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"SWEET'S"

INDEXED CATALOGUE OF BUILDING CONSTRUCTION



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· and ·
· CHICAGO ·


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“SWEET’S” INDEXED CATALOGUE
OF BUILDING CONSTRUCTION



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"THE BOOK OF CATALOGUES"

"SWEET'S"

INDEXED CATALOGUE OF BUILDING CONSTRUCTION

FOR THE YEAR

1906

WITH AN INTRODUCTION BY
THOMAS NOLAN, F.A.I.A.
ASSISTANT PROFESSOR OF ARCHITECTURE
UNIVERSITY OF PENNSYLVANIA

AND A RECOMMENDATION AS TO SCOPE, PURPOSE AND PLAN

FROM A NUMBER OF
EMINENT ARCHITECTS

DEvised, COMPILED AND EDITED BY THE ARCHITECTURAL RECORD

THE ARCHITECTURAL RECORD CO.

14 and 16 Vesey St., New York City

∴
1906

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THE HERALD COMPANY OF BINGHAMTON
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BINGHAMTON, N. Y.

ENDORSEMENT



EARLY three thousand Architects have directly or indirectly approved of the plan, purpose and method of dealing with the "catalogue problem" embodied in "Sweet's Indexed Catalogue of Building Construction." Nothing could demonstrate more decisively the need that exists for a work of the character here presented than the extreme cordiality with which from the very conception of the enterprise practically the entire architectural profession have assisted and encouraged the publishers. The publication here even of excerpts from thousands of commendatory letters (literally thousands) would be merely a tedious exhibition of approval and would add nothing to the practical value of the book. The Publishers, however, cannot refrain from printing the following Endorsement, with the names of the distinguished architects who signed it:

To the Architectural Profession and the Public:

We, the undersigned, while recognizing the utility of the trade catalogue, are convinced that its value at present is materially impaired by its heterogeneous distribution, its diversity in shape and form, and its general unsuitableness of contents and arrangement for the purposes of reference—the value of a catalogue in an architect's office being confined very largely to "reference."

Trade literature to be of service in the specification room (1) should be condensed, (2) should be arranged upon some organic principle, (3) should state facts and give positive information, and finally, (4) should be arranged essentially for the purpose of reference.

The publishers of "Sweet's Index" have undertaken to group together all catalogues on this principle so as to supply the architectural profession with an encyclopaedia or dictionary of building materials and building material firms, accompanied by an extensive and scientific cross-index, by means of which the architect may refer without difficulty to any information for which he may be seeking. The architectural profession cannot remain indifferent to an enterprise of this scope, character and value. Therefore, without assuming the slightest responsibility for any statement made in the text matter of this work, we are pleased to join with Mr. Nolan in endorsing and commending the PURPOSE, the IDEA, the METHOD, and the PRINCIPLE that underlie "Sweet's Index," as a real solution of the existing "catalogue problem."

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INTRODUCTION



IN offering to the public, and especially to the architects of the United States, the first edition of Sweet's Indexed Catalogue of Building Construction, the publishers have realized at the very outset the importance of stating clearly, first, what the book is, and secondly, the reasons for commending it to the architectural profession for their use and support.

The writer of this introduction has been asked by the publishers to explain in a few words the character and purpose of the work, and as he has no interest in the commercial side of the publication, and is not responsible for any of the statements made in it by manufacturers themselves, and therefore may be considered an impartial judge, he has very gladly consented to commend the idea embodied in these first successful efforts toward a really *scientific standard catalogue and index of building materials and construction*. For the past fifteen years he has himself urged the desirability of embodying this idea in some form, and of finding some practical solution for that "Catalogue Problem" which no architect has ever been able to work out for himself.

Let the matter be looked at entirely from the point of view of the architect. What are the facts regarding this difficulty, which is a fruitful source of perplexity in every architect's office?

Perhaps a reference to the writer's personal experience in this matter, and to the experiments he made in his own office will illustrate the difficulty of handling catalogues so that they may be really available as working implements in the specification department.

For a period of a dozen years, every possible method of collecting, sorting, classifying, filing and indexing all the catalogues and circulars of building materials was conscientiously given a fair trial, and after a thorough test, every method was just as conscientiously abandoned. They were abandoned because they did not work well in the specification room. They were not practicable. Everything was tried, arrangements of shelves, bookcases, pasteboard boxes, filing cases, patent binders, filing cabinets, cases of drawers, indexing schemes and "index-rerums." At first, all the big books were put together in one place and all the little books in another place; and then all the big and little books were mixed up together, and indexed according to subject. Some had four pages, and some had four hundred pages. Barely two were of the same shape or superficies. The little ones would not stand up, and could not be gotten at when laid flat. Another elaborate system was introduced, and a voluminous cross-index started, but the big books contained too much useless matter, and the little books got lost or mislaid or could not be found just when wanted. Then the writer decided, after much time and expense, that the present system of publishing and distributing catalogues, as far as the architect is concerned, might be rightly termed "The Catalogue Delusion," and that the only solution of the problem must lie in a scientific standard catalogue and index of building materials and construction, gradually developed toward an ideal result by the co-operation of manufacturer and architect. As far back as January 28th, 1893, one of the leading architectural journals published a strong editorial advocating just this very thing, and in that same year the writer himself submitted the problem to several hundred architects and manufacturers, and found that there was a consensus of opinion that something *should* and *could* be done in the way of a great uniform standard catalogue or index.

The pressure upon the profession is increasing steadily and rapidly from year to year. The architect has less and less time, and yet greater demands are made upon his time. The tremendous mechanical activity of our modern days is one of the sources of pressure upon the architect. Invention and innovation after invention and innovation demand his consideration, and the architect is compelled to pay some attention to these demands. He cannot give up his time to the reception of salesmen interested in pushing these novelties. The day is too short. He cannot, in all cases, select the good from the bad before he grants an audience. The names of building material firms are legion. It is difficult to find any really valid test for discrimination. What course is open to the architect? His dilemma is, that he must either forego the necessary knowledge of all these things that he should know, and remain behind his age, or give up his time to learning about them and then have no time left for anything else.

Of course, there is the ordinary trade catalogue, but hitherto manufacturers have not, for the most part, produced catalogues that are really serviceable to the architect, or that provide him readily with the information he needs. The question cannot be judged by a consideration of any one catalogue. The whole cannot be appraised from the piece. To understand the subject, one must view the entire mass of this printed matter deposited annually in the office of every architect of any standing. Singly, any one of these catalogues might be serviceable, but the problem begins when the first few hundred arrive, and attains to chaos with the third or fourth thousand. How are these tons of documents to be massed, preserved, and made available for ready reference? For the chief value of a catalogue is not as "reading matter," but as information for *reference*. Indeed, the catalogue belongs properly to the same category as the dictionary, or the telephone book; yet the effort of the catalogue maker in the past has been to push it into the "reading" class with volumes dealing with the technics of buildings, or to make it a substitute for the persuasive salesman. Devoid of any logical arrangement, singularly free from real hard facts and positive details, nearly always lacking even an index, the old catalogue method merely adds another problem to the architect's over-burdened career. Moreover, the making of these catalogues of the old type is rarely intrusted to the right authors. They are either written by some one more interested in his own personal fame or the fame of his "house" than in anything else, or they are written by some "Ad" writer, who values predominantly the "smart" phrase, the "catchy" term; or they are written by some expert, who starts off by assuming fifty per cent. of the "trade" or the technical information which the reader really requires. The printer then is called in to confound confusion. All he cares for is typographical niceties,—a "pretty" looking page or pamphlet,—little vignnetted pictures, thumb-nail sketches, all done on tinted papers with tinted inks. The result is supposed to be artistic. It may be artistic, but it certainly is very far from being pre-eminently useful to the busy architect. As a matter of fact, every catalogue should be composed entirely within and from the point of view that prevails in the architect's specification room. Factory ideas, printers' ideas, "Ad" writers' ideas, each alike, has little to do with the case. The proper purpose of the catalogue is to impart to an architect the very information that the *architect* demands, and upon a plan that makes it readily available for his work. If it does not do this completely, the effort is misdirected.

Then again, there is the case of those firms who issue enormously bulky catalogues. These volumes may be a monument to the house that produces them, but clearly they are built on the wrong principle so far as the architect is concerned. It is not so necessary to impress an architect as it is to give him the information he needs. These big books, if examined, will be found to contain a great amount of text and illustration of no value to any architect. Consider one or two examples. In some hardware catalogues, a place is given to meat choppers. In others, pages are devoted to an exhibition of blank keys that sell from fifteen cents upward per dozen. Pages are allotted to iron keys selling for approximately \$2.40 a gross, and to trunk padlocks, common cabinet locks, etc., etc. Similarly with the books issued by plumbing firms;

a great deal of space is used to illustrate rubber plugs and the commoner plumbing materials. Now, this may have a value for someone, but why is it thrust upon the architect? Because he uses it? No! It is sent to him because the architect is lumped with the hardware dealer in the country town, and with the local plumber. It is sent to both on the genial supposition that a book of a thousand pages (containing much useless information) has a greater influence upon an architect than a carefully edited book of two hundred and fifty pages would have.

What is the logical way of escape from this muddle? Let us inquire what are the architect's requirements? First of all and chiefly, the architect needs catalogues for reference, and reference only. Therefore, clearly, the reference idea should dominate in the solution. Again, the architect does not need all conceivable information about any product or about the house that makes it, but selected information free, as far as possible, from mere "trade" talk. Condensation, therefore, is necessary. Moreover, the architect wants all of this information so that he can get at it offhand and immediately. In whatever form it is presented, it must not be cumbersome. Obviously, a volume like the dictionary is suggested by these requirements. Finally, the architect ought not to be made to pay for this information, because he is not the beneficiary of any sale of merchandise. The book, therefore, should be distributed.

It is from these ideas and from this method of reasoning that "Sweet's Index" has arisen.

Briefly, then, what is Sweet's Indexed Catalogue of Building Construction? It is a scientific catalogue book system (a volume or series of volumes), as easy to refer to as a dictionary, consisting of groups of catalogues from which as much unnecessary matter as possible has been eliminated, carefully indexed and cross-indexed, and sent out gratuitously by the publishers to every architect of good standing. Each catalogue in the work is organically arranged in its parts. It proceeds in a regular order from fact "A" to fact "Z". Illustrations of a certain class are all grouped and arranged according to some obvious plan. "Literature" and "mere writing" are omitted, as an architect has no time in his office for either.

The idea of what a book of reference is, has been always kept in mind. The thousands of facts are grouped together in a concise and systematic way. The arrangement was conceived with the idea of answering promptly, clearly and as automatically as possible, every question that reasonably can be put; and also, as far as possible, in each catalogue, every bit of information that is of a particular kind or class is kept together instead of being scattered.

Pictures of utterly common articles, thoroughly known to everyone, are omitted as far as manufacturers would consent. The object has been to give illustrations for the purpose of information, and not for the sake of the pictures. The Index proper is made up strictly to meet the demands of those particular moments when the architect is called upon to turn to it for a specific bit of information, just as he would turn to the telephone book or to the dictionary.

Every architect knows that at the very least, fifty per cent. of all the matter put into the *usual* catalogue is of no earthly value to him; it never was of value to him; it never could be of any value to him.

The first edition of such a work is naturally susceptible of improvement and development, like the first locomotive, or the first telephone book. In order to get the idea started, something had to be done, and the hardest thing in launching the idea was to convince some building material firms (though really the majority had their suspicions) that the architect is not tickled to death with the present catalogue and its promiscuous distribution. The next most difficult task was to induce some of these manufacturers to give up the publication of irrelevant matter. It was just as difficult to induce them "to get down" to stating facts, something about their products that could be weighed, or measured, or tested in some way or another. The writer knows that the first volume of "Sweet's Index" is not as radical as the publishers would like to have it. He also knows, however, that it contains as much hard effort and unstinted expenditure of capital as could be devoted to a first venture when the "idea" could not be exhibited to building

material firms in a really concrete and tested form. Next year, particularly with plans they are making, the publishers will advance the new catalogue method very materially, and broaden its development in new directions.

The publishers, however, assure me that a substantial majority of the building material firms with whom they discussed "Sweet's Index," approved, or were converted to the general idea and plan of the project; and if they are not all represented in the pages of this particular volume the absence is due, in the main, to conditions of financial policy, etc., such as: "Publicity arrangements for the year already made"; "new catalogue on the old method just issued"; "our directors have voted to try a straight advertising policy for the current year," etc. Most of these firms have arranged to use the next volume of "Sweet's Index," thus adding, of course, materially to its value to the architect. For, again, like unto the telephone book, the more inclusive "Sweet's Index" is, the more valuable it is to the profession.

Just how near this book comes to an absolutely ideal solution, the architectural profession will decide. The writer thoroughly believes in the *idea*, that is, in a really scientific condensation, arrangement and presentation of the vast amount of information relating to building materials and construction to which architects must constantly refer in the writing of specifications. He believes also, with many other architects, that this book, whatever may be its shortcomings on account of the initial difficulties of the undertaking, is distinctly in the direction of the ideal solution of the problem. Whatever may be the amount or nature of the matter contained in such a work—and with this, of course, the writer of this introduction has nothing to do—he commends the *idea*, the *purpose* of the book, the *form* in which the matter is presented to the architectural profession.


If the architects believe in it, approve of it and give it their support by using it; if they will co-operate by helpful suggestions for its improvement and enlargement in the coming editions, it will not be difficult to save the profession from the present nuisance of a multitudinous lot of circulars of all shapes and sizes, and finally to completely solve the "Catalogue Problem," one of the most perplexing problems with which they have to deal in the most practical and exacting part of their work.

THOMAS NOLAN.

PHILADELPHIA,

December, 1905.

PUBLISHERS' NOTICE

 HE purposes of the present undertaking have been set forth at length in Professor Nolan's "Introduction," and the only word the publishers desire to add is one to emphasize the fact that their intention has been and is to hold the ethical and professional character of this work in no degree secondary to its practical objects, believing, indeed, that the latter are to be realized fully only by strict subordination to the former. To this end they will appreciate highly communications from readers drawing attention to any error of statement or of fact that may be found in the following pages. They also solicit any suggestion for the improvement either in plan or contents, of the "new catalogue method."

The method adopted in this book and the manner and form in which that method is embodied, are not to be judged lightly. In passing judgment, the difficulties derived from the existing situation regarding catalogues must be considered. The old promiscuous catalogue method, dating from time immemorable, naturally has created its own traditions; and these traditions it is not possible to destroy offhand by any attack, however sound in principle or persistent in effort. An arbitrary or purely theoretic attack would fail beyond doubt. Even when the average man accepts completely in principle a new idea he proceeds, usually without the slightest sense of contradiction, to incorporate into the novel working scheme a large measure of the old way of thinking and doing, much of it essentially opposed to the idea but recently adopted. This is only another way of saying—all of us are prone to be more radical in our thoughts than in our actions. With this tendency the publishers of "Sweet's Index" have had to contend. They have even had to surrender to it temporarily where the compromise has not invaded the real integrity of their plan. Their project could not be made visible to clients until the actual work of publication was completed; and the wonder, therefore, is not that building material firms herein represented have demanded so much in respect to an old tradition, but that they have conceded so much in response to an appeal to rationalize and systematize the antique catalogue method. The publishers, indeed, would be singularly lacking in appreciation did they not acknowledge here the frank, open-minded consideration accorded to their project by manufacturers generally. With few exceptions, the general desire has been "to improve" and to assist the architectural profession in dealing with the "catalogue problem." For the catalogue is a vastly useful piece of trade machinery. It is simply indispensable to the building material firm. It is equally indispensable to the architect. Considered by itself, any single catalogue might be fairly satisfactory. The "problem" does not arrive until the catalogue is multiplied, and it "arrives all the more" as the multiplication proceeds. There comes a point in the process when something must break. Either the architect must surrender to the deluge, or, to save himself, embark in the Ark of Indifference to all trade literature. As the average professional man prefers the pursuit of his profession to the solution of a problem in catalogues, his entry into the ark is inevitable. The really extraordinary circumstance is that building material firms did not recognize long ago the evident condition of affairs. Almost any busy architect could have "made them wise." The very fact that card-index systems, filing cabinets, binders and other make-shift devices for propping up the overburdened catalogue situation had become necessary should have warned the manufacturer that trade literature, at least in the mass, had developed a weakness, although

one not easily visible in any single catalogue. An excuse probably is to be found in the circumstance that the manufacturer rarely sees his catalogue *in situ*—at its destination. All that comes to his observation usually is a single copy presented to him in his office by the printer or other subordinate; at most a bundle or two of catalogues stacked for delivery. This is like looking through the wrong end of the telescope; it dwarfs the view. The correct vision can be obtained only in the architect's office, or rather in the offices of several architects where the daily mails bring in the deluge. It has been calculated that an architect reading steadily eight hours a day throughout the working year could not finish the perusal of the catalogues he receives in twelve months. Strict mathematics may prove this computation slightly incorrect one way or the other—that it is approximately accurate is significant of the extent to which the "Catalogue Delusion" has been carried.

A way out of the difficulty was imperative. The publishers of the present work frankly accord the credit of the solution of the problem to the three thousand architects whom they consulted. These professional men pointed out the remedial course to be taken. "Sweet's Index" is essentially the embodiment of these suggestions. The plan adopted was in a sense obvious, that is, as greater inventions were obvious—after realization. The plan of the "new catalogue method" lay as it were in the centre of the "old catalogue" difficulty. It had merely to be abstracted and put into operation. The publishers of "Sweet's Index" believe that the inherent fullness, rationality and strength of their enterprise rest on this very fact.

Apart from the unsolicited expressions of approval and encouragement the publishers have received, conveyed literally in thousands of letters, they believe they may fairly assert they are acting (as the cant political phrase runs), under a "mandate" from the architectural profession. Their instructions are formulated in requirements somewhat as follows: Condense; exclude display advertisements; expunge mere "trade" talk; adopt a single organic plan for all catalogues; arrange all matter solely with a view to reference; edit strictly with respect to the requirements of the architect; supply a scientific cross-index; employ a legible type. The volume in hand is based as far as possible upon these instructions. In the next edition, for which plans are even now making, these instructions can be more rigorously applied and additional improvements developed. What is essentially needed to-day in the interests of all concerned is a legitimate and earnest co-operation of architects, material firms and the publishers. The measure of co-operation already secured is a matter which the publishers on their part acknowledge with gratitude. They believe that more than the first step has been taken toward the solution of the "catalogue problem."

LIST OF CLASSIFICATIONS

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GENERAL INDEX

Names of firms in CAPITALS; cities in FULL FACE; trade names of products in *Italics*; general titles of products in Roman lower case.

RULE FOR CONSULTATION.—When seeking any building material, make the search against the fundamental NOUN, not the adjective or qualifying phrase. If there be a restricted or special noun for the article required and also a wider or more general denomination, choose the latter.

EXAMPLES:—"Building Paper" is not indexed under the letter B (Building Paper), but under P (Paper, building). Similarly, the index reads "Decorations, Interior," not "Interior Decorations"; "Brick, Sand-lime," not "Sand-lime Brick," and so on, with results such as

Apparatus, Lighting.	Machinery, Pumping.
Auxiliaries, Builders'.	Stone, Structural.
Equipment, Electrical.	Supply Systems, Water.
Fixtures, Electric Lighting.	Treads, Safety.

It will be noticed that there are a few entries such as "Concrete Construction," with a reference to "Construction, Concrete;" but duplications of this kind are introduced merely as helps and time-savers in case of the persistence of old habits.

Of course compound words are treated as such. For example, the entry is "Dumb-waiter," not "Waiter, Dumb," etc.

In reference to the employment of the wider or more general designation for an article, for example the use of "Stone, Structural," "Metal Work, Structural," "Equipment, Heating," to cover many minor details, this has been necessitated in part by the confusion that exists in trade nomenclature, and by the fact that in the first edition of a work of this character, it has been impossible to establish a clearly defined vocabulary, and induce manufacturers to enumerate in detail each item on their list of products. For instance: one firm usually designates its business simply "Manufacturers of Hardware," another "Hardware Specialties," another "Hardware Supplies," terms which undoubtedly include all the common articles of the trade, but leave the Indexer in some doubt about the less usual articles. Of course, nothing should be indexed that is not specifically mentioned in a book; but this rule, in its strict application, would deprive a work of this special character of much of its value to the working architect who brings to the use of the book no little special knowledge and power of interpretation. In short, what the architect needs is accurate guide-posts, not precise directions. If he is seeking "Locks," it is sufficient for practical purposes if he reaches all Hardware Makers' catalogues. This "guide-post method," however, has been applied only in certain cases where it seemed to be unavoidable. Elsewhere the stricter plan of indexing has been adhered to, and it is this plan that will be developed and extended to the utmost in future editions of this book.

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" 163. After first line, insert *Winona, Minn.*

" 314. First line, for J. G. Janusch, read *F. G. Janusch.*

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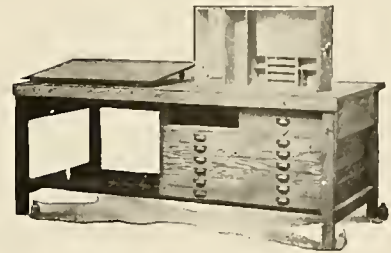
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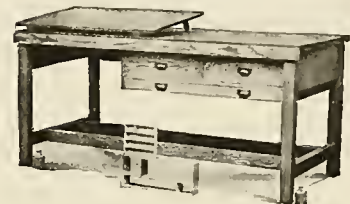
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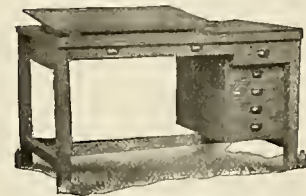
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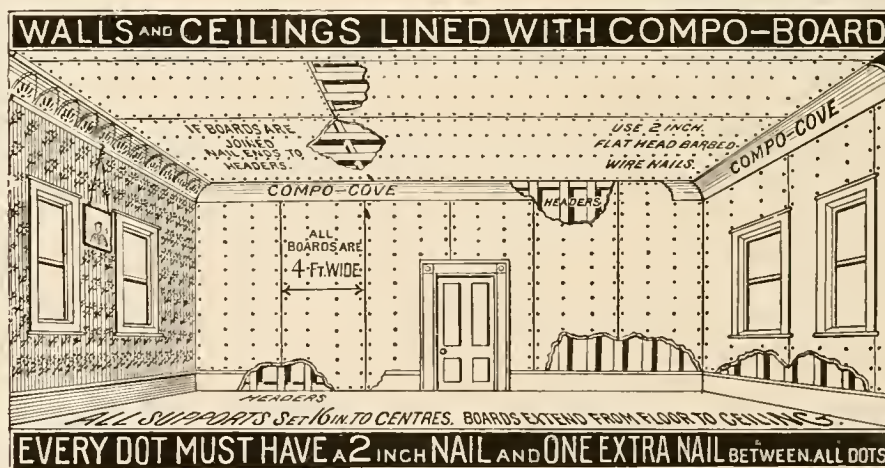
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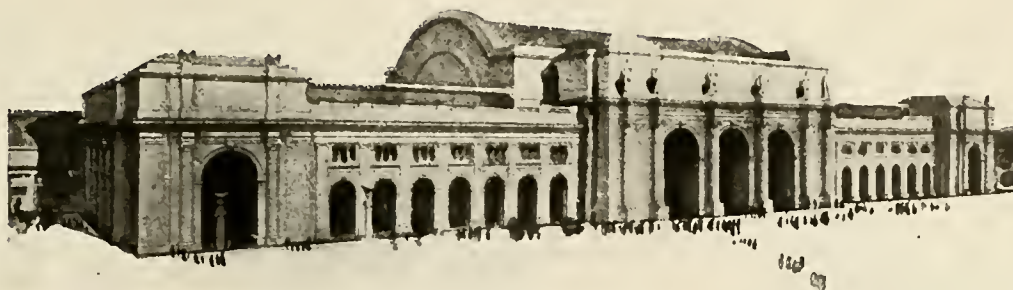
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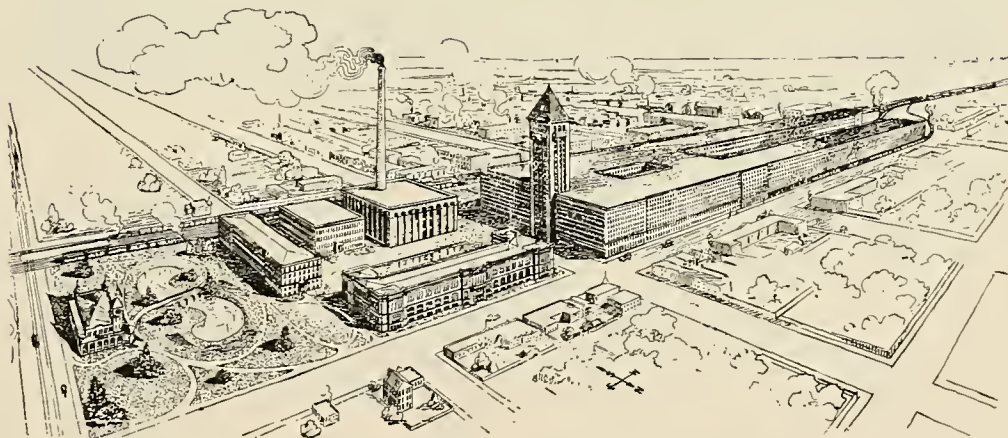
ATLANTIC BUILDING, 51 Wall Street, New York,
Clinton & Russell, Architects.

KUHN-LOEB BUILDING, 52 William Street, New
York, James B. Baker, Architect.

NEW WANAMAKER STORE, Philadelphia, Pa.,
D. H. Burnham & Co., Architects.

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mons & Fellows, Architects.

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ham & Co., Architects.



SEARS, ROEBUCK & CO.'S NEW PLANT IN CHICAGO
Recently completed in record time by the Thompson-Starrett Company

A. & S. WILSON COMPANY

Contractors and Builders

541-551 Third Avenue

PITTSBURGH, PA.

TELEPHONES

C. D. & P. COURT 225 AND 226; P. & A. MAIN 225 AND 230

SERVICES.

We are GENERAL CONTRACTORS for the erecting of any type of BUILDING and possess every facility to specialize in HIGH CLASS RESIDENCES and HEAVY CUT STONE and STEEL OFFICE BUILDINGS and WAREHOUSES.

FACILITIES.

We own and operate one of the largest and best equipped interior finishing mills in the country, which enables us to do our own woodwork in the shortest possible time at the least expense consistent with first-class work. In addition to this, we own a large and complete brick and stone yard, and at all times have on hand immense stocks of paint and plaster. Our engineering department is equipped in every branch and capable of complete building management of any magnitude.

TERRITORY.

Being centrally located and with unsurpassed shipping facilities we are able to carry on large contracts in any part of the United States. We solicit correspondence on important work in any locality.

EXPERIENCE.

This Company was organized in the year 1852 and incorporated under the laws of Pennsylvania in 1902. During that time we have erected some of the best known and most important buildings in the Pittsburgh district as well as work in other sections of the country.

EXAMPLES OF OUR WORK.

We submit below a list of some well-known buildings in various classes to give an idea of the wide range of our experience and facilities.

A. R. PEACOCK RESIDENCE	JOS. HORNE RETAIL STORES
J. M. GUFFEY RESIDENCE	PITTSBURGH HIGH SCHOOL
W. L. MELLON RESIDENCE	PITTSBURGH RYS. CO. POWER PLANT
BAILEY FARRELL MFG. CO. WAREHOUSE	ALLEGHENY COUNTY JAIL ANNEX
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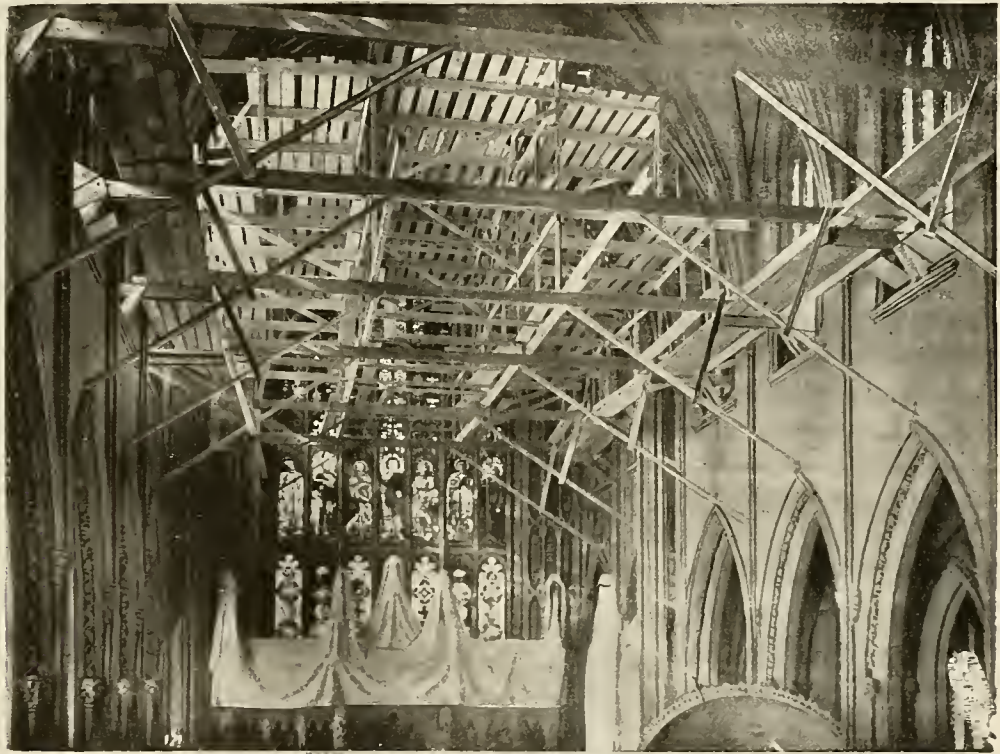
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PRODUCTS.

We manufacture the following: SCAFFOLDS, FLAG POLES, PORTABLE HOUSES, BUILDERS' HORSES, TUBS and HOSE, LADDERS, STEP LADDERS, BRICK HODS, MORTAR HODS, CORNICE STRIPS, DERRICK POLES, ELEVATOR SHAFTS, FEATHER EDGES, STRAIGHT EDGES, MAPLE ROLLERS, MORTAR BOARDS, MORTAR SCREENS, SAND SCREENS, PLASTERERS' RODS and DARBIES, POWDER BOXES, SCAFFOLD ROPE, CLOTHES POLES, SIDEWALK BRIDGES, STONE BUNKERS, TOOL BOXES, TOOL HOUSES, WHEEL-BARROWS and WEDGES.



SCAFFOLDING FOR CEILING OF TRINITY CHURCH, NEW YORK CITY

SCAFFOLDS.

We supply every kind and form of scaffolding, and are prepared to furnish whatever material may be required, and erect the structure if so desired.

We have furnished scaffolding for a large number of the most important buildings in New York and elsewhere, including church spires and other structures of great height.

The above cut illustrates some of our work.

We will furnish and erect flag poles complete in all sizes.

We manufacture portable houses for use as temporary offices, tool houses, and for storage purposes.

We make Ladders of every kind; Boat Masts and Spars; Clothes Poles of all kinds, and set the latter when so ordered.

Complete catalogues will be furnished on application.

FLAG POLES.

PORTABLE HOUSES.

OTHER SPECIALTIES.

PRICES.

CARLSON HOISTING COMPANY

23-27 Douglass Street
BROOKLYN, N. Y.

TELEPHONE, 4472 MAIN.

PRODUCTS—PLATFORM HOD ELEVATORS, WHEELBARROW ELEVATORS, ENDLESS-CHAIN HOD ELEVATORS, PATENT HODS.

TERRITORY—Business done in any part of the United States.

TERMS—The Hod Elevators and Endless Chain Machines are rented as well as sold.

PATENT CARLSON TEN-HOD ELEVATORS—This is an improvement over all other elevators and is the first elevator that will successfully carry 10 hods.

The hods are held by a special kind of socket on the lower cross-bar, and by a special kind of hook on the upper cross-bar, which holds the hods so securely that they can't fall off accidentally. The hods are put on by simply engaging the studs on the handle in the socket on the lower cross-bar, and pushing in the hod to the upper cross-head, and the double hook engages the upper studs on the handle automatically. This is done so easily that a man with very little experience can put on a hod even without using his hands. To unload or take the hod off, the carrier just lifts the upper hook a little and the hod comes back on his shoulder. The ease of loading and unloading this machine is the secret of its success and favor with the builders and contractors.

The platform is made very strong and well braced and will safely carry 2000 lbs.

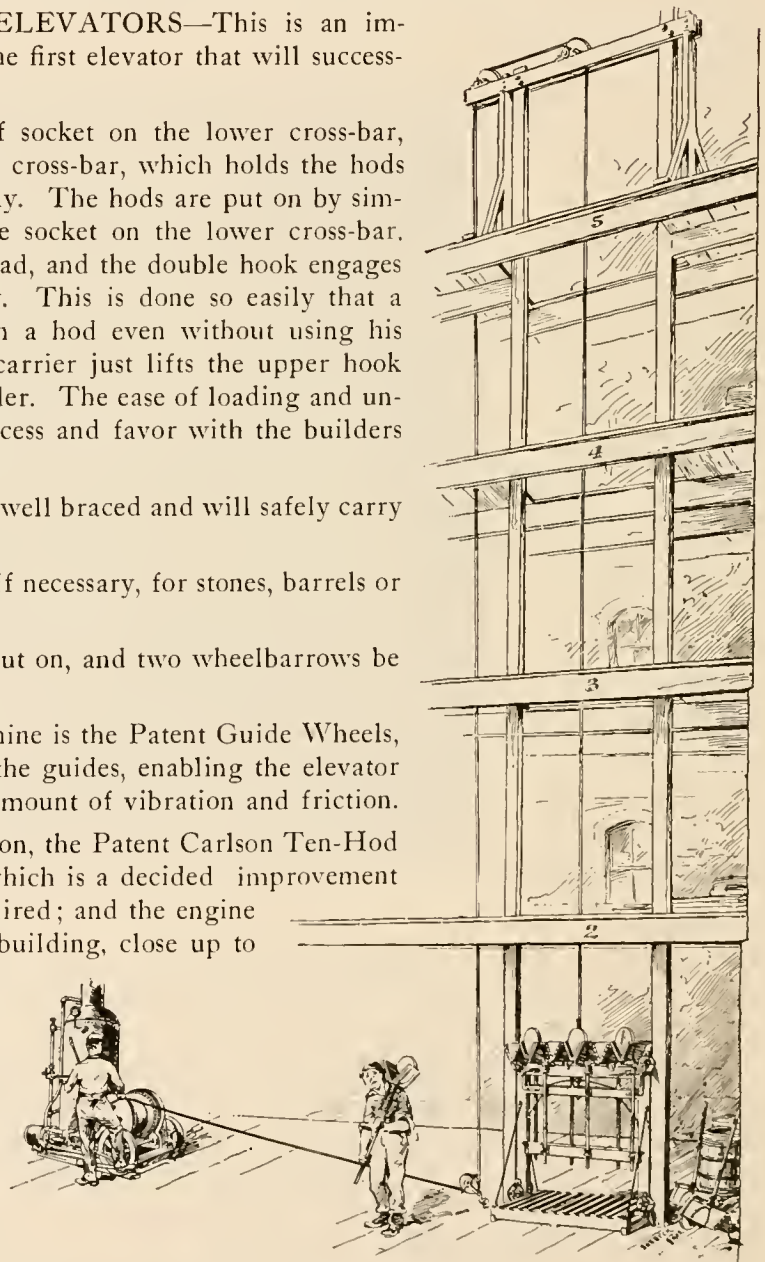
The lower cross-bar can be taken out if necessary, for stones, barrels or a wheelbarrow.

A wheelbarrow platform can also be put on, and two wheelbarrows be put on at a time.

Another important feature in this machine is the Patent Guide Wheels, so constructed as to roll on three sides of the guides, enabling the elevator to run up and down with the least possible amount of vibration and friction.

As shown in the accompanying illustration, the Patent Carlson Ten-Hod Elevator is rigged up with a single rope, which is a decided improvement over all other systems as only one cage is required; and the engine can be placed anywhere, in or outside the building, close up to elevator, or at a distance in any angle to the machine, and on either side. The elevator can also be let down in the cellar, which is sometimes necessary where there is no room on the street for the building material.

The Company also manufactures and rents out Double Platform (one up and one down) Material Elevators.



This Cut Represents Elevator in Use with Engine

SIZES OF THE PATENT CARLSON HOD ELEVATOR

Sizes of Platform	No. of Hods Carried	Two Legs, one Cross-Head, 3 Sheave Wheels, one Bell for Signal and Danger Sign	Mortar Hods	Brick Hods
8' 6"x 28"	14	.....	30	60
6' 6"x 28"	10	.....	17	33
6' 6"x 28"	8	.....	15	25
4' 6"x 28"	4	.....	8	17

The Guide Posts are made of 3x6 Spruce.

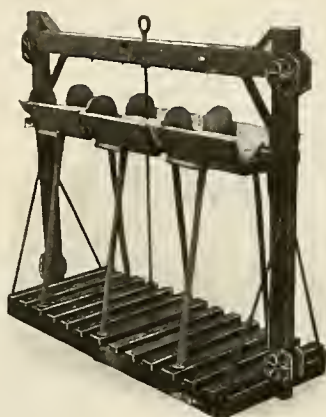
PATENT CARLSON COMBINATION HOD AND WHEELBARROW ELEVATORS—

The Patent Carlson Combination Hod and Wheelbarrow Elevators are made in 3 sizes as follows:

- One to hold 1 wheelbarrow and 4 hods.
- One to hold 2 wheelbarrows and 6 hods.
- One to hold 3 wheelbarrows and 8 hods.



Elevator Rigged for Wheelbarrows



Elevator Rigged for Hods



Elevator Rigged for both Hods and Wheelbarrows

CARLSON ENDLESS CHAIN MACHINE—This machine consists of two parts, one for the top and one for the bottom, connected with the hod elevator chain, and the hods are hung on the rungs of the chain. The machine is kept going continuously, the loaded hods being hung on and taken off while the machine is working, and the empty hods sent down on the other side, where they will fall off themselves when the handle strikes the floor. Thus it will be seen a steady stream of loaded hods can be kept coming up and empty ones going down, and as the hods balance themselves, there is only the weight of the material to be hoisted. The capacity is surprising, as from 25,000 to 35,000 bricks, besides the mortar, sills, lintels, etc., can be hoisted per day.

This machine is made entirely of steel. It will not rot, or dry up and get loose in any way, but will remain straight and rigid. It works easily, being fitted with roller bearings, which are enclosed in cone shaped steel sleeves providing for automatic adjustment with perfect alignment.

The boxes of top shaft are open, allowing shaft with attached roller to be laid in.

The crank shaft boxes are hinged and easily opened with a monkey wrench.

The safety of this machine is secured by the ratchet which is attached under the top wheel and will stop the machine if the transmitting chain breaks, and prevent the machine running backwards.

It is very simple to put together and take apart, and is practically everlasting.



General View of Endless Chain Machine at Work

THE DUPLEX HANGER COMPANY

INCORPORATED

CLEVELAND, OHIO

PRODUCTS.

Sole manufacturers of THE DUPLEX JOIST and WALL HANGERS, I BEAM HANGERS, DUPLEX POST CAPS, CLEVELAND STEEL WALL TIES and CORRUGATED WALL TIES.

ADAPTABILITY.

We have the endorsement of the Building Inspectors of every large city.

TESTS.

The Duplex Hangers are the best, strongest and most reliable Hangers that are manufactured. The Hangers have been tested under all possible practical conditions and we feel that the results of these tests entitle us to claim undisputed superiority of construction.

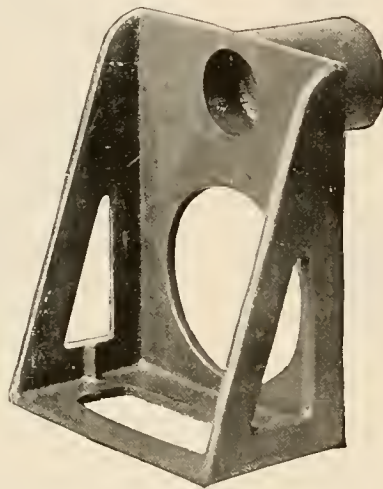


FIG. 1. DUPLEX JOIST HANGER



FIG. 2. DUPLEX WALL HANGER

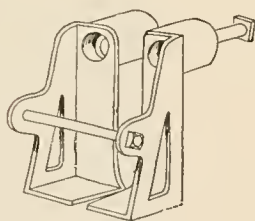


FIG. 3. DUPLEX JOIST HANGER IN PAIRS

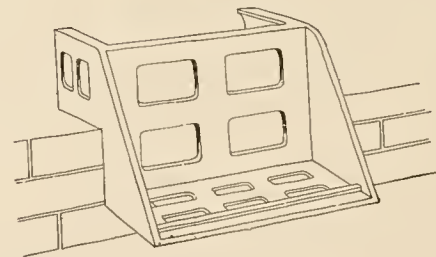


FIG. 4. EXTRA HEAVY DUPLEX HANGER

DUPLEX
JOIST
HANGER.

The Duplex Joist Hanger (Fig. 3) is the best hanger for heavy mill construction work. It is used in pairs and when bolted through the girder and beam gives a perfect tie.

DUPLEX
WALL HANGER.

The Duplex Wall Hanger (Fig. 2), gives an increased bearing for the timber. It does not break the regular bond of masonry wall. It prevents the decay of timber from dry rot. It permits the timber to release itself in case of fire.

For heavy mill construction we make the Extra Heavy Duplex Wall Hanger (Fig. 4). This Hanger gives 8" bearing on the wall and provides for 8" bearing for the girder.

DUPLEX I BEAM HANGER.

The unanimous endorsement of every architect, engineer or structural iron man who has used the Duplex I Beam Hanger (see Fig. 5) proves clearly that it will soon be generally adopted. The Hanger will fit any I Beam or channel. It is made to fit the flange of the beam with ample bearing for the joists. A $\frac{3}{4}$ " hole punched 6" from the bottom of the beam will fit any hanger. For construction where a beam is to be carried which is of less height than the I Beam we make hanger shown in Fig. 6.



FIG. 5. DUPLEX I BEAM HANGER

DUPLEX POST CAP.

The Duplex Post Cap (Fig. 7) is the most perfect column and girder connection that it is possible to obtain.

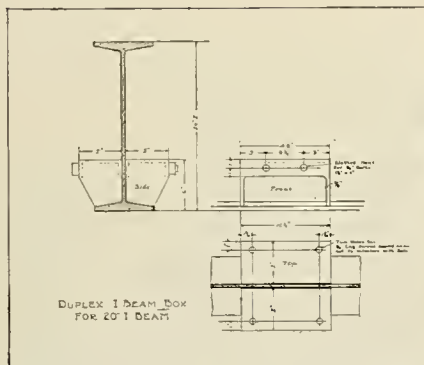


FIG. 6. DUPLEX I BEAM BOX For 20" I Beam

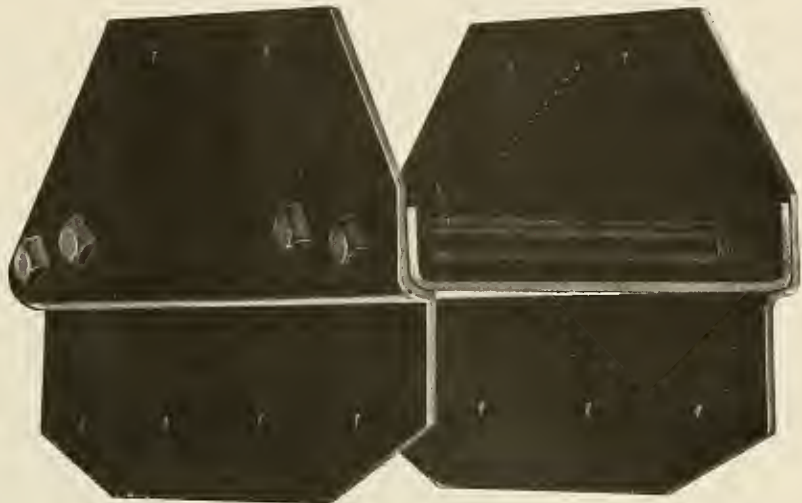


FIG. 7. DUPLEX POST CAP

The Caps are made of mild steel $\frac{1}{4}$ " thick for Caps up to 12x12 Posts. For larger sizes heavier plates are used. The Caps adapt themselves to every possible construction and we carry a complete stock.

SIZES AND PRICES.

DUPLEX JOIST HANGERS			DUPLEX WALL HANGERS—Continued.				
No. 10,	to carry Joists.....	2 x 6 to 2 x 10	\$0.20	No. 1000,	to carry Joists.....	10x10 to 10x12	\$1.60
No. 14,	to carry Joists.....	2 x 12 to 2 x 16	.30	No. 1200,	to carry Joists.....	12x12 to 12x14	2.00
No. 15,	to carry Joists.....	3 x 6 to 3 x 10	.30	No. 800,	Extra Heavy..	8x14, 8x16, 8x18, 8x20	2.50
No. 18,	to carry Joists.....	2½ x 6 to 2½ x 16	.40	No. 1000,	Extra Heavy..	10x14, 10x16, 10x18, 10x20	3.00
No. 20	to carry Joists.....	4 x 6 to 4 x 10	.35	No. 1200,	Extra Heavy..	12x14, 12x16, 12x18, 12x20	4.00
No. 21,	to carry Joists.....	3 x 12 to 3 x 14	.45	No. 1400,	Extra Heavy..	14x14, 14x16, 14x18, 14x20	5.00
No. 21X,	to carry Joists.....	3 x 16 to 3 x 20	.50	No. 1600,	Extra Heavy..	16x16, 16x18, 16x20	6.00
No. 28,	to carry Joists.....	4 x 12 to 4 x 14	.60	DUPLEX I BEAM HANGERS			
No. 28X,	to carry Joists.....	4 x 16 to 4 x 20	.70	No. 2,	to carry Joists.....	2 x 6 to 2 x 16	\$.30
No. 53,	to carry Joists.....	5 x 8 to 5 x 16	.75	No. 2½,	to carry Joists.....	2½ x 6 to 2½ x 16	.40
No. 16,	to carry Joists.....	6 x 6 to 6 x 9	.50	No. 3,	to carry Joists.....	3 x 6 to 3 x 16	.45
No. 60,	to carry Joists.....	6 x 10 to 6 x 12	.80	No. 4,	to carry Joists.....	4 x 6 to 4 x 16	.60
No. 60X,	to carry Joists.....	6 x 14 to 6 x 16	1.00	No. 5,	to carry Joists.....	5 x 8 to 5 x 16	.75
No. 80,	to carry Joists.....	8 x 8 to 8 x 12	1.00	No. 6,	to carry Joists.....	6 x 8 to 6 x 16	.80
No. 90,	to carry Joists.....	8 x 16 to 8 x 18	1.50	No. 7R,	Used in pairs.....	8 x 8 to 8 x 16	\$1.00
No. 35R,	} Used in pairs.....	8 x 8 to 8 x 14	\$1.25 pair without Bolts	No. 7L,				} Used in pairs.....	10x10 to 10x16	a
No. 35L,		10 x 10 to 10x14		pair		12x12 to 12x16	pair
No. 75R,	} Used in pairs.....	10 x 16 to 16x18	\$2.00 "		DUPLEX POST CAPS (INCLUDING BOLTS)		
No. 75L,		} Used in pairs.....		45% angle hangers of all sizes carried in stock.		6 x 6,	two ways.....	$3.50
DUPLEX WALL HANGERS				8 x 8,	two ways.....	4.00	
No. 140,	to carry Joists.....	2x 6 to 2x 16	\$0.35	10x10,	two ways.....	5.00	
No. 210,	to carry Joists.....	3x 6 to 3x 16	.50	12x12,	two ways.....	6.00	
No. 280,	to carry Joists.....	4x 6 to 4x 16	.75	14x14,	two ways.....	8.00	
No. 500,	to carry Joists.....	5x 8 to 5x 16	1.00	16x16,	two ways.....	10.00	
No. 600,	to carry Joists.....	6x 8 to 6x 16	1.25	25% additional for three way post caps.			
No. 800,	to carry Joists.....	8x 8 to 8x 14	1.50	50% additional for four way post caps.			

Write for complete catalogue and discount list.

THE LINK-BELT ENGINEERING COMPANY

PHILADELPHIA, PA.

NEW YORK CITY, N. Y.,
49 Dey Street

PITTSBURGH, PA.,
1501-2 Park Building

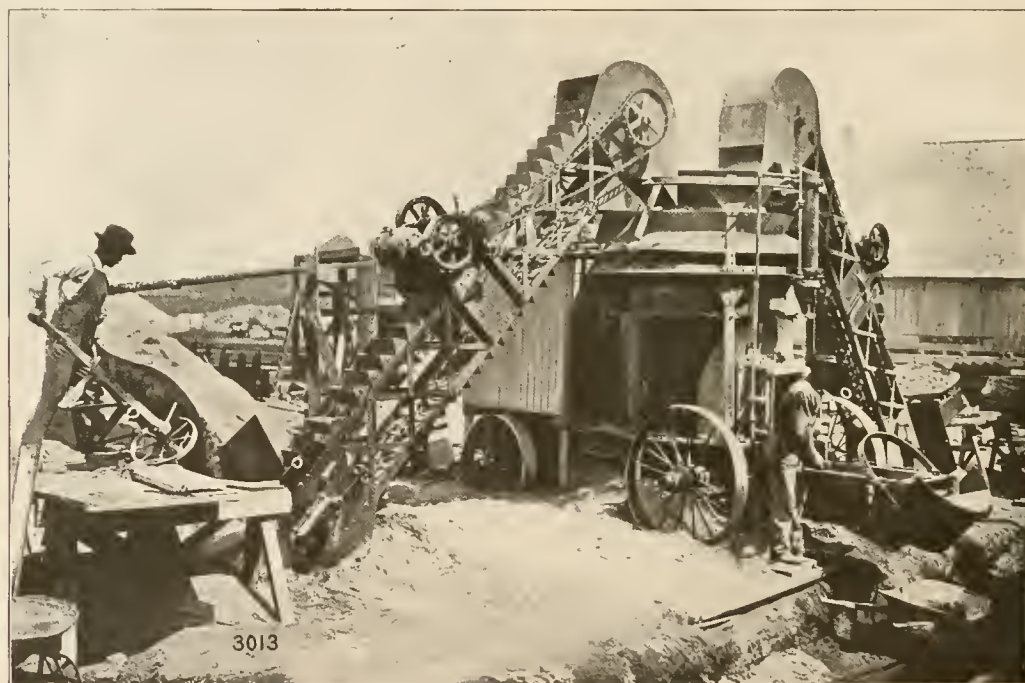
CHICAGO, ILL.

THE LINK-BELT MACHINERY COMPANY
39th Street and Stewart Avenue

CABLE ADDRESS, "CHAINBELT"

PRODUCTS.

Manufacturers of CONVEYING and ELEVATING MACHINERY for Coal, Coke, Ashes, Sand, Cement, Stone, Gravel, etc. ORIGINAL "EWART" LINK-BELTING, STEEL and MALLEABLE-IRON CHAINS, "RENOLD" SILENT and ROLLER CHAINS; SPROCKET WHEELS, FRICTION CLUTCHES, CRUSHERS, PRESSED STEEL BUCKETS, INDUSTRIAL RAILWAYS, STEEL CARS, HOPPERS, TANKS, CASINGS; STRUCTURAL STEEL WORK, etc. Also TURNTABLES for Industrial Track Systems and Automobiles.



TRUMP CONCRETE MEASURING AND MIXING MACHINE

TRUMP CONCRETE MEASURING AND MIXING MACHINE.

A self-contained portable outfit that automatically measures, moistens and mixes the ingredients, turning out accurately proportioned concrete. It is built in capacities of 7, 20 and 40 cu. yds. per hour. (Engraving shows largest size).

Its absolute portability enables the machine to be kept at the heels of such contracts as sewers, reservoirs, street paving, conduits, etc., and in small jobs all the advantages of machine-made concrete are obtained without any expense except that of hauling the outfit to the site of the work.

It may be driven by gas, gasolene or steam engine, or by electric motor.

Architects would do well to specify the use of this Machine in order to obtain concrete of greatest efficiency.

ARTHUR KOPPEL COMPANY

66 - 68 Broad Street, New York City, N. Y.

MANUFACTURERS OF

INDUSTRIAL, NARROW AND STANDARD GAUGE RAILWAY MATERIALS

ESTABLISHED 25 YEARS

YARD AND WORKS—Hoboken, N. J., Bochum, etc.
CHICAGO BRANCH OFFICE—618 Monadnock Building.

PRODUCTS.

We manufacture INDUSTRIAL, NARROW and STANDARD GAUGE RAILWAY MATERIALS of every description, including RAILS, STEEL TIES, TRACKS, SWITCHES, CROSSINGS, TURNTABLES, CARS and LOCOMOTIVES.

FACILITIES AND REFERENCES.

Our experience of twenty-five years, extensive works, increasing facilities, and staff of expert engineers qualify us to guarantee first-class workmanship and material, and to make prompt shipments. Reference is made to large numbers of architects and builders, and proprietors of factories, plantations and mines throughout the country, with whom we have had extensive dealings.

ADAPTATION.

The equipments which we supply are adapted for auxiliary purposes during construction, making of foundations, and handling all kinds of building material, concrete, etc. They are suitable for either temporary use or as part of the permanent equipment of buildings in boiler and storage rooms, power plants, etc., for handling coal, ashes, ash cans, boxes, paper and other materials, and general merchandise. Our system of track is specially adapted for use where it must not extend above the floor, as in boiler rooms, etc., where the floor is of cement or asphalt.

STANDARD SIZES ON HAND; SPECIAL SIZES TO ORDER.

This material is all of standard construction, used throughout the world, and is always kept in stock. It can therefore be shipped promptly and at lower prices than specially made material. Whenever necessary we make changes, or new construction, to meet special conditions.

TRACK.

Industrial or Portable Track can be made of any light rail and for any gauge. Our standard rails illustrated in Fig. 173 are made in different sizes, viz: 2 inches high for 9 lbs. and 12 lbs.; $2\frac{3}{8}$ inches for 16 lbs.; $2\frac{5}{8}$ inches for 20 lbs.; and $2\frac{3}{4}$ inches for 25 lbs. These are furnished in sections of track in standard lengths of $7\frac{1}{2}$ feet and 15 feet, and in any gauges required.

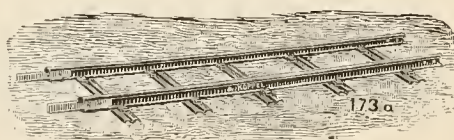


Fig. 173, Section of Standard Track

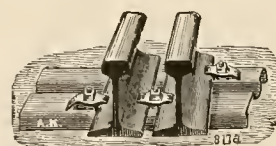


Fig. 817, Double-rail Track, One Side

DOUBLE-RAIL TRACK.

Where it is necessary to avoid obstructing the free passage of barrows, road vehicles, or hand trucks, as in factories, factory yards, wharves, and public roads, it is desirable to use double-rail track (Fig. 817). Here two ordinary tee rails are placed close together on each side of the track, mounted on steel ties. The track is sunk so that the tops of the rails are flush with the floor or ground level, and the space between the two sets of rails is leveled up with concrete, wooden blocks, bricks, etc., as the case may be. The wheels run on the outer rails, the wheel flanges traveling in the slots between the outer and inner rails. This system has been extensively adopted in breweries, chemical factories, paper mills, and large plants and factories of all kinds.

CURVED TRACK.

Curves can be made of any radius. The two standard radii are 12 and 30 feet.

TIES.

All ties are of corrugated rolled steel, made especially for the purpose, and which we deem superior to channel iron. Ties are four inches wide and $\frac{5}{8}$ inch high for 9 and 12 lb. rails, and 5 inches wide and $\frac{3}{4}$ inch high for 16 and 20 lb. rails. Connection between rails and ties is made by clips and bolts, as shown in Fig. 817.

SWITCHES.

We carry switches in stock for our regular gauges, 19 $\frac{5}{8}$, 21 $\frac{1}{2}$ and 23 $\frac{5}{8}$ inches, for 9, 12, 16 and 20 lb. rails, right, left, two-way and three-way. Switches are made in two standard lengths, 9 and 15 feet, to match track, and for radius of 12 feet and about 30 feet respectively. Switches of other weights and gauges, etc., can be made to order within a short time.

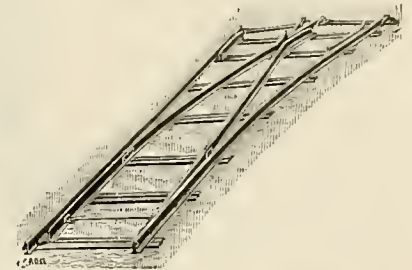


Fig. 480, Two-way Switch

CROSSINGS.

Crossings are kept in stock to match our regular portable track, but only right-angle crossings. Others can be made to order on short notice, of any weight of rail and for any gauge.

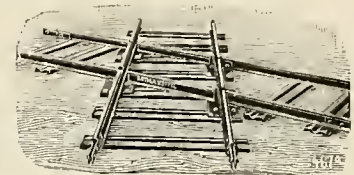


Fig. 467, Crossing

CAST PLATE TRACK OUTFITS.

We furnish cast plate track and cast iron floor plates for use in boiler rooms and similar places; also all necessary curves, switches, crossings, etc., to correspond. See Fig. 5259.

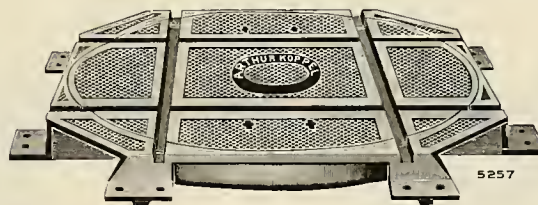
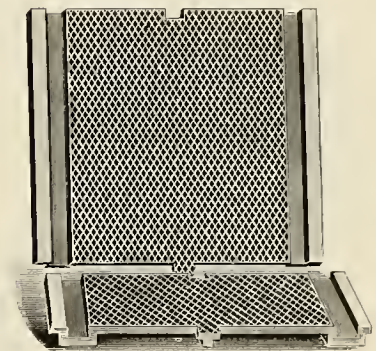


Fig. 5257, Turntable



ARTHUR KOPPEL 5259
Fig. 5259, Cast Plate Track

TURNTABLES.

We have turntables of different styles and capacities. The one mostly used with industrial railways in buildings, is style 5257. It has checkered top, stops automatically after every quarter-revolution, and as it turns on hardened steel balls, which run in a machine-turned groove, it works very easily, and without any difficulty. The sizes most generally used for power plants and boiler rooms are as follows:

Diameter of turntable, inches.....	40	44	52	60
Gauge of track, inches.....	20	21 $\frac{1}{2}$ & 24	24	24
Track space taken up, inches.....	41 $\frac{1}{2}$	45 $\frac{1}{2}$	53 $\frac{1}{2}$	61 $\frac{1}{2}$
Depth from bottom to top of plate, inches..	4 $\frac{1}{4}$	4 $\frac{1}{4}$	5 $\frac{5}{16}$	5 $\frac{1}{2}$

For all our standard cars the 40 inch turntable is large enough for 20 inch gauge, and the 44 inch one for 24 inch. If our cars are not used, we must know wheel-base to determine diameter of turntable required.

CARS.

The following styles of cars can be considered the standard for power plants, coal and ash handling, boiler rooms, storage and handling of general merchandise.

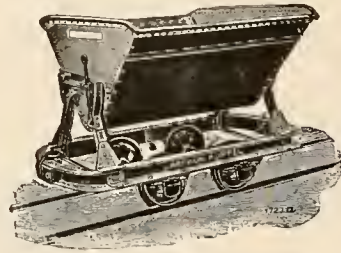


Fig. 1723. Standard Steel Side Dump Car, made entirely of steel, dumping to both sides; contents clear the track; cast steel wheels; capacity 18, 27, 36 and 54 cubic feet; gauges 18, 19 3/8, 21 1/2, 24, 30 and 36 inches

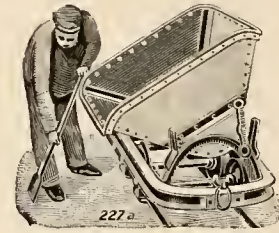


Fig. 227. Same as 1723, slanted for loading

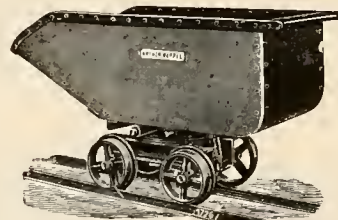


Fig. 1726. All Around Dump Car, made entirely of steel; very narrow; capacity 18 and 27 cubic feet; gauges 18, 20, 21 1/2 and 24 inches

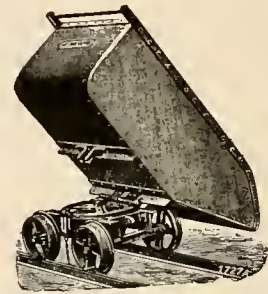


Fig. 1727. Same as 1726, in dumping position



Fig. 5179. Charging Car for Boiler rooms, made entirely of steel, built with one or two doors, which can be placed either at the side or the end, or with rotary box; capacity from 500 lbs. to 2 tons of coal; gauge generally 20, 21 1/2 and 24 inches

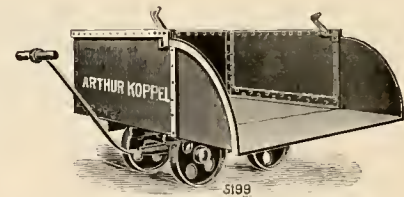


Fig. 5199. Charging Car, similar to Fig. 5179, but built for use without track



Fig. 109. Small Platform Car, with steel frame, platform of steel, of wood, or of wood lined with steel, for hand power, capacity from 2 to 3 tons; 20, 21 1/2 or 24 inches gauge; size of platform about 3 by 5 feet. Other sizes made to order

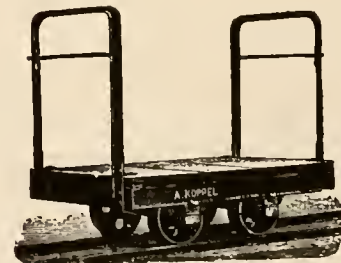


Fig. 110. Same car as Fig. 109, but with two end racks with handles; can also be furnished with one end rack only

DIMENSIONS OF STANDARD CARS.

The following table gives the principal over-all dimensions of the standard sizes of cars mentioned before, which will help architects, etc., to figure out space to be reserved for them. These are approximate dimensions; where it is essential that any dimensions must be exactly held to, it should be specifically so stated in the order.

Car No.	Gauge, Inches	Capacity Cubic Feet	Length, feet, inches	Width, feet inches	Height from Top of Rail	Dist. top of rail to bott'm of car	Depth of Box
1723	20	18	5 ft. 7 in.	4 ft. 3 in.	3 ft. 4 in.		
	24	18	5 ft. 7 in.	4 ft. 3 in.	3 ft. 6 in.		
	20	27	6 ft. 2 in.	4 ft. 10 in.	3 ft. 10 in.		
	24	27	6 ft. 2 in.	4 ft. 10 in.	3 ft. 11 in.		
	24	36	6 ft. 9 in.	4 ft. 11 in.	4 ft. 2 in.		
1726	20	18	5 ft. 6 in.	2 ft. 6 in.	3 ft. 0 in.		
	24						
5179	20	20 cub. feet ½ ton	Of box 4 ft. 6 in.	Of box 3 ft. 6 in.	Of box 2 ft. 6½ in.	13½	17 in.
	24	40 cub. feet 1 ton	5 ft.	4 ft. 0 in.	3 ft. 1½ in.	17	22½ in.
5199		½ ton	4 ft. 6 in.	3 ft. 6 in.		15	17 in.
		20 cub. feet					

SCALES.

In connection with our track lay-outs we supply scales for weighing coal, etc. Particulars upon application.

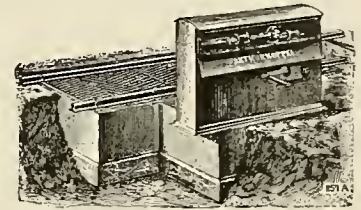


Fig. 857. Standard Scale, with track connection

COMPLETE LAY-OUTS.

We furnish complete lay-outs of railroad equipment as above described, in accordance with plans or blue-prints given us by architects or owners. When inconvenient to send us plans, it will be sufficient to supply us with data giving location and dimensions of premises, an outline of where the track shall be laid, and kind and quality of material to be transported, and our own engineers will prepare plans. These lay-outs are shipped ready to be laid down, each section being marked for its proper place, so that the customer has nothing to do but lay and cement them.

PRICES AND ESTIMATES.

Prices of standard material will be furnished upon application. We are always willing to answer questions, give advice, and submit offers and estimates whether for large or small orders; or one of our representatives will call, if a personal interview, which is always more satisfactory, is desired.

HENRY PELS & CO.

Incorporated 1904

HENRY PELS, *President*

FELIX F. WIENER, *Vice-Pres. and Treas.*

INGO MADDAUS, *Secretary*

Main Office, 68 Broad Street, New York City

Works and Warehouses, Hoboken, N. J.

LONG DISTANCE TELEPHONE: 4935 Broad

CABLE ADDRESS: Alighting, New York
Western Union Code

PRODUCTS.

Manufacturers of PUNCHING and SHEARING MACHINES for structural and architectural iron works.

GENERAL INFORMATION.

We guarantee our machines for one year as to capacity, quality of material and workmanship.

We have for nearly twenty years been designing and building shearing and punching machines for hand and belt power, and they have been in operation under varied and trying conditions in every part of the globe. They are the standard tools for Bridge Builders, Contractors and Engineers.

Prices and specifications will be given on application.

TERRITORY.

Our tools are sold all over the world and are known everywhere.

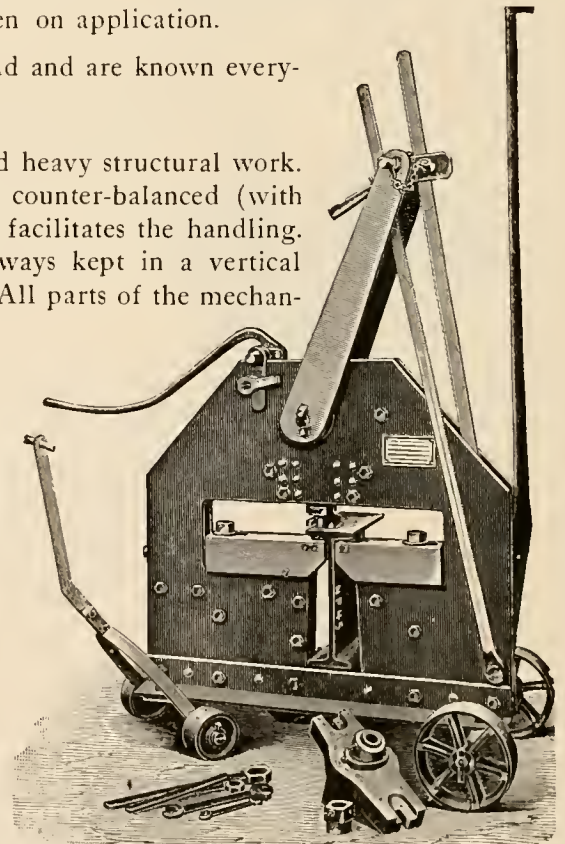
WERNERS PATENT PORTABLE BEAM PUNCHES FOR HAND POWER.

Especially designed for medium and heavy structural work. Our new types for 1906 have the levers counter-balanced (with the exception of W. 1-3). This greatly facilitates the handling. While punching flanges the beam is always kept in a vertical position by means of the second slide. All parts of the mechanism are placed outside the frame.

WERNERS PATENT PUNCHING MACHINES FOR HAND POWER.

Nos. W₃, W₄, W_{5a} and W₅ for Punching Webs as well as Flanges of Beams, Channels, etc.

TYPE NOS.	SIZE OF BEAMS TO BE PUNCHED		WEIGHT	CODE
	Webs	Flanges		
W 1.....	15"	..	1000 lbs.	Zabumba
W 2.....	24"	..	1100 lbs.	Zaburro
W 3.....	15"	12"	1250 lbs.	Zagaglia
W 4.....	18"	18"	1500 lbs.	Zagalejo
W 5a.....	24"	24"	2110 lbs.	Zalotical
W 5.....	24"	24"	3100 lbs.	Zamboeria

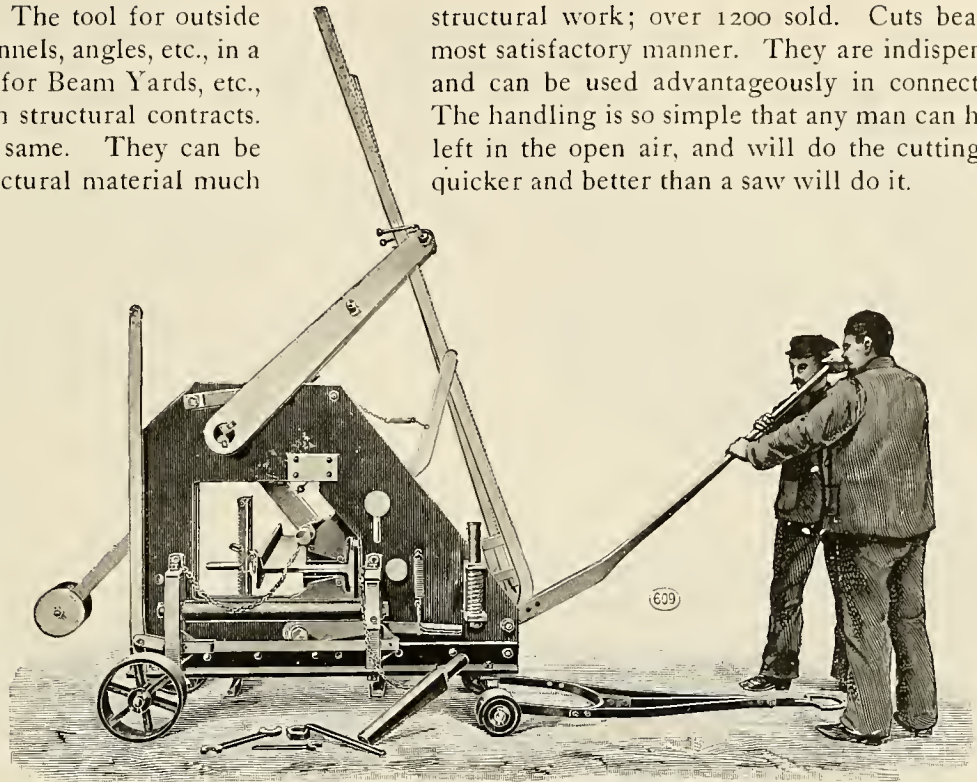


WERNERS PORTABLE BEAM PUNCH

WERNERS
PATENT
PORTABLE
BEAM SHEARS
FOR HAND
POWER.

The tool for outside channels, angles, etc., in a beam yard, etc., with structural contracts. They can be used for structural material much

structural work; over 1200 sold. Cuts beams, most satisfactory manner. They are indispensable and can be used advantageously in connection with structural work. The handling is so simple that any man can handle them in the open air, and will do the cutting of beams quicker and better than a saw will do it.



WERNERS PATENT PORTABLE BEAM SHEAR FOR HAND POWER

TYPE	CAPACITY				WEIGHT	CODE
	Beams	Channels	Angles	Tees		
Model A	8", 18 lbs.	8"	4x3x1/2"	3 1/2 x 3 3/8"	738 lbs.	Zampare
Model B	12", 31 1/2 lbs.	10"	5x3x5/8"	5x3x1 1/2"	1400 lbs.	Zampognare
Model C	12", 40 lbs.	12"	6x3x5/8"	5x3x1 1/2"	1725 lbs.	Zangarse
Model D	15", 60 lbs.	15"	6x6x5/8"	5x3x1 1/2"	2590 lbs.	Zanyism

PELS PUNCHES.

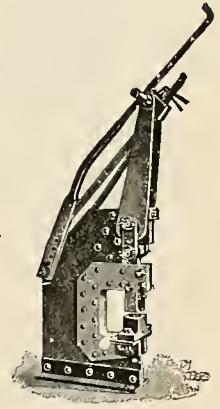
Are unbreakable, because the frame consists of Steel Plates. Furthermore, they are lighter than cast-iron machines and can therefore easily be carried around and used for outside work. All parts of the mechanism are placed outside the frame.

TABLE OF CAPACITY, TYPE, WEIGHT, ETC., OF PELS PUNCHES.

TYPE	CAPACITY		DEPTH OF THROAT	APPROXIMATE WEIGHT	CODEWORD
	Diameter of Hole	Thickness of Material			
P. 1	1/4"	1/4"	4"	31 lbs.	Islet
P. 2	5/16"	5/16"	5"	55 lbs.	Isolate
P. 3	3/8"	3/8"	6"	100 lbs.	Isthmus
P. H. L. 0	5/8"	3/8"	5"	176 lbs.	Isthmian
P. H. L. 1	3/4"	3/8"	5"	264 lbs.	Italics
P. H. L. 2	1"	1/2"	6"	572 lbs.	Itchling
P. H. L. 3	1 3/16"	9/16"	8"	792 lbs.	Iterate



PELS PUNCH Type P.



PELS PUNCH Type P. H. L.

J. B. PRESCOTT & SON

WEBSTER, MASS.

PRODUCTS.

BUILDING SPECIALTIES, INCLUDING RUTTY METAL WALL PLUGS, MORSE WALL TIES, PRESCOTT CORNER BEADS, PRESCOTT WIRE SLEEPER CLIPS, PRESCOTT SHEET METAL SLEEPER CLIPS.

RUTTY METAL WALL PLUGS.

The Ratty Metal Wall Plug forms a nailing base for fastening woodwork of any description to brick or hollow tile walls and partitions. Made in one size only, which covers all situations.

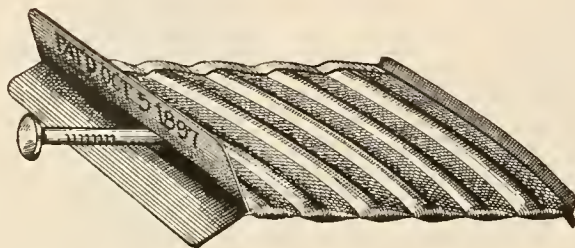


FIG. 1. THE RUTTY METAL WALL PLUG
Size $2\frac{3}{8} \times 2\frac{1}{2}$

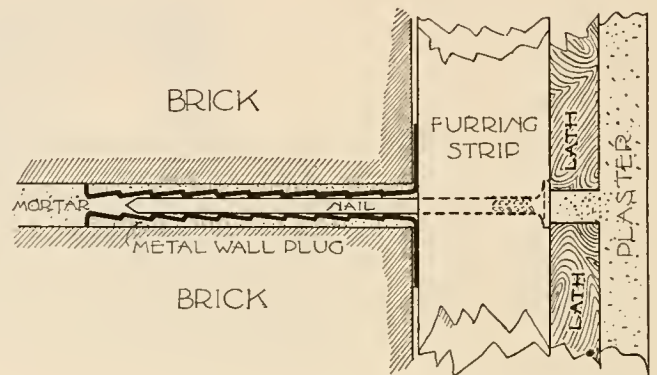


FIG. 2. THE RUTTY METAL WALL PLUG
Built into a Brick Wall

The objections to the old method of fastening woodwork to brick or stone walls are entirely obviated by the use of the Ratty Metal Wall Plugs. The Plugs are built into the wall and virtually become a part of the masonry. They will not shrink or rot. Considering the amount of labor used in other methods of plugging, the Ratty System represents a great economy.

THE MORSE PATENT WALL TIES.

The Morse Patent Wall Ties should be used universally in all brick buildings. They are adapted to all situations in brick and stone construction.

The form illustrated by Figure 3, is invaluable for bonding walls having an air space of one inch or more; it is an absolute preventative of moisture and dampness. It is made in all sizes.



FIG. 3. MORSE PATENT WALL TIE



FIG. 4. MORSE PATENT VENEER TIE

Figure 4 illustrates the universal form of Tie used for securing brick veneer construction, and the only bond that is perfect for this purpose.

In construction of the character shown in Figure 5, as used in School Houses, Church, Dormitories, Dwellings, etc., where the bonds are subjected to the effects of dampness, only a $\frac{3}{16}$ Morse Drip Tie should be used. Brewery and cold storage construction also demand this form of Tie—an ordinary light bond is useless.

THE PRESCOTT CORNER BEAD.

The Prescott Corner Bead, manufactured under the Marsh Patents, for plastering on wood, brick, terra cotta and steel construction, consists of a solid rod of steel, held rigidly in position by heavy galvanized clips.

Most corner beads on the market necessitate the bringing of the plastering to a "feather edge," which is, of course, very bad construction, resulting in the breaking out of the plaster in a short time. Besides this, the "Key" from one side of the corner to the other is not sufficient, owing to the usual construction of beads. Another trouble is the practical impossibility of erecting corners in an absolutely true and vertical line.

In the Prescott Corner Bead these difficulties are entirely eliminated. The Bead is a solid steel rod specially formed so as to allow a $\frac{5}{32}$ -inch thickness of plaster at extreme corner, besides giving an almost continuous key throughout its entire length. The Bead is absolutely straight and true, and any unevenness or faulty alignment in the wood-work or brick-work is readily and permanently corrected in placing the binding clips.

The Prescott Bead is especially adapted to arch work, and can be supplied in curves of various radii.

It is carried in stock in 8, 10 and 12 feet lengths.

Other lengths supplied to order.

In ordering state thickness of grounds.

No special tools of any kind are required for the erection of the Prescott Corner.

Our Sleeper Clips are made in both galvanized steel wire and heavy sheet metal. They have been found to be an indispensable detail in securing wooden sleepers to I beams. We manufacture them in various forms and sizes. Write for description.

Catalogues, samples, and prices of any of our building specialties will be cheerfully furnished on request.

Our building specialties are kept in stock at our various agencies in all the larger cities of the United States. Prompt delivery is thus assured.

PRESCOTT SLEEPER CLIPS.

SAMPLES AND PRICES. DELIVERY.

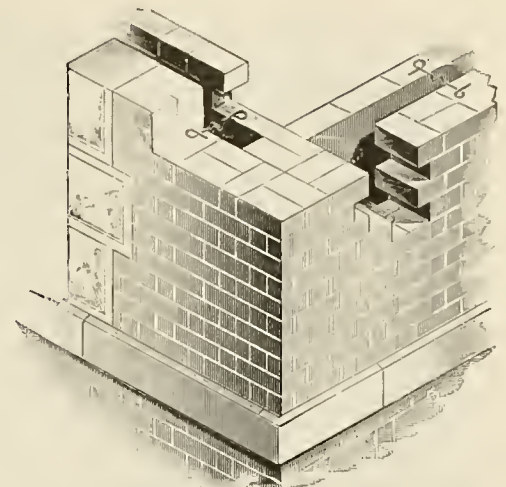


FIG. 5. APPLICATION OF THE MORSE PATENT WALL TIE

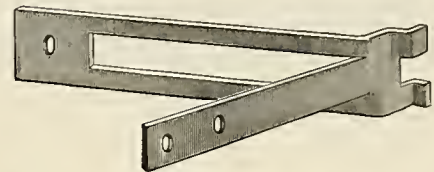


FIG. 6. UNIVERSAL CLIP FOR TERRA COTTA AND OTHER CONSTRUCTION



FIG. 7. PRESCOTT CORNER BEAD (Full size)



FIG. 8. APPLICATION OF PRESCOTT CORNER BEAD

STANLEY HOD ELEVATOR COMPANY

MAIN OFFICE

620-630 West 25th Street
NEW YORK CITY, N. Y.

TELEPHONES

1254 Chelsea
1783 Chelsea

BRANCHES

NEW YORK CITY, N. Y.
628-630 E. 146th Street, Bronx
Telephone, 50 Melrose
539-541 W. 111th Street
Telephone, 1334 Morningside

BALTIMORE, MD.
824 George Street
TELEPHONES
Maryland, Cortlandt 2318
C. & P., Mt. Vernon 4078

PRODUCTS.

Manufacturers of and agents for all kinds of HOISTING ENGINES, BUILDERS' HOD and BARROW ELEVATORS, DOUBLE ACTING ELEVATORS of every description, CHAIN MACHINES (with or without power), HODS, also PUMPS for draining foundations.

FACILITIES.

Our plant covers 35,000 square feet and we are in a position to execute any order for special machines with unusual promptness and dispatch.

Our machines are for sale outright or to rent. We keep continually on hand a stock of machines and elevators, etc., of all kinds, for which there is a constant demand.

DUPLICATE PARTS.

We can duplicate entirely or in part any machine that has been obtained from us. They are all of standard size and make, easily assembled, adjusted and regulated.

QUALITY OF MANUFACTURE.

The material used in the construction of our machines is the best, and each part is tested and guaranteed before it leaves the shop. Our success among builders and masons is owing to the quality of our products, both in workmanship and durability. Architects, engineers or general contractors who recommend our machines do so with the assurance of good service and prompt attention.

ELEVATORS.

The following elevators constitute our standard styles and sizes. Special sizes built to order.

Hod Capacity	Brick Capacity Per Day	
4	40,000	} with mortar to lay them.
6	60,000	
8	80,000	

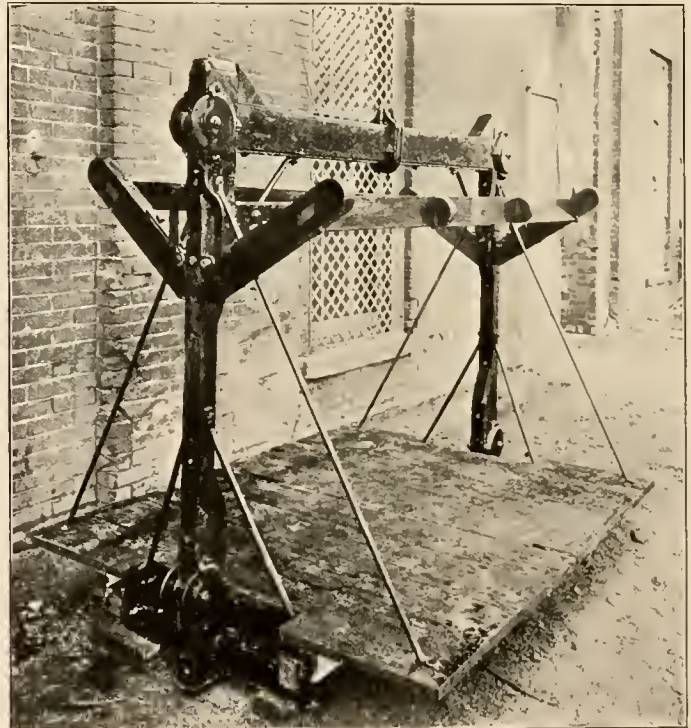


FIG. 1. COMBINATION ELEVATOR
For 2 Wheelbarrows and 6 Hods

Double Wheelbarrow Elevators for carrying two wheelbarrows; capacity 90,000 brick per day, with mortar to lay them.

We also supply all the necessary equipment and include same in our prices.

We supply these Pumps in all sizes.

HOISTING ENGINES.

We also supply Hoisting Engines of all sizes, either for use with our elevators or for other construction purposes. We will be pleased to submit plans and full information concerning this line, on request.

We are agents for the Lidgerwood Hoisting Engines and have them in all sizes.

INSTALLATION.

Machines ordered for out of town work are installed by us as per arrangement with the purchaser or builder.

SPECIFICATIONS.

In order to protect their clients architects should be careful to specify our goods as those made and handled by "The Stanley Hod Elevator Company" of New York.

Care should also be taken to mention size and capacity of the machines wanted.

REFERENCES.

We refer with permission to the leading Builders, Architects and Contractors in the United States, by whom our machines are used in all their building operations.



FIG. 7. THE STANLEY KEROSENE ENGINE
Showing its connection to the Top of the Chain Machine

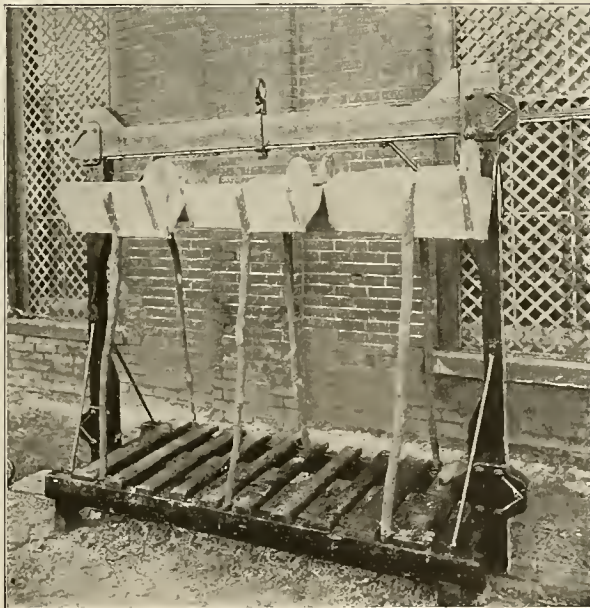


FIG. 9. SIX-HOD ELEVATOR



FIG. 8. BOTTOM OF CHAIN MACHINE

Single Wheelbarrow Elevators; capacity 45,000 brick per day, with mortar to lay them.

These Machines consist of 1 Top with Gear, Shafts and Crank Handles, 1 Bottom, Chain and sufficient Hods to complete the work.

STANLEY KEROSENE ENGINE.

We are the exclusive owners of the Stanley Kerosene Engine (see Figs. 6, 7 and 8), which can be attached to any of our Chain Machines and operated at an expense of 31 cents a day.

This Engine is complete in every detail and has proven very satisfactory where it has been used. No engineer is necessary; in fact, its construction is so simple that a boy can operate it. It will hoist 30,000 brick per day with mortar to lay them.

We urgently call the attention of engineers, builders and masons to this engine. Its small cost of maintenance, its many uses and general adaptability where small power is needed, make it indispensable to those engaged in building operations.

FOUNDATION PUMPS.

Our Pumps for draining foundations are exceedingly strongly built and are of great simplicity of construction. All unnecessary parts have been done away with. Their pumping capacity is greater in comparison to the power used than any other make on the market.



FIG. 4. CHAIN MACHINE (Hand Power) in Use

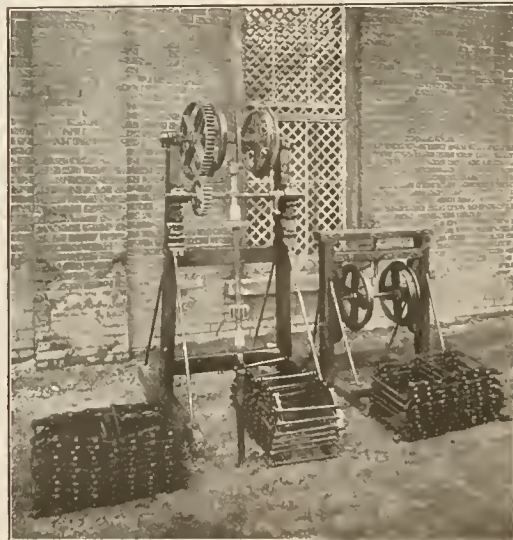


FIG. 5. SHOWING THE SMALL SPACE NECESSARY For Storage of a Chain Machine

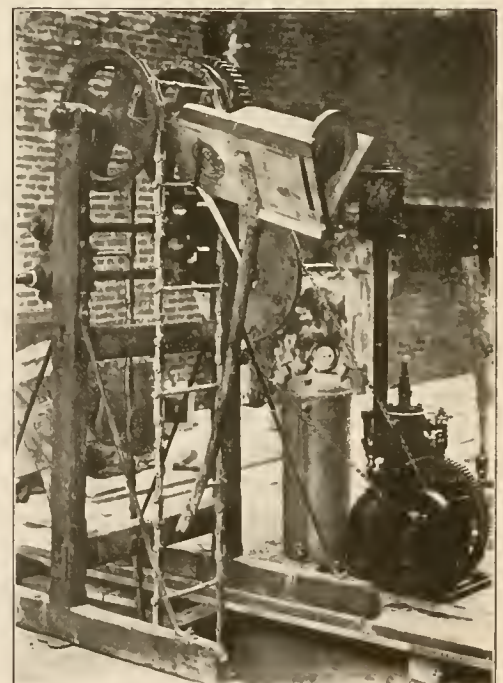


FIG. 6. THE STANLEY KEROSENE ENGINE (Side View) Showing the Simplicity and lack of Complicated Parts

COMBINATION
ELEVATORS.

Combination Elevators for carrying six hods and two wheelbarrows; capacity 110,000 brick per day with mortar to lay them.

These machines consist of 1 Elevator, 1 Headpiece, 2 Legs and 3 Sheaves, Guides, Bell, Bell Rope, Cable and Cable Clamp.

The Wheelbarrow Elevators can also be arranged for carrying hods, when they are so ordered.

Double Acting Elevators (Fig. 3), one up and one down, interdependent, for carrying one or two wheelbarrows; capacity for single wheelbarrow machine 100,000 brick per day, with mortar to lay them; two-wheelbarrow machines, capacity 200,000 brick per day with mortar to lay them.

These machines have all the latest improvements, and many of the objectionable features of other machines of this character have been eliminated.

When a hod machine is ordered, a sufficient number of hods is always sent to complete the work.

CHAIN
MACHINES.

Our Chain Machines (Figs. 4 and 5), worked by hand power, have met with unprecedented success in all parts of the country. Their simplicity and compactness (see Fig. 4), combined with the ease with which they can be assembled and operated, have strongly appealed to masons, builders and contractors.

They are self-oiling and therefore do not have to rely upon the attention of a negligent workman. Each part is so affixed that they can be erected ready for operation at very short notice.

The capacity of the hand power Chain Machines is 20,000 brick per day, with mortar to lay them.

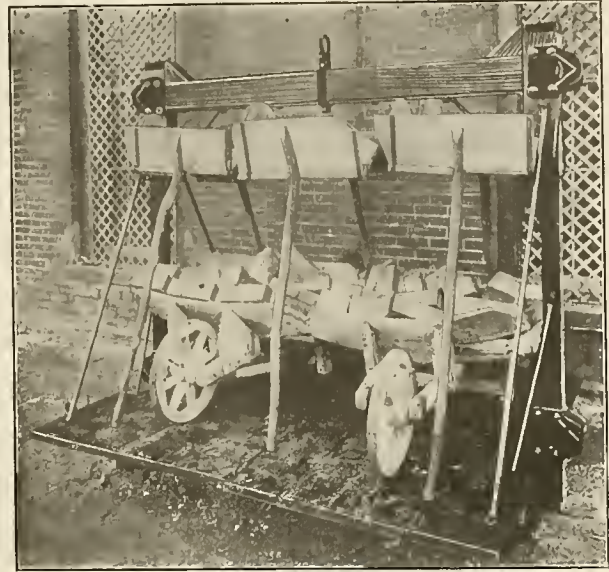


FIG. 2. DOUBLE WHEELBARROW ELEVATOR

FIG. 3. VIEW OF METHOD EMPLOYED
To install a Double Acting Elevator on the Outside of a
Building for Repair Work

ERNST WIENER COMPANY

Railroad Specialists for All Industries

66 and 68 Broad Street
NEW YORK CITY, N. Y.

WORKS, YOUNGSTOWN, O.

ERNST WIENER, *President.*
CARL KOCH, M. E., *Vice-Pres.*

PRODUCTS.

Manufacturers of Narrow and Standard Gauge RAILWAY MATERIALS for INDUSTRIAL PURPOSES, Auxiliary Equipments for BUILDERS and CONTRACTORS, Portable and Permanent TRACKS, RAILS, SWITCHES, TURNTABLES and FROGS, CARS and LOCOMOTIVES. Complete equipments for Mines, Quarries, Foundries, Factories, Lumber Yards, Plantations, etc. Complete outfits of Cable and Incline Railways.

FACILITIES.

Our works are up-to-date in every respect, planned especially for our purposes. They are equipped with the best machinery and are located in the heart of the iron and steel industries, so that we can turn out good work at competitive prices and ship quickly and with the full advantages of lowest freight rates to all parts of the country. Our officers have a long and varied experience in buying, selling and manufacturing, and are thoroughly familiar with the requirements of railroads and their equipment for all industrial and similar purposes, so that we know what type of construction to offer in each case, and can give valuable suggestions when desired.

STANDARD AND SPECIAL OUTFITS.

All material in regular sizes is kept on hand and can be promptly shipped. Rails, Tracks, Switches, Turntables and Cars on hand are of a variety of lengths and sizes. Special types and sizes can be made at short notice.

ECONOMY OF AUXILIARY EQUIPMENTS DURING CONSTRUCTION.

The saving of labor, the speedier transportation of supplies, concrete and all other building material, by the use of auxiliary or portable equipments during the construction of buildings and the making of foundations, is becoming a permanent factor in the building trades. A contractor owning an equipment of this character has an overwhelming advantage over his competitors. The saving of labor alone will pay for the investment in a short time.

PERMANENT EQUIPMENT.

We have given special consideration to the permanent equipment of buildings: in boiler rooms, for the transportation of coal, ashes and ash can; in storage rooms, for the transportation of merchandise, supplies, boxes, waste paper, etc.; in factories, for the transportation of the raw and finished product, and in power plants, foundries, printing plants, etc.

Equipments used for auxiliary purposes during the construction of a building can be installed as a part of the permanent equipment of the building.

ESTIMATES AND COST.

As conditions and requirements are different in all cases, it is impossible to quote prices. We are ready, however, to supply architects and contractors with suggestions for installation and improvements and to submit drawings, with an estimated cost of any equipment desired.



No. 76. SECTION OF STANDARD INDUSTRIAL TRACK

Mounted on corrugated steel ties. This track is used for transportation purposes during construction, or for permanent work after building is finished.

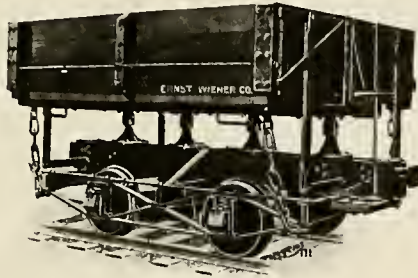


No. 18. DOUBLE-RAIL TRACK

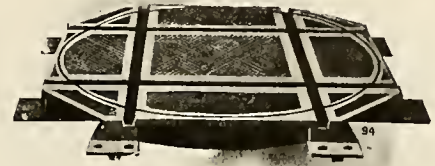
Specially used where track has to be imbedded in cement, top of rails flush with floor.

ILLUSTRATIONS.

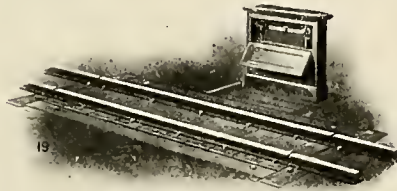
We give below pictures of a few representative styles of our equipments in general use. In orders and correspondence they may be referred to by number.



No. 111. DUMP CARS
Made of steel or wood. For carrying earth, stone, concrete, etc. All gauges and capacities. Many styles



No. 94. CAST-IRON TURNTABLE
Turning on steel balls, which run in machine-turned groove and stop automatically after every quarter of a turn



No. 19. INDUSTRIAL RAILWAY SCALE
For use in connection with boiler room track, to weigh coal



No. 96. CAST-IRON PLATE TRACK
For use in boiler rooms and power stations. With checkered top to prevent men from slipping



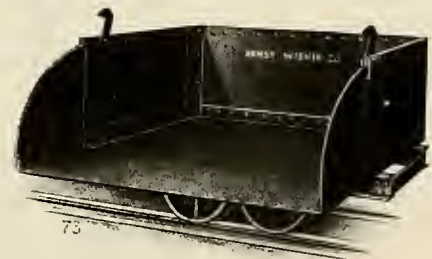
No. 45. GROUT BOX
For contractors' use during excavating and building



No. 40. SMALL PLATFORM CAR
To be pushed by hand, for carrying boxes, ash cans, etc., in basements of large buildings



No. 104. TUB
For contractors' use during excavating and building



No. 73. CHARGING CAR FOR BOILER ROOMS
From which coal can be shoveled directly into boilers. Can be built with either side or end discharge, either on one or both. Also for use without tracks

RAYMOND CONCRETE PILE COMPANY

GENERAL OFFICE
135 Adams Street
CHICAGO, ILL.

LONG DISTANCE TELEPHONE CENTRAL, 4465
AUTOMATIC TELEPHONE, 4465

CABLE ADDRESS: RAYCONPILE

PRODUCT.

RAYMOND CONCRETE PILING for Foundations, Docks, Sea Walls, Breakwaters, etc.

BUILDING DEPARTMENT APPROVALS.

The Raymond System of Concrete Piling has received the approval of the building departments of New York City, Chicago, St. Louis, St. Paul, Cincinnati and other leading cities, and of the Navy Department of the United States.

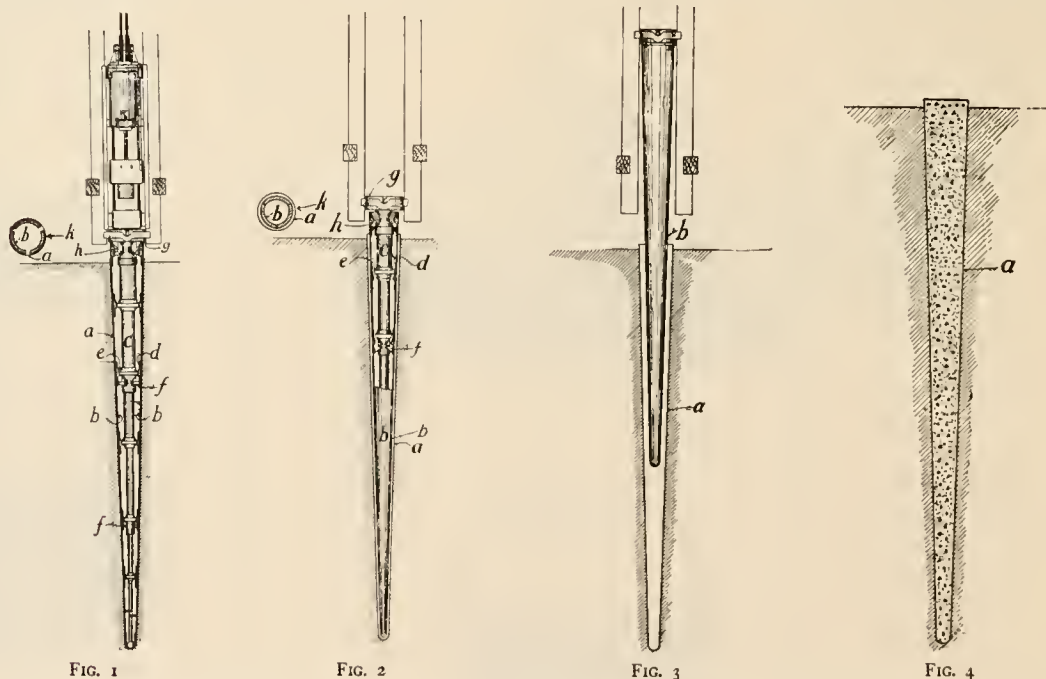
TERRITORY.

We are prepared to handle work in any part of the United States.

METHODS OF INSTALLATION.

Raymond Concrete Piles are usually put in by either of two methods, the jetting method or the pile core method. The jetting method is adaptable only for soils such as sand, quicksand, silt, etc., which will flow readily under a water jet.

The pile core method, which is the method more generally used for foundation work, may be briefly described as follows: A collapsible steel pile core, conical in shape, is encased in a tight-fitting metal shell. The core and shell are driven into the ground by means of a pile-driver (preferably fitted with a steam hammer). When the desired depth has been reached, the core is collapsed or shrunk so that it loses contact with the shell, and is easily withdrawn, leaving the shell or casing in the ground to act as a mold or form for the concrete and to prevent the admixture of extraneous matter. When the core is withdrawn, the shell or casing is filled with carefully mixed Portland Cement Concrete, which is thoroughly tamped during the filling process.



DESCRIPTION OF DIAGRAMS.

FIG. 1—Sectional view, Raymond Concrete Pile Core, showing collapsing and expanding device (Steam hammer in leads, resting on core). Shell driven and core expanded. (a) Shell driven in the ground. (b) Exterior plates ($\frac{3}{8}$ " thick) of pile core. (c) Stem of pile core, made of extra heavy pipe of diminishing diameter as lower end of pile core is approached. (d) Wedge-shaped castings fitted to exterior plates. (e) Corresponding wedges fitted to interior stem. This wedge is made of a steel casting which also acts as a collar for coupling together the various sizes of pipes forming the stem. (f) Hinges linking exterior plates and interior stem of core. Note position when core is expanded. (g) Head of core, made of cast steel, hollowed out at the top to receive an oak cap-block which receives blow of hammer. (h) Keys to keep exterior plates in place when expanded. (k) Cross section to show opening between plates to allow for collapsing.

Fig. 2—Sectional view of pile core collapsed and ready to withdraw from shell. Note that wedges (*d*) and (*e*) are no longer in contact, thus allowing plates (*b*) to collapse toward the center of core, leaving space between plates (*b*) of core and shell (*a*). Note also position of hinges (*f*) when core is collapsed.

Fig. 3—Pile core collapsed and partly withdrawn from the shell. Shell remains in ground and forms mold for concrete, assuring a perfect pile.

Fig. 4—A complete Raymond Concrete Pile without reinforcement.

POINTS OF SUPERIORITY.

Numerous experiments have been made in an endeavor to put in concrete piles without a protecting form, and in most instances have proven unsuccessful. In sand and quicksand it was found that the concrete mixed with the sand or quicksand to an extent that made their use unsafe. In cinders and filled ground, it was found that the cement had run out into the surrounding material and left sand and stone instead of concrete. In other soil, it was found that when the work was finished, while the hole was filled apparently with concrete, it had required but two-thirds as much concrete as the cubic capacity of the hole.

The superiority of the Raymond Concrete Pile over any other form of concrete piling consists: (1) in the use of a shell or form for each pile, (2) the tapering shape of the pile, (3) the ease of reinforcement, (4) the comparative rapidity of work, (5) no driving on the concrete.



FIG. 5. RAYMOND CONCRETE PILE
Used in the Construction of the Academic Building,
Annapolis, Md.



FIG. 6. RAYMOND CONCRETE PILE
Test Made at Annapolis, Md. 133,270 lbs., no settlement.

THE SHELL—To all who have given the matter careful consideration, it is very evident that the Raymond System of Concrete Piling is the only one that can be depended upon absolutely to fill the necessary requirements under adverse conditions. There is *always* a *form* or *mold* for the concrete. What careful engineer or architect would place green concrete in quicksand, silt, mud, or any porous or unstable soil without protecting it with a form? How much more important, therefore, it is to protect the concrete, which is placed in such material, underground, where there is often great pressure! With the Raymond Concrete Pile, it is always possible to ascertain that the hole is a perfect one, and thus to be certain of a perfect pile. This is not possible with a concrete pile which does not use a shell. There is no working in the dark.

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The SIMPLEX PILE meets all the requirements of the most varied and exacting uses, and is at once simple, efficient, and economical; able to compete successfully in load-carrying capacity, first cost, and ultimate economy, with concrete-filled steel caissons, stone or other types of masonry walls, and wooden piles.

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The Simplex Concrete Pile is available for every form of foundation, such as the foundations of buildings, wharves, docks, viaducts, trestles, etc. As a substitute for the ordinary stone foundation walls for heavy mill or warehouse buildings in ordinary soils, a row of concrete piles may be driven along the line of the wall—say thirty-six inches from center to center—preferably “staggered,” and from eight to fifteen feet deep, said piles to have a diameter of sixteen inches; build a capping of concrete upon these piles to a height of eighteen inches, and on the sure foundation so secured erect the building. By the adoption of this system, fully three-fourths of the excavating and removal of dirt is avoided; shoring up, and the pumping out of trenches are dispensed with, and the work goes forward with a greatly increased expedition, as a driver can easily put in from 15 to 30 such piles per day. The principal gain, however, lies in the unflinching integrity of the foundation so secured, as, in place of removing the dirt, you have driven it down and compacted it with the underlying and immediately surrounding earth, and by so doing added materially to the total of its sustaining power.

AS A SUBSTITUTE FOR STEEL CAISSONS

As a substitute for steel caissons filled with concrete, such as are now constantly used for large office buildings, etc., drive a group of concrete piles, say eighteen inches in diameter, directly down to bed rock, or hard pan, or other firm stratum. A nest of such piles can be made strong enough to be equal in carrying capacity to any caisson, and it can be put in very much more cheaply, and with a considerable saving of time. The earth is highly compressed, and it does not have to be laboriously excavated from the cramped interior of the caisson. The cost of the heavy iron or steel shell is, of course, saved, and any desired structural shape may be embedded in such piles for making fast the superstructure. They can also be strongly reinforced with steel rods or expanded metal.

FOR FOUNDATION OF BRIDGE PIERS, ETC.

For the foundation of bridge piers, smoke stacks, and for the installation of heavy machinery, drive a group of piles of a diameter, length and spacing to correspond with the weight to be carried, giving, of course, due heed to the nature of the ground; cap with concrete, and build directly upon such capping.

As a substitute for the ordinary wooden pile for work of any class. As a general statement, one of our concrete piles will carry with entire safety a weight for which two or more wooden piles of a similar length would be required; concrete piles can be put in wherever a wooden pile can be driven, and often when such cannot be used. The forms for our Concrete Piles can be put in with a water jet, the same as wooden piles, where sand prevails.

OUR WORK.

We are prepared to put these piles into all kinds of ground—hard ground, filled ground, ash fills, swamps, or water. We can equal the longest wooden pile in length, and can go up to 24 inches in diameter.

The Simplex Concrete Piles can be put into ground quite impenetrable to a wooden pile; ordinary boulders, and other obstacles liable to be found in filled ground will not stop us.

We have driven piles 48 feet long, and, so far as we know, the Simplex is the only concrete pile that has penetrated beyond 30 feet.

One of the Simplex Concrete Piles, 16-inch diameter and 20 feet long, at New York, sustained a load of 49 tons without settling, and might have carried much more could it have been applied. A nest of four 16-inch diameter Simplex Piles at Pittsburg sustained a load of about 200 tons without settlement.

Simplex Piles have been very largely used by the U. S. Government and have stood exhaustive tests made under the supervision of government engineers, building departments and prominent architects.

ADVANTAGES.

The following valuable advantages are obtained by the use of the Simplex Concrete Piles:

1. Unlimited durability, equal to that of natural rock.
2. Surpassing carrying power, due to enormous skin friction, resulting from method of putting in place; this, combined with the lower end bearing, will develop the full compressive strength of the entire volume of surrounding and underlying earth, or else that of the pile itself. Except in rare and extraordinary cases, neither of these things is possible with any other type of pile now in use.
3. An increased compression of the earth displaced by their installation.
4. Absolute immunity from the attacks of the sea-worm or *Teredo*.
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The nine statues for the Essex County Court House, Newark, N. J. (partly shown in the engravings), were carved in Goodale Marble by Piccirilli Brothers, New York, according to the designs of Cass Gilbert, architect, and Andrew O'Connor, sculptor. These statues are seven and a half feet high. They were cut from ten-ton blocks.

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NORTH BROTHERS ISLAND		AUSTIN, SMITH & WESTERVELT, Architects
HEIDE BUILDING	New York City, N. Y.	DELEMONS & CORDES, Architects
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View of Quarry, Woodbury Granite Company



View of part of Cutting Plant, Woodbury Granite Company

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It has also been used extensively for monumental work, as, for instance, the Soldiers' and Sailors' Monument, Scranton, Pa.; Wilson Mausoleum, Woodlawn, N. Y.; and for bridge work, such as the Bronx Approaches and Piers, Lenox Avenue Bridge, New York City.

The entire granite contract for the new State Capitol Building at Harrisburg, Pa., was awarded to this Company.

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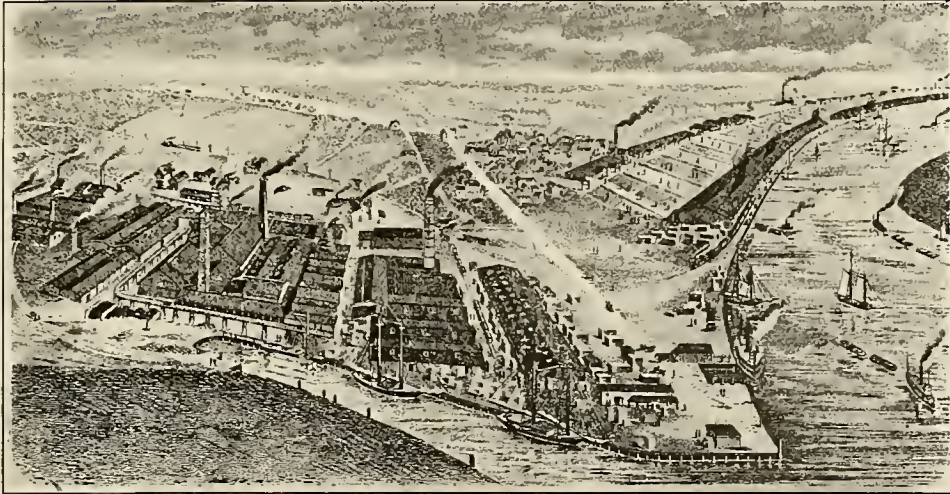
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FINE PRESSED FRONT BRICK, SPECIAL BRICK, BRICK for ARCHES or ORNAMENTAL WORK, SUPERIOR ENAMELED BRICK, SPECIAL RED BRICK and BUILDING BRICK, FIRE BRICK, HOLLOW BRICK (for fireproofing purposes).

FRONT BRICK IN VARIOUS COLORS.

These we manufacture in a great variety of colors: White, Ochre, Light and Dark Buff, Red, Grey, Old Gold and Mottled, other shades to order; enabling Architects to select a material that, while fire-resisting and easily handled, shall permit them to lighten and beautify and add strength and variety to a street facade.

SPECIAL BRICK. BRICK FOR ARCHES OR ORNAMENTAL WORK.

We manufacture these to meet Architects' designs in any particular color or size.

SUPERIOR ENAMELED BRICK.

These we produce in any desired shape, plain or moulded.

We manufacture Superior Enameled Brick in large quantities. They are coming into more general use for a great variety of purposes, and are especially adapted for lining of waiting rooms of railroad stations, tunnels, markets, hospitals, engine and boiler rooms, kitchens, etc.

SPECIAL RED BRICK AND BUILDING BRICK.

Our immense facilities for manufacturing these brick enable us to produce them in very large quantities. We make a special Red Pressed Front Brick that is superior to the so-called "Harvard Brick" in many respects—color, shape and finish. The demand for them increases each year.

SHIPPING FACILITIES.

The favorable locality of our works at deep water on the Raritan River, N. J., enables us to load vessels drawing 14 feet of water at our dock.

Shipments can also be made direct to all points, connecting with any line of railroad.

EXPORT TRADE

We make a specialty of loading large vessels for export trade.

THE HYDRAULIC-PRESS BRICK COMPANIES

MANUFACTURERS OF

Plain and Molded Front Bricks

HYDRAULIC-PRESS BRICK CO.,

St. Louis, Mo.

ILLINOIS HYDRAULIC-PRESS BRICK CO.,

St. Louis, Mo.

WASHINGTON HYDRAULIC-PRESS BRICK CO.,

Washington, D. C.

EASTERN HYDRAULIC-PRESS BRICK CO.,

Philadelphia, Pa.

CLEVELAND HYDRAULIC-PRESS BRICK CO.,

Cleveland, Ohio.

FINDLAY HYDRAULIC-PRESS BRICK CO.,

Findlay, Ohio.

NEW YORK HYDRAULIC-PRESS BRICK CO.,

Rochester, N. Y.

OHIO PRESS BRICK CO.,

Zanesville, Ohio.

CHICAGO HYDRAULIC-PRESS BRICK CO.,

Chicago, Ill.

KANSAS CITY HYDRAULIC-PRESS BRICK CO.,

Kansas City, Mo.

OMAHA HYDRAULIC-PRESS BRICK CO.,

Omaha, Neb.

MENOMONIE HYDRAULIC-PRESS BRICK CO.,

Minneapolis, Minn.

KANSAS CITY HYDRAULIC-PRESS BRICK CO.,

Chanute, Kansas.

PRODUCTS.

We manufacture every variety of PLAIN and MOLDED FRONT BRICKS in practically all colors, including Red, White, Buff, Cream, Gold, Gray, Brown, Pink, Tan and Iron Spot mottled and speckled in Standard, Roman and Norman sizes. Also ENAMELED BRICKS in White, Buff, Brown, Green, Blue, Aagate and Mottled Shades in Standard, Roman and English sizes.

BRICKS FOR FIREPLACES AND ROCK-FACE BRICKS.

We can supply bricks for Fireplaces, hand selected, from the finest stock in Standard, Roman or Norman sizes.

We also solicit orders for Rock-Face bricks of Standard size, in any color. It should be noted that "seconds" make perfect Rock-Face bricks.

SIZES.

Standard size is approximately $2\frac{5}{16} \times 8\frac{1}{4} \times 4$ inches.

Roman size is approximately $1\frac{3}{8} \times 11\frac{3}{4} \times 4$ inches.

Norman size is approximately $2\frac{5}{16} \times 11\frac{3}{4} \times 4$ inches.

INSTRUCTIONS AND SUGGESTIONS REGARDING ORDERS.

We carry a large stock and can fill orders promptly. We also are ready to make to order anything that may be needed, and earnestly solicit inquiries regarding Face Brick in any size or color; molded shapes must be made to special order.

Architects and others should note that the many beautiful shades of brick known as "Fire Flashed," cannot be served as uniformly as Red Brick.

Quotations, including freight to railroad destination, will be supplied on telegraphic request at our expense.

We invite prospective users of brick to call for samples of our product, which we will cheerfully furnish by express, prepaid, to any point.

AMERICAN ENAMELED BRICK AND TILE CO.

Enameled Brick in Standard and Ornamental Shapes

1 Madison Avenue
NEW YORK CITY, N. Y.

TELEPHONE 751 GRAMERCY

BRANCH OFFICES

BOSTON, MASS.
PHILADELPHIA, PA.
PITTSBURG, PA.
WILLIAMSPORT, PA.
WASHINGTON, D. C.
BALTIMORE, MD.
CLEVELAND, OHIO

CINCINNATI, OHIO
DAYTON, OHIO
COLUMBUS, OHIO
DETROIT, MICH.
RICHMOND, VA.
SAN FRANCISCO, CAL.
ST. LOUIS, MO.

KANSAS CITY, MO.
ST. PAUL, MINN.
SEATTLE, WASH.
TACOMA, WASH.
NEW ORLEANS, LA.
KNOXVILLE, TENN.

JACKSONVILLE, FLA.
SYRACUSE, N. Y.
UTICA, N. Y.
BUFFALO, N. Y.
SCHENECTADY, N. Y.
ROCHESTER, N. Y.
NEW HAVEN, CONN.

HARTFORD, CONN.
MERIDEN, CONN.
MONTREAL, CAN.
TORONTO, CAN.
MILWAUKEE, WIS.
PORTLAND, OREGON
SIOUX CITY, IOWA

PRODUCT.
TERRITORY.

ENAMELED BRICK in Standard and Ornamental Shapes.
The business operations of this firm cover the United States, Canada, South America and elsewhere.

STANDARD SIZES,
SHAPES AND
COLORS ENAM-
ELED BRICK.

Name	Dimensions	Surface Enameled	Brick required per square foot of surface including joints	Note on Stock at Factory in White	
English Size..... Standard	2 $\frac{7}{8}$ x 8 $\frac{7}{8}$ x 4 $\frac{3}{8}$	2 $\frac{7}{8}$ x 8 $\frac{7}{8}$	5.33 Brick	Large	to 500,000 Three Million. Made to order in any of our colors or shapes. Standard colors and moulded shapes held in stock, in 1,000 to 5,000 lots only.
English Size..... Flatters	4 $\frac{3}{8}$ x 8 $\frac{7}{8}$ x 2 $\frac{7}{8}$	4 $\frac{3}{8}$ x 8 $\frac{7}{8}$	3.55 Brick	Medium	
Double English	6 x 9 x 2 $\frac{1}{4}$	6 x 9	2.66 Brick	Little	
American Size..... Standard	2 $\frac{1}{4}$ x 8 $\frac{1}{4}$ x 4 $\frac{1}{16}$	2 $\frac{1}{4}$ x 8 $\frac{1}{4}$	7.24 Brick	Large	
American Size..... Flatters	4 $\frac{1}{16}$ x 8 $\frac{1}{4}$ x 2 $\frac{1}{4}$	4 $\frac{1}{16}$ x 8 $\frac{1}{4}$	4.23 Brick	Medium	

DETAILS RE-
QUIRED FOR
ARCH BRICK.

When ordering arches please furnish details as long as possible in advance of time the arches will be required. We should be allowed from three to six weeks' time to make up Arch Brick. Arch Brick should be made to order to secure satisfactory work. We keep no standard arches in stock. We cannot always guarantee uniformity of shade in arches as in regular deliveries of first-quality plain stock brick.

WORKING
DRAWINGS.

We make full-size working drawings (shrinkage scale).
We mark drawing so that each different brick has its own designating letter or number in arch, and make typewritten schedules.
We make every brick as per drawing, each brick marked with designating letter or number as per schedule and drawing.
We ship you copy of drawing and schedule with the brick to serve as guide in setting. The mason should lay each brick on its place on drawing before attempting to set the arch.

SPECIAL
FEATURES AND
ADVANTAGES OF
OUR ENAMELED
BRICK.

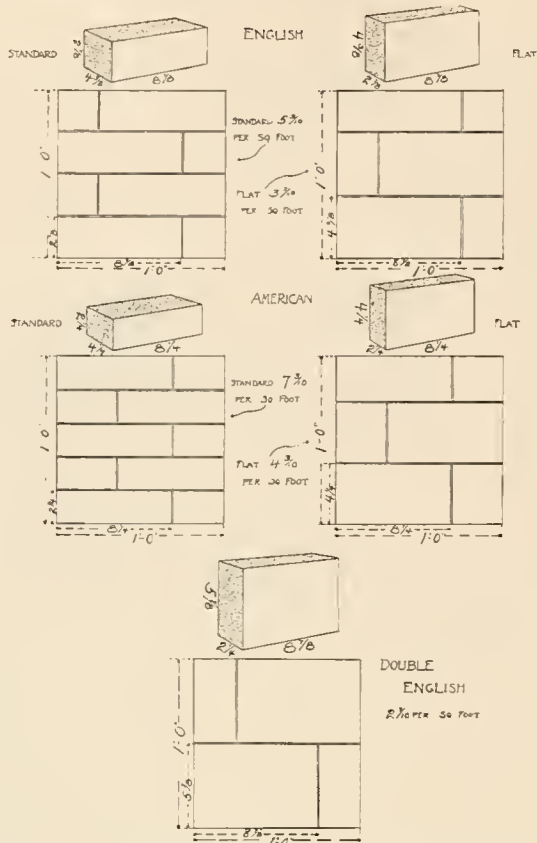
We pack arches separately in barrels, and mark barrels distinctly to avoid confusion at job.
Our bricks are not terra cotta with transparent surface glazes, nor enameled terra cotta, nor brick made by the dry process and enameled just before the second firing. They are enameled brick, made by the mud process in one fire, and as such they are free from the underglaze, cracks and crazes which are ever present on bricks made by other methods. Our special shapes are chosen with the idea of reducing to a minimum the danger of cracking and spalling of the irregular surfaces, caused by irregular shrinkage they produce in the body of brick.

DESIGNS.

In the following pages are shown designs that we recommend as being most satisfactory in manufacturing results.
We try to keep a stock of these on hand, in standard colors and in English and American sizes.

We will try on orders of moderate size, or on larger orders, if ample time is given, to match in shade the moulded and stretcher stock on any order, but cannot always guarantee to uniformly shade shipments of specials.

N. B.—UNIFORM SHADING OF STRETCHERS AND RETURNS IN FIRST QUALITY IS OUR SPECIALTY.



OF BRICK PER SQUARE FOOT
 PLATE S. COMPARISON OF SIZES, SHOWING NUMBER

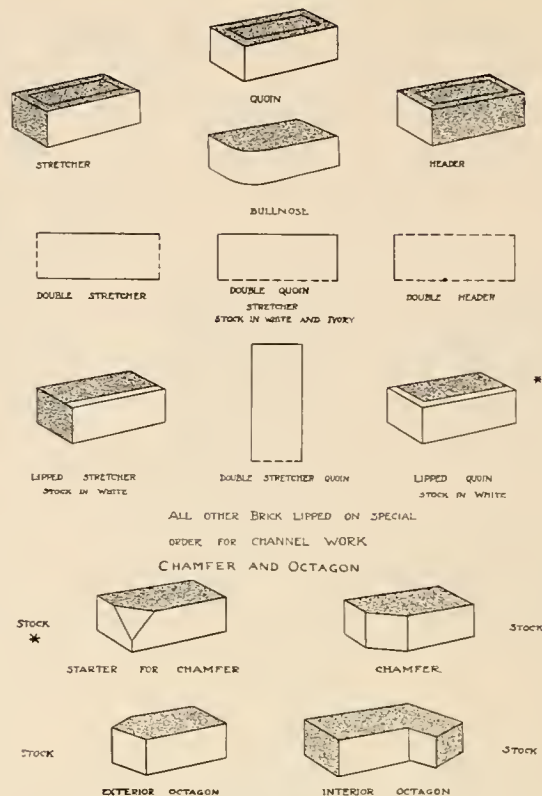
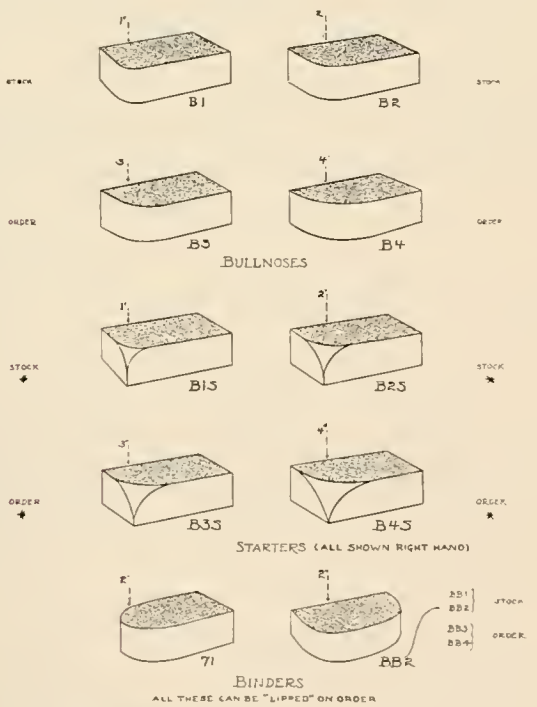
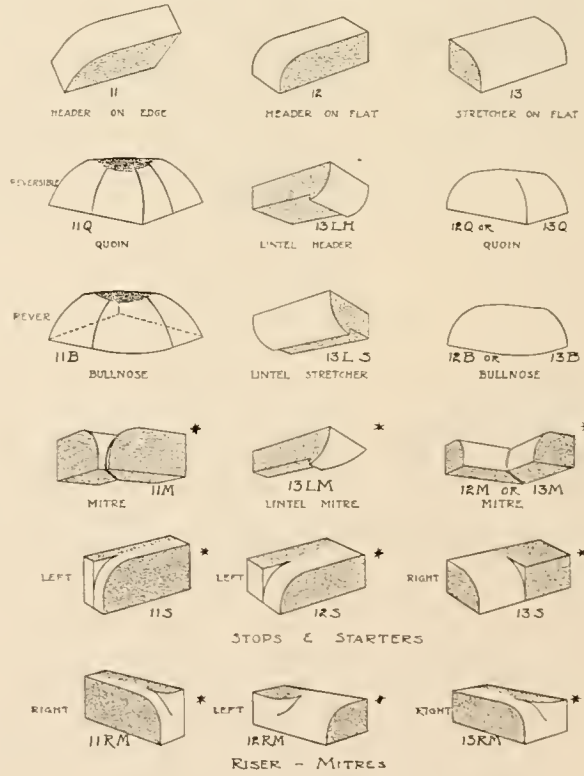


PLATE T. ILLUSTRATION OF TYPES
 On Double Brick, shown above in Plan, solid lines represent faces enameled; dotted lines represent faces not enameled



NOMENCLATURE
 Letter B indicates Bullnose finish
 Numeral—1, 2, 3, 4 indicate Radii of Bullnozes
 Exception—No. 71, which also belongs to, and is classified on, Plate 7

PLATE B. BULLNOSE AND STARTERS



All Rowlock Brick on left side of plate
 PLATE I. BULLNOSE SPECIALS
 Special—13 LH, 13 LS, 13 LM are special forms for steel lintels covered with wooden trim

The * on Plate I means made Right and Left (not Reversible). Unit numeral indicates whether: Header bedded on edge—1; Header bedded on flat—2; Stretcher bedded on flat—3. Tens numeral indicates shape of mould. Initials indicate Quoin, Bullnose, Mitre, Starter, Stop, Riser Mitre or Panel Mitre or Architrave.

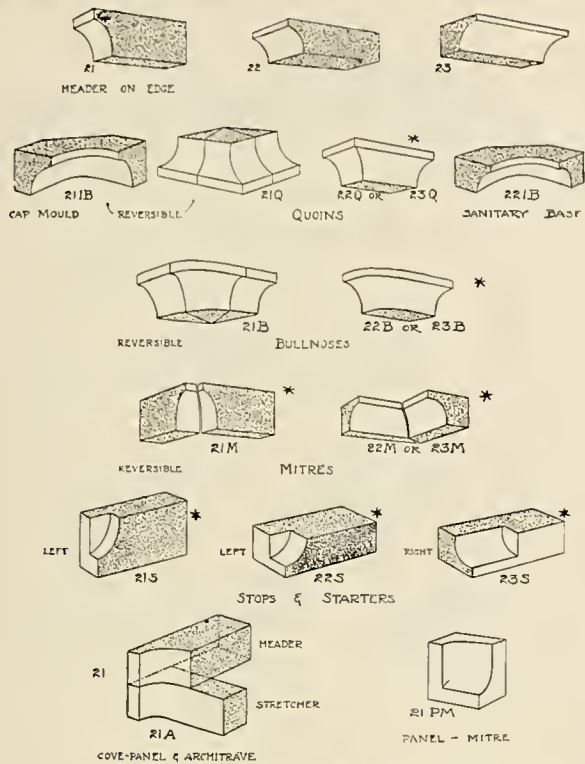


PLATE 2. COVE MOULD

Two extra specials on this sheet, 21 IB for Rowlock and 22 IB for regular type, are furnished for use in connection with B 2 I and 21 and 22 and 23 to carry mould around a 2-inch radius internal bullnose corner. See illustration.
All Rowlock Brick on left side of plate.

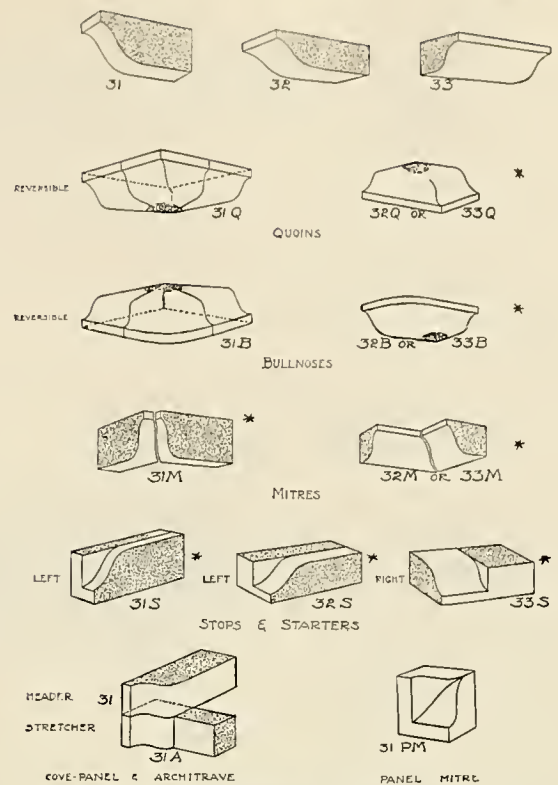


PLATE 3. BULLNOSE COVE MOULD

All Rowlock Brick on left side of plate

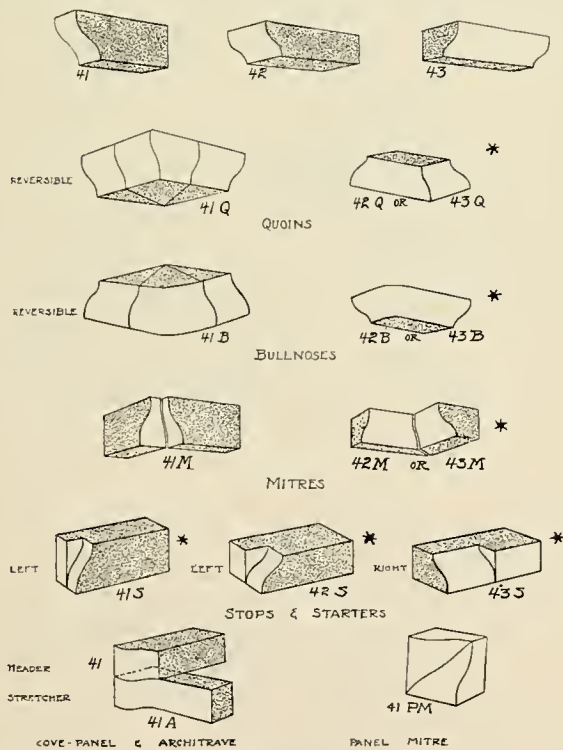


PLATE 4. OEGEE MOULD

All Rowlock Brick on left side of plate

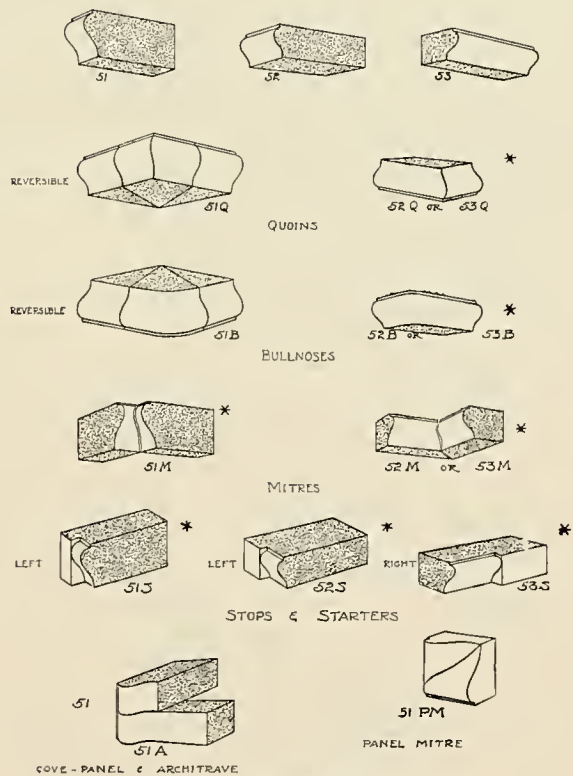
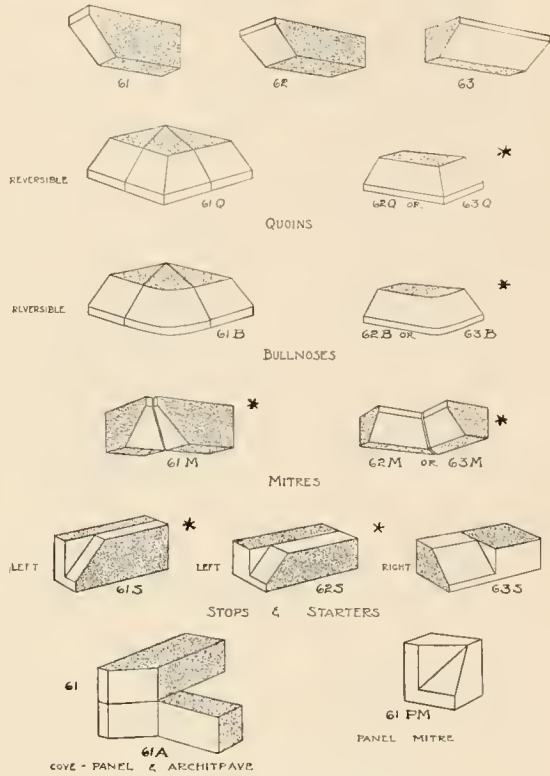


PLATE 5. OEGEE MOULD

All Rowlock brick on left side of plate.

* Means made Right and Left (not Reversible). Unit numeral indicates whether: Header bedded on edge—1; Header bedded on flat—2; Stretcher bedded on flat—3. Tens numeral indicates shape of mould. Initials indicate Quoin, Bullnose, Mitre, Starter, Stop, Riser Mitre or Panel Mitre or Architrave.



COVE - PANEL & ARCHITRAVE

PLATE 6. CHAMFER MOULD
All Rowlock Brick on left side of plate.

* Means made Right and Left (not Reversible). Unit numeral indicates whether: Header bedded on edge—1; Header bedded on flat—2; Stretcher bedded on flat—3. Tens numeral indicates shape of mould. Initials indicate Quoin, Bullnose, Mitre, Starter, Stop, Riser Mitre or Panel Mitre or Architrave.

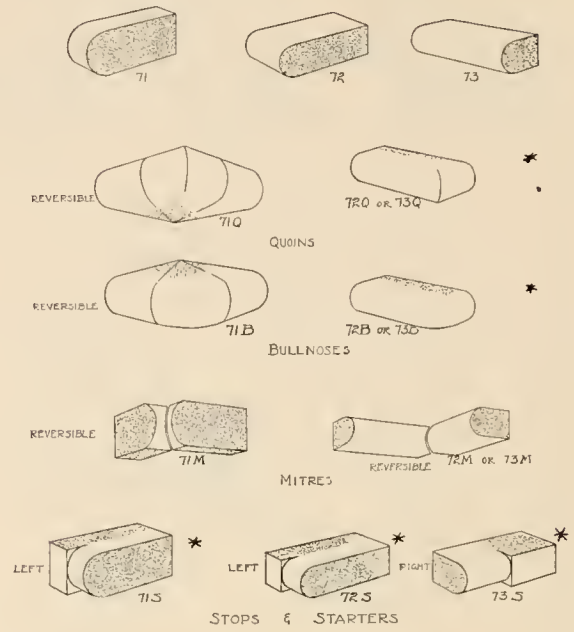
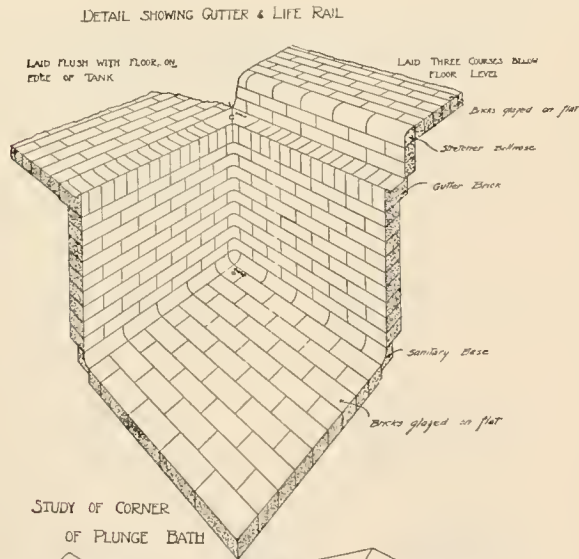


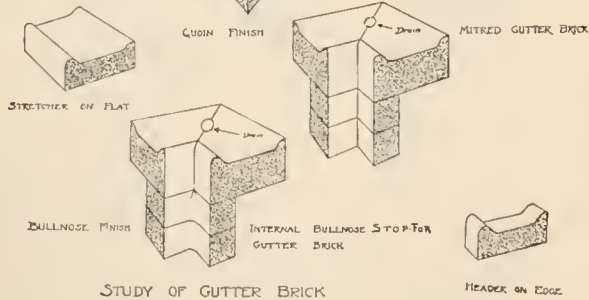
PLATE 7. BEAD MOULD

All Rowlock Brick on left side of plate.

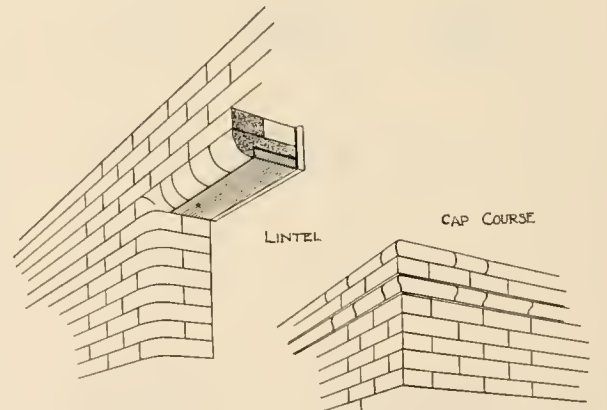
STUDIES OF THE APPLICATIONS OF SPECIAL SHAPES



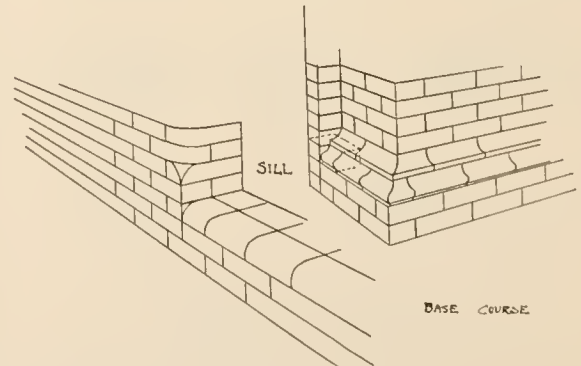
STUDY OF CORNER OF PLUNGE BATH



STUDY OF GUTTER BRICK



STUDY OF WINDOW OPENINGS. STUDY OF A WAINSCOT.



OPAL BRICK & TILE COMPANY

MANUFACTURERS OF

Opal Glass Faced Brick, and Tile

OFFICE AND FACTORY

4408 MASON STREET

Cleveland, Ohio

TELEPHONE CONNECTION

EASTERN OFFICE

1181 BROADWAY

New York City, N. Y.

TELEPHONE CONNECTION

PRODUCTS.

Manufacturers of OPAL BRICK, (GLASS FACED BRICK) and TILE.



FIG. 1. OPAL BRICK

Pat. Sept. 27th, 1904.

OPAL BRICK.

Opal Brick (Fig. 1), must not be confounded with Enameled Brick or Glazed Brick of any kind. Opal Brick has a face of plate-glass which is practically indestructible and absolutely not affected by moisture or exposure. It can be washed, when soiled, with a hose, without affecting its color. It will not crumble or disintegrate with age, nor craze or crack from exposure to tropical heat or Arctic cold. Opal Brick is not a burned brick, but it will withstand a higher temperature, without injury, than practically any burned or pressed brick.

Our particular claim for the Opal Brick and Tile—a claim that cannot be contradicted and which common-sense alone proves, is that the face will be in as perfect a condition twenty years after being placed in the building, as on the day the bricks were built into the wall.

As Opal Brick and Tile are not affected by variations of temperature, they can be used either on the inside or the outside of buildings, etc., or on both.

SIZES.

The stock sizes of Opal Brick are: $8\frac{1}{2} \times 2\frac{1}{2} \times 4$ inches; $6 \times 2\frac{1}{2} \times 3$ inches.

The stock size of Opal Tile is: $6 \times 2\frac{1}{2} \times 1$ inch.

Special sizes and shapes can be made to order at short notice.

Working drawings should be sent to us with all orders so that the necessary number of return pieces and special shapes may be shipped with the order.

ESTIMATES.

Estimates and prices are either based on the square foot of surface to be covered, or by the thousand.

INSTALLATION.

The Opal Brick and Tile can be laid by any competent contractor or local workman, or if the contract is large enough, we will be pleased to estimate on the work ourselves.

ANDREW RAMSAY

MANUFACTURER OF

Enameled Brick

WORKS AND OFFICE

MOUNT SAVAGE, MARYLAND

- PRODUCTS. We manufacture ENAMELED BRICK in all Shapes and Colors in American and English sizes.
- PORCELAIN FACED BRICK. Porcelain Faced Brick are made in all colors. Size $8\frac{1}{4}'' \times 4'' \times 2\frac{1}{4}''$ only. Our production is such that we promptly filled the largest enameled brick order ever placed, which was 1,200,000 for the United States Government Printing Office, Washington, D. C.
- TERRITORY. Being centrally located and having connection with the Baltimore & Ohio Railroad and the Pennsylvania Railroad, our territory covers the entire United States and Eastern Canada.
- FACILITIES. Large stocks of white enameled and white porcelain brick are always on hand; smaller stocks of cream and buff. Other colors to order only. We have excellent facilities for turning out moulded brick, arches and special shapes. Our brick are all of the highest grade of excellence, and by reason of our large production and the patents we hold on special machinery, we are in a position to quote lower prices on superior quality brick than any other manufacturer. Architects should specify our "Porcelain Faced Brick" for exterior work, as they are the only *Pure White Front Brick* on the market and the only white front brick made that will stay white.

TIFFANY ENAMELED BRICK COMPANY

(INCORPORATED 1884)

General Offices and Works

MOMENCE, ILLINOIS, U. S. A.

(FIFTY MILES SOUTH OF CHICAGO, ON CHICAGO & EASTERN ILLINOIS R. R.)

PRODUCTS.

We are manufacturers of superior qualities of ENAMELED BRICK and ENAMELED TILE (guaranteed not to craze or scale), for exteriors and interiors. We make a specialty of SATIN (dull) FINISH IMPERVIOUS BRICK in various colors for fine fronts. "TIFFANY" BRICKS are manufactured in all the standard sizes, shapes and colors. We are prepared to execute special orders to meet special requirements.

QUALITY OF PRODUCTS.

"TIFFANY" quality is of the very highest standard; a fact attested not only by the reputation which our products have attained with the leaders of the architectural profession, but is attested by the fact that we were awarded the Grand Prizes at the Louisiana Purchase Exposition, St. Louis, Mo., 1904; the Highest Award at the World Columbian Exposition, Chicago, Ill., 1893, and the Highest Award of the Illinois Chapter of the American Institute of Architects.



RAYMOND G. SYKES' RESIDENCE, CHICAGO
Ernest A. Mayo, Architect
Tiffany Enameled Bricks Used.



SWIMMING POOL, SAINT CHRISTOPHER HOUSE
Barney & Chapman, Architects
New York City
Tiffany Enameled Bricks Used.

FACILITIES.

The works of this Company are of very great extent, and with an idea of giving our customers, scattered as they are throughout the United States, even better service than heretofore, we removed our general offices, about four years ago, to the site of our works at Momence, Illinois, fifty miles south of Chicago. Having our general offices at our works enables us not only to give prompt attention to inquiries, but also to fill orders promptly and properly. Confidence thus established, demonstrated by the increased number of orders placed with us, has since compelled the doubling of our capacity.

GENERAL
INFORMATION
REGARDING OUR
PRODUCTS.

To those not familiar with our materials, we briefly mention their principal uses:

FRONTS—While we also have the bright (highly glazed) finish, beautiful, soft effects can be had in the various shades in our satin (dull) finish, which is equally as impervious. Great pains are often taken by architects and owners in their selection of brick, stone and other building material to get a color or shade which will give the completed building the desired effect, but too often this effect is spoiled by the atmosphere of such cities as Chicago, Pittsburg or Cincinnati, and one has only to look about him and compare the attractive and cleanly appearance of fronts constructed of enameled brick and terra cotta with those constructed of the absorbent dry pressed brick, or stone, to see the value of having an impervious surface, which is not only practically kept clean by the action of the rains, but has the advantage which Bedford Stone and other softer building materials have not; that is, of being fireproof. These brick are available for:

Light Courts, Elevator Shafts, Interior of Railway Depots, Subways, Tunnels, Hospitals, Bank Interiors and Bank Vaults, Fire Engine Houses, Restaurants, Bakeries, Markets, Sanitariums, Swimming Pools, Lavatories, Smoking and Billiard Rooms, Kitchens, Laundries, Gymnasiums, Turkish Baths, Mausoleums, Private



CHICAGO, ROCK ISLAND & PACIFIC RAILWAY DEPOT
Thirty-first Street, Chicago, Illinois
Frost & Granger, Architects
Our Cream, Satin Finish, Norman Flat Size used



THE ELBRIDGE T. GERRY STABLE
41 East 62d Street, New York City
McKim, Mead & White, Architects
Tiffany Enameled Bricks Used

Stables, Power Houses, Engine and Boiler Rooms, in fact wherever light and cleanliness are essential.

Remember—Our bricks are fireproof, waterproof, and of unchanging color.

COLORS—Are produced not only by the materials used, but also by the degree of heat they receive in burning, and it should therefore be borne in mind that slight variations in shade are unavoidable. While we may disagree with some, we do not think that absolute uniformity of shade is desirable, but that slight variations add to, rather than detract from, the beauty of the finished wall. Our reason is that light and shade as well as form are important considerations in architecture and the wall is thus given life and relieved from the dull sameness that it otherwise would have.

The following twelve shades are our standard make: White, Cream, Ivory, Light Buff, Dark Buff, Granite, Light Mottled Blue, Teapot Brown, Dark Terra Cotta, Chocolate, Silver Gray and Dark Olive.

INSTRUCTIONS
AS TO ORDERS.

The more you let us know about what you want, when you want it, how much of it and in what part of building you wish to use it, the quicker we can tell you whether we can furnish it in the kind, time and quantity required. Your time is worth money and so is ours. We want to save you yours.

We want to make you a permanent customer by saving you money. This we can do by prompt deliveries of good quality and by our suggestions.

EXPLANATIONS.

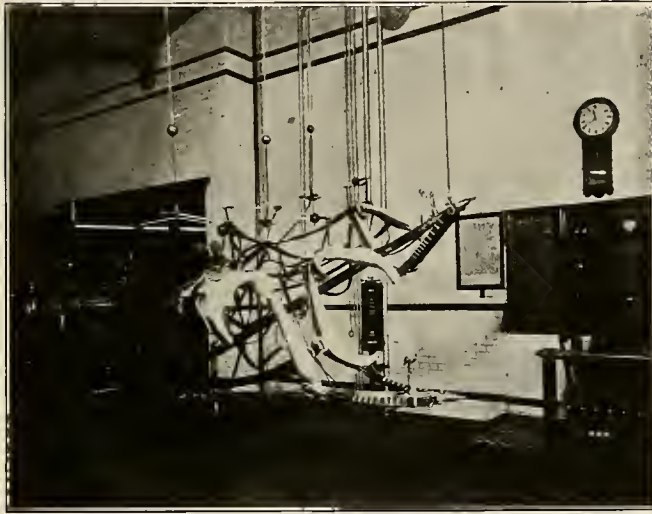
STRETCHER—A stretcher is enameled on one face only.

HEADER—A header is enameled on one end only.

QUOIN—A quoin is enameled on one face and one end, and is frequently called a "return."

BULL NOSE—A bull nose is a round end quoin "return" and is enameled only on the rounded face and rounded end. It is generally used at window and door jambs where a rounded corner is preferred to a square return.

OCTAGON—An octagon is a brick used in a stretcher course to form a 45° external angle.



FIRE ENGINE HOUSE

West 77th Street, New York City
Horgan & Slattery, Architects
Tiffany Enameled Bricks Used



ILLINOIS CENTRAL STATION

Van Buren Street, Chicago, Illinois
Francis T. Bacon, Architect
Tiffany Enameled Bricks Used

NOTE—When necessary our bricks can be enameled back on top or bottom as far as desired.

An observation of the following rules will greatly facilitate prompt shipment.

First—State sizes and shapes, and whether stretchers, quoins, bull nose, etc.

Second—State color or colors, and whether highly glazed or satin (dull) finish.

Third—State exact quantities of each kind and color required.

Fourth—State when shipments should begin and how fast thereafter.

Fifth—State whether for interior or exterior use. When bricks are required for a front, state that fact; if for interior, in which part of building. Regarding Molded Brick, it is important to distinguish between regular and special quoins ("returns") and bull nose (round corner). The word "special" only applies to the L-shaped "returns" and round ends.

SPECIAL RETURNS—Norman flat special "returns" and round ends are intended to be used with Norman flat stretchers where more of a "return" is wanted than the ordinary depth of the Norman flat stretcher.

PROJECTION BRICKS—The projection A, C, D and H bricks (shown on this page) are used for ornamental stretcher courses and are usually enameled about half way back on top and bottom. "Returns" are made for these.

PLAIN SIZES.

SIZES AND PRICES.

NAME	AVERAGE SIZE		Weight	APPROXIMATE COST	
	Enamel Face	Depth		Per M.	Per Sq. Ft.
American Stretcher	8 1/4 x 2 1/4"	4 1/16"	5 1/2 lbs. each	\$ 75	55 cents
English Stretcher	8 7/8 x 3"	4 3/8 "	8 "	85	46 "
Norman Flat Stretcher	11 3/4 x 4"	2 1/4 "	8 "	100	30 "
Norman Stretcher	11 3/4 x 2 1/4"	4 "	8 "	95	51 "

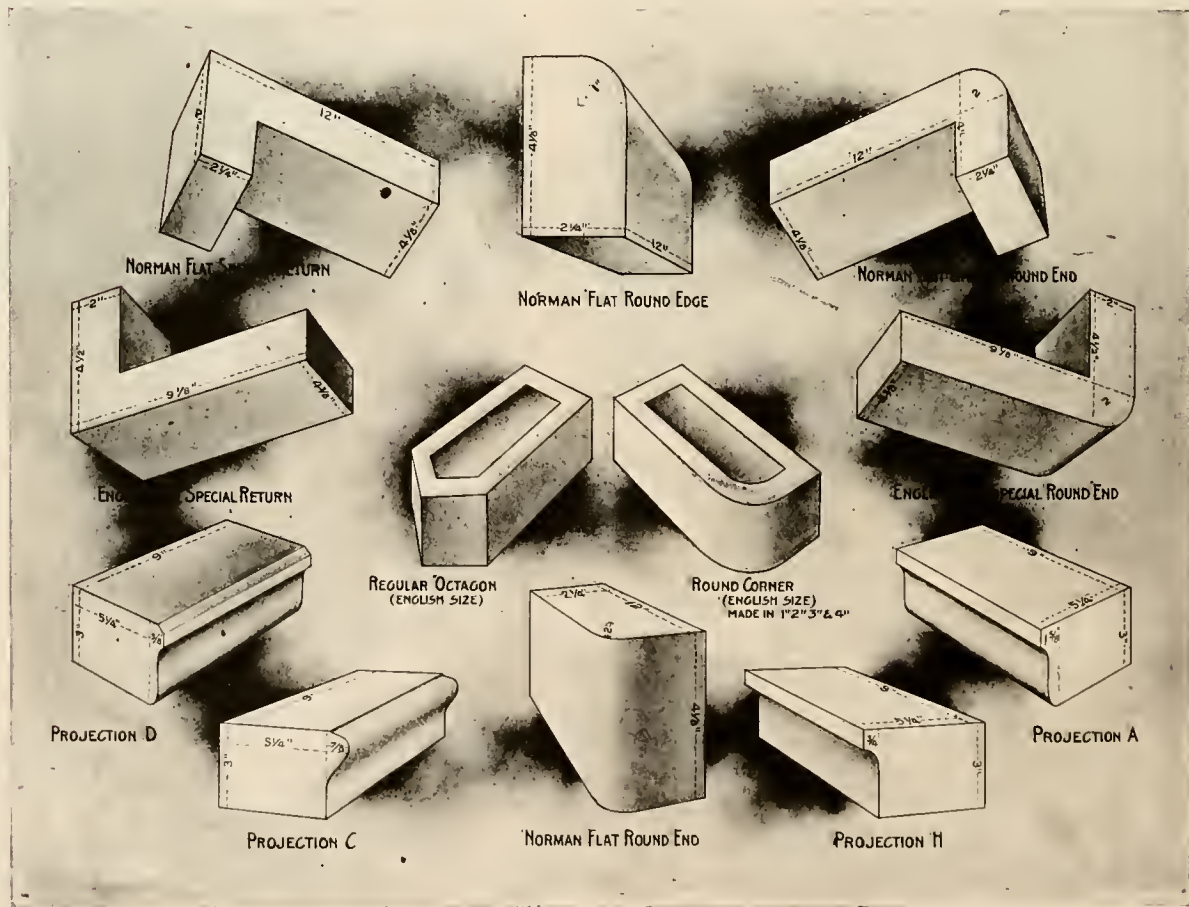
NOTE.—Prices of course vary with distance from our factory but the above are approximately correct within a reasonable radius.

SAVE MONEY.—Where possible by using our size having the larger enameled surface, such as our Norman Flat which has been successfully used for interior and exteriors (fronts).

ANCHOR SLOT.—Our flat size is made with an anchor slot or hole in top which permits of its being tied into the balance of the wall by galvanized iron brick anchors, where that is thought necessary.

	Average Sizes
American Bright Finish	8 1/2" x 2 1/4" x 4 3/16"
American Satin Finish	8 5/8" x 2 1/4" x 4 1/4"
English Bright Finish	9 1/8" x 3" x 4 1/2"
English Satin Finish	9 3/16" x 3" x 4 1/2"
Norman Flat Bright	12" x 4 1/8" x 2 1/4"
Norman Flat Satin	12 1/16" x 4 1/8" x 2 1/4"
Norman Bright Finish	12" x 2 1/4" x 4 1/8"
Norman Satin Finish	12 1/16" x 2 1/4" x 4 1/8"

Material ordered by mistake or in excess of requirements will not be taken back.



"TIFFANY" BRICK SHAPES

THE SCAGLIOLINE BRICK AND FIREPROOFING CO.

609 WEST 43d STREET



NEW YORK CITY, N. Y.

TELEPHONE CONNECTION

NEW YORK SELLING AGENTS, THE FIREPROOF BUILDING CO.,
103 West 42d Street, NEW YORK CITY, N. Y.

TELEPHONE, 5445-38th Street

PRODUCTS.

Manufacturers of SCAGLIOLINE BRICK for fireproof partitions or outer walls, elevator shafts, dumb-waiter shafts, etc.

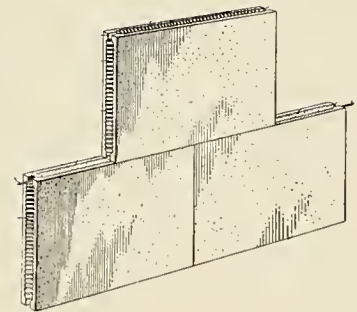
SCAGLIOLINE BRICKS.

These consist of building slabs 18 x 24 inches, and 3 and 2 inches thick, the four sides being provided with corrugated "V" grooves to receive the binding material, as shown in the illustration.

ADVANTAGES.

THESE BRICKS have the following advantages over any other fireproof material in the market:

1. They are cheaper and more fireproof.
2. Make a greater saving in plastering.
3. Are more rapidly erected.
4. Can be papered or painted a few days after erection without plastering (for cheap work) as the surface is quite smooth and all blocks are of exactly the same thickness.
5. Are more sound-proof.
6. Save space in the thickness of walls.
7. Are more sanitary, being vermin and damp-proof.
8. Make a stiffer wall on account of the novel form and mode of erection.
9. The joints are hardly visible, the edges of the bricks coming close together.



SMOOTH SURFACED SCAGLIOLINE BRICKS

TERRITORY.

The Fireproof Building Co., 103 West 42d St., New York City, will undertake the erection of these walls within fifty miles of New York, or the bricks will be shipped by the Scaglioline Brick & Fireproofing Co., to any part of the United States, where they can be set by any competent mason.

OFFICIAL TESTS.

These bricks have been approved by the New York City Bureau of Buildings.

NEWBURGH BRICK CO.

GEORGE R. MITCHELL, *President*
 JAMES S. TAYLOR, *Vice-President*

W. JOHNSTON MCKAY, *Secretary*
 WILLIAM T. HILTON, *Treasurer*

NEWBURGH, N. Y.

PRODUCT.

This Company manufactures a thoroughly superior and guaranteed SAND-LIME BRICK; a product that architects and others may specify with the utmost assurance that they are getting not merely so much material, but also material of definite high quality. In order, however, to guarantee themselves and their clients against substitutes, architects and others should carefully state the following in their specifications.

SPECIFICATION.

"SAND-LIME BRICK to be of the manufacture of the NEWBURGH BRICK CO., Newburgh, N. Y., each brick to bear the imprint of 'Newburgh.'"

QUALITIES OF OUR PRODUCT.

By attention to this particular in specifications, we guarantee our friends that they will obtain from us a Sand-Lime Brick distinguished by the possession of fifteen points of excellence, as follows:

1. Improves with age.
2. Great crushing strength.
3. Low in porosity.
4. No efflorescence.
5. No scaling.
6. Slight heat conductivity.
7. Unaffected by acids.
8. Absolutely sanitary.
9. No disintegration with extreme climatic changes.
10. Practically no expansion from heat.
11. Great electrical resistance.
12. Economy in laying on account of:
 - (a) Uniformity of size, shape and color.
 - (b) Minimum of bats.
 - (c) Facility with which brick can be cut.
13. The only brick with which a two-sided finished eight-inch wall can be built.
14. The natural color is that of Indiana sandstone. All colors and shades can be made, and they are proof against climatic changes.
15. Superior brick for underground purposes, especially sewers.

SCIENTIFIC COMPUTATIONS.

Many architects and builders, who have used our material, have recognized the foregoing fifteen points of excellence in our product, and it may be interesting to them and to others to submit below the following scientific endorsement of our sand-lime product:

MADE AT COLUMBIA UNIVERSITY, IN THE CITY OF NEW YORK
 MECHANICAL ENGINEERING DEPARTMENT
 REPORT OF TRANSVERSE TESTS FOR NEWBURGH BRICK CO.
 NEWBURGH, N. Y.

MODULUS OF RUPTURE—Lbs. per sq. in. 592, 661, 737, 610, 673. Average 654 3-5.

Report of Compression Tests from Transverse Test, Flatwise

ULTIMATE STRENGTH—Lbs. per sq. in. 3480, 3523, 3610, 3264, 3898. Average 3555

Approved,

IRA H. WOOLSON. E. M.

TERRITORY.

We are prepared and are in a position to furnish Sand-Lime Brick promptly in any market.

SIZE OF BRICK.

We shall be glad to furnish estimates and any data that may be desired.

The size of our brick is $2\frac{1}{4}'' \times 4'' \times 8\frac{1}{2}''$.

We are ready to execute special orders, producing any kind of brick that may be desired within the possibilities of the material and existing machinery.

PEERLESS BRICK COMPANY

OFFICE AND FACTORY

East 118th St., and Harlem River

NEW YORK CITY, N. Y.

TELEPHONE, 1327 HARLEM

PRODUCT. THE PEERLESS BRICK COMPANY are manufacturers of LIMESTONE FACE BRICK and ROUGH BRICK.

FACILITIES. The demand for LIMESTONE BRICK is increasing steadily, and we have every facility for the prompt filling of orders.

We have our own wharf and can make shipment by boat if desired. Capacity of plant 20,000,000 per year. Brick are carried in stock in yard at foot of East 118th Street and prompt delivery can be depended on.

ADAPTABILITY. Our LIMESTONE BRICK has been tested by the Bureau of Buildings of New York City and passed by it as a first grade building material.

LIMESTONE BRICK. LIMESTONE BRICK has been in use for more than thirty years. It has great compression strength and low porosity and is uniform in size, shape and color. There are certain stock colors (which we specify below) but we can supply almost any shade desired on short notice.

PRICE. Our present quotations are on front brick, delivered on job within a three-mile haul of our factory.

On deliveries in excess of three-mile haul, the additional expense of cartage is added.

Prices are as follows:

	<i>Per 1000</i>
Pearl Gray for Courts and Light Shafts.....	\$16.00
Pearl Gray Limestone Fronts.....	20.00
Red or Rose Limestone Fronts.....	20.00
Buff Limestone Fronts.....	22.00
Speckled or Mottled Gray Limestone Fronts.....	22.00
Speckled or Mottled Buff Limestone Fronts.....	24.00

Rough brick are quoted at market rates, their color matches light limestone.

DISCOUNT. On all above prices we allow a cash discount of \$2.00 per thousand.

The following are a few of the architects, builders and owners who have used our brick in New York City:

SOME OF OUR CLIENTS.	ARCHITECTS AND BUILDERS	BUILDINGS	ARCHITECTS AND BUILDERS	BUILDINGS
	JAS. E. WARE & SON Architects	86th St., Y. M. C. A. Court	T. J. REILLY CONSTRUCTION Co.	35 Maiden Lane
I. A. HOPPER & SON	Cor. Green St. and Waverly Place	SOMERS CONSTRUCTION Co.	Five houses	
CITY AND SUBURBAN HOMES Co.	Model tenements, 68th St.	GOHAM CONSTRUCTION Co.	4-8 East 28th St.	
TRANSIT REALTY Co.	137th St. and Riverside Drive	HILLSIOE REALTY Co.	One building	
WEINSTEIN & FIELDER	321-3 East 121st St.	STEIMAN REALTY Co.	Two buildings	
A. B. KIGHT	341-349 West 70th St.	CHARLES REALTY Co.	One building	
A. B. KIGHT	203-207 West 101st St.	MURTHA AND SCHMOHL	One building	
T. J. BUCKLEY	561 West 36th St.	HUGH GETTY & Co.	One building	
H. ROMN	2186 2d Avenue	S. JACOBS & SONS	Two buildings	
H. ROMN	223 E. 110th St.	G. W. FLAGG	Marion Avenue, 195th St.	
J. H. JONES	Highbidge	H. J. LIPPE	42 W. 39th St.	
MORRIS FINE	4 Buildings	CHAS. ZIMMERMAN	Elton Ave. near 159th St.	
WILLIAM & HIRSH	151 W. 123d St.	ABBATE & ALVINO	Spring and Elm St.	
		HAUBEN REALTY Co.	222-238 E. 119 St.	

C. & S. SMITHSON

ESTABLISHED 1890

BELLMORE, L. I., N. Y.

PRODUCTS.

CEMENT BLOCKS for Building Purposes; FULL SURFACE TILING for Interior Walls, Floors and Marble Facing; GARDEN FURNITURE and ORNAMENTAL POTTERY, made from architects' designs or from our own patterns; INTERIOR DECORATIONS in COMPOSITION STONE.

TERRITORY.

We are prepared to fill orders from any part of the country and our facilities enable us to make prompt shipments.

GENERAL INFORMATION.

Our experience extends over a term of about fifteen years, and we have executed work under the supervision of some of the most eminent architects of the country,



RESIDENCE OF MRS. CARHART, TUXEDO PARK, N. Y.

Built entirely from Cement Blocks made by us.

with entire satisfaction to them and their clients. All of our products are the result of the finest material wrought into shape by expert craftsmen. One member of this firm gives his entire attention to the inspection of each article we produce, so that our entire output is in perfect condition at the time of shipment and unexcelled by any other first-class manufacturers.

The location of our works and the volume of our business enables us to offer the highest grade of work at the lowest possible prices.

SERVICES.

We are always at the command of the architect, either for conference or the execution of designs.

C. W. CAPES
 MANUFACTURER OF
 The "Stucco" Plasterboard
 1170 Broadway
 NEW YORK CITY, N. Y.

- PRODUCT.** The "STUCCO" PLASTERBOARD.
- INSTALLATION.** Its installation is simplicity itself,—hammer and nails, studding, sheathing or furring.
- PECULIAR ADVANTAGES.**
1. "Stucco" Board cannot rust. It will last as long as the house stands.
 2. It is fireproof.
 3. It is solid and rigid. It will not give under impact of the trowel.
 4. It adds to the strength of a structure.
 5. Its perfect undercut key holds the plaster immovably.
 6. It is economical, requiring about half the plaster needed for the metal laths; and being a non-conductor, retains the interior warmth of winter and excludes the heat of summer.



"STUCCO" PLASTERBOARD



SECTION SHOWING
UNDERCUT KEY

- AS A BASE FOR CEMENT EXTERIORS.** The "Stucco" Board, as a foundation for Portland cement exteriors of buildings, affords a method of such superlative excellence that architects who have tried it admit it has no competitor.
- SIZE.** Standard size, 16x47 $\frac{3}{4}$ inches.
- SAMPLES.** Samples cheerfully submitted.
- PRICE.** Twenty-five cents per square yard, F.O.B. cars, New York City or Long Island City.

SACKETT WALL BOARD COMPANY

MANUFACTURERS OF

Sackett Plaster Board

17 Battery Place

NEW YORK CITY, N. Y.

PRODUCTS

THE SACKETT WALL BOARD COMPANY are the manufacturers of the SACKETT PLASTER BOARD.

FACILITIES

A growing demand for our Product has justified the erection of two thoroughly equipped plants, one at Garbutt, New York, and the other at Grand Rapids, Michigan, enabling us to meet the continually increasing consumption with prompt delivery.

SACKETT PLASTER BOARD

SACKETT PLASTER BOARD is a FIRE RESISTANT. It is made of sheets 32x36 inches, composed of alternate layers of strong wool felt and plaster, and is superior to wood or metal lath in the construction of plastered walls and ceilings. Less than one-half the amount of water is used in constructing walls and ceilings with this BOARD than is required in plastering on wood or metal lath, resulting in a great *Saving of Time*, and reducing the warping and shrinking of timber to a minimum. It is impossible for walls and ceilings constructed with SACKETT PLASTER BOARD to fall, as the perfect adhesion between it and the plastering material makes a solid body that is securely held in place by nails through the board. It will not warp, buckle or shrink.



FIG. 1. SECTION OF A BUSINESS BUILDING SHOWING CONDITION OF BEAMS WHEN PLASTER BOARDS WERE TORN DOWN BY FIREMEN AFTER A FIRE

In insulation against heat and cold it is greatly superior to lath and plaster. In the latter construction a large portion of the surface is used for the clinches of the plastering material, which is decidedly porous and through which the air passes readily. This condition does not exist where our BOARD is used, its surface being solid throughout.

SACKETT PLASTER BOARD is non-flammable and is accepted as a fire-resistant where underwriters and municipal building departments require slow burning construction, not only in plastered walls, but on the under side of roof boards, between floors and on exposed wooden surfaces. (See Figs. 1 and 2.)

INSTALLATION

Our Product can be installed by any ordinary workman following the general directions for application given herewith.

The BOARDS are 32x36 inches, and are nailed directly to the STUDDING, set 16 inches from centres. CEILINGS should be furred with $\frac{7}{8}$ x2 inch strips, 8 or 12 inches from centres.

CURVED BOARDS for Coves of moderate radius require no bracketing.

For buildings of SLOW BURNING construction, nail boards solid to wooden surface. To CUT BOARDS, use an ordinary saw.

In NAILING use $1\frac{1}{4}$ inch Wire Nails with large head, set 4 to 6 inches apart, with each nail driven home firm and tight to prevent any working under the Plaster Coat. SPACE BOARDS one-fourth of an inch apart, BREAKING JOINTS horizontally on the walls and at right angles with the furring on the ceiling, as shown in Fig. 3.



FIG. 2. COTTAGE SHOWING WHERE THE CLAPBOARDS WERE BURNED AWAY

This building stood within seventy-five feet of a large frame hotel which was entirely consumed by fire

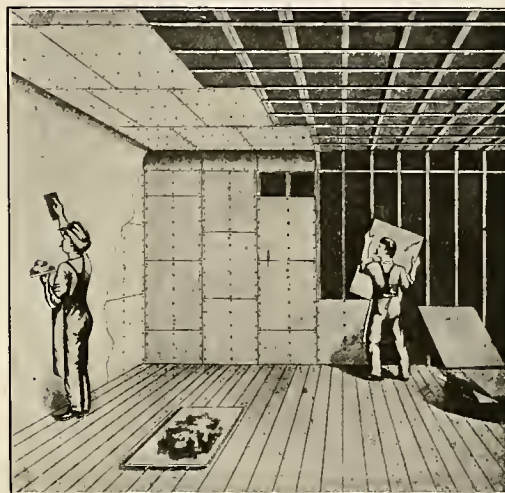


FIG. 3. METHOD OF APPLYING PLASTER BOARD

DO NOT WET THE BOARDS before applying the plaster. Adhesion between the plastering material and the dry boards is perfect.

The best results are obtained by first thoroughly filling the joints between the boards, and applying a BROWN COAT, $\frac{1}{4}$ to $\frac{3}{8}$ inch thick, of any good brand of hard wall plaster. When the first coat is thoroughly set, FINISH with a thin coat of regular hard finish (lime-putty and plaster), or a patent ready finish.

COST

We gladly furnish estimates and can assure our clients that the use of our BOARD will result in a great saving of cost to them and their clients.

REFERENCES

SACKETT PLASTER BOARD is now used in hundreds of Buildings and Private Residences. Upon request, we will be pleased to forward a list of any number where our BOARD is in successful use.

THE ATLAS PORTLAND CEMENT COMPANY

30 Broad Street
NEW YORK CITY, N. Y.



WORKS

NORTHAMPTON, PA.

COPLAY, PA.

HANNIBAL, MO.

PRODUCT.

PORTLAND CEMENT.

OUTPUT.

The Atlas Portland Cement Company's works are located at Northampton, Pa., Coplay, Pa., and Hannibal, Mo., and produce over 12,000,000 barrels of "Atlas" Portland Cement per year.

RAW MATERIAL.

The Company's quarries of cement stone have been selected after careful examination, and furnish in perfect form the chemical ingredients necessary in the production of a true Portland Cement.

LABORATORY TESTS.

Through the entire works the greatest care is exercised to keep the product at its high standard, and as a final check all cement is submitted to the laboratory for chemical and physical examination before shipment. The care exercised in this regard has created a reputation for reliability among the users of cement who do not have the time or opportunity to test each shipment, and who consequently rely largely upon the manufacturer.

"Atlas" Portland Cement is guaranteed to be equal to any and superior to most Portland cements.

PACKAGES.

"Atlas" Cement is shipped in barrels, and in duck and paper bags. The barrels weigh 400 pounds gross or 380 pounds net. When shipped in bags the weight is 95 pounds per bag, four bags to the barrel.

The Cooperage Department is thoroughly equipped to produce a barrel which experience has proved to be the most suitable for cement. Each barrel is lined with a specially prepared paper as an extra guard against the possible absorption of moisture.

GOVERNMENT TEST.

The following comparative table of strength of Portland Cements is from a report of the operations of the Engineering Department of the District of Columbia, under the direction of Major Charles F. Powell, Corps of Engineers, U. S. A., Engineer Commissioner of District of Columbia, year ending June 30, 1896, (page 194) :

TENSILE STRENGTH: 3 PARTS QUARTZ, 1 PART CEMENT

	7 days	1 month	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	12 mos.
ATLAS.....	321	441	441	510	519	525	538	546
Alsen.....	188	310	290	328	385	380	390	366
Dyckerhoff.....	164	175	192	236	257	293	298	323
Hanover.....	205	244	251	277	301	315	315	354
Alpha.....	105	182	310	309	310	295	327	350
Hemmoor.....	159	203	286	301	323	329	314	347
Giant.....	230	275	275	267	296	329	325	327
Porta.....	181	257	305	319	315	322	343	329
Egypt.....	159	205	255	240	285	301	341	394
Henry.....	159	188	229	277	300	320	319	332
Mannheimer.....	193	226	306	329	335	323	343	336
Saylor's.....	135	156	205	203	254	277	289	279

CAYUGA LAKE CEMENT COMPANY

MANUFACTURERS OF

Cayuga Portland Cement

ITHACA, NEW YORK

PRODUCTS.

THE CAYUGA LAKE CEMENT COMPANY are manufacturers of CAYUGA PORTLAND CEMENT—the highest grade Portland Cement manufactured.

MANUFACTURING FACILITIES.

Large factories and the latest and most improved machinery in every department, handled by men of experience in the manufacture of Portland Cement, combine in giving them unequalled facilities for filling large contracts reasonably and promptly.

SHIPPING FACILITIES.

The works are so located that shipments can be made by either rail or boats, as they have side tracks from the Lehigh Valley Railroad running between the main buildings and the warehouses. Cement can be loaded directly into cars on one side of the warehouses, and into canal boats from the other side. Thus it is possible to make shipments not only by rail, but by boat loads to all points on the Erie, Oswego and Champlain Canals, and to all points on the Canal between Buffalo and New York; and boat loads can be transferred at either terminal, or at Oswego to large boats to reach all points on the Great Lakes and Atlantic coast, as well as for export trade.

CAYUGA PORTLAND CEMENT.

The CAYUGA BRAND of Portland Cement, manufactured by the CAYUGA LAKE CEMENT COMPANY, is made by combining cement rock with a calcareous shale which immediately underlies the cement rock. The cement rock is found in the vicinity of the works, and has a depth of about 22 feet. The calcareous shale carries about 22 per cent. of lime, and extends to a great depth.

The cement rock is obtained from a group of silicious limestone containing 6½ per cent. silica which is known geologically as the Tully limestone. This material is not to be excelled by any stone in this country for the purpose of making Portland Cement.

REFERENCES.

CAYUGA PORTLAND CEMENT has been used during the past five years in the best engineering work in the United States and Canada, including Government, State and Municipal work.

Its use has been attended with the highest degree of success and the utmost satisfaction, and it is recommended by the best engineers.

If desired, we can refer to a number of our clients who will recommend our product to anyone requiring a *first-class* Portland Cement.

COST.

Information regarding estimating or price will be sent upon request.

CONSOLIDATED ROSENDALE CEMENT CO.

F. N. STRANAHAN, SALES AGENT

Sales Offices 26 Cortlandt Street

NEW YORK CITY, N. Y.

EXECUTIVE OFFICES
CORNELL BUILDING, KINGSTON, N. Y.

MILLS
TOWN OF ROSENDALE, ULSTER CO., N. Y.

PRODUCTS.

Manufacturers of the following brands of genuine ROSENDALE CEMENT:
BROOKLYN BRIDGE, NORTON, BEACH, HOFFMAN, NEWARK ROSENDALE, and XXX.



FACILITIES.

Our mills have a daily capacity of 10,000 barrels, and our storage facilities being ample we always have a large stock of cement on hand, and can ship all orders promptly.

TERRITORY COVERED BY OUR OPERATIONS.

The situation of our mills on tide-water gives us the advantage of both rail and water connections, and the territory we cover includes the entire Middle, Eastern and Southern States, and the West Indies.

GENERAL INFORMATION.

We guarantee that our brands of Natural Cement are genuine Rosendale, manufactured in the town of Rosendale, Ulster County, N. Y. Their universal use on United States Government work, on many State and Municipal contracts, as well as on numerous private undertakings, has given the genuine Rosendale Cement a reputation that is unequalled by any other brand of Natural Cement.

FORM OF SPECIFICATION.

Architects and others specifying genuine Rosendale Cement should embody the name of the desired brand in their specifications, as

Brooklyn Bridge, Norton, Beach, Hoffman, Newark Rosendale, or XXX.

THE EDISON PORTLAND CEMENT COMPANY

MANUFACTURERS OF

Edison Portland Cement Exclusively

Girard Trust Building
PHILADELPHIA, PA.

NEW YORK CITY, N. Y.
Empire Building
PITTSBURGH, PA.
Farmer's Bank Building

BOSTON, MASS.
Board of Trade Building
EDISON LABORATORY
Orange, N. J.



PRODUCTS. EDISON PORTLAND CEMENT exclusively.

QUALITY. Edison Portland Cement shows 85% through 200 mesh; 98% through 100 mesh. It is perfect in color, perfect in analysis and finest ground. In every way it possesses the qualities as described by the following authorities:

AUTHORITATIVE STANDARDS. "Fineness of grinding is an essential quality in cements to be mixed with sand. The residue on a sieve of 100 meshes to the inch is of no cementitious value, and even the grit retained on a sieve of 40,000 openings to the square inch is of small value."—*U. S. Government Official Report.*

"To compare the quality of two brands of cement otherwise similar, sift through a 200-inch mesh and choose the finest cement.

"It is generally accepted that the coarser particles in cement are practically inert, and it is only the extremely fine powder that possesses the cementing or adhesive qualities.

"The more finely cement is pulverized, all other conditions being the same, the more sand it will carry and produce a mortar of a given strength."—*Taylor and Thompson's Treatise on Concrete.*

TRADE MARK. The following Trade Mark is a guarantee of our product and of its excellence.

TRADE MARK
Thomas A Edison

TERRITORY. We are in a position to deliver Edison Portland Cement in any part of the country, and on contracts of any magnitude.

PRICES AND ESTIMATES. We will quote prices upon application.

CHARLES WARNER COMPANY

WILMINGTON DELAWARE

Land Title Bldg., PHILADELPHIA, PA.

SOLE SALES AGENT FOR

NAZARETH CEMENT COMPANY

CEDAR HOLLOW COMPANY

WHITELAND LIME COMPANY

DIAMOND STONE-BRICK COMPANY

MCCOY LIME COMPANY

PRODUCTS.

These companies manufacture annually 900,000 Barrels Cement, 2,500,000 Bushels Lime, 18,000,000 Bricks, 25,000 Tons "NAZARETH" PORTLAND CEMENT, LIME, "LIMOID" (a prepared lime), "WARNER'S CEMENT WALL PLASTER," "DIAMOND STONE-BRICK," CRUSHED STONE, SAND, TERRA COTTA PIPE, CALCINED PLASTER, PLASTERING HAIR, FIRE BRICK, TILE, MORTAR COLORS, MARBLE DUST, FIRE CLAY, etc.

TERRITORY.

Our materials enter all of the territory adjacent to New York, Philadelphia, Baltimore, Washington, Norfolk and Pittsburgh. Cements: all portions of the United States and Canada, and for export trade.

GUARANTEE.

All our products are guaranteed both as to quality and weight. They are all put through careful and continuous tests to insure a uniform product of the highest quality.



"NAZARETH" PORTLAND CEMENT.

"NAZARETH" PORTLAND CEMENT has been used extensively during the past seven years in Municipal, Railroad and Government work; in the construction of large Industrial Plants; also in Office Buildings, Theatres, Libraries, Residences and Religious Institutions.

LIME.

We make LIME for Building, Plastering, Chemical and Agricultural purposes.

LIMOID

"LIMOID."

"LIMOID" is a prepared lime, ready for immediate use. It is a scientifically Hydrated Lime used extensively for building and plastering purposes. We particularly call attention to the use of "LIMOID" in connection with Portland Cement, replacing to great advantage Rosendale Cement in brick and masonry work, and Gypsum Hard Wall Plasters.

"LIMOID" is a pure lime and can be used in any place where lump lime is used. It can be kept indefinitely without waste, and is always fresh and ready for immediate use.

Over twenty car loads of "LIMOID" were used in plastering the United States Government Printing Office, Washington, D. C., and it is now being used extensively in every class of important construction work in the East.

CRUSHED STONE.

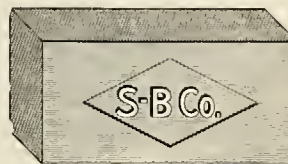
We manufacture CRUSHED STONE at Cedar Hollow Quarries, for Walks, Road-making and Concreting.

SAND.

From our Dredge "Phœnix," which has a capacity of 2000 tons, we produce Washed and Screened Bar SAND, for delivery in barge loads to points on the Delaware river and for carload shipments from Wilmington and Philadelphia. Silver SAND, White Finishing SAND, GRAVEL and PEBBLES for filtering purposes.

WARNER'S
CEMENT WALL
PLASTER.

WARNER'S CEMENT WALL PLASTER is superior to all others for strength, hardness and durability.



DIAMOND STONE-BRICK

DIAMOND
STONE-BRICK.

DIAMOND STONE-BRICK is manufactured from the highest grade Silica Sand and pure Calcium Lime. It is a superior product of such shape and color as may be desired, giving a wide range of architectural possibilities. Exhaustive tests covering crushing strength, water absorption, high degree of temperature and freezing, demonstrate their superiority over the clay brick.

TERRA COTTA
PIPE.

In the manufacture of TERRA COTTA PIPE, we use the best Ohio River Fire Clay, vitrified and salt glazed. We make Sectional Sewer Blocks, Flue Liners, Fireproofing, Conduits and all Fire Clay products.

COST.

We gladly furnish quotations and further information on request.

SPECIFICATIONS.

NAZARETH PORTLAND CEMENT—Manufactured by the Nazareth Cement Company, of a quality to comply with the tests and requirements of the American Society of Civil Engineers.

LIMOID MORTAR FOR PLASTERING—To be composed of "LIMOID," clean sand, long washed hair, thoroughly mixed in the following proportions:

First Coat—One sack "LIMOID" (100 lbs.), two and one-half bbls. (Cement or Plaster bbl.), sand, one-half bushel hair.

Second Coat—One sack "LIMOID" (100 lbs.) three and one-half bbls. (Cement or Plaster bbl.), sand, one-quarter bushel hair.

LIMOID HARD WALL PLASTER—To be composed of "LIMOID," clean sand, best grade of Portland Cement and washed hair, mixed thoroughly in the following proportions:

First Coat—Two sacks "LIMOID" (100 lbs. each), five bbls. (Cement or Plaster bbls.), sand, one bag best Portland Cement (95 lbs.), one bushel hair.

Second Coat—Two sacks "LIMOID" (100 lbs. each) seven bbls. sand, (Cement or plaster bbls.), one bag best Portland Cement (95 lbs.).

FINISH OR WHITE COAT—"LIMOID" mixed thoroughly with clean water to a paste and gauged with best grade of Calcined Plaster and white sand.

SAND-LIME BRICK—Manufactured by the Diamond Stone-Brick Company of Wilmington, Delaware.

The following requirements must be met to secure the acceptance of the brick:

The modulus of rupture must average 400 pounds per square inch and must not fall below 300 pounds per square inch in any case. The ultimate compressive strength must average 2500 pounds per square inch and must not fall below 2000 in any case. The percentage of absorption being the weight of the water absorbed divided by the weight of the dry sample must not average higher than 15%, and must not exceed 20% in any case. The reduction of compressive strength must not be more than one-third, except when the lower figure is still above 2500 pounds per square inch, the loss in strength may be neglected. The freezing and the thawing process must not cause a loss in weight greater than 10% nor a loss in strength of more than 33 $\frac{1}{3}$ %. Size 4x8 $\frac{1}{2}$ x2 $\frac{1}{2}$. Tests must be made from 15 samples selected from the bricks to be furnished on the work.

NORTHAMPTON PORTLAND CEMENT COMPANY



SALES DEPARTMENT
STANDARD OIL BUILDING

26 Broadway
NEW YORK CITY, N. Y.

MAIN OFFICE AND WORKS
STOCKERTOWN, P. A.

PRODUCTS.

PORTLAND CEMENTS of the highest grades.

FACILITIES.

Our capacity for production is 2000 barrels a day for 360 days in the year. We have direct railroad connection with all parts of the United States, Canada and Mexico, and therefore connection by steamship with every part of the world.

RESULTS OF TESTS.

Ours NEVER RECEDES: Note the progressive strength:

NEAT CEMENT

	24 Hours	7 Days	28 Days	3 Months	6 Months	9 Months	12 Months
	354 lbs.	665 lbs.	760 lbs.	903 lbs.	930 lbs.	989 lbs.	943 lbs.
	340 lbs.	584 lbs.	740 lbs.	822 lbs.	876 lbs.	945 lbs.	948 lbs.
	333 lbs.	620 lbs.	769 lbs.	815 lbs.	850 lbs.	983 lbs.	1028 lbs.
Average	342 lbs.	623 lbs.	756 lbs.	847 lbs.	885 lbs.	972 lbs.	973 lbs.

1 PART CEMENT — 3 PARTS SAND

7 Days	28 Days	3 Months	6 Months	9 Months	12 Months
251 lbs.	360 lbs.	465 lbs.	492 lbs.	498 lbs.	540 lbs.

REFERENCES.

To enumerate the thousand large hotels and commercial buildings and great constructions in which Northampton Portland Cement has been used would be impracticable. We name a few that are easily accessible:

- METROPOLITAN LIFE INSURANCE BUILDING.....New York City, N. Y.
- RAPID TRANSIT SUBWAY R. R.....New York City, N. Y.
- U. S. NAVY YARD.....Brooklyn, N. Y.
- U. S. NAVY YARD.....Boston, Mass.
- U. S. NAVY YARD.....Portsmouth, N. H.
- COURT HOUSE.....Newark, N. J.
- CONTINENTAL TRUST BUILDING.....Baltimore, Md.
- COLD STORAGE WAREHOUSE.....Jersey City, N. J.
- CHALFONTE HOTEL.....Atlantic City, N. J.
- PENN. LIFE INSURANCE BUILDING.....Philadelphia, Pa.
- RESERVOIR DAM.....Mt. Morris, N. Y.
- FOSTER-ARMSTRONG PIANO WORKS.....Despatch, N. Y.*

* The largest set of concrete buildings in the world.

THE WHITEHALL PORTLAND CEMENT COMPANY

PHILADELPHIA, PA.

MAIN OFFICE
1719-1725 LAND TITLE BUILDING

HOWARD B. GREEN
MANAGER OF SALES

FACTORY
CEMENTON, LEHIGH CO., PA.

BRANCH OFFICES

NEW ENGLAND SALES OFFICE
E. G. BRICK, *Representative*
141 MILK ST., BOSTON, MASS.

SOUTHERN SALES OFFICE
W. J. BENNETT, *Representative*,
CENTURY BUILDING, ATLANTA, GA.

WESTERN SALES OFFICE
S. J. VAIL, *Representative*,
172 E. WASHINGTON ST., CHICAGO, ILL.

PRODUCTS. WHITEHALL PORTLAND CEMENT.

FACILITIES. Our mills are a unit comprising one of the largest plants in the world with an annual capacity of 1,250,000 barrels.

TERRITORY. Whitehall Portland Cement is handled by dealers in all principal cities east of the Mississippi River and many cities in Canada, Cuba and other foreign countries.

ADAPTABILITY OF PRODUCT. Our cement meets the requirements of the Building Laws and Regulations of all Municipalities. Our product is thoroughly calcined and, therefore, conforms to the rules and requirements of Boards of Underwriters and similar bodies. Architects and builders specifying Whitehall Portland Cement, will obtain for their clients absolutely pure Portland Cement and run no risk of using a blended article.

INSTRUCTIONS AS TO ORDERS. The enormous capacity of our Storehouse enables us to keep on hand a large stock of thoroughly seasoned cement, making it possible for us to fill all orders upon short notice, and obviating all necessity of shipping out green cement.

Our cement is shipped in paper, cloth or wood.



WORKS OF THE WHITEHALL PORTLAND CEMENT CO., CEMENTON, PA.

A PERFECT CEMENT.

There are some very good reasons why we place Whitehall on the pinnacle of perfect cements. Among them may be mentioned the following:

Our mill is up-to-date in every respect.

Our mill is a unit and not a number of small mills run with more or less irregularity.

All of our raw material is quarried on our own property.

THIS LABEL IS A
GUARANTEE OF PER-
FECT PORTLAND CE-
MENT



TRADE MARK. REGISTERED

We have a large corps of competent chemists employed at our mill, who carefully make chemical tests every hour during the day and night on the raw material, as well as the finished product.

The clinker from our rotary kilns is particularly small, due to mechanical arrangements used in our mill only; consequently, on account of the smallness of the clinker, we are able to thoroughly burn the centre, or in other words, the entire clinker.

We confine ourselves to one uniform standard grade of Portland Cement, and sell it under our registered trade mark.

WHITEHALL is honestly, generously and thoroughly made with the individual features above outlined, making it the standard of perfection.

TESTS AND
RESULTS.

Department of Public Works, City of Philadelphia, Bureau of Surveys Testing Laboratory:

Average Results of Portland Cement Tests.

BRANDS	FINENESS IN PER CENT.			Specific Gravity	SETTING		ULTIMATE TENSILE STRENGTH IN POUNDS PER SQUARE INCH													
	No. 50	No. 100	No. 200		Time in Minutes		NEAT								1 TO 3 STANDARD QUARTZ SAND					
					Initial	Hard	24 H'rs	7 Days	28 Days	2 Mos.	3 Mos.	4 Mos.	6 Mos.	24 H'rs	7 Days	28 Days	2 Mos.	3 Mos.	4 Mo	6 Mos.
Alpha	99.8	91.0	76.6	3.117	110.5	361.8	357	770	834	885	813	785	827	81	252	314	344	312	302	262
Atlas	99.9	90.4	76.5	3.105	26.0	288.3	542	728	790	802	761	815	825	104	204	289	324	321	337	308
Lehigh	99.8	90.3	77.1	3.173	119.0	361.7	377	699	747	684	735	774	760	76	233	329	296	310	303	325
Saylor's	100.0	95.5	82.4	3.129	100.4	396.0	295	697	766	756	766	733	745	64	217	296	319	301	311	286
Vulcanite	99.5	89.9	74.7	3.129	108.9	439.2	290	748	767	707	807	710	740	45	226	287	269	298	280	330
Whitehall	100.0	91.0	75.4	3.148	82.4	326.5	524	713	765	788	796	775	....	87	232	313	295	295	343	

Highest Sand Test.

"WHITEHALL," alphabetically last but first in quality.

FOUR YEARS OF UNIFORMITY DEPARTMENT OF PUBLIC WORKS,
PHILADELPHIA

WHITEHALL PORTLAND CEMENT	SPECIFIC GRAVITY	SETTING		ULTIMATE TENSILE STRENGTH IN POUNDS PER SQUARE INCH				
		Time in Minutes		Neat			1 to 3 Standard Quartz Sand	
		Initial	Hard	24 Hours	7 Days	28 Days	7 Days	28 Days
Year of 1901	3.148	82.4	326.5	524	713	765	232	313
Year of 1902	3.137	66.6	326.0	444	660	731	201	304
Year of 1903	3.140	64.0	322.0	457	749	797	236	311
Year of 1904	3.157	64.0	346.0	450	716	759	246	336

G. S. WEBSTER, Chief Engineer.

W. PURVES TAYLOR, Engineer in Charge.

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY BRIDGE AND BUILDING DEPARTMENT

REPORT OF SPECIAL LONG TIME TEST OF CEMENT

Two year test of "WHITEHALL" Portland Cement was made to-day.

CHICAGO, December 5, 1902.

TENSILE STRENGTH IN POUNDS PER SQUARE INCH

1 YEAR

2 YEARS

765

843

NEAT CEMENT AVERAGES.....



PUGH POWER PLANT, CINCINNATI
Ditoe & Wisenall, Architects.
Solid Concrete. Whitehall Portland Cement used.



TESTING MCKEAN ST. CONCRETE SEWER,
PHILADELPHIA, PA.
2200 Feet Built with Whitehall Portland Cement according to the
Ransome System, by the Ransome Construction Co., Philadelphia.

*P.S. We shall gladly send
Cementology, our monthly publication
to any one interested in Portland
Cement.*

GYPSUM PRODUCTS COMPANY

MINERS OF

Gypsum Rock and Manufacturers of Stucco and Wall Plasters

800-804 Prudential Building

BUFFALO, N. Y.

MINES
OAKFIELD, N. Y.

WORKS
BLACK ROCK, N. Y.

W. F. Redlich & Co., Selling Agents, New York City and Vicinity

156 Fifth Avenue, New York City, N. Y.

PRODUCTS.	CALCINED GYPSUM, STUCCO and WALL PLASTERS. Specialty, WOOD FIBRE WALL PLASTER.
FACILITIES.	Equal to any demand.
TERRITORY.	Home and Foreign market.
ADAPTABILITY OF PRODUCT.	Eminently adapted to all stucco and wall plaster work. Can be used and applied by any first-class plasterer.
GENERAL INFORMATION.	<p>When applied $\frac{1}{4}$ inch thick, it covers 150 square yards to the ton on wood lath.</p> <p>It adheres equally well to brick, stone, common or metal lath, wood or iron.</p> <p>It sets in one and one-half hours. This quick-drying quality economises in both time and cost.</p> <p>It works cool, spreads freely and trowels smoothly.</p> <p>Containing no acid, it accepts promptly and holds any tint or color of paint or kalsomine.</p> <p>It makes a wall exceptionally hard and elastic, fireproof and more impervious to dampness than other plaster.</p> <p>It compares MOST FAVORABLY in cost with other plasters</p>
FORM OF SPECIFICATION.	To guard themselves and their clients from substitutes it is suggested that architects should incorporate the following words in their specifications: The plaster to be used must be the KEYSTONE WOOD FIBRE, made by the GYPSUM PRODUCTS CO., of BUFFALO, N. Y.

KEYSTONE PLASTER COMPANY

16 South Broad Street
PHILADELPHIA, PA.

MILL
FOOT OF JEFFRIES STREET
CHESTER, PA.

PRODUCTS.

The Keystone Plaster Company are manufacturers of WALL PLASTER, CALCINED PLASTER, PLASTER BLOCK, and all other Gypsum products, one of our special industries being the manufacture of the well known VICTOR and ADAMANT WALL PLASTERS.

FACILITIES.

Our mill is one of the largest in the Eastern States, equipped with the most improved machinery. We have excellent facilities for shipping, either by rail (over two trunk lines whose sidings reach our doors), or by water from our own wharves. Orders of any size can, therefore, be filled with promptness and dispatch.

VICTOR AND ADAMANT WALL PLASTERS.

Our Plasters are made from the purest Nova Scotia Gypsum.

It is often essential for decorations or for other reasons that the wall plaster be of extra strength and density. Where such is required the use of Adamant Wall Plaster (ready mixed) will give the utmost satisfaction.

For the ordinary interior uses of wall plaster, either on wood or wire lath, tile, concrete, brick or stone, architects recommend Victor Wall Plaster (ready mixed), which needs nothing added by plasterers but water.

ADVANTAGES.

Both these brands of plaster set within twenty-four hours after being applied, and, therefore, the drying process being one of crystallization rather than evaporation, finishes can, without detriment, be applied much more quickly, and valuable saving in time effected.

Their strength, density and elasticity render them less liable to cracking, breaking or any of the casualties to which ordinary plaster walls are subject.

Frequent fire tests have proven the value of Gypsum products of all kinds as fire resistants, and Gypsum being the basis of these wall plasters, they add greatly to the fire resisting qualities of a building.

INSTALLATION.

Victor and Adamant Wall Plasters are applied by any plasterer skilled in his trade, in the same manner and much more easily than common lime-and-sand mortar.

COST.

The cost of Victor Wall Plaster on the wall is but slightly more than that of good lime mortar, ordinarily about 5%.

The cost of Adamant Wall Plaster on the wall exceeds that of Victor Wall Plaster about 5%.

SPECIFICATIONS.

Specifications can be written "Victor (or Adamant) Wall Plaster as per directions of Keystone Plaster Company," or specification forms will be promptly furnished on application for any case detailed.

REFERENCES.

Our plasters have been used on the White House, the Capitol Building and many United States Government Buildings in Washington; the Capitol Building at Harrisburg; the City Hall in Philadelphia, and upon such a large number of prominent office buildings, business houses, factories, residences, etc., all over the east that we ask those desiring further information to write us for list, as we cannot detail in our space here.

J. B. KING & COMPANY

MANUFACTURERS OF

King's Windsor Cement Dry Mortar, King's Stucco Cement, etc.

1 Broadway

NEW YORK CITY, N. Y.

BRANCH OFFICES

PHILADELPHIA, PA.

JOHN H. HOLMES, *Mgr.*,
24 South 7th Street.

BUFFALO, N. Y.

CHAS. C. CALKINS, *Mgr.*,
322 E. Genesee Street.

BOSTON, MASS.

WINDSOR CEMENT CO.,
446 Albany Street

PRODUCTS.

KING'S WINDSOR CEMENT DRY MORTAR, WINDSOR COARSE and SUPERFINE CEMENT, WINDSOR CEMENT, LATH and BRICK MORTAR, KING'S STUCCO CEMENT, DIAMOND BRAND CALCINED PLASTER, HILLSBOROUGH BRAND CALCINED PLASTER, LAND PLASTER, FLYINGS, MARBLE DUST, MARBLE FLOUR, TERRA ALBA, PERFECTED COLD-WATER PAINT, J. B. White & Bros. "KEENE'S CEMENT," WASHED BANK SAND, WHITE SAND, etc., etc.

KING'S WINDSOR CEMENT DRY MORTAR.

It is well known now, as also it was hundreds of years ago, that whatever matrix or cementitious materials are employed in making artificial marble, mortar, stucco, or plaster for Walls and Ceilings, the best results can be attained only by using thoroughly *washed*, sharp, silicious bank sand.

Hence, in our aim to provide the best possible material for plastering WALL AND CEILINGS, we employ in the manufacture of our WINDSOR ASBESTOS CEMENT DRY MORTAR only this quality of sand, machine-screened and so thoroughly washed that it ceases to discolor the wash water, after which it is rendered anhydrous by kiln drying—in conformity with the old adage, "Like sand, like mortar."

We are the only concern in the United States that washes sand for use in the manufacture of hard plaster for walls and ceilings.

ADVANTAGES OF KING'S WINDSOR CEMENT DRY MORTAR.

It saves time. It does not chip or pit and can be finished in any way that ordinary plastering can. It makes walls and ceilings more elastic, thus avoiding unsightly cracks; also prevents falling ceilings by its great adhesiveness and strength. For additions, alterations, repairs and patching it cannot be beaten and makes an excellent bond even to lime mortar. Frost will not injure the work after it has been on from 12 to 24 hours. The asbestos used renders the material a protection against fire and deadens sound. It is vermin and germ proof. It is air-tight and makes a house much warmer. It can be applied to wire, iron or metal lathing without rusting. Neither will it rust masons' tools. It will not discolor decorations. The most delicate tints in either water or oil colors can be applied with perfect safety. It dries out from two or three weeks quicker than lime mortar and carpenters can follow plasterers in a much shorter time. Our Superfine finish gives a very hard, smooth, white and elastic surface.

BRIEF FORM OF SPECIFICATION FOR KING'S WINDSOR CEMENT.

Beyond determining which form of our materials shall be used, viz: whether King's Neat Windsor Cement or King's Windsor Cement Dry Mortar, and the kind of finish, it is quite unnecessary for the architect to be very explicit in directing the mason in its use, provided he includes in his specifications that, "The said materials must be applied in strict conformity with instructions of the manufacturers of the same as found with each and every package thereof."

THE FRANK E. MORSE COMPANY

Non-Staining Cement and Hard Wall Plaster

17 State Street

NEW YORK CITY, N. Y.

PRODUCTS.

Importers and sole agents for America of MORSE'S WHITE NON-STAINING CEMENT, and agents for HIGGINSON'S WHITE CEMENT HARD WALL PLASTER in New York and vicinity and for the State of New Jersey.



MORSE'S WHITE NON-STAINING CEMENT.

This is a Puzzolona Cement specially prepared for the finest grade of marble, granite, limestone, tile and stucco work. It will not stain or discolor the most delicate material. It is lighter in color than other non-staining cements, and compares favorably with them as regards composition and tensile strength, and successfully passes the warm water and boiling test, thereby showing the cement to be sound in all respects.

PHYSICAL TESTS.

Samples of Morse's Non-Staining Cement tested by the Henry S. Spackman Engineering Co., resulted as follows:

Fineness—Passing No. 100 sieve, 99%; passing No. 200 sieve 84%.

Constancy of Volume Test—Normal Pat. Test Am. Soc. C. E. Cold Water Pat., good; Air Pat. good.

Setting Time—Vicat Needle; Initial Set, 3 hrs., 5 min.; final set 8 hrs., 15 min.; Per cent. of water, 26; Temperature of air, 66 F.; Temperature of water 68 F.

Accelerated Test—Warm Water Test, good; Steam and Boiling Water Test, good; Specific Gravity, 2.80.

Tensile Strength of Standard Briquettes—(One square inch Section).

No. of Briquette	Composition	Per cent. of Water	TIME			Date Made	Date Tested	Strength in lbs. Average
			In Air	In Water	Total			
25820	Neat	26	24 hrs.	6 days	7 days	12-8-'04	12-15-'04	284
25825	{ 1 Cement } { 3 Sand }	10.3	24 hrs.	6 days	7 days	12-8-'04	12-15-'04	111
25830	Neat	26	24 hrs.	27 days	28 days	12-8-'04	1-5-'05	502
25835	{ 1 Cement } { 3 Sand }	10.3	24 hrs.	27 days	28 days	12-8-'04	1-5-'05	194
25845	{ 1 Cement } { 3 Sand }	10.3	24 hrs.	89 days	3 mos.	1-9	4-9	276
25855	{ 1 Cement } { 3 Sand }	10.3	24 hrs.	151 days	6 mos.	1-9	7-9	317

ANALYSIS.

Silica, 25.62%; Alumina, 9.23%; Iron Oxide, .44%; Lime, 53.04%; Magnesia, 2.20%; Sulphuric Anhydride, .23%; Potassium Oxide, .92%; Soda, .47%; Loss on Ignition, 7.58%.

HIGGINSON'S WHITE CEMENT WALL PLASTER.

Higginson's White Cement Wall Plaster is a high grade material for plastering walls and ceilings. It is elastic, strong, durable and economical, and when properly applied, will not buckle or fall off or crack.

ANTI-RUST.

This plaster is the only anti-rust preparation which will not corrode metal lath or cause nail heads to show. It is easy to apply and will cover 30% more than other brands of wall plaster.

WILLIAM H. REVIS

Keene's & Caen Stone Cements and Welsh Flooring Quarries

Townsend Building, 1123 Broadway

NEW YORK CITY, N. Y.

PRODUCTS.

General Agent for VICTORIA KEENE'S CEMENT, manufactured by Cafferata & Co., England; CAEN STONE CEMENT, made in France, and WELSH RED FLOORING QUARRIES made by J. C. Edwards, Ruabon.

VICTORIA KEENE'S CEMENT.

This Cement is made in various grades to suit all requirements of interior finish. The grades are as follows:

No. 2—Is used for gauging ordinary lime mortar for first and second coat plastering.

No. 1—Used for white finish on No. 2 mortar.

FINE—Is quick setting and makes beautiful white alabaster-like mouldings, casts, ornaments and columns.

SUPERFINE—Is the finest ground and purest white Cement made and is used for the colored face of artificial marble.

COARSE—Forms the base of artificial marble.

GUARANTEE.

The whole of these varieties of Keene's Cement are guaranteed to be absolutely free from any impurities and staining properties.

ECONOMY.

Victoria Keene's Cement makes a plastered wall stronger and superior to that made by any other material on the market, and at a cost no greater than that of any hard mortar. Rooms finished with it are more sanitary than if lined with tiles or marble.

(NOTE—Victoria Keene's Cement Dry Mortar, ready for use with the addition of water only, is now supplied on the building by Clifford L. Miller & Co., 125 E. 23d Street, New York City.)

CAEN STONE CEMENT.

This Cement produces on any wall, old or new, an exact facsimile of Caen Stone Blocks. Texture and color are indistinguishable from those of the real stone. It is easy to work and in time becomes as hard as the real stone.

WELSH RED FLOORING QUARRIES.

These flooring quarries are made of special clay found only in Ruabon, N. Wales, to which are due both their color and texture. They improve in surface and in tint with wear, and are easily kept clean.

They make the best floors for engine rooms, breweries, cafés, kitchens, etc.

SIZES.

The principal sizes are 9"x9"x1 $\frac{1}{4}$ ", 6"x6"x $\frac{7}{8}$ ", 4"x4"x $\frac{3}{4}$ ", 9"x4"x1 $\frac{1}{4}$ ".

PRICES.

Full information and quotations f.o.b. any part of the country will be promptly supplied on application.

ROCK PLASTER COMPANY OF N. Y. AND N. J.

OFFICE

FACTORY

11 Broadway, NEW YORK CITY, N. Y.

150th Street and E. River, New York City, N. Y.

PRODUCT.

ROCK PLASTER is a substitute for common mortar. It is made from the best SLACKED LIME, SHARP and CLEANED KILN-DRIED SAND, with a proper proportion of PLASTER OF PARIS, ASBESTOS and the best WASHED and WHIPPED CATTLE HAIR. It is furnished as follows:

SCRATCH COAT (for Wood Lath)	} In 100 lb. bags. Requires addition of water only.
“ “ (“ Wire “)	
BROWNING COAT (for Brick or Terra Cotta)	

ROCK WALL CEMENT in 100 lb. bags and in 300 lb. barrels.	} Requires addition of sand.
--	------------------------------

WHITE TROWEL FINISH, in 300 lb. bbls. Requires addition of lime putty.

COMPLETE WHITE FINISH, in 300 lb. bbls. Requires addition of water only.

SAND FLOAT OR ROUGH FINISH, in 100 lb. bags. Requires addition of lime putty.

“ RIVERSIDE ” PLASTER OF PARIS, for Masons, Casting and Dental uses.

FACILITIES.

Our new factory has a capacity of twelve thousand bags per day, and is the most complete Plaster factory in this country.

ADVANTAGES OF ROCK PLASTER.

Rock Plaster is the “ Practical Modern ” Plaster, and gives a wall that is durable, tough, hard and practically indestructible.

It will not of itself crack, swell or shrink, and will not come down in case of leakage.

Saves time, as it admits of carpenters immediately following the plasterers, giving the owner his building weeks earlier than with ordinary plaster.

Affords the finest and most durable surface for decorating and papering.

Is fireproof and is recognized by underwriters as a remarkable fire retarder.

Can be used in winter as well as summer, as it is only necessary to keep it from freezing till after it thoroughly sets, after which it is not affected by frost.

Will give you walls that are so dense as not to harbor vermin, filth or disease germs, and will make your house warmer in winter and cooler in summer.

Is put up in convenient form for handling, is ready for use at a moment's notice and does not require days to get ready for plastering. Is just the thing for patching.

Does not stain in contact with iron; adheres firmly to iron, wood or brick.

SHORT FORM OF SPECIFICATION.

“ ALL plastering throughout to be done with Rock Plaster according to the directions of the Manufacturers and to the satisfaction of the Architect.”

AMERICAN TERRA COTTA AND CERAMIC CO.

630 Chamber of Commerce Building
CHICAGO, ILL.

PRODUCTS.

Manufacturers of ARCHITECTURAL TERRA COTTA of all kinds.

USES.

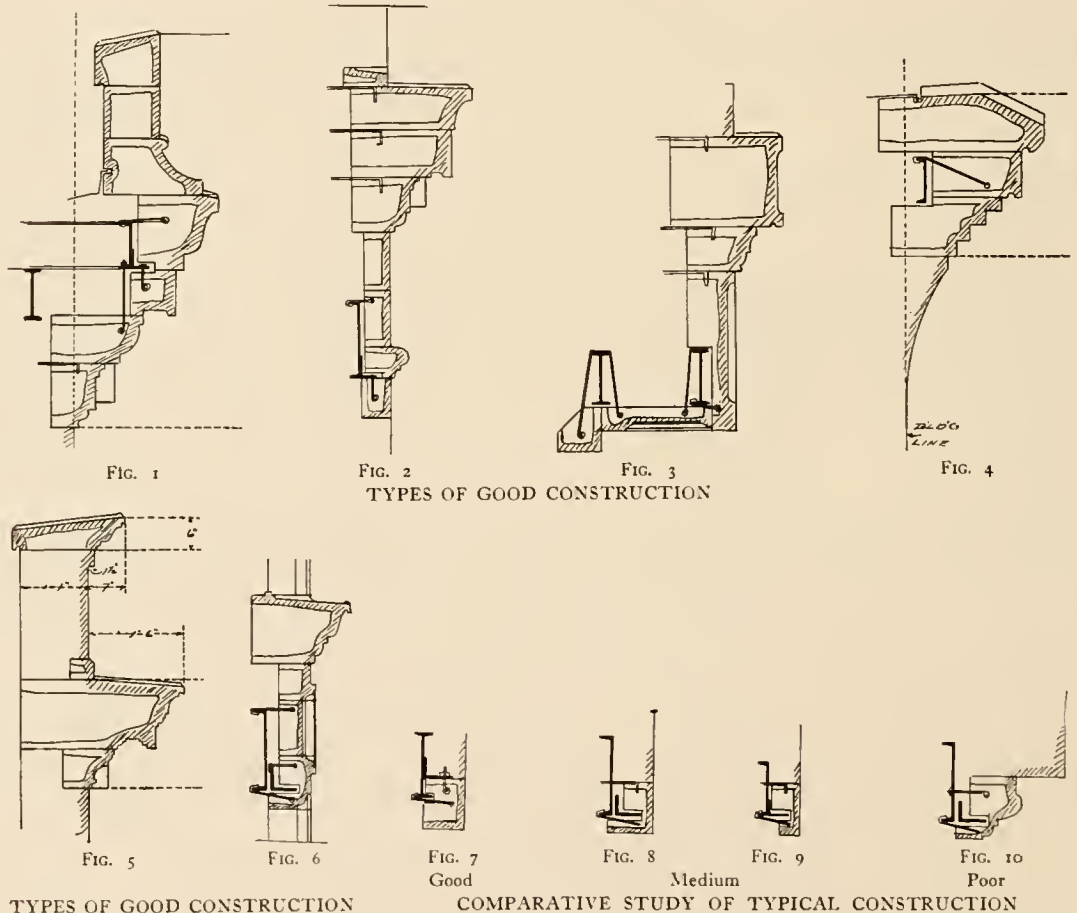
The architectural qualities of Terra Cotta and the readiness with which artistic effects are obtainable by its means are well recognized, as well as its value as a constructional element and particularly its fireproofing qualities. To insure the latter, however, care must be taken to have the greatest possible thickness over steel, so that the steel may be properly protected in case of possible conflagration.

DESIGN.

In designing Terra Cotta, several things must be considered, *i.e.*, Architectural Effect, Cost, Weight, Fireproofing qualities and Construction. The design must be such that the required strength and conjunction with the structural steel can be secured.

PLANS OF TYPICAL CONSTRUCTION.

There are certain typical constructions which are considered good, and these are shown by Figures 1 to 6. We venture to submit a comparative study of typical constructions, good and bad, which we believe will be of suggestive value. See Figs. 7, 8, 9 and 10.



COST.

This depends entirely upon the character and amount of the work; also whether the finish is semi-glazed or enameled. We will gladly make estimates on plans, calling attention of our clients to the fact that ornament adds greatly to the cost and that the cost is decreased if a design repeats or occurs in several places.

THE ATLANTIC TERRA COTTA COMPANY

287 Fourth Avenue
NEW YORK CITY, N. Y.

TELEPHONE, 6991 Gramercy
6992 Gramercy

FACTORY
Tottenville, S. I., N. Y.

AGENCIES

BOSTON, MASS.
PHILADELPHIA, PA.
BALTIMORE, MD.

WASHINGTON, D. C.
PITTSBURG, PA.
MILWAUKEE, WIS.

MINNEAPOLIS, MINN.
CLEVELAND, O.
DETROIT, MICH.

ATLANTA, GA.
SEATTLE, WASH.

PRODUCTS. Manufacturers of architectural terra cotta, making a specialty of semi-glaze, matt surface, sand-blasted glaze, and glazes in all colors.

FACILITIES. The factories of the Atlantic Terra Cotta Company at Tottenville, Staten Island, are the largest and best equipped for producing terra cotta of the finest grade.

TERRITORY. The territory covered by this company extends through all the largest cities of the United States.

EXAMPLES OF REPRESENTATIVE WORK. The following list of buildings demonstrates the ability of the Atlantic Terra Cotta Company to execute the largest contracts:

"Flat-Iron" Building,	New York, N. Y.
Hippodrome,	New York, N. Y.
Bellevue-Stratford Hotel,	Philadelphia, Pa.
Belvedere Hotel,	Baltimore, Md.
Union Station,	Washington, D. C.
Old South Building,	Boston, Mass.
Nixon Theatre,	Pittsburg, Pa.
Nicholas Building,	Toledo, O.

PRICES. Correspondence regarding prices or requests for information relative to the adaptability of material solicited. Preliminary and final estimates made from architects' sketches or finished drawings. No stock carried on hand.

EXCELSIOR TERRA COTTA COMPANY

MANUFACTURERS OF

Architectural Terra Cotta Exclusively

1170 Broadway

NEW YORK CITY, N. Y.

TELEPHONE, 2448-9 MADISON SQUARE

WORKS: ROCKY HILL, N. J.

-
- PRODUCTS.** Manufacturers of ARCHITECTURAL TERRA COTTA EXCLUSIVELY and entirely to order.
- FACILITIES.** Our works, located at Rocky Hill (near Princeton), New Jersey, on the Pennsylvania Railroad and the Delaware & Raritan Canal, are large, well arranged, and very completely equipped, enabling us to handle the most important work expeditiously.
- EXTERIOR WORK.** Every possible use of Terra Cotta, as an architectural building material, can be supplied by us. Its flexibility for decorative, color and surface effects and its proven fireproof qualities are well known.
- INTERIOR WORK.** Terra Cotta, in polychrome effects, is being successfully used in large quantities for lining entrance halls and corridors of large buildings, such as office buildings, hospitals and public institutions, libraries and entire interiors of railroad stations and power houses. The entire interior of churches may be constructed of terra cotta, and permanent decorative effects in ornament and color obtained at a moderate cost.
- RANGE.** We are prepared to manufacture material for either exterior or interior work in any color or shade desired, glazed or unglazed (both lustrous and dull), with the usual standard surfaces or with surface effects especially designed.
- GARDEN WORK.** The demand for terra cotta for garden work in the last few years has been great, and hardly any landscape work, of any pretensions at all, is complete without the use of terra cotta, such as fountains, sun dials, balustrades, large jardinières, etc. When the contract is large enough to warrant, we erect our own work on foundations supplied by owner.
- INFORMATION AND ESTIMATES.** We are always glad to supply architects and builders with information relative to the proper use of terra cotta, and advise as to the best and most economical construction. We are ready to make approximate and exact estimates at any time.

THE NORTHWESTERN TERRA COTTA COMPANY

CHICAGO, ILL.

PRODUCT.

The largest manufacturers of ARCHITECTURAL TERRA COTTA in the World.

ILLUSTRATIONS.

The accompanying illustrations show 3 buildings with Enameled Terra Cotta fronts manufactured and erected by them.



REPUBLIC BUILDING, CHICAGO,
ILL.
Holabird & Roche, Architects



RAILWAY EXCHANGE BUILDING,
CHICAGO, ILL.
D. H. Burnham & Co., Architects



OLIVER BUILDING, PITTSBURG, PA.
D. H. Burnham & Co., Architects

SPECIFICATIONS.

We submit herewith a brief but safe specification, which will be a useful guide to those who have had but little experience in the use of terra cotta:

"Samples of the material shall be submitted to the architect, and all work must correspond to same as to quality, color and finish.

"Painted, patched, oiled, cracked and spawled pieces will be rejected.

"It must have webs or partitions in sufficient number to give it a compressive strength equal to that of the brick work.

"Work must be delivered at the building fitted to exact size, with joints of such thickness as directed by the architect or agreed upon.

"Full setting diagrams, showing corresponding marks on Terra Cotta, must be provided.

"Contractor will submit to architect for his approval or correction, diagrams showing all points involving special construction which may not be clearly shown on architect's drawings, as for instance: Jointing, Bonds, Beds, Anchoring, Engagements with structural iron, Construction of railings and transoms, Arrangements for gutters, downspouts, etc.

"Contractors must verify promptly all general information conveyed by plans and specifications, and see that details are in accordance with the general drawings. Also to avoid delay, see at once that he actually has all the information required, such as:

"Wall line measurements throughout. Size for returns. Size, radii and reveals of openings. Method of engaging staff beads and sub-sills. Gable angles and pitches. Flue plans of chimneys. Reigles for flashing. Brick sizes, joints, etc.

"All ornament to be skillfully modeled and properly undercut, and architect's approval or correction obtained by submitting photographs.

"This contractor will, on request of architect, furnish such copies of shop drawing as may be desired by other contractors, whose work engages Terra Cotta.

"Absolute durability of material must be guaranteed."

R. GUASTAVINO COMPANY

INCORPORATED UNDER THE LAWS OF THE STATE OF MASSACHUSETTS

DESIGNING AND INSTALLING THE SYSTEM OF

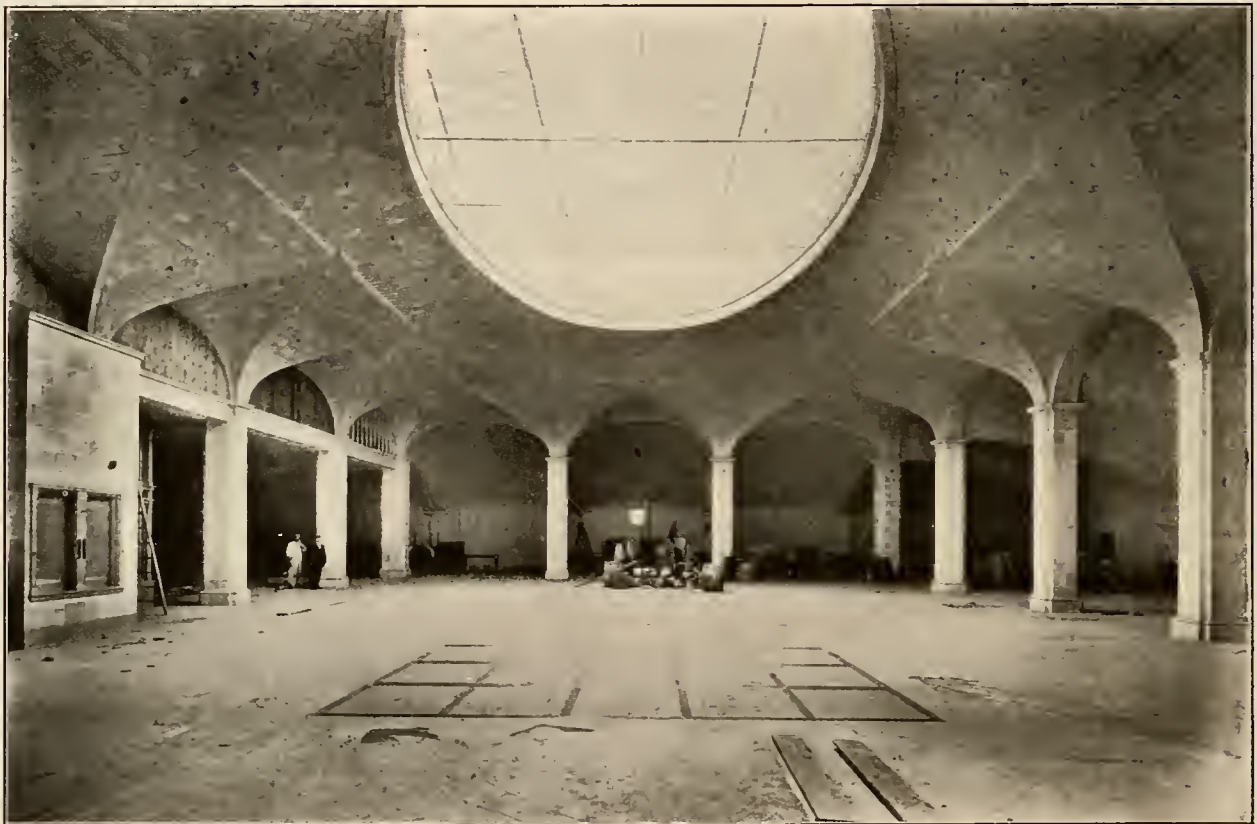
Cohesive Tile Construction

NEW YORK OFFICE
FULLER BUILDING

FACTORY
WOBURN, MASS.

BOSTON OFFICE
OLD SOUTH BUILDING

The business of this Company is that of DESIGNING and INSTALLING THE SYSTEM OF COHESIVE TILE CONSTRUCTION, with which its name has been identified for many years. It is equipped for work in any section, and owns and operates for its sole use, as contractors, a factory for the manufacture of the finer grades of tile required in its exposed or finished work, thus having unexcelled facilities for prompt installation and the making of special pieces in connection with its contracting business.



GLAZED TILE CEILING FORMING ROOF OF TIFFANY BUILDING, FIFTH AVE., NEW YORK CITY
Floor Span 102 ft. by 60 ft. McKim, Mead & White, Architects

Owing to the diverse characteristics of this system, embodying engineering and architectural features, it has been found impracticable to present in a reasonable compass sufficient information or data to serve for specification purposes, as usually each proposition is a problem by itself requiring its own special treatment. The most satisfactory method for its application is to forward the Company, before the plans are fully drawn, a sketch outline of the requirements, in order that suggestive drawings be submitted embodying the principles of construction, with approximate cost of same.

The class of work for which this system is particularly adapted is that of buildings of a monumental type, State Houses, Court Houses, Libraries, etc., in which the vaulted ceiling is notably acceptable, especially when laid in finished repressed tiles of designs as required, either unglazed or glazed, of any color desired.

A large portion of its business is in FIREPROOF STAIRCASE CONSTRUCTION in all its forms when enclosed in masonry shafts, and FLOOR CONSTRUCTION for very heavy loads.

In nearly all cases the small amount of steel required is used in tension only, and thoroughly imbedded in the masonry.



ELLIPTICAL RODUNTA DOME, 130 Ft. by 75 Ft. SPAN, NEW YORK CUSTOM HOUSE
Cass Gilbert, Architect

Some recent important and interesting work :

BUILDING	LOCATION	ARCHITECTS
CASTLEGOULD STABLE	Port Washington, L. I.	AUGUSTUS N. ALLEN
CHRISTIAN SCIENCE CHURCH	Boston, Mass.	CHARLES BRIGHAM
WALTERS ART GALLERY	Baltimore, Md.	DELANO & ALDRICH
SUFFOLK SAVINGS BANK	Boston, Mass.	CASS GILBERT
CATHEDRAL OF ST. JOHN, THE DIVINE	New York City, N. Y.	HEINS & LAFARGE
ST. PAUL'S CHAPEL, COLUMBIA UNIVERSITY	New York City, N. Y.	HOWELLS & STOKES
MCKINLEY MEMORIAL	Canton, Ohio	H. V. B. MAGONIGLE
MADISON SQUARE PRESBYTERIAN CHURCH	New York City, N. Y.	MCKIM, MEAD & WHITE
CARNEGIE TECHNICAL SCHOOLS	Pittsburg, Pa.	PALMER & HORNOSTEL
ERASMUS HALL HIGH SCHOOL	Brooklyn, N. Y.	C. B. J. SNYDER
WORCESTER Co. INSTITUTION FOR SAVINGS	Worcester, Mass.	WINSLOW & BIGELOW
ARMY WAR COLLEGE BUILDING	Washington Barracks, Washington, D. C.	

HENRY MAURER & SON

ESTABLISHED 1856

Fireproof Building Materials Made of Hollow Terra Cotta

420 East 23d Street
NEW YORK CITY, N. Y.

FACTORIES
MAURER, NEW JERSEY

PHILADELPHIA OFFICE
PENNSYLVANIA BLDG.

PRODUCTS.

Manufacturers of FIREPROOF BUILDING MATERIALS made of Hollow Terra Cotta, Porous and Semi-porous. Also manufacturers of all kinds of FIREPROOFING made of CLAY, for ARCHES (end and side construction), PORUS TERRA COTTA BOOK TILES, PARTITIONS, FURRING, GIRDER and COLUMN PROTECTION, FIRE CLAY FLUE LININGS, FIRE BRICK, CLAY and GLASS ROOFING TILES.

Among our many specialties are the "PHOENIX" HOLLOW TILE WALL CONSTRUCTION (patented) and the "HERCULEAN" FLAT ARCH (patented), which are described below.

TERRITORY.

There are no territorial limits to our operations.

ADAPTABILITY.

The products of this firm conform to the Building Law requirements of the leading cities and towns of the United States and Canada, and to the rules and requirements of the National Board of Fire Underwriters and similar bodies.

A most important feature in the use of Terra Cotta in the construction of buildings is that fire insurance is obtained at the very lowest rates.



FIG. 1. "PHOENIX" 4-INCH WALL, SHOWING 12-INCH PIER, AND BAND IRON (Patented)

"PHOENIX"
HOLLOW
TILES FOR
OUTSIDE WALLS.

We offer the "Phoenix" Hollow Tile as a substitute for common red brick in wall construction. (Fig. 1.) It is more economical, more quickly erected, of considerably less weight, and is adapted to any kind of building, especially country houses, barns, automobile garages and all kinds of factory buildings. The blocks (4, 6, 8,

and 12 inches in thickness) are manufactured especially for this purpose, of hard burned terra cotta, either smooth, or ribbed to receive stucco, and having grooves on top to fit courses of band iron. The walls are further strengthened with piers of hollow blocks, 12 inches square, and laid in bonded courses. The pier blocks are made in various shapes to suit requirements. This combination adds enormously to the strengthening of the walls, besides securing great economy in weight, with fully 25% reduction in cost. The use of iron members is avoided and the fire resistance greatly increased. Hollow blocks being non-conductors possess further advantages on this account over common brick and all other material.

**"PHOENIX"
PARTITIONS.**

This same method of construction (Fig. 2), is also applied to inside partitions. By the addition of a light band iron the tensile strength of the partition is enormously increased, so that a two inch partition equals an ordinary wall six inches thick. A partition of 4, 6, or 8 inches with band iron gives proportionate results. The saving in weight is very great.

**"HERCULEAN"
FLAT ARCH.**

This form of Flat Arch (Fig. 3), is especially adapted for large spans, up to 22 feet, eliminating entirely the use of steel beams. The material, semi-porous terra cotta, is the most perfect fire-resistant known. The only metal employed is T iron, thoroughly embedded in Portland Cement, thus preventing corrosion; and as a further protection the metal is covered by not less than two inches of terra cotta. No other method of construction presents a surface so ideally fireproof. Arches constructed on this method have stood the severest tests as to strength and rigidity. An arch measuring 18 feet from wall to wall loaded with 108,000 pounds of hard brick, distributed over a surface of 180 square feet (600 pounds to the square foot), and left from May 21st to June 10th, showed no perceptible deflection. When laid, the ceiling is ready for plastering, and the smooth surface of the under side greatly reduces the cost of the latter.

This form of construction has been approved by the New York and Philadelphia Building Departments, by the Building Departments of many other cities, and by the United States Government Engineers.

The blocks are 12" x 12" and vary in depth from 8 to 12 inches as required; there are grooves in the sides to accommodate the T irons, which are 1½ x 1½ x 3 x 16 inches.

**RED CLAY
ROOFING TILE.**

Our roofing tiles are made of hard burned clay, and may be used on pitched or mansard roofs. Their moderate cost and fireproof quality make them especially advantageous, not only for dwellings, but also for factories, mills, warehouses, depots, etc. Being non-conductors they are admirably adapted for roofing in warm climates. Special designs of top or ridge tiles made to order.

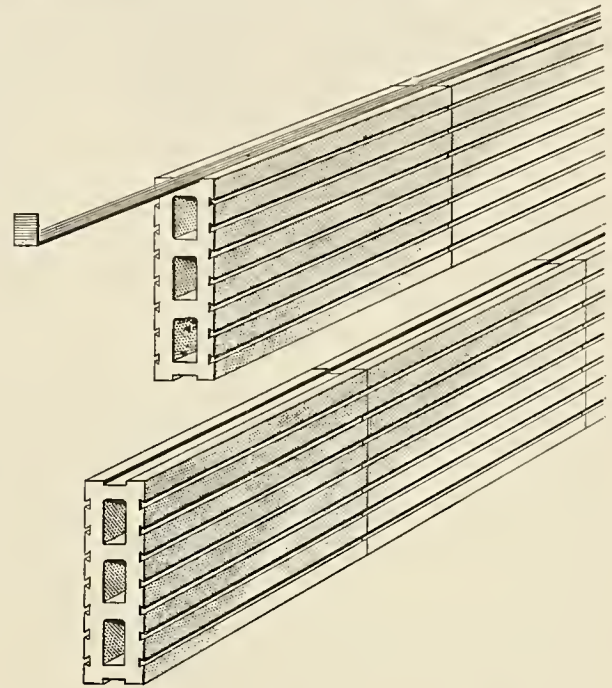


FIG. 2. "PHOENIX" 2-INCH PARTITIONS, WITH AND WITHOUT BAND IRON. (Patented)

Weight, 8 lbs. per square foot. Sizes of Blocks: 12x9x2, 12x8x3, 12x8x4, 12x8x6, and 12x6x8 inches

We would particularly draw attention to the fact that this method of construction was patented by us and has been used for many years with most satisfactory results, and our rights in same will be rigidly enforced.

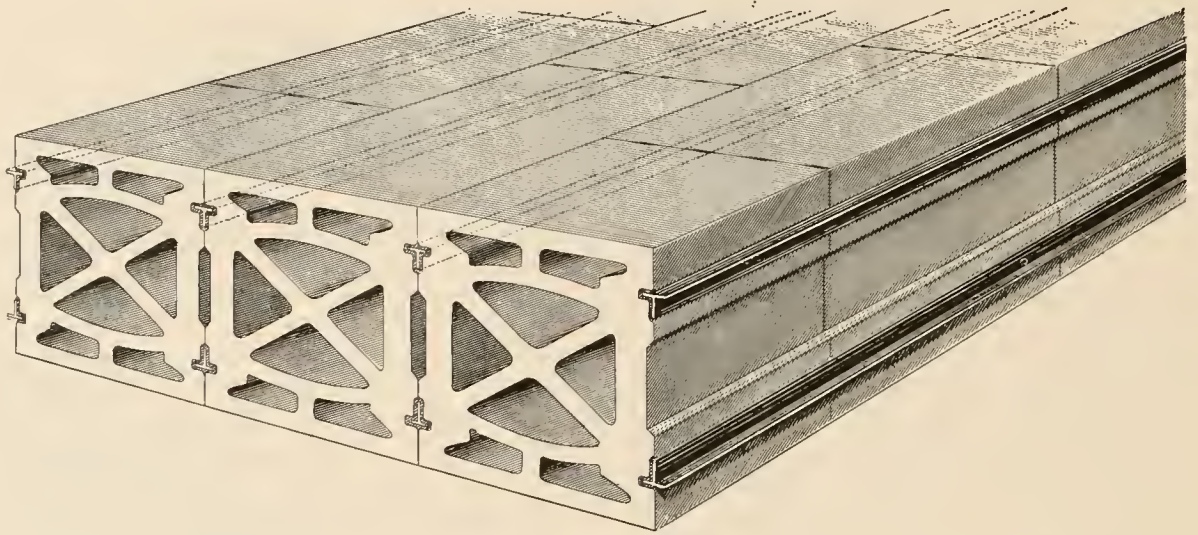


FIG. 3 "HERCULEAN" FLAT ARCH. SECTION SHOWING METHOD OF CONSTRUCTION (Patented)
Weight per square foot including T irons: 8 inches deep, 33 lbs.; 10 inches deep, 42 lbs.; 12 inches deep, 51 lbs.

GLASS ROOFING TILE.

In connection with the RED CLAY ROOFING TILE we make a clear, tough GLASS TILE identical in shape and size so that the two are interchangeable. Their use is most desirable when it is necessary to obtain light through the roof, as they obviate the necessity of skylights with their liability to leakage; also the extra cost of maintenance. These tiles can be used on either iron or wood construction. Size, 8x14 inches to the weather. Requirements, 132 tiles per square (100 feet), weighing per square 924 lbs. The accompanying cut (Fig. 4), shows detail of fastening of the tiles.

ESTIMATES.

Complete catalogues and estimates will be forwarded on application.

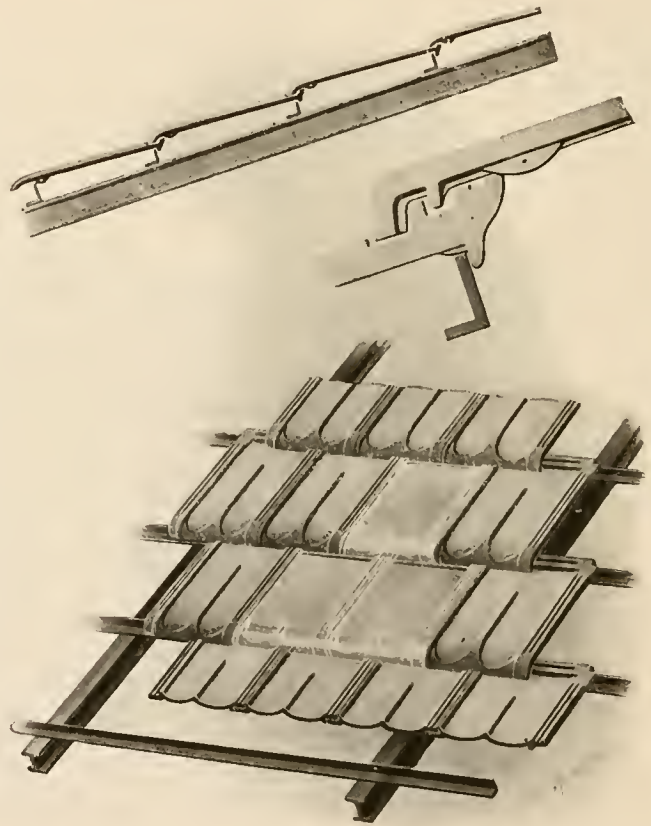


FIG. 4. RED CLAY ROOFING TILES WITH INTERCHANGEABLE
GLASS TILES

O. W. KETCHAM

Main Office, Master Builders' Exchange
PHILADELPHIA, PA.

BALTIMORE OFFICE
BALTIMORE AMERICAN BUILDING
BALTIMORE AND SOUTH STREETS

NEW YORK OFFICE
JOHNSTON BUILDING
1170 BROADWAY

PRODUCTS.

ORNAMENTAL TERRA COTTA, FRONT BRICK, HARD BRICK, HOLLOW BRICK, FIRE BRICK, PAVING BRICK, ENAMEL BRICK, ROOFING TILE, FIRE CLAY, FIREPROOFING, MOULDED BRICK, HOLLOW TILE FLOOR ARCHES, HOLLOW TILE PARTITIONS.

FACILITIES.

We are adequately equipped to *furnish* and *erect* materials in contracts of any size on short notice. It is a part of our plan of operation to keep in stock at all times a large amount of material, so that operations may be started with the utmost expedition, after which, with our large facilities, shipments can be made at a rate to keep pace with any building construction as it progresses.

ADAPTABILITY OF PRODUCTS.

Our products are all of standard size and quality and being of the highest scientific grade and workmanship, our full line of material safely conforms to all the Building Law requirements of the several municipalities, and satisfies all the requirements of the National Board of Fire Underwriters.

SPECIAL WORK.

We are fully prepared to deal with special orders of all kinds, working from detailed drawings. We will cheerfully furnish estimates from drawings and specifications furnished to us by architects, or we will furnish detailed drawings and specifications for the consideration of architects, in addition to any other information that may be requested concerning our Fire Clay, Tile Fireproofing, and all of our other materials.

INSTRUCTIONS AS TO ORDERS.

In general, our full line is sold direct to the contractor or owner and when required we will furnish estimates and make contracts for the erection of our fireproofing.

FACTS REGARDING OUR PRODUCTS.

The materials used in our products are, in all cases, of the highest grade obtainable. Our Face Brick are so made as to permanently retain their natural color and surface and are imperishable.

Unlike the products of many other firms, our fireproofing is made strictly of the very finest grade of FIRE CLAY, thus insuring an absolutely fireproof product, the use of which will effect a considerable saving in insurance alone in a short time, and thus offset any slight increase that there may be in the cost of our material compared with that of other systems.

SAMPLES.

We shall be pleased to furnish samples upon request. All samples leaving our several offices are properly stenciled and lettered. Architects are requested in their correspondence with us to state as fully as possible their requirements, in order that any information we furnish will be exact and to the point.

SPECIFICATIONS.

In making their specifications, architects, builders, and others are requested to use the name "O. W. KETCHAM" in order to insure a high grade of material, stating at the same time in the specifications the shade number or color as marked on our samples.

BUILDINGS IN WHICH OUR PRODUCTS HAVE BEEN USED.

The products of this concern are regularly specified by many of the leading architects of the country, and among the many prominent buildings for which this Company has furnished material, we may mention the following:

BUILDING	LOCATION	ARCHITECT
ST. AGNES HOSPITAL	Philadelphia, Pa.	E. F. DURANG
NEW WANAMAKER STORE	Philadelphia, Pa.	D. H. BURNHAM & Co.
RESIDENCE OF MRS. A. VANRENSELAER	Philadelphia, Pa.	PEABODY & STEARNS, Boston, Mass.
RESIDENCES OF JOS. D. WIDENER AND W. L. ELKINS	Philadelphia, Pa.	HORACE TRUMBauer
BALTIMORE AMERICAN BUILDING		SIMONSON & PRITSCH
PENN. R. R. AND B. & O. TERMINAL STATION	Washington, D. C.	D. H. BURNHAM & Co.
TERMINAL DEPOT	Atlanta, Ga.	MAYIE & WRIGHT
CHALFONT HOTEL	Atlantic City, N. J.	ADDISON HUTTON
UNIVERSITY OF PENN., NEW GYMNASIUM		FRANK MILES DAY

THE BROWN HOISTING MACHINERY COMPANY

Main Office and Works
CLEVELAND, OHIO

BRANCH OFFICES

NEW YORK CITY, N. Y.
26 Cortlandt Street

PITTSBURGH, PA.

LONDON, ENGLAND

AGENTS FOR FERROINCLAVE

W. W. LINDSAY & Co.,
Harrison Building, Philadelphia, Pa.
Agents for Eastern Pennsylvania, Delaware
and Southern New Jersey

CHAS. E. HANIK
Muncie, Ind.
Agent for Indiana

PRODUCTS.

Manufacturers of "FERROINCLAVE" for the construction of FIRE RESISTIVE ROOFS, FLOORS, BINS, etc.



TRADE MARK

"FERRO-INCLAVE."

"Ferroinclave" is a special dovetail shape (Fig. 1), corrugated sheet steel. It is especially adapted for the reinforcement of concrete roofs on factories, power plants, gas works, etc.

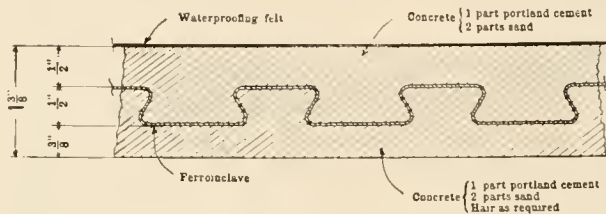


Fig. 2. Section of Ferroinclave Roof as used on Span of 4' 10 1/2" C. to C. of Purlins. For longer Spans increase the thickness of concrete above the Ferroinclave from 3/4" to the following: Span 6'; concrete on top 3/4". Span 7'; concrete on top 1 1/4". Span 8'; concrete on top 1 3/4". Weight per square foot as shown, 16 lbs.



FIG 1. "FERROINCLAVE"

ROOFS.

Roofs are made with "Ferroinclave" by attaching the sheets to the purlins in practically the same manner as ordinary corrugated iron. The upper side is then coated with Portland cement mortar (Fig. 2), and then the same process is repeated on the lower side. Finally a covering of standard waterproofing material is applied—such as tarred felt with pitch and slag for flat roofs, or asphalt or asbestos felt with asphalt cement for steep roofs. Our standard specification and detail pamphlet furnished on application.

ADVANTAGES.

"Ferroinclave" is fire resistive. Its light weight makes it economical by a saving in the cost of trusses and purlins, which support it. No centering is required in its erection. It can be erected very rapidly. It has an exceptionally neat appearance, and as it is almost white on the under side, it will reflect the light to a great extent. Its cost is very moderate.

COST OF COMPLETED ROOF.

The cost of a roof made with "Ferroinclave" depends on the spacing of the purlins. If the purlins are spaced 4 ft. 10 1/2 in., the total net cost will be from 18c. to 20c. per square foot. This estimate does not include the waterproof felt covering, the cost of which is nominal. The maximum spans for roofs or floors is 9 ft. 9 in. The most economical span is 4 ft. 10 1/2 in.

SIZES.

Standard sheets are 10 ft. long by 20 in. wide, No. 24 U. S. Std. gauge. Shorter sheets can be furnished, but not longer.

PRICES.

We will be pleased to quote prices by the 100 square feet; or send drawings of your buildings and we will quote on the amount required for them.

We will ship the sheets in lengths to fit the buildings and furnish erection drawings showing locations. Fastenings are furnished without extra charge.

Where large quantities of "Ferroinclave" are required, we will contract to erect it and will guarantee the construction.

WHERE USED.

Shipments are made in less than a week from receipt of order.

"Ferroinclave" for roofs and floors has been used upon many of the largest manufacturing plants in the United States. Three hundred and fifty thousand square feet are used on our own shops.

NATIONAL FIREPROOFING COMPANY

Pittsburg, New York, Boston, Philadelphia, Baltimore, Chicago,
Canton, Cleveland, Minneapolis and London, Eng.

TELEPHONE, 5196 CORTLANDT

NEW YORK OFFICE, 179 BROADWAY

PRODUCTS—MANUFACTURERS of and CONTRACTORS for DENSE and POROUS TERRA COTTA for FIREPROOFING, for FLOORS, ROOFS, CEILINGS, PARTITIONS, WALL FURRING, COLUMN and GIRDER COVERINGS etc.

ADVANTAGES—1. Terra cotta, a product of fire, is absolutely fireproof. Boards of Fire Underwriters give the lowest rates where it is used.

2. It is much lighter than concrete.
3. Arches of terra cotta strongly brace the steel structure. There is no shrinkage possible, as with composition.
4. The Portland cement setting for terra cotta acts as a rustproofing for the steel work.
5. Terra cotta can be set in winter and dries out in a few days.
6. It is more nearly sound proof than is solid construction.
7. We have 28 factories, each of which is in a center of population, thus insuring cheap transportation and prompt delivery.

CORRESPONDENCE SOLICITED—We would be pleased to send on application a more exhaustive description of our products, giving tables of safe loads for various spans, and further details of materials.

The services of our corps of engineers and estimators are always at the disposal of those who are interested in the design and construction of fireproof buildings, and estimates of the cost of the work will be cheerfully given.

ILLUSTRATIONS—Following are descriptions and illustrations of some of the forms in common use. Only typical sections are given.

FLAT ARCHES—SIDE CONSTRUCTION. This, the oldest method, is now but little used. Its principal advantages are that the blocks are set breaking joints, and the flat sides of the blocks make it easy to form a good mortar joint between them.



Section Through Typical Arch



Perspective of Typical Arch

For weights of arch see below. Weight of cinder concrete fill, about 60 pounds per cubic foot. Weight of maple floor, $3\frac{1}{2}$ pounds per square foot. Weight of sleepers, about equal to weight of cinder concrete. Weight of two coats plastering, 5 pounds per square foot.

Depth of Arch, Inches	Weight, Pounds per Square Foot	Spans Allowable Between 1 Beams	
		Arch Set Flat, Feet and Inches	Set with Slight Camber, Feet and Inches
6	24 to 26	4-0	4-6
7	26 to 28	4-6	5-6
8	27 to 32	5-0	6-0
9	29 to 36	5-6	7-0
10	33 to 38	6-6	7-6
12	37 to 44	7-0	8-6

TABLE OF WEIGHTS AND SPANS

NOTE: The heavier weights are the ones commonly used. The lighter weights can be made if required. See note under table on next page for ordinary and maximum spans

FLAT ARCHES—END CONSTRUCTION. This type of arch is now generally used for all ordinary purposes, being lighter and much stronger than the preceding. We recommend the combination end construction arch with the side construction soffit skew.

To find total dead load of any floor use the following weights: Tile, rock asphalt or cement finish weighs about 140 pounds per cubic foot; wood flooring, 3½ pounds per square foot; wood sleepers, 25 pounds per cubic foot; cinder concrete fill, 60 pounds per cubic foot; T. C. arch, see table below; plastering, 5 pounds per square foot; steel I, divide weight of beam by span in feet.



Perspective of Typical Arch

Depth of Arch, Inches	Weight, Pounds per Square Foot	Spans Allowable Between 1 Beams	
		Arch Set Flat, Feet and Inches	Set with Slight Camber, Feet and Inches
6	20 to 25	4-6	5-0
7	22 to 26	5-0	5-9
8	24 to 30	5-6	6-6
9	26 to 34	6-0	7-0
10	28 to 36	6-6	7-6
12	30 to 40	7-6	9-0
15	37 to 50	9-0	10-0

NOTE: The strength of any arch depends as largely upon the workmanship as upon the material, therefore the maximum spans given can only be used where experienced workmen are employed and the work is guaranteed by a responsible contractor.

SEGMENTAL ARCHES—This form of arch combines great strength with cheapness and lightness. It is suitable for warehouses, lofts, factories, sidewalks or wherever a flat ceiling is not essential. Metal lath and plaster ceiling may be used in combination with it, as in the New York public schools, private houses, stores, etc. The 6 inch arch is used for all ordinary purposes.



Showing Plastering on Arches Showing Use of Metal Lath Ceiling
SECTION OF TYPICAL ARCHES.

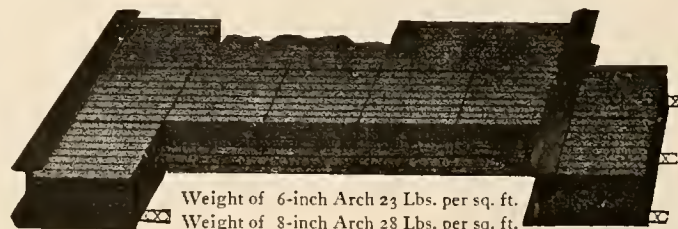
Weight of 6 inch hollow tile arch 27 lbs. per sq. ft.

“NEW YORK” REINFORCED TERRA COTTA ARCH, “BEVIER PATENT.” This arch is light, cheap and strong, and is particularly adapted to wide spans in shallow beams. It is the ideal construction for hotels, residences and hospitals, etc. It is lighter than any other system of terra cotta or concrete construction now in use. The wire truss reinforcement is embedded in Portland cement mortar, the best known rust preventative for steel, and between the blocks, where it is protected from the heat in case of fire. The open-work construction of the wire truss enables the mortar to flow freely all about it, insuring that it is perfectly embedded.

The 6 inch arch for 6 foot span and the 8 inch for 7 foot 6 inch span are approved by the Bureau of Buildings of New York for a live load of 150 lbs. per sq. ft.



Section showing Raised Arch in Deep Beams, giving Paneled Ceiling



Soffit Skew

Plain Skew

PERSPECTIVE OF TYPICAL ARCH



Photo of Beam Block



6-inch Arch



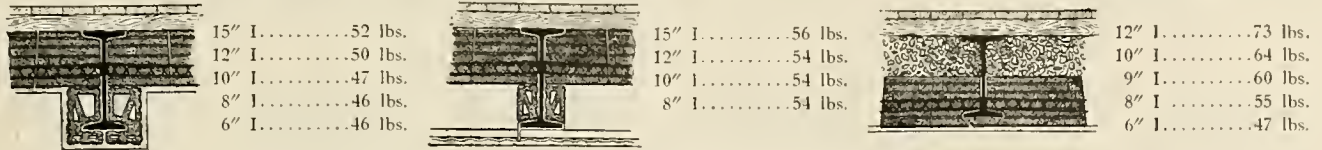
8-inch Arch

Section through Arch Parallel to Beams



Wire Truss Reinforcement

TOTAL WEIGHTS OF TYPICAL FLOORS—Weights of complete floors given below are based on following weights per square foot: 1-inch maple flooring at 3.5 pounds; 2 x 4-inch spruce sleepers, 16-inch centers and 2-inch cinder concrete filling between sleepers at 8.5 pounds; 6-inch arch blocks and mortar joints at 23 pounds; cinder concrete at 60 pounds per cubic foot; metal lath and plaster ceiling at 10 pounds; plaster ceiling on T. C. arch, 5 pounds; dry cinders, 48 pounds per cubic foot. Weight of beam included.



WEIGHTS IN VARIOUS DEPTHS OF BEAMS PER SQ. FT.

All the above weights are based on the use of the 6-inch arch with dry cinder fill to top of beams and cinder concrete between sleepers. If 8-inch is used instead of 6-inch and set 1 inch below the beams using 15, 12, 10, 9, 8 and 7 inch I beams, the total respective weights will be 80, 67, 58, 54, 49, and 44 lbs.

PARTITIONS—Terra cotta blocks form absolutely the best fireproof partitions now known and can be erected at a cost almost as low as the most inferior. They are commonly built of semi-porous material with about 15% of full porous for securing the trim where nailing is required. Where 2" partitions are required, we recommend the use of the New York Reinforced Partition. 3 inch blocks can be used safely to a height of 12 feet, 4 inch to 14 feet, and 6 inch to 20 feet.

STOCK SIZES

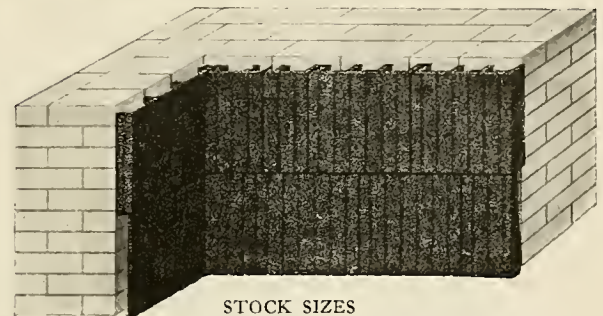
2 Inches	3 Inches	4 Inches	5 Inches	6 Inches
2 x 6 x 12	3 x 6 x 12	4 x 6 x 12	5 x 8 x 12	6 x 8 x 12
2 x 8 x 12	3 x 8 x 12	4 x 8 x 12	5 x 12 x 12	6 x 12 x 12
2 x 12 x 12	3 x 12 x 12	4 x 12 x 12		

WEIGHTS, PER SQUARE FOOT

	2 Inch	3 Inch	4 Inch	5 Inch	6 Inch
Semi-porous.....	12 lbs.	15 lbs.	16 lbs.	18 lbs.	24 lbs.
Porous.....	14 lbs.	17 lbs.	18 lbs.	20 lbs.	26 lbs.



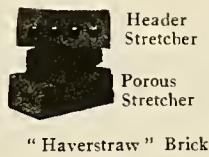
TYPICAL SHAPES OF TERRA COTTA BLOCKS



STOCK SIZES

1 1/2 x 12 x 12 inches, weight per square foot, 9 pounds
 2 x 12 x 12 inches, weight per square foot, 10 pounds

WALL FURRING—Walls are furred to prevent the admission of moisture, either by lining the inside with terra cotta furring blocks, or by building the inside face of the wall with hollow brick, "Haverstraw" size. The former method is the more effective.



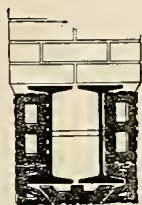
"Haverstraw" Brick

COLUMN COVERING—Steel and cast-iron columns must be covered by at least two inches of porous terra cotta.

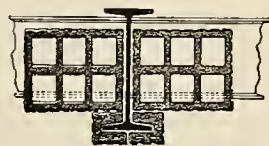


STANDARD SHAPES OF COLUMN COVERING

GIRDER COVERING—The terra cotta girder covering is made in various forms to meet special cases. It is usually self-supporting, except where the space to be covered is wider than 12 inches, when the soffit is supported by metal clips.



Double Beam Girder Supporting Brick Wall



STANDARD SHAPES OF GIRDER COVERING

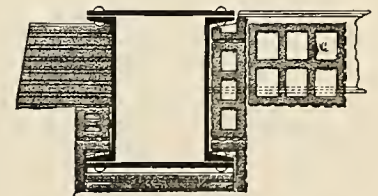
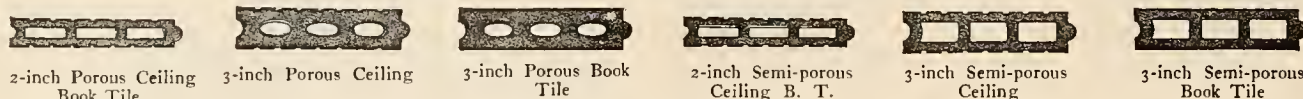


Plate Girder Protection Hung on Metal Clips

ROOF AND CEILING BLOCKS—Roof and ceiling blocks, also called "book tile," are used between T irons to form flat and mansard roofs and hung ceilings. Tile and slate or metal roofing can be nailed directly on the porous blocks. Ceiling blocks have rabbeted ends so that the blocks are flush with bottom of the iron.

SECTIONS OF STANDARD ROOF AND CEILING BLOCKS



STANDARD SIZES AND WEIGHTS

ROOF BLOCKS, INCHES		CEILING BLOCKS, INCHES	
3 x 12 x 18	20 lbs. per square foot	3 x 12 x 16	20 lbs. per square foot
3 x 12 x 20	20 lbs. per square foot	3 x 12 x 18	20 lbs. per square foot
3 x 12 x 24	20 lbs. per square foot	3 x 12 x 20	20 lbs. per square foot
4 x 12 x 24	22 lbs. per square foot	3 x 12 x 24	20 lbs. per square foot
		2 x 12 x 16	12 lbs. per square foot
		2 x 12 x 18	12 lbs. per square foot
		2 x 12 x 20	12 lbs. per square foot

SPECIFICATIONS FOR STANDARD HOLLOW TILE FIREPROOFING

GENERAL	The contractor for this work will be required to furnish all the material and labor of every description required to erect the same in place complete.	CURB WALL	The curb wall in basement shall be furred with three-inch (3-inch) tile extending up to the under side of the iron plate along edge of curb wall and properly fitting around all beams.
DETAILS	When requested to do so the contractor shall furnish large scale details or full-sized drawings for all special shapes, which shall be submitted to the architects for their approval.	ROUGH FRAMES	The contractor for carpenter work will furnish and erect the rough wood frames at all openings in partitions and furring.
SCAFFOLDING, TOOLS, ETC.	Furnish all the tools, machinery, hoisting apparatus and centering, necessary to carry on the work.	COLUMN COVERING	Column covering shall be designed to properly fit the columns. All corners of square columns shall be left (square) (round). Column covering to be wired (once) (twice) in each course in height or secured together with clasps. Blocks must be set to break joints.
TILE	All the tile required for this work shall be of the best quality of hard-burned fire clay, semi-porous, or porous terra cotta. Material to be equal to that manufactured by the National Fireproofing Company	NAILING BLOCKS	Furnish and set where required for nailing trim, thick porous blocks which will receive and hold nails.
MORTAR AND LAYING	All the tile work for the floor construction shall be laid in mortar composed of one (1) part American Portland cement, of approved brand, four (4) parts sharp sand and one (1) part lime mortar, all thoroughly well mixed together. All other tile work is to be laid in mortar composed as follows: One (1) part Louisville, Rosendale, or other natural cement, three (3) parts sharp sand and one part lime mortar. All tile must be laid with full flush joints, plumb to a line. Fill all the joints and crevices between the tile and steel work with mortar well slushed in.	COVERING EXPOSED STEEL WORK	All girders, beams, channels, etc., that show below the under side of ceiling are to be incased on all sides with at least one inch thickness of fireproof tile secured to the steel in the usual manner.
TYPE OF ARCH	The arches for the floors in general shall be $\frac{1}{4}$ inch segment or flat arches (side) (end) construction. Skew-backs must be carefully bedded in place against beams.	BOXES FOR PLUMBING PIPES	All pipes shall be boxed in, using three-inch (3-inch) tile, starting from the floor tile in all cases. This boxing shall not be done until the pipes have been properly tested, and covered by another contractor. Outlet fireproof frames to be furnished by carpenter shall be set by the fireproofing contractor.
BEAM TILE	The soffits of all beams to be protected with slabs of tile at least one inch in thickness.	BULKHEADS	All bulkheads shall be built of 3-inch tile; the structural iron contractor furnishing all necessary tee irons for the support of the tile.
ROOFS	The arches for the main roof are to be $\frac{1}{4}$ inch segment or flat arches same as specified for the floors.	PENT HOUSES	The contractor shall build the walls of pent houses with four-inch (4-inch) hard or glazed tile, laid up in Portland cement mortar, all joints to be thoroughly flushed. Curbs of all skylights shall be built of 4-inch tile.
MINOR ROOFS	The roofs of pent houses, roof over projecting portion in second story, floor of bulkheads, and other portions indicated on details as book tile shall be made of three-inch (3-inch) book tile set in place between tee irons. Tee irons to be furnished by the iron contractor.	FLOOR STRIPS AND CONCRETE FILLING	After the floor arches have been set in place, the contractor for carpenter work will furnish and set the 2-inch by 3-inch wood floor strips required for nailing the finished wood flooring, where wooden flooring is called for. After the strips have been set, the fireproofing contractor must fill in between the same with concrete filling; this concrete is to be composed of one (1) part American Portland cement, of approved brand, and ten (10) parts broken tile, stone, gravel or fine, clean coal cinders, thoroughly mixed together dry, then tempered and mixed, and stamped in place.
PARTITIONS	All partitions must start on steel beams or on fireproof floor arches. Partitions shown on the plans to be built the thickness indicated in figures. If no dimensions are given, the following sizes will govern: Partitions for all corridors and for partitions over 12 feet and up to 14 feet in height, to be 4 inches. Partitions over 14 feet in height to be 5 or 6 inches, and all cross partitions, 12 feet or less, to be 3 inches. Partition walls to be built straight, true, plumb and well-bonded, and to be well-wedged underneath fireproof ceiling.	FINALLY	Do everything necessary to finish the entire work in a thorough and substantial manner. Remove promptly from the premises, all the tools, scaffolding, unused tile, debris, etc., as soon as the work is completed.
FURRING TILE	Where indicated on plans, 2-inch furring tiles to be built against the outside walls of the building. These tiles are to be secured to the brick walls with tenpenny spikes on every second course, driven into the brick work at intervals not greater than 36 inches apart.		

ASSOCIATED EXPANDED METAL COMPANIES

MANUFACTURERS OF

Expanded Metal Lath for General Use in Building Operations

256 Broadway

NEW YORK CITY, N. Y.

ASSOCIATE COMPANIES

EASTERN EXPANDED METAL CO.,

Boston, Mass.

MERRITT & COMPANY,

Philadelphia, Pa.

BUFFALO EXPANDED METAL CO.,

Buffalo, N. Y.

SOUTHERN EXPANDED METAL CO.,

Washington, D. C.

WESTERN EXPANDED METAL AND

FIREPROOFING CO.,

San Francisco, Cal.

EXPANDED METAL ENGINEERING CO.,

New York City, N. Y.

CENTRAL EXPANDED METAL CO.,

Pittsburg, Pa.

NORTH WESTERN EXPANDED METAL CO.,

Chicago, Ill.

EXPANDED METAL FIREPROOFING CO.,

Toronto, Canada.

EXPANDED METAL FIREPROOFING CO.,

Pittsburg, Pa.

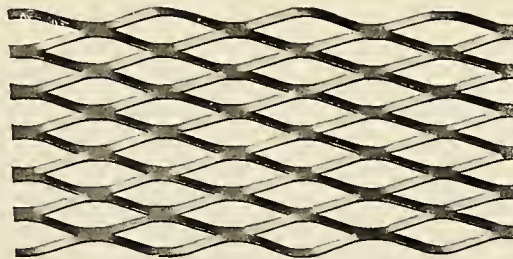
SOUTH WESTERN EXPANDED METAL CO.,

Knoxville, Tenn.

PRODUCTS.

LATHING—We manufacture and sell EXPANDED METAL LATH for every form in which plastering can be done. Metal furring and lathing is now a highly developed specialty in building operations, and Expanded Metal very largely facilitates the requirements of the architect.

By the use of lathing meshes, in the hands of competent workmen, any architectural detail of interior construction can be readily accomplished.



EXPANDED METAL LATH

FOR FLOOR ARCHES—Our material is adaptable for any form or shape of flat or segmental floor arch. It is possible to make any conceivable arch known. The design of the ceiling may be flat, paneled, groined or coved.

FOR FIREPROOFING—In addition to a complete line of metal lathing, covering six different varieties, styles and weights, both "Diamond" and oblong mesh, we manufacture heavier meshes for general use in fireproof floors and roof constructions, as well as for the reinforcement of concrete in the building of every kind of structure known to the engineering world wherein reinforced concrete may be employed.

FACILITIES.

The facilities for the manufacture and delivery of our material are practically unlimited. With five factories established throughout the American continent, we are prepared to make immediate deliveries of all standard stock sizes; a large stock for shipment being carried in the warehouses of all the factories and operating companies, for this purpose. Orders for special sizes will be filled within a reasonable length of time. We, at present, manufacture more than 5,000,000 yards annually, and

we can manufacture more than 30,000,000 square feet of the heavier meshes per year. These latter meshes are made from steel, as light as No. 16, and as heavy as $\frac{1}{4}$ " in thickness, and in meshes from $\frac{1}{2}$ " in the opening to 6" in the opening.

TERRITORY. The entire North American Continent represents the territory covered by our Associated Companies. In addition to this a large export business is handled.

BUILDING LAWS. Our methods of construction and the uses of our materials have been approved by the building laws and municipal regulations of every city in the United States; they also conform to the rules of the National Board of Fire Underwriters. In fact our materials are standard in every respect.

AGENCIES. We are represented in nearly every business center, either by one of our Associate Companies, or by local agents, who either carry stock or are able to obtain our expanded metal lathing at short notice. Our agents will also contract to install our goods. The address of the nearest local agent will be furnished by us on request.

INSTALLATION. Our goods have been on the market for over fifteen years, and builders in general are familiar with them and are capable of installing them in all ordinary work.

General rules for the installation of metal laths are sufficient to cover the requirements of the use of our goods.

Rules for the use of Expanded Metal in concrete, for floors and roofs, are simple. The metal is regarded as a reinforcing member and takes the natural form in supplying the tensile element to a concrete slab. It has a capacity possessed by no other material in lending itself to the purpose intended. By virtue of its peculiar construction, one pound of it occupying one square foot in concrete, it distributes the strain in all directions, in a manner accomplished by no other steel product. Other systems, such as bars, rods and meshes of wire, transmit strains in straight lines only, while Expanded Metal, with its diamond form and solid joints, distributes the strain in all directions, thus making it possible to use less steel per square foot of concrete than in any other form of fireproof floor construction. This material is furnished in sheets of varying lengths up to 12' according to requirements, and in weights from 35-100 lbs. to $1\frac{1}{2}$ lbs. per sq. ft.

ESTIMATES AND INFORMATION. We are prepared to furnish estimates on any class of work needed, and we will be pleased to supply any further details, plans or general specifications to assist architects in properly indicating to general or subcontractors its required use.

PACKING. Our goods are packed in bundles convenient for shipment and handling; orders can be placed for lathings in square yards, and the meshes for reinforcement of concrete, in square feet. Complete information as to size and weights of bundles and sheets will be furnished on request.

SPECIFICATIONS. Architects in making their specifications for work should specify Expanded Metal, as manufactured by any of the Associate Companies mentioned above, in order to insure the use of goods manufactured and sold by the Associated Expanded Metal Companies.

EXPANDED METAL IN REINFORCED CONCRETE CONSTRUCTION. Expanded Metal in the heavier meshes is adaptable for use in Foundations, Piers, Sewers, Bridges, Subways, Reservoirs, Flumes, Tunnels, Conduits, Vaults, Tanks, Cisterns, Septic Tanks, Storage Bins, Dry Kilns, Coal Bunkers, Dry Docks, Fortifications, Retaining Walls, Power Plants, Warehouses, Naval Storehouses, Factories, Sidewalks, Deck Houses, Floors, Roofs, Domes, etc.

EXAMPLES OF
FLOOR
CONSTRUCTION.

We reproduce herewith illustrations of a few of the styles of our construction that are most generally used.



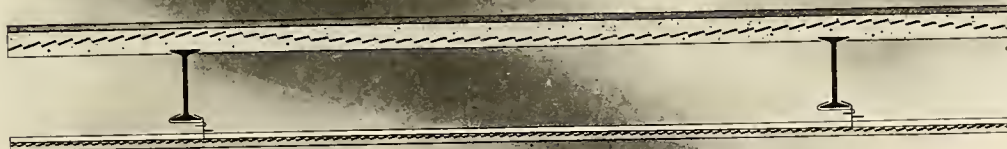
SYSTEM NO. 3 A

A popular type where paneled ceilings are desired. The illustration shows the use of screeds, the single wood flooring space between the screeds being filled with cinder concrete



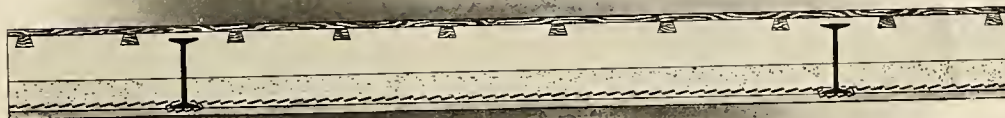
SYSTEM NO. 3 B

Showing an underfloor nailed to the concrete, and the finished floor nailed directly to the former; also a level ceiling of iron furring, metal lath and plaster



SYSTEM NO. 4 A

With cement-finished floor, and space for piping and wiring above the ceiling



SYSTEM NO. 8 A

With screeds embedded in concrete, and a single floor nailed to same

THE CLINTON WIRE CLOTH CO.

FIREPROOFING DEPARTMENT

FACTORY

ALBERT OLIVER

CLINTON, MASS.

150 NASSAU STREET

NEW YORK CITY, N. Y.

OFFICES

BOSTON, MASS.

CHICAGO, ILL.

BALTIMORE, MD.

SAN FRANCISCO, CAL.

NEW YORK CITY, N. Y.

PRODUCTS—The Clinton Wire Cloth Company are manufacturers of the CLINTON ELECTRICALLY WELDED FABRICS.

FACILITIES—The factory of this Company is one of the largest in the country, and is in a position to accept orders for any amount and will make prompt deliveries.

TERRITORY—The operations of the Company cover the entire United States and Canada.

ADAPTABILITY—Clinton Welded Fabric, made from 6 to 10 gauge drawn steel wire, galvanized, can be laid in lengths up to 300 feet, thereby forming a continuous bond for that distance. Heavier gauge wire will be laid in lengths up to 60 feet, and where connected will be locked or hooked to the next sheet, if the building requires more than one sheet in length.

The desirability of this method as contrasted with a system where lapped ends of steel fabric are necessary every few feet is readily appreciated. For this reason, no entire collapse of any arch erected with CLINTON ELECTRICALLY WELDED FABRIC can occur unless the weight imposed on the arch is sufficient to strain and break all the wires.



FIG. 3. A PIECE OF ELECTRICALLY WELDED FABRIC

So cut as to expose the weld between the longitudinal and the transverse wires. It is not possible to detect the point of junction between the two wires; in other words, there is a perfect weld.



FIG. 1. ELECTRICALLY WELDED FABRIC.

Subjected to twisting tests may be distorted, as shown above, without in any way impairing the solidity of the weld.

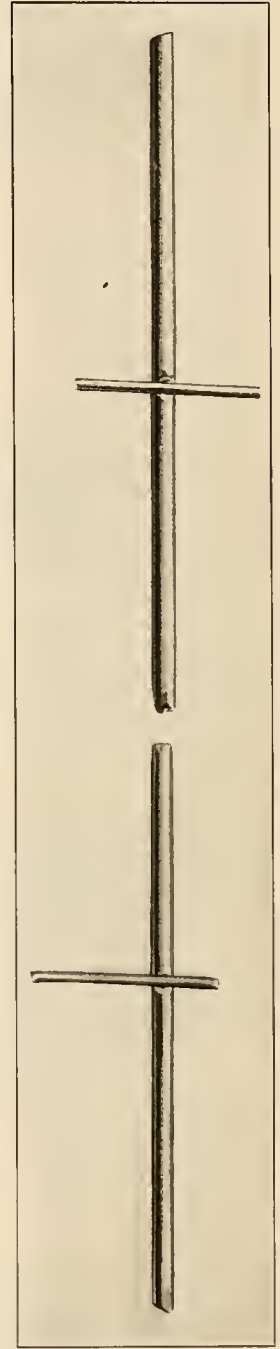


FIG. 2. ELECTRICALLY WELDED FABRIC

Subjected to tension until broken at a point other than the weld. This proves that the strength of the fabric at the weld is actually greater than the wire itself.

For roofs of great length this feature is ideal, as no better roof can be erected than by using the concrete slab knit together for great lengths with a steel fabric. We especially invite the attention of engineers to the ease and accuracy with which the heavier grades of the CLINTON WELDED FABRIC can be used in the erection of wide span arches from 10' to 15', also for floors of bridges, construction of culverts, tunnels, shafts, sewers, retaining walls footings, coal and ash pockets, etc.

GALVANIZING—All material is thoroughly galvanized. This is of especial interest to the export trade, as materials are frequently exposed to all sorts of climatic conditions. The Clinton material may be left in the open for six months without displaying any indication of corrosion. This cannot be said of any expanded mesh now in the market.

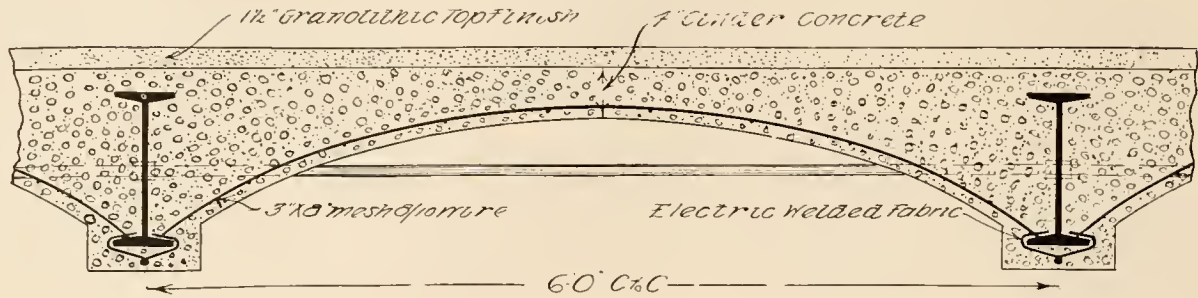
The ease with which the Welded Wire can be handled results in a saving of fully three-quarters in the price of labor as contrasted with the handling of any of the other materials offered by our competitors at this time. Architects and engineers, who carefully consider tensile strength, quality of steel, galvanizing as protection against corrosion, economy in handling, and the general adaptability of this material to first-class construction, will not fail to give the CLINTON FIREPROOFING SYSTEM a place in their Specifications.

WIRE LATH—A serious objection, where expensive decorations are used in fireproof buildings, arises from the discoloring of walls and ceilings where the block construction is used. This never occurs where plastering is done on wire lath for ceilings and hollow or solid partitions and wall furrings.

TESTS—In tests made for the New York Bureau of Buildings, the records show that mesh material lapped in the concrete inside the beam or bearing points, when carrying a distributed load of 150 pounds to the square foot, and while being subjected to a fire test temperature in the neighborhood of 1,700 degrees Fahr., deflected so seriously that the Engineer for the Bureau of Buildings ordered the discontinuance of the test. Compare this result with the test held for the New York Bureau of Buildings by the Clinton Wire Cloth Company, in which the concrete arch, 15 feet center to center of I beams, tested in an exactly similar manner to that above referred to, was pronounced the most successful test ever held in New York City. We emphasize this point because the strength shown in tests of our material is the result of the continuous bond established throughout the entire length of any slab in which the Clinton Electrically Welded Fabric is used.

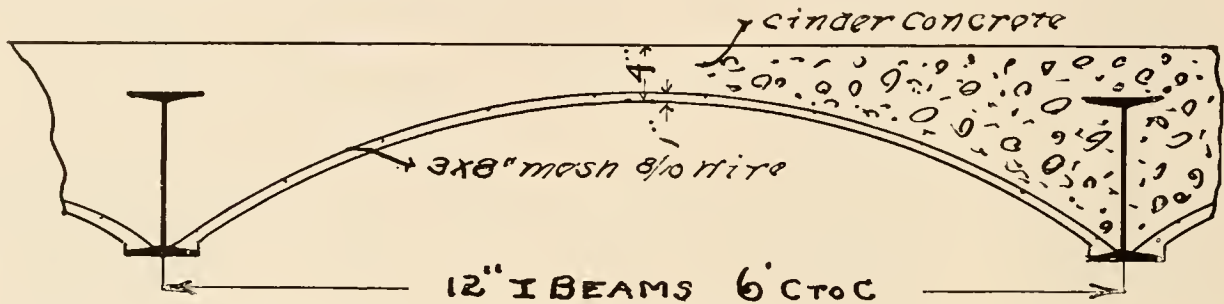
INTERSECTION OF WELDED WIRES—As regards the argument advanced by some of our competitors that the fabric is weak at the weld, we direct the attention of engineers and architects to Fig. 3, showing an intersection of welded wires. It is impossible to detect the point of welding even by a microscopic examination of the point of intersection, where the same has been exposed and burnished. Attention is also called to Figs. 1 and 2 of breaking tests of wire. In thousands of breaking tests the results have been as shown. The wire has broken at points other than the intersections in all cases. This will effectually dispose of one of the arguments used against welded wire. An eminent engineer, in control of one of the largest operations in the United States, decided to use welded wire in preference to any other material on account of the excellence and strength of the weld. He had demonstrated theoretically that at each transverse or bonding wire there was in effect an arching of the concrete from wire to wire. The position he took has been justified, because tests have demonstrated that the fixed point at the intersection has the effect of distributing the load along the lines of the transverse wires and at the same time increasing the strength of the tension wires on account of the immovability of the welded intersecting wires.

ILLUSTRATIONS OF TYPES OF OUR CONSTRUCTION



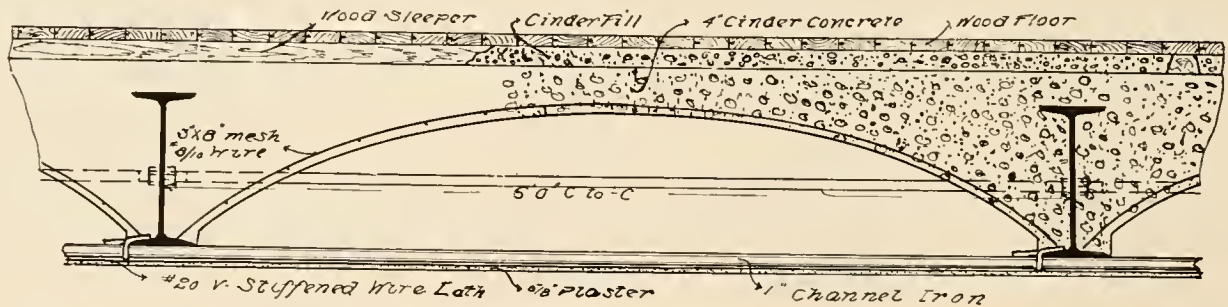
SYSTEM A, TYPE I

Segmental arch designed for spans from 4 to 8 feet and for use in power houses, warehouses, breweries, press floors in printing houses, etc. This arch is constructed of either stone or cinder concrete, the welded fabric being laid over wood centres about 1" from under side of arch and ends placed on tops of lower flange of I beams. Live load, 600 lbs. per sq. ft.



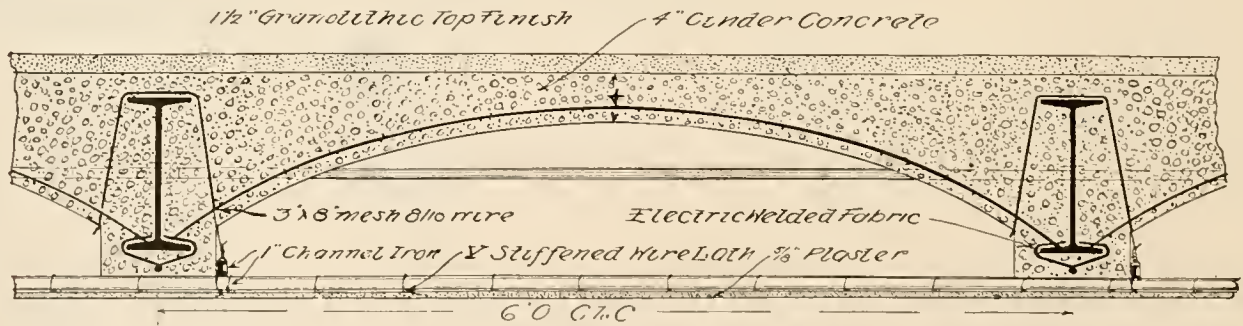
SYSTEM A, TYPE II

Authorized for use by the Bureau of Buildings, New York City, for load of 350 lbs. per square foot. Factor of Safety of Ten.



SYSTEM A, TYPE III

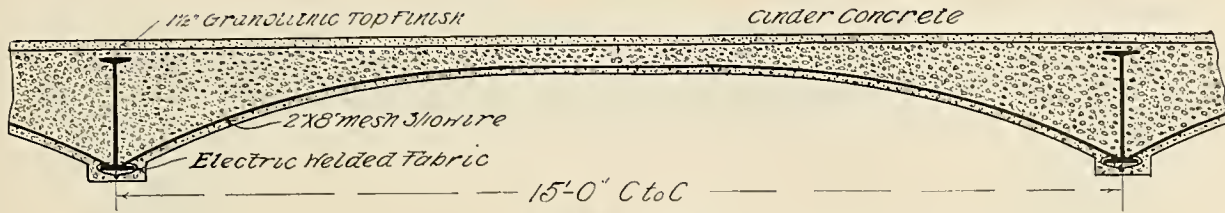
The ceilings of any building where this system is used will always be dry and free from discoloring. The space over ceiling is found to be of very great service as a pipe space, and also has the effect of entirely deadening sound. Add to the above the fact that in case of fire the heat must burn through the ceiling (in itself a good fireproofing) before it can attack the arch, and the value of this construction is very much enhanced.



SYSTEM A, TYPE III

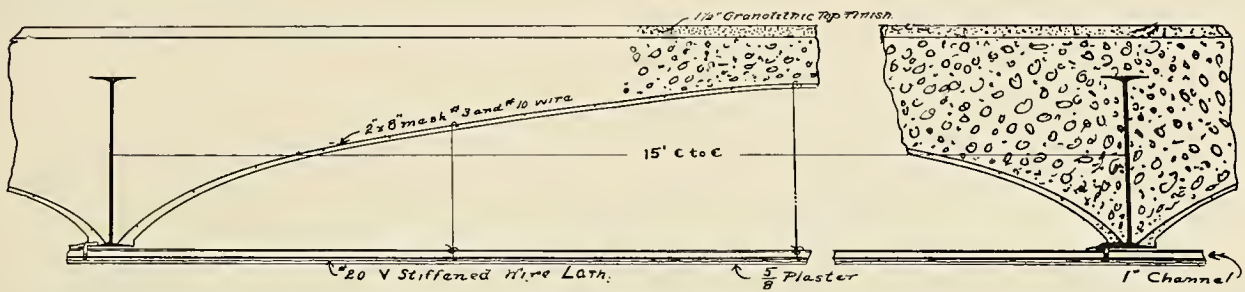
Showing granolithic top finish and method of fireproofing soffits of beams and suspending ceiling.

ILLUSTRATIONS—Continued



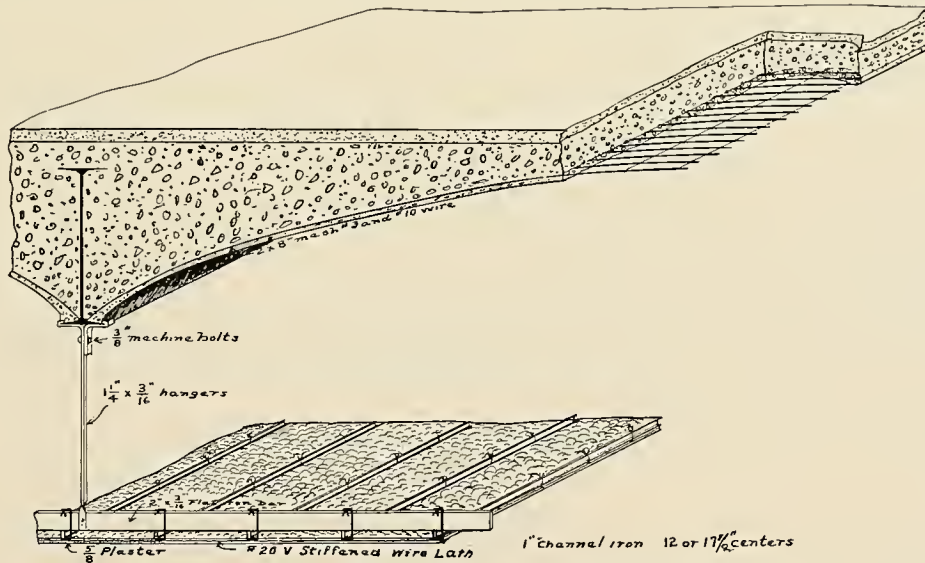
SYSTEM B, TYPE I

System of construction for store, office, school, hotel, courthouse and public buildings. This type constructed along much the same lines as arch System A. The greater distance between beams results in a large saving in tonnage of steel and framing, with a consequent saving in time required for completion of building. For loads up to 300 lbs. per square foot. Factor of Safety of Ten.



SYSTEM B, TYPE II

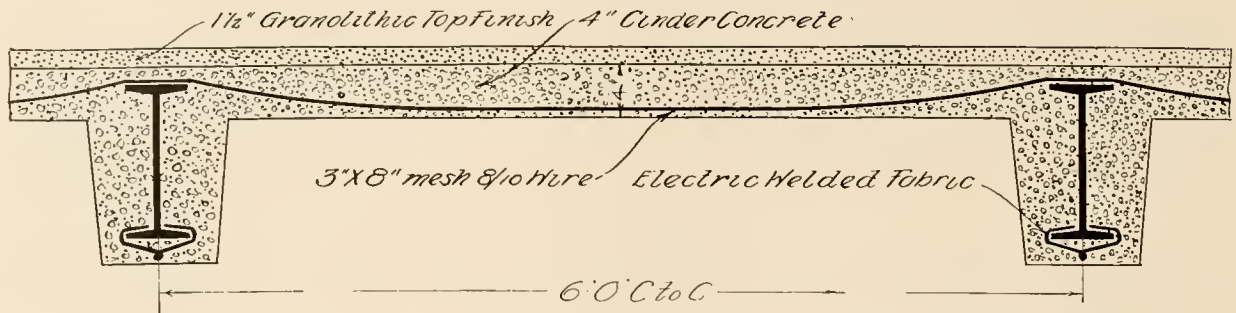
Showing ceiling erected, clipped to I beams and supported at intervals, with galvanized wires hung from arch. When ceilings are referred to, it is generally intended that same shall be made up of 3/4" to 1" channel iron, spaced from 12" to 18" on centres, to which is laced Clinton "V" Stiffened Lath, of the gauge specified by architects, tie wire to be No. 18 Galvanized Annealed Wire and ties to be made over every "V."



SYSTEM B, TYPE II

Same in general outline as other cut of Type II and showing method for suspending ceiling for the accommodation of pipes, wires, etc., and for architectural effect.

ILLUSTRATIONS—Continued



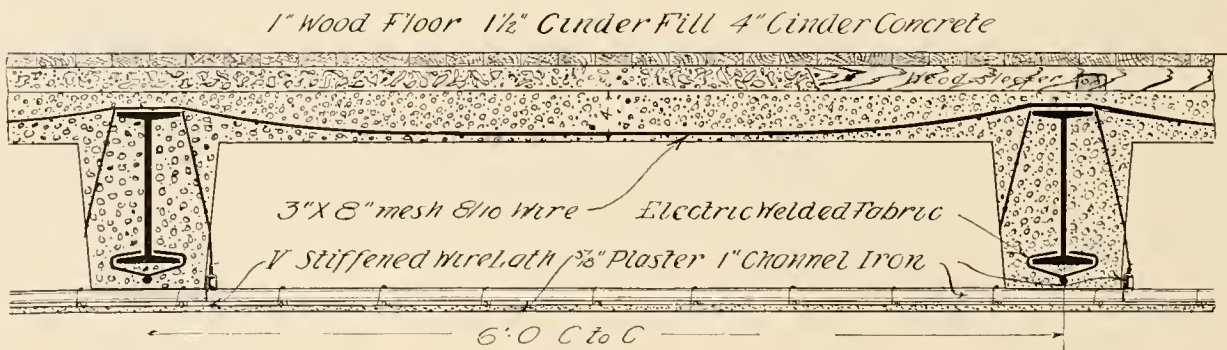
SYSTEM C, TYPE I

Designed for use in factories, refrigerating plants, warehouses and storage buildings, hospitals, schools and public buildings.

Where ceilings are paneled this construction forms a pleasing symmetrical effect. One light coat of plastering floated to an even surface or with a coat of finishing plaster, is all that is required to give the under surface a perfect finish.

Where used in hospital or school buildings this system is ideal, as all corners and angles can be rounded and coved, thus presenting a construction which can be kept absolutely clean, and every part of which can be reached. This feature is being made much of by architects for many large hospitals and school buildings, and as the old buildings are found faulty and inadequate, architects must find means to make their buildings more sanitary, light and attractive. It is safe to say, in no way can more be accomplished toward attaining this end than by the use of a monolithic construction of reinforced concrete, with granolithic finish, and all angles, coves, soffits, etc., rounded.

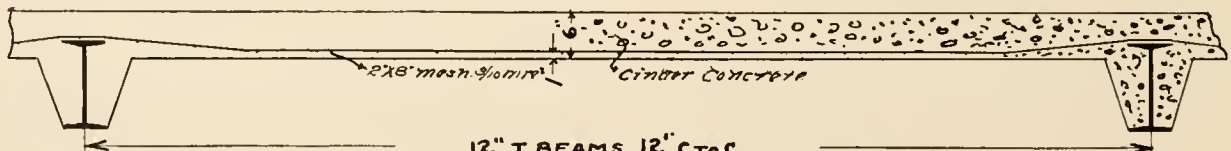
- Weight per square foot of slab.....27 lbs.
- Weight per square foot of top finish.....16 lbs.



SYSTEM C, TYPE II

For hotels, office buildings, schools, hospitals, depots, banks, etc. Concrete arch reinforcing same in general outline as Type I, sleepers filled between with concrete fill and wood floor used instead of granolithic finish. Flat ceiling suspended from fabric imbedded in the concrete and lathed as described under heading of lathing.

- Weight per square foot of slab.....27 lbs.
- Weight per square foot of sleepers and fill.....11 lbs.
- Weight per square foot of flooring.....4 lbs.
- Weight per square foot of under flooring, if used.....2 lbs.



12" I BEAMS 12' C to C
Weight per square foot of slab, 37 lbs.

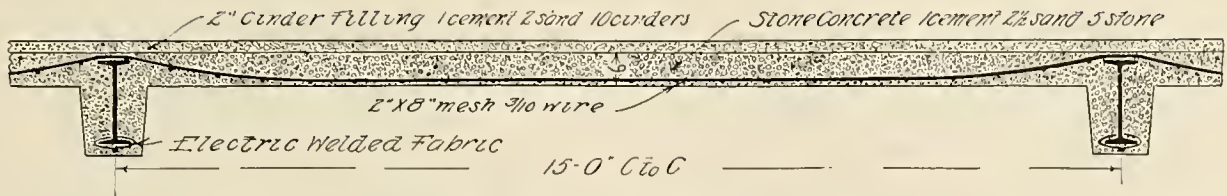
SYSTEM C, TYPE III

Twelve foot span cinder concrete arch for apartment hotels, office buildings, residences, etc. This construction differs in no wise from Types I and II, except in the reinforcing wires, which in this case are No. 3 instead of No. 8. Ceiling can be erected making flat finish if preferred to paneled finish. This type is easily erected, is strong and safe, and its use admits of light steel framing.

Twelve-foot span authorized for use by the Bureau of Buildings, Borough of the Bronx, for loads of 60 lbs. per square foot.

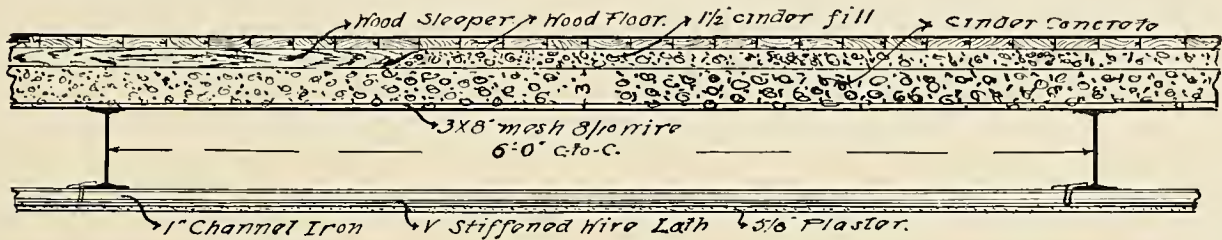
Factor of Safety of Ten.

ILLUSTRATIONS—Continued



SYSTEM C, TYPE IV

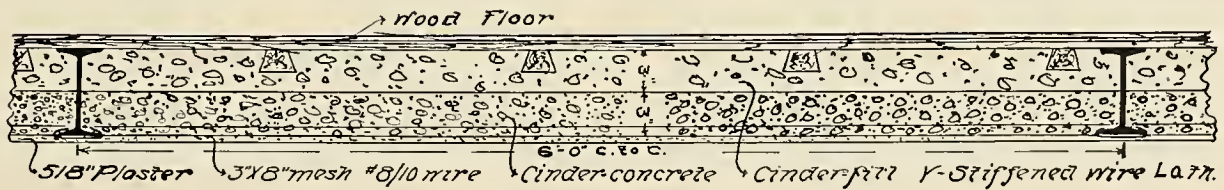
Stone concrete arch for wide spans and for use in hotel, office, theatre, bank, depot, school and public buildings. The steel reinforcing of this type is No. 3-10 wire, 2 x 8 mesh, the idea being to place a wire every 2", the tensile strength of which is 3,000 lbs. The tests made for the Bureau of Buildings of the several boroughs of Greater New York demonstrated the great value of this reinforcing and secured its approval by the Commissioners of Buildings for spans up to 15' and loads of 150 lbs. When it is estimated that the factor of safety demanded is a factor of 10, the splendid qualities possessed by this arch are readily apparent. Weight per square foot of slab, 41 lbs.



SYSTEM D, TYPE I

Construction adapted for use in apartment houses, residences, office and bank buildings, forming a continuous slab, placed over tops of beams and having ceiling clipped by usual method to lower flanges of beams. Cinder fill used to imbed wood sleepers.

Weight per square foot of slab.....	20 lbs.
Weight per square foot of fill.....	11 lbs.
Weight per square foot of floor.....	4 lbs.



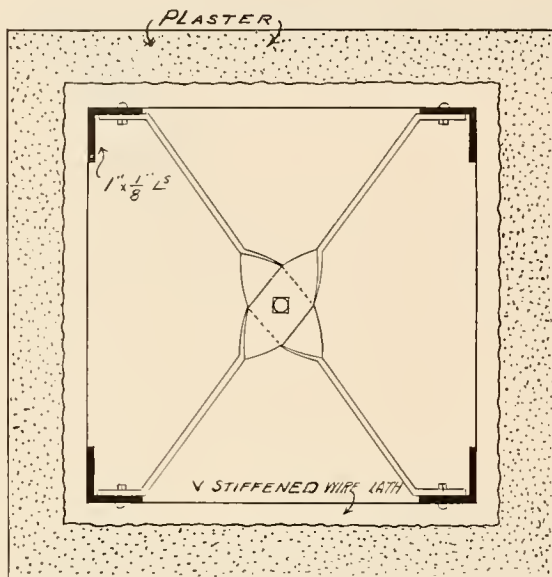
SYSTEM E, TYPE I

For use in residences, tenements and general light construction. In this construction the steel framing is necessarily light, and the floor system, forming both the ceiling and the floor slab, makes the system one of the best that can be installed at a minimum of cost. This system can be erected to occupy for wood or granolithic floor, cinder fill fireproof slab and plastering, a space of 7 1/2". In the many buildings where a similar system has been used it has given entire satisfaction.

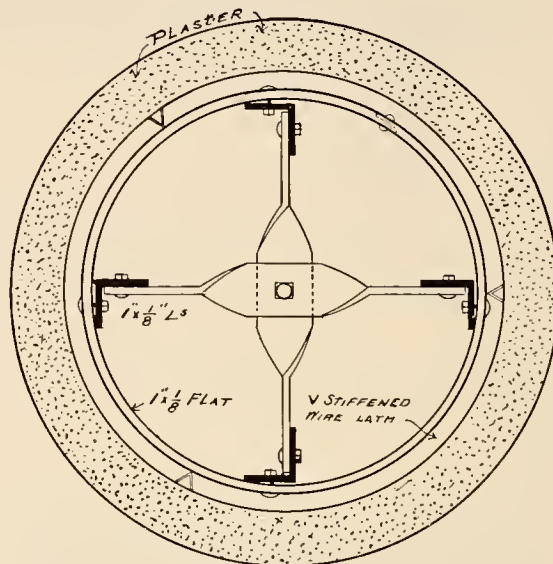
Recommended for loads of 60 lbs. per square foot. Factor of Safety of Ten.

Weight per square foot of slab.....	20 lbs.
Weight per square foot of fill.....	13 lbs.
Weight per square foot of floor.....	4 lbs.

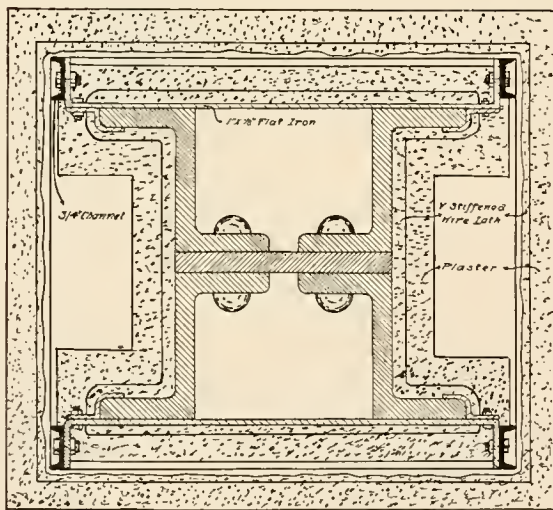
ILLUSTRATIONS—Continued



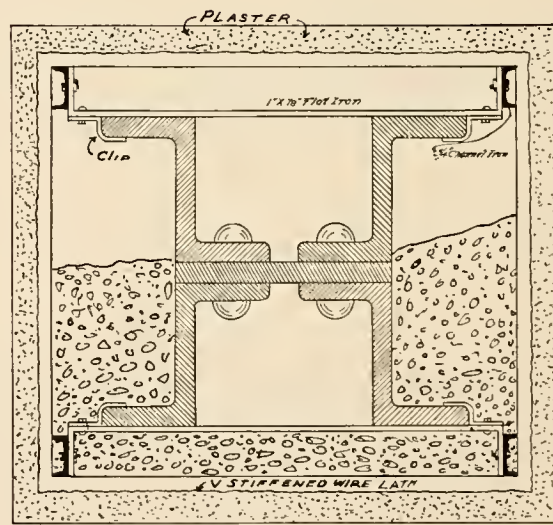
FALSE COLUMN



FALSE COLUMN



FIREPROOF COLUMN



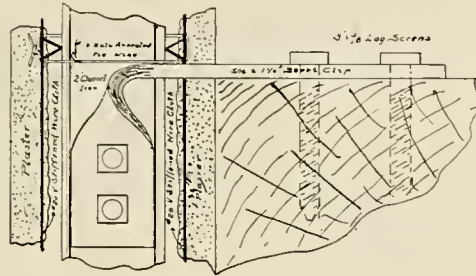
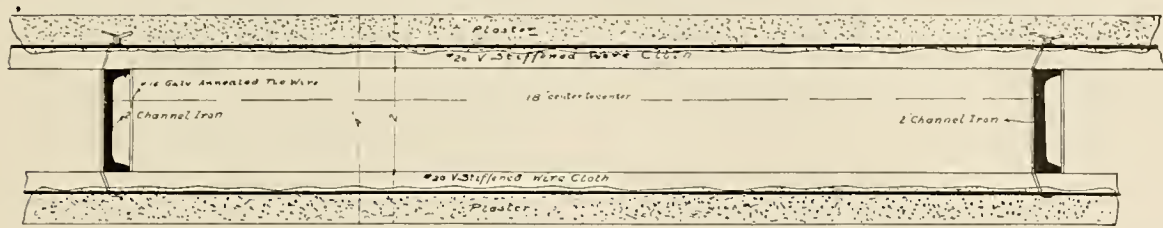
FIREPROOF COLUMN

The cuts of False Columns show method of erecting columns used for architectural effect.

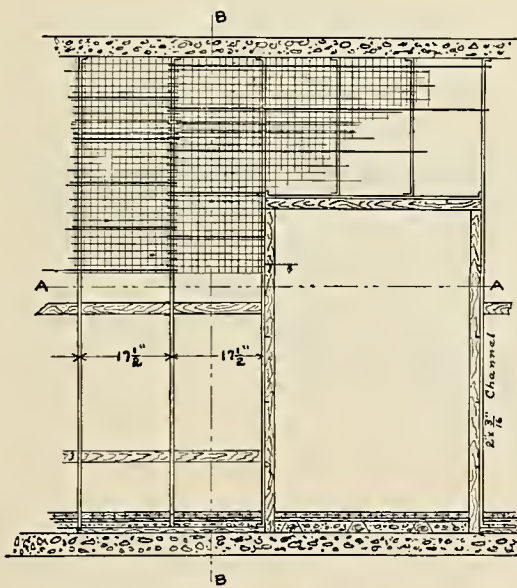
The above cuts are illustrations of our method of incasing columns with lath and plaster, and with concrete, by fitting our lath to the column putting in place the furring brackets to carry lath for finish of columns, and plastering directly against the column with at least 1" of mortar, being careful to close every part and leaving columns perfectly incased. No safer method can be followed than this one. The lath is then put on the exterior furring and the column plastered into its finished shape. This makes a light, durable and rust-proof column.

The cuts of fireproofed columns show two methods, one by the use of furring lath and plaster, and the other by the use of furring lathing and concrete. Both methods are good and result in actually increasing the steel work.

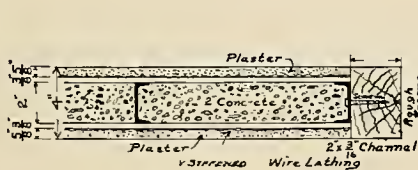
ILLUSTRATIONS—Continued



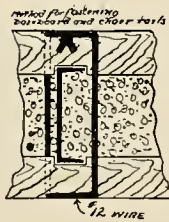
METHOD USED IN CONSTRUCTING HOLLOW EXTERIOR WALL



HOLLOW AND SOLID PARTITIONS AND WALLS—
 The lightest, strongest and most thoroughly fireproof partition for use in residences, hotels, schools, office buildings, hospitals, and, in fact, all classes of structures, is the light channel or angle iron and lath and plaster 2" partition specified by us. This is the most sanitary partition erected, being absolutely close and compact. When used in hospitals where base, door and window trim is run in cement or plaster, with angles and corners rounded, it forms the ideal partition. For kitchens, laundries and toilet rooms it is the best, and for the small extra outlay required in the erection of a residence or other form of structure, where wood construction is used, this feature will commend itself to the careful architect and builder. The 4" partition, either hollow, or filled solid with concrete, is strong, durable and fireproof.



4" SOLID FILLED PARTITION



METHOD FOR FASTENING BASEBOARD AND CHAIR RAILS



2" SOLID PARTITION

COLUMBIAN FIREPROOFING COMPANY

ENGINEERS AND CONTRACTORS FOR THE

Columbian Concrete and Hollow Tile Fireproof Construction

GENERAL OFFICE, 26 W. 26TH STREET, NEW YORK CITY

BOSTON, MASS., 833 Old South Bldg.
 WASHINGTON, D. C., Savings Bank Bldg.
 NEW YORK CITY, N. Y., 26 W. 26th St.
 SAN FRANCISCO, CAL., Rialto Bldg.

LONDON, ENGLAND, 37 King William St.,
 PITTSBURG, PA., Times Bldg.
 CHICAGO, ILL., 324 Dearborn St.
 BALTIMORE, MD., 237 Equitable Bldg.

PRODUCTS.

Engineers and contractors for the COLUMBIAN CONCRETE and HOLLOW TILE FIRE-PROOF CONSTRUCTION, and REINFORCED CONCRETE STRUCTURAL WORK.

COLUMBIAN SYSTEMS OF FIREPROOF CONSTRUCTION

SYSTEM	CONNECTION BETWEEN BARS AND BEAMS	RELATION OF SLAB AND BEAM
Short Span System A.....	Stirrups	Top flush with top of beam.
Short Span System B.....	Over top flange.....	Bottom $\frac{3}{4}$ inch below top of beam.
Short Span System C.....	Over bottom flange.....	Bottom 1 inch below bottom of beam.
Short Span System D.....	Over concrete beam.....	Top flush with top or bottom of beam.
Long Span System A.....	Stirrups	Top flush with top of beam.
Long Span System B.....	Angles and bolts.....	Top flush with top of beam.
Long Span System C.....	Over top flange.....	Bottom $\frac{3}{4}$ inch below top of beam.
Long Span System D.....	Over concrete beam.....	Top flush with top or bottom of beam.

CONCRETE CONSTRUCTION.

The above systems consist of ribbed steel bars of various sizes and weights, attached to the supporting beams by angle or stirrup connections, as shown in Figs. 1 and 2, or by resting on either flange. The bars are bedded in and entirely surrounded by cinder, slag or stone concrete, of a thickness and mixture dependent upon the span, loading and specifications. All beams, girders and columns are cased in solid concrete.

REINFORCED CONCRETE CONSTRUCTION.

The use of armored or reinforced concrete for beams, columns and girders in addition to the floor constructions here shown, is becoming more and more prevalent. The varied specifications covering this work prevent a comprehensive cataloguing of same. We are prepared to submit designs, estimates and details of this class of construction for every purpose, and solicit correspondence in connection therewith.

HOLLOW TILE CONSTRUCTION.

The company also manufactures and is prepared to bid on all shapes and sizes of hollow tile fireproofing. Our material is thoroughly burned plastic fire clay, true and first class in every particular. We carry at all times a comprehensive stock list, and can fill orders promptly from same for any size of standard shapes. Special shapes will be furnished to order.

ADVANTAGES OF THE COLUMBIAN SYSTEM.

Strength.—The ribbed bar does not of itself furnish all the strength for the floor, but furnishes it in combination with the homogeneous cast of concrete that surrounds and embeds it. It is the union of two elements of strength—steel and concrete. The concrete adheres to the ribs, and by locking itself between them, supports the ribbed bar, holds it in position and prevents its deflection.

Fireproof Qualities.—There is no fire that can disintegrate good concrete. If the concrete slab forming our fireproof floor were heated to the highest temperature possible during a fire, it would still retain its hardness and perform its function of supporting and strengthening the ribbed bar by adhering to and locking itself between them. Should the ribbed bar become heated even to the plastic point, it would still be absolutely impossible for it to change position, being held firmly in combination with the uninjured concrete.

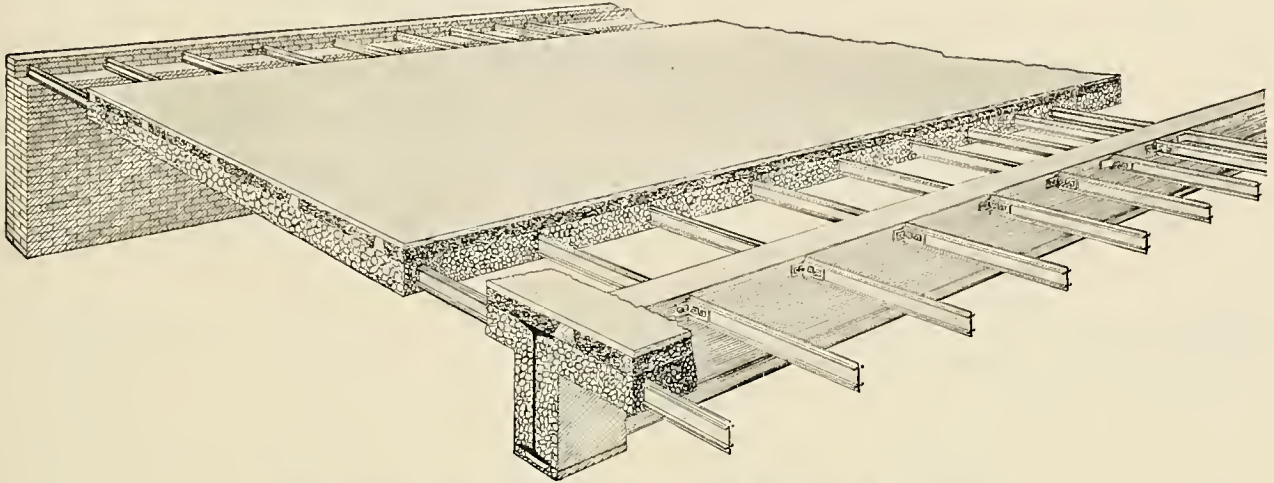


Fig. 1. VIEW OF FLOOR WITH HEAVY BARS FRAMED TO GIRDERS

This plan of connecting bars adapted to long spans and large bars

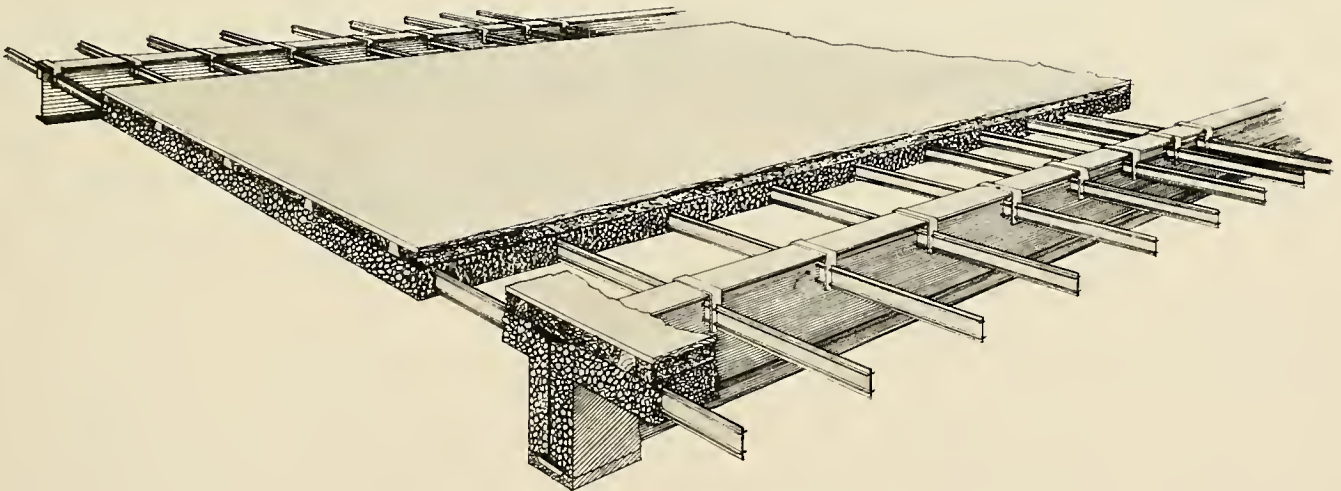


Fig. 2. VIEW OF FLOOR WITH HEAVY BARS SUSPENDED IN STIRRUPS

This plan of connecting bars adapted to short spans and small bars

Other Advantages.—Among other advantages of the Columbian construction are: (1) Absolute protection from rust, it being well known that nothing so thoroughly protects steel as good concrete; (2) rapidity of erection; (3) saving in story-height

due to thin floor; (4) saving in first cost of completed structure; (5) level ceiling between girders, eliminating furring; (6) increased stiffness and carrying power of girders and columns, due to solid concrete casing; (7) bottom equal to a scratch-coat of plaster if required; (8) our long span is the only concrete floor system having a rigid bolted connection between the structural frame and reinforcing steel.

ADAPTABILITY.

The Columbian Construction is available for all spans up to 20 feet between beams, for the loads shown in the accompanying table. It is approved by the Bureau of Buildings of New York City for spans running to 15 feet; and in the other principal cities of the United States for all spans.

ESTIMATES.

The company through any of its offices is prepared to submit figures based on our construction for every type of fireproof building construction. We maintain a competent corps of engineers, who are always available for furnishing details of all parts of our work, and we solicit the privilege of designing floor or reinforced concrete construction; also of submitting for consideration a lay-out of any contemplated building, adapting our construction to the requirements of the plans and specifications.

TABLES OF STRENGTH

The following tables are compiled from actual tests, using a safety factor of 4 for the live load.

Spans Feet	5 IN. BAR—6½ IN. CONCRETE			4¼ IN. BAR—5¾ IN. CONCRETE			3½ IN. BAR—5 IN. CONCRETE			2½ IN. BAR—4 IN. CONCRETE		2 IN. BAR—3½ IN. CONCRETE		1 IN. BAR—3 IN. CON.					
	Spacing Bars			Spacing Bars			Spacing Bars			Spacing Bars		Spacing Bars		Sp. Bar					
	24 in.	30 in.	36 in.	24 in.	30 in.	36 in.	24 in.	30 in.	36 in.	24 in.	30 in.	24 in.	28 in.	4 in.					
	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load					
10	500	400	350	8	600	500	425	8	450	375	340	4	600	500	4	550	450	4	390
11	430	350	325	9	520	450	375	9	380	320	290	5	400	325	5	360	280	5	250
12	375	300	275	10	450	400	330	10	325	300	250	6	275	225	6	250	200	6	175
13	330	260	240	11	390	350	290	11	290	240	220	7	200	165	7	180	145	7	120
14	290	230	200	12	340	300	250	12	250	210	190	8	150	125	8	140	100	8	Ceilings Only
15	240	190	160	13	300	250	220	13	220	180	165	9	120	100	9	100	75	9	.....
16	200	150	120	14	250	200	180	14	190	160	140	10	100	80	10	Ceilings Only	Ceilings Only	10	.....
17	175	120	100	15	200	175	125	15	160	125	100	11	80	60	11	.....	.....	11	.....
18	125	100	75	16	150	100	75	16	100	75	.....	.....	.....	.....	.....	.....	.....	.....	.....

For heavier loads than those specified in tables, the bars are spaced closer and the concrete is increased in thickness. Thirty-six inches is the maximum spacing of bars. For light loads, such as hotels, apartment houses, etc., we erect spans up to and including 20 feet between supports. For ceilings and pitched roofs, we use 1 inch bars on spans up to 8 feet.

RECENT WORK.

The following is a partial list of buildings we are now erecting:

Long Island Storage Warehouse, Brooklyn, N. Y., Helmle, Huberty & Huds-well, architects; Harrison Estate Building, Cincinnati, O., Gustav Drach, architect; Midshipmen's Quarters, U. S. Naval Academy, Ernest Flagg, architect; St. Francis Hospital, New York City, Schickel & Ditmars, architects; Luzerne County Court House, Wilkesbarre, Pa., F. J. Osterling, architect; Lackawanna Terminal, Hoboken, N. J., Kenneth Murchison, architect; Pittsburg Opera House, Pittsburg, Pa., McClure & Spahr, architects; German Hospital, San Francisco, Cal., Herman Barth, architect; Central Building, Ia. Agricultural College, Ames, Ia., Proudfoot & Bird, architects.

CUMMINGS STRUCTURAL CONCRETE CO.

4 Smithfield Street
PITTSBURG, Pa.

BELL TELEPHONE, 3189 COURT

ROBERT A. CUMMINGS, M. AM. Soc. C. E.
Consulting Engineer.

PRODUCTS.

Patentees and sole manufacturers of steel for the CUMMINGS SYSTEM OF REINFORCED CONCRETE. Our laboratories make standard tests of cement and steel at the Mills before shipment, and our facilities are unexcelled.

ADVANTAGES.

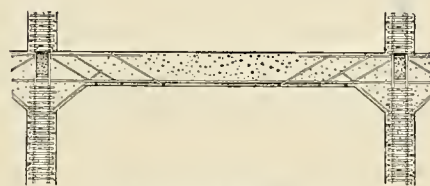
Reinforced Concrete is strong, durable, economical and fireproof. It offers unsurpassed possibilities for rapid, substantial and permanent construction. Insurance and maintenance are reduced to the minimum.

THE CUMMINGS SYSTEM.

The established success of the Cummings System is due to the most careful consideration of the details of construction and the economical distribution of steel for all stresses.

THE SELF-SUPPORTING LOOPEO BARS. (PATENTED)

These are formed by shaping the tension bars into long rectangular frames and bending up the ends of the frames to resist sheering stresses. The looped ends form an anchorage by which the steel is self-supporting, and cannot be disarranged nor omitted.



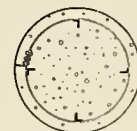
CUMMINGS SYSTEM OF REINFORCEMENT



CUMMINGS LOOPEO BARS



CUMMINGS SUPPORTING AND SPACING CHAIR



CUMMINGS SELF-CENTERING HOOPS AND SPACING VERTICALS FOR COLUMNS

THE SUPPORTING AND SPACING CHAIRS. (PATENTED)

These sheet steel Chairs have projections bent up for spacing and others bent down to support the reinforcement in its exact position when placing the concrete. These Chairs should be used in all work, as they are entirely imbedded in the concrete and are not seen on removing the moulds.

THE SELF-CENTERING HOOPS AND VERTICALS FOR COLUMNS. (PATENTED)

These Hoops have an end bent outwardly, thus fixing the reinforcement concentrically in the column. Self-centering Hoops increase the safe compressive value of concrete at least four-fold. The spacing verticals for hoops are also utilized for bending stresses in the column. The size of the Cummings Column is no greater than a structural steel column for similar loads.

CONCRETE PILE FOUNDATIONS. (PATENTED)

Difficult foundations demand skilled treatment. Concrete piles frequently offer the most economical solution. Our method of driving concrete piles is the result of a long special study. It is the most simple and efficient yet devised. Our method of making "cast" piles "in situ" is of equal merit.

ESTIMATES.

We will design or contract for all work where reinforced concrete can be used. We will make estimates and suggestions free of charge and solicit inquiries upon the Cummings System.

GUARANTEE.

We guarantee our workmanship to be strictly as represented.

THE INTERNATIONAL FENCE AND FIREPROOFING CO.

GENERAL OFFICES AND FACTORY
COLUMBUS, OHIO

PRODUCTS.

THE INTERNATIONAL FENCE and FIREPROOFING COMPANY are manufacturers of high grade STEEL WIRE FABRIC and CABLE as required in their system of CONTINUOUS REINFORCEMENT, known as the INTERNATIONAL SYSTEM of FIREPROOFING.

ADAPTABILITY.

The various essentials in this System of Fireproofing are particularly adapted to flat arch floor and roof construction (see Fig. 1), but the same materials employed in this floor construction may also be used to excellent advantage in other works, such as conduits, reservoirs, retaining walls, elevators, etc.

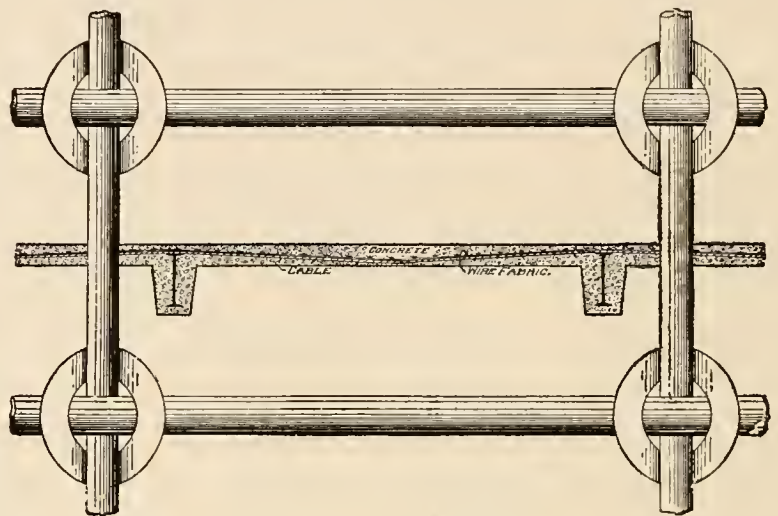


FIG. 1. FLAT ARCH CONSTRUCTION

FLAT ARCH CONSTRUCTION.

This System of Flat Arch Construction is readily applicable with either structural steel or structural concrete, or if desired, it may be wall bearing; but regardless of the supports, the slab is continuously reinforced throughout.

CONTINUOUS REINFORCEMENT.

This is provided by STEEL WIRE FABRIC (see Figs. 2 and 3), in combination with steel cable distributing members, both of which are manufactured from special wire, having high elastic limit and tensile strength. When installing these materials,

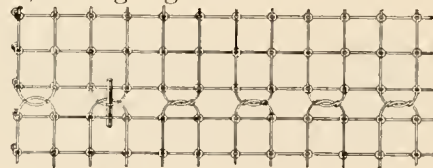


FIG. 2. METHOD OF SPLICING FABRIC

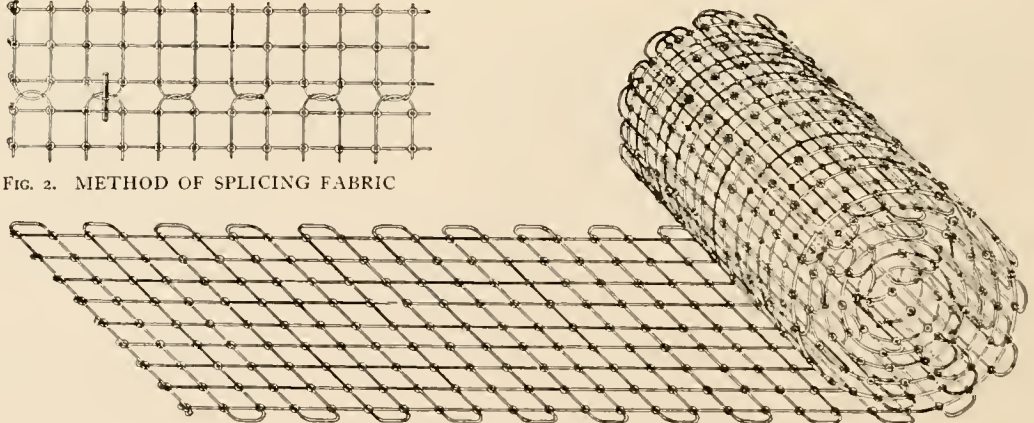


FIG. 3. STEEL WIRE FABRIC

the cables are anchored to the wall or beam, and extend to the opposite end of the building, and after being drawn reasonably tight, are secured to other anchors. The spacing of the cables varies from 6" to 24" as required for the width of span and safe live load. Over the cables, the steel wire fabric is placed (as can be seen in Fig. 1) and all embedded in the bottom of the slab.

THE IDEAL SYSTEM.

The Ideal Reinforcing should be well distributed through the cross section, and not concentrated in heavy sections at widely distributed points. The fibre stress should be direct, not diagonal, and drawn steel is in every way superior to rolled or cut metal. Neither our cables or fabric are in any way injured by heat incidental to welding, either electrically or otherwise.

LONG SPAN CONSTRUCTION.

No matter from which view-point this System of Fireproofing is examined, we claim our floor construction to be in advance of any other, and our long span work (See Fig. 4) to be the simplest, most efficient, and economical on the market. It is practically without a competitor. It will be apparent to the experienced Architect and Engineer that a floor reinforced continuously and fabricated so thoroughly is to be desired in preference to one having sectional metal at widely distributed points.

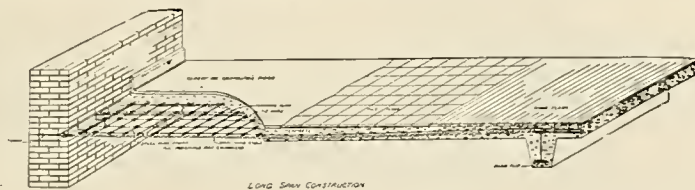


FIG. 4. LONG SPAN WORK

SIZES.

The STEEL WIRE FABRIC is carried in stock in 4, 5 and 6 ft. widths, and in lengths up to 200 ft. Special fabric is made in all sizes of mesh and gauges of wire. No skilled labor is required to lay this material.

STEEL WIRE CABLES.

As few people understand our method of manufacturing STEEL WIRE CABLES (See Figs. 5 and 5a), the question of elongation naturally arises and is readily answered. We have designed and are using a machine whereby all of our cables are twisted under hydraulic tension, thus producing an initial stress on the wires. The cables are formed with an eye on each end (See Fig. 6), and by this method each wire is stretched tightly in place, making them as stiff and rigid as bars, with far greater strength, and many disadvantages of rods or bars are eliminated. Our cables are for

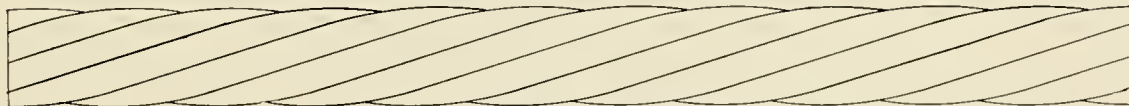


FIG. 5. STANDARD CABLE 7 STRAND No. 9 WIRE



FIG. 5A. CROSS SECTION OF CABLE

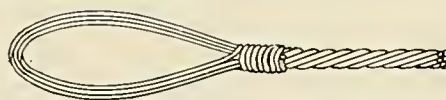


FIG. 6. EYE AT EACH END OF CABLE

this purpose far superior to those made on rope machines; in fact, ordinary cables are not suitable as distributing members, since they never cease to elongate.

NOTE—The use of cables in concrete is fully protected by United States Patents, and infringers will be prosecuted to the full extent of the law.

GIRDER AND BEAM CONSTRUCTION.

This is an especially important department, to which we have devoted years of constant application. The details of concrete steel girder and beam construction are too extensive to be given a mere outline description. We invite correspondence regarding the same and will gladly give those interested the benefit of our experience in structural concrete steel.

DESIGNS AND ESTIMATES.

We will cheerfully furnish designs and details for the installation of our product, and any special construction submitted will be carefully estimated upon, both as to strength and cost.

DETROIT FIREPROOFING TILE COMPANY

246 to 250 Beecher Avenue

DETROIT, MICH.

PRODUCTS. Manufacturers and contractors for FIREPROOF PARTITIONS and COLUMN COVERINGS of "GYPSITE."

CONSTRUCTION. Our method of construction differs radically from any other and is fully protected by patents. It is the lightest fireproofing construction known; there are no mortar joints; the vertical metal stiffeners are not exposed to fire; this system is so rigid in itself that it will stand up regardless of the destruction of all woodwork attached to it; it requires no wire wrappings to hold it in position; and it is so strong that it will withstand the impact of falling portions of buildings and streams from hose, without buckling or falling down. Our system will enclose pipes, wires, etc., and protect them from fire without any mutilation of the structure. It will prevent the transmission of heat, and does not expand under fire nor contract under water. Our system weighs one half as much as hollow tile and at the same time is stronger and more rigid. It has been tested and proved, is in use in a large number of buildings, and has been subjected to severe official fire tests, the results of which have been reported in its favor by unprejudiced and disinterested persons.

GYPSITE. We call our system the "Gypsite" System. The tiles are composed mainly of Gypsum, the superiority of which as a fire-resisting material is well known. They are of a uniform size of 24x18" and 1 inch thick. Imbedded in each tile is a quantity of strong interlacing fibre, or a sheet of specially woven burlap with large meshes, which so strengthens and binds the tile that it cannot be easily shattered under repeated blows. Each tile is plumb and true, thus assuring the level construction for which "Gypsite" is famous.

WEIGHT AND INSTALLATION. "Gypsite" Tiles weigh 2½ pounds per square foot. They are securely keyed in place without wedges or wire wrappings, and are perfectly attached to frames of door and window openings, but absolutely independent of them for stability. New openings can be cut, at any time, with a saw, as cleanly as a board partition. They are sound proof in the highest degree.

Only thin coatings of plaster are needed with our system. The total thickness, browning and finish, averages 3-16 to ¼ inch. Metal verticals at any desired space O. C. imbedded in staff columns within our partitions are absolutely protected from heat.

PARTITIONS, COLUMN COVERINGS, ETC. We have no system of floor construction, but confine our work exclusively to partitions, column coverings, wall furring and suspended ceilings.

We claim to offer a larger number of styles of partitions and column coverings than any company in the fireproofing business. Our column coverings are unique, tough, strong and rigid; they cannot be shattered by blows or destroyed by water streams. It is substantially impossible for heat to reach and expand a steel column protected by our coverings.

SOLID PARTITIONS. In addition to the hollow partitions above described we can offer several styles of solid staff partitions 2" thick and upwards, built around and imbedding a metal framework. This gives a wonderfully strong construction, forming a homogeneous mass without joints, and *requiring only a single finish coat of plaster.*

SPECIFICATIONS AND ESTIMATES. Architects should, *in the interest of their clients,* specify partitions and column coverings *separately from floor construction.* Better results will thus be secured in both.

Ask for particulars, special catalogue, specifications and blue prints, and investigate our system. Specify our specialties as alternates with any or all other systems, and let us submit bids for our construction. Our Engineering Department is at service of architects for arranging all details to insure satisfactory results.

KEYSTONE FIREPROOFING COMPANY

MANUFACTURERS OF

Keystone Fireproof Blocks, etc.

16 South Broad Street
PHILADELPHIA, PA.

TELEPHONES
BELL, SPRUCE 24-05
KEYSTONE, RACE 6-08

WORKS: JEFFRIES ST. AND DELAWARE RIVER
CHESTER, PA.

NEW ENGLAND
REPRESENTATIVE
"THE TILE SHOP," 9 Park St., Boston, Mass.

PRODUCTS.

We are the manufacturers of the **KEYSTONE FIREPROOF BLOCK**, and contractors for its erection.

ADAPTABILITY.

The scope of Fireproofing as applied by the Keystone Fireproofing Company embraces **PARTITIONS, WALL FURRING, COLUMN PROTECTION, ROOF BLOCK, CEILING BLOCK, GIRDER and BEAM PROTECTIONS.**

Keystone Fireproofing has been formally tested with fire and water, by the Building Authorities and the Insurance Underwriters of the eastern cities, and meets their requirements. We shall be pleased to forward on request full data of fire and water tests, also heat, cold and sound conductivity.

DURABILITY.

Our Keystone Fireproof Block is the same form of fireproofing which has been extensively used for many years in Europe, the oldest jobs showing greater durability than other types of fireproofing of less age. In more recent additions to Windsor Castle this form was used.

KEYSTONE FIREPROOF BLOCK.

Keystone Fireproof Block can be cut, nailed and sawed, the same as wood. Partitions can be taken down and rebuilt. Doors can be cut through and any other changes made readily. No wood plugs are required for picture moldings, chair rails or baseboards, as Keystone Fireproof Block will hold nails like wood. Its sound proof qualities render it the best type of partition for hotels, apartment houses, office buildings and wherever privacy is desired. Its non-conductivity of heat and cold makes it the best form of outside wall furring.

DIMENSIONS.

Keystone Fireproof Blocks are regularly made in the following thicknesses: 1" boards for nailing; 1½" and 2" solid blocks; 3", 4", 5" and 6" cored blocks. The most popular size is 3" cored. This, when plastered to ½" grounds each side, gives a finished partition 4" thick, weighing but 17 lbs. per square foot.

SPECIFICATIONS.

Specifications will be drawn up to fit conditions for any proposed building, or preliminary estimates will be cheerfully submitted at any time.

REFERENCES.

We append herewith a few representative buildings in which Keystone Fireproof Blocks have been used.

BUILDING

ARCHITECT.

BOSTON GLOBE BUILDING, Boston, Mass.....	WINSLOW & BIGELOW.
MASSACHUSETTS BUILDING, Boston, Mass.....	SHEPLEY, RUTAN & COOLIDGE.
STATE MUTUAL BUILDING, Boston, Mass.....	ANDREWS, JACQUES & RANTOUL.
NEW ENGLAND CONSERVATORY OF MUSIC, Boston, Mass.....	WHEELWRIGHT & HAVENS.
LIBRARY BUILDING, West Point Military Academy.....	R. H. HUNT.
CHAS. M. SCHWAB'S HOUSE, New York City, N. Y.....	MAURICE HEBERT.
KEITH'S NEW THEATRE, Philadelphia, Pa.....	BRUCE PRICE.
PHILADELPHIA STOCK EXCHANGE, Philadelphia, Pa.....	L. C. HICKMAN.
MERCHANTS' & MARINERS' BUILDING, Philadelphia, Pa.....	J. H. WINDRIM.
HOTEL CHALFONTE, Atlantic City, N. J.....	ADDISON HUTTIN.
SURGICAL BUILDING, JOHN HOPKINS' HOSPITAL, Baltimore, Md.....	
COLORADO OFFICE BUILDING, Washington, D. C.....	RALPH S. TOWNSEND.
LARZ ANDERSON HOUSE, Washington, D. C.....	LITTLE & BROWN.
CARNEGIE LIBRARY, Charlotte, N. C.....	J. F. McMICHAEL.

MACKOLITE FIREPROOFING COMPANY

MANUFACTURERS AND CONTRACTORS OF

Light Fireproofing Material for All Purposes

Schiller Building
CHICAGO, ILL.

PRODUCTS.

Our special manufacture is MACKOLITE, the modern fireproofing material, in its various forms, among which are MACKOLITE PARTITION TILE, MACKOLITE FURRING TILE, and MACKOLITE COVERING for Columns and Girders.

We also make POROUS TERRA COTTA FIREPROOFING.

DESCRIPTION.

The basis of Mackolite (which is an invention of Messrs. A. & O. Mack, Ludwigsbuurg, Germany), is gypsum, which is calcined, ground, mixed with certain chemicals, and then poured into moulds, being left for about one-half hour to set, after which it is kiln-dried for four days.

USES.

Mackolite has been employed in the construction of large Office Buildings, Apartment Houses, Hotels, Warehouses, Hospitals, Insane Asylums, Public Schools, Court Houses, Municipal Buildings, Breweries, Residences, Factories of all kinds, etc., throughout the country. It is a standard material for all classes of fireproof and semi-fireproof buildings.

ADVANTAGES.

Mackolite enters into all forms of fireproof construction, from the fact that, to a degree greater than other building materials, it has the following distinct advantages:

1. It is non-combustible, light in weight and vermin-proof.
2. It is a non-conductor of heat, cold and sound.
3. It forms a fireproof, durable wall.
4. It is non-decaying and will last forever.
5. It is easily and rapidly applied.
6. As an insulator, it has no equal.
7. It does not waste mortar behind keys.
8. It is composed of material that will not discolor through the plastering to injure or destroy decorative effects.

In connection with the *Iron Construction* of modern fireproof buildings, Mackolite materials replace the heavier and more costly clay tiles, terra cotta, etc. It is not only necessary that a material be absolutely fireproof, but also that it be easily manipulated and that the finishing materials be readily applied to it. Mackolite fills all these requirements.

FIRE AND
WATER TEST.

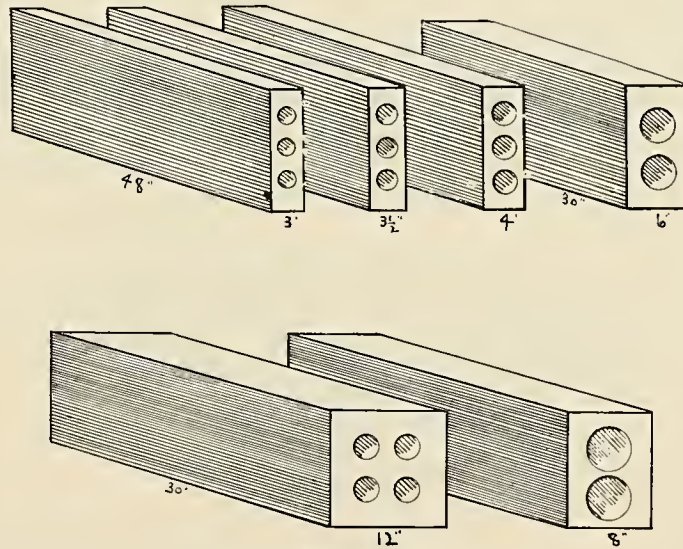
A test of Mackolite was made by the Chicago Board of Underwriters in September, 1898, to determine the fire and water resistance of the material, as applied to iron beams for fireproof floors.

A building 10x12 and 9 feet high was constructed with two sides of the outer walls of Mackolite Brick, and the remaining two sides of ordinary brick. The roof of the structure was formed of L Beams of Mackolite Floor Tile with the regulation wood floor strips and cinder concrete on top, the object being to obtain a construction similar to that employed in large office and warehouse buildings. The floors were loaded with brick up to three hundred pounds per square foot to determine the deflection, if any, under this weight, during the progress of the fire.

On the day of the test there were present, Mr. D. J. Sweeney, Chief of the Chicago Fire Department; Mr. T. A. Bowden, Supt. of Ratings of the Chicago Fire Underwriters Association; Mr. T. O. Shea, Deputy Commissioner of Buildings, together with representative architects, engineers and others interested in fireproof construction.

When all was in readiness, a large quantity of hard wood staves, saturated with coal tar, was thrown into the enclosure and ignited, thereby producing an intense heat in a few moments. More fuel was added from time to time, for over an hour, at the expiration of which, a stream of water, city pressure, was turned on the surface of the Mackolite within the enclosure to determine its effect upon the material.

A critical examination of the material subjected to this test, after the application of the water, failed to reveal any damage whatever to the Mackolite. During the progress of the fire the temperature of the roof was noted and at no time could it be discovered that a fire existed underneath it.



MACKOLITE PARTITION TILE

MACKOLITE
PARTITION
TILE.

The adaptation of Mackolite Hollow Blocks for partitions dividing the various floors of a building into compartments, which is one of the most important parts in the construction of fireproof buildings, may be treated of here. It can be readily seen that economy of weight in these partitions is, next to the fireproof qualities, the one thing to be desired. Hollow blocks or tile of Mackolite are manufactured in thicknesses of from three to eight inches and can be erected in one-half the time consumed in setting a partition of other materials. The nature of the material is such that it can

be easily sawed to fit around all door and window openings, thus saving much time and material.

The permanent stability of these partitions cannot be questioned, for it is attested by their constant use in large office buildings in Chicago and elsewhere where strength is next in importance to incombustibility. Mortar composed of rich lime and coarse sharp sand is used to set in place the Mackolite Tile, which is laid in regular courses, twelve inches high and four feet long to break joints as in cut-stone work. This in part accounts for the great strength of the light partitions erected by us. As our material is cast in moulds, each tile, which contains four square feet, is perfect in shape, and when set in place presents a plumb, straight and true wall for plastering that cannot be obtained with other materials.

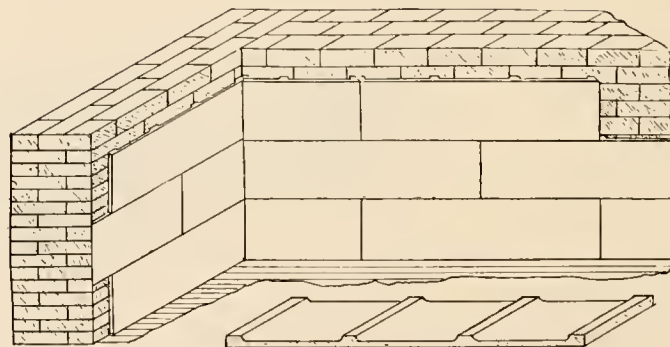
CONCERNING INSTALLATION.

The best method, and the one in general use, for securing the tile to the rough jambs for doors and windows, is to use a twelve- or sixteen-penny spike "Toe-nailing" at each joint or brick. By this simple method, each tile is securely fastened to the door or window-frame or brick wall and precludes the possibility of cracking the plastering which occurs at these points. No wood or iron studding or other extraneous support is required to stiffen walls built of Mackolite. If extra doors or window openings are to be made in the solid walls already built, saws are used to cut through.

A wood strip the size of the hollow core in the Mackolite Tile inserted into these longitudinal holes, where base boards, chair rail, picture mouldings, etc., are to be applied, will insure a firm nailing base for the carpenter's trim. Gas and other pipes, electric wires, etc., can be inserted into the partitions by cutting into or through the material without in the least destroying its stability.

MACKOLITE FURRING TILE.

In most buildings it is necessary to furr the interior of the outside brick walls to prevent the penetration or dampness, heat and cold. Furring Tile of Mackolite one inch in thickness, four feet long and twelve inches wide, with a projection of one inch in each foot of length, meet all these requirements. By our method of Furring, as will be observed by the accompanying illustration, a complete circulation of air is obtained over the entire surface of the furred wall, which accounts for the universal freedom from dampness, where our Furring Tile have been applied.



MACKOLITE WALL FURRING

Size 12''x48''x1 1/2''

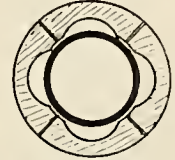
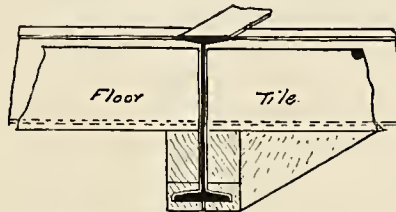
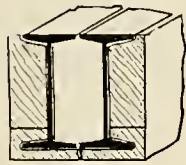
INSTALLATION.

The Furring Tiles are nailed up in regular courses, with break joints, the joints being pointed up with mortar. All necessary wood blocks, etc., can be built into the Tile.

MACKOLITE COVERING FOR COLUMNS AND GIRDERS.

Iron and steel which at the present time enter so largely into the construction of all buildings, are not in themselves fireproof, and require the protection of a non-heat conducting and fire-resisting material to prevent them from warping or twisting out of shape when exposed to fire.

Fireproofing covering of all sizes and shapes are manufactured by us for the protection of columns, girders, trusses, etc. As our material can be easily sawed, construction of this kind can be carried on rapidly and the best results obtained.



MACKOLITE GIRDER COVERING

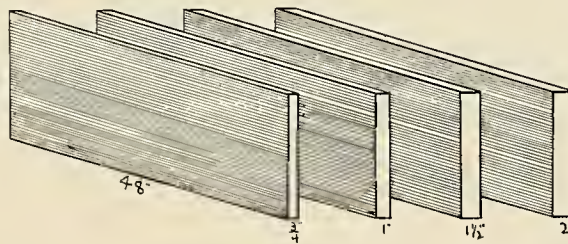
MACKOLITE COLUMN COVERING

ORNAMENTAL CONSTRUCTION FOR INTERIOR WORK.

In the construction of some buildings a certain amount of attention must be paid to the design and effect of the finish of interiors. In rooms where beams and girders form a part of the ceilings, or where a brace has to be covered, duplicates of some cheaper material may be needed to produce a certain symmetrical effect. Cove work, pilasters and all such work are as easily constructed of Mackolite as of wood and at the same time provide a fireproof covering. To illustrate this point we have reproduced several photographs of work done by us. We especially wish to call the attention of architects to this method of construction and the utility of Mackolite for the same.

MACKOLITE PLASTER BOARD.

The uses to which Mackolite Plaster Board may be put are many. The Boards are from three-quarters of an inch to two inches in thickness and are manufactured in lengths adapted for studding and joists spaced the usual distance apart. The simplest use of the Plaster Boards is where they replace the ordinary lath and plaster, as in ordinary partitions, ceilings and furring.



MACKOLITE PLASTER BOARDS

This construction, aside from being fireproof, is desirable from the fact that one coat of plastering is saved in finishing, and this dries rapidly. It does away with the expense of maintaining salamanders in winter. A wall or ceiling is also obtained to which the plaster will firmly adhere, thus preventing the great annoyance of frequent patching.

In basements, boiler rooms and other places where a finished coat of plastering is not required, a pointing up of the joints after the material is applied is sufficient for the fire protection and is a saving of money to the owners.

Mackolite Plaster Boards are absolutely the best non-conductors of heat and cold, and can successfully resist any fire without being destroyed. This non-conductivity renders a building cool in summer and warm in winter.

Another prolific field for Mackolite will be readily recognized when we call attention to it for the lining of ceilings and walls located over boilers for the purpose of preventing the excessive heating of the rooms above. We are frequently called upon to remedy trouble from this source and have never failed to do so by the use of Mackolite Plaster Boards.

INSTALLATION.

When installing Mackolite Plaster Board to replace ordinary lath and plaster, the boards used for this purpose are usually one inch in thickness, and are nailed direct to the woodwork with sixpenny wire nails, and reinforced with a tin shield or washer where they are applied to ceilings.

POROUS
TERRA COTTA
FIREPROOFING.

In addition to Mackolite Tile, we have erected a complete plant for the manufacture of all standard shapes of Porous Terra Cotta Fireproofing, both for floor and partition construction.

FACILITIES.

This plant is equipped with all of the latest machinery and we have on our property the clay particularly adapted for this type of work. We are prepared to handle contracts of any size in all approved systems of burned tile construction.

SERVICES.

In this department of our business we take contracts for completing installation of fireproofing materials on any type of buildings in which Porous Terra Cotta Tile is used.

SIZES AND
WEIGHTS.

TABLE OF SIZES AND WEIGHTS OF POROUS TERRA COTTA FIREPROOFING TILE

PARTITION TILE	BOOK TILE	END CONSTRUCTION FLOOR ARCHES
2" x 12" x 12"—10 lbs.	3" x 12" x 18"—18 lbs.	6" Segment Arch 25 lbs. per square foot
3" x 12" x 12"—12 lbs.		7" Flat Arch 26 lbs. per square foot
4" x 12" x 12"—14 lbs.		8" Flat Arch 28 lbs. per square foot
5" x 12" x 12"—18 lbs.	FURRING TILE	9" Flat Arch 29 lbs. per square foot
6" x 12" x 12"—22 lbs.	1½" x 12" x 12"—7 lbs.	10" Flat Arch 33 lbs. per square foot
7" x 12" x 12"—25 lbs.	2" x 12" x 12"—8 lbs.	12" Flat Arch 40 lbs. per square foot
8" x 12" x 12"—28 lbs.		

Special Tile, such as Girder Covering, Column Covering, etc., made to order.

MARTIN J. MONAHAN

Contractor for Metal Lathing and Iron Furring

1123 Broadway

NEW YORK CITY, N. Y.

SERVICES.

I furnish IRON FURRING and METAL LATH of all styles, and *Erect* it in any place or building, according to specifications. I am not a manufacturer of any special lath. My aim is to give satisfaction to the architect, and with this in view I use *any make of lath* specified, or any which experience has proven to be best adapted for the particular work in hand.

SPECIALTIES.

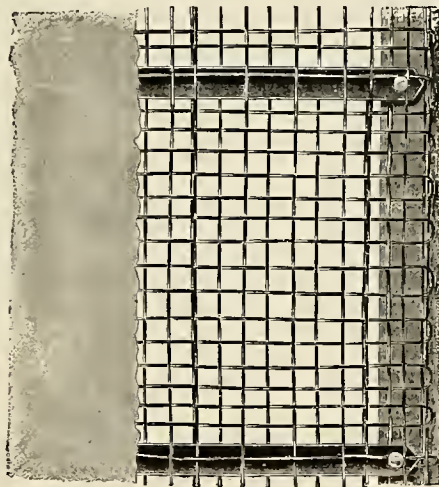
I make a specialty of high grade work in FIREPROOF PARTITIONS, GROINED or ARCHED CEILINGS, CORNICES, TRANSOMS, etc., making all connections, where practicable, by *bolting* or *clipping* members together, avoiding the use of tie wire.

ESTIMATES.

Upon receipt of plans and specifications I will submit estimate covering total cost of all labor and material required in the erection of any style of work called for in my business.

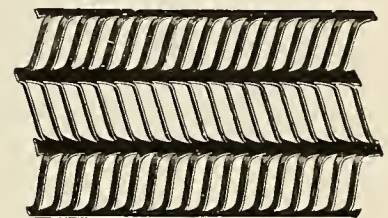
ILLUSTRATIONS.

The accompanying illustrations show a few of the different styles of lath made, all of which can be furnished by me either painted or galvanized, and will be erected promptly in place on any building.

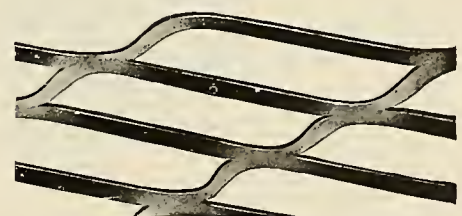


WIRE LATH

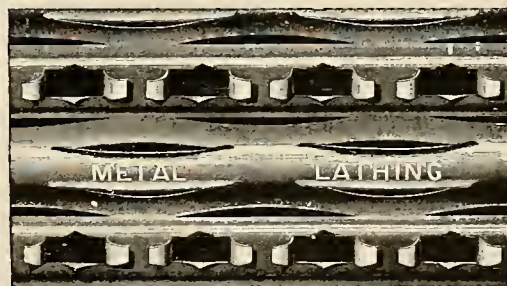
This is made in all sizes and gauges of wire and can be supplied either reinforced, as shown, or plain



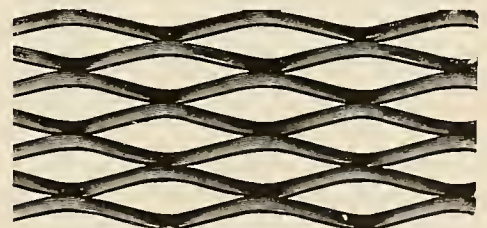
HERRINGBONE METAL LATH
26, 27, 28 Gauge



EXPANDED METAL LATH
24 to 27 Gauge



SHEET METAL LATHING



EXPANDED METAL LATH, DIAMOND MESH
26 and 27 Gauge

THE ROEBLING CONSTRUCTION CO.,

CONTRACTORS FOR

The "Roebling" and "Rapp" Systems of Fireproof Construction

Fuller Building, Broadway and 23d Street
NEW YORK CITY, N. Y.

BRANCH OFFICES

BOSTON, 101 TREMONT STREET

PHILADELPHIA, 1416 LAND TITLE BUILDING

BUFFALO, 96 ERIE COUNTY BANK BUILDING

SAN FRANCISCO, 201 CROSSLEY BUILDING

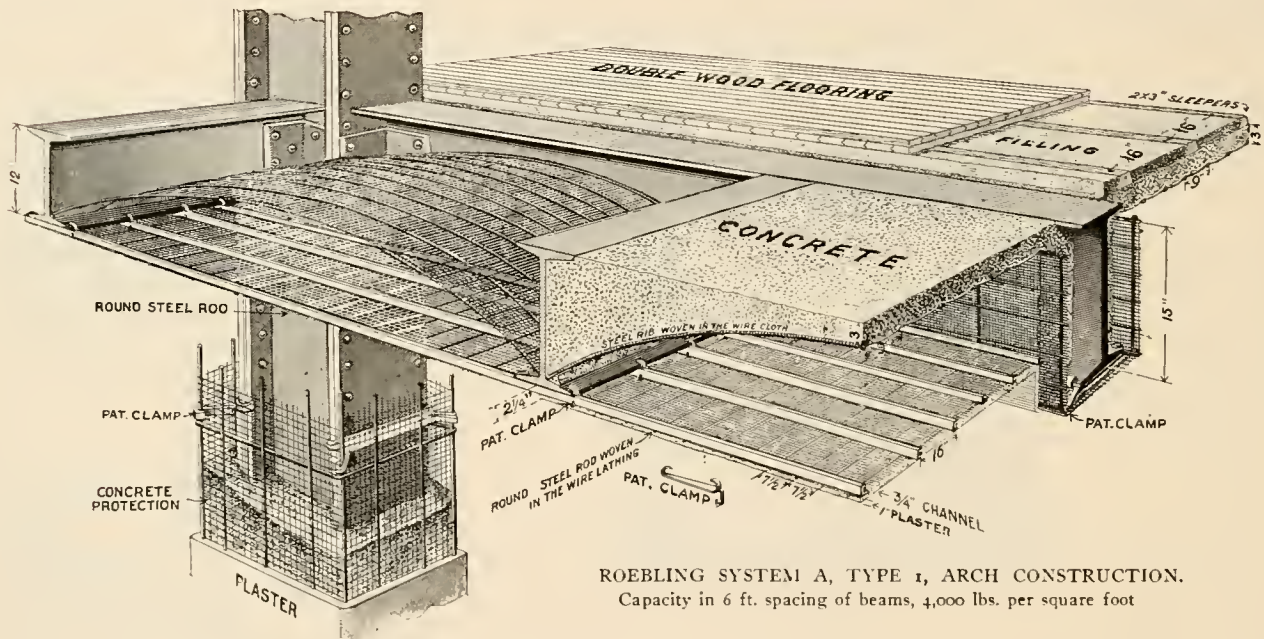
PITTSBURG, 3220 SMALLMAN STREET

CHICAGO, 906 TRIBUNE BUILDING

ST. LOUIS, 1212 CHEMICAL BUILDING

SEATTLE, 313 FIRST AVENUE, SOUTH

PRODUCTS AND SERVICES—We are prepared to contract for work in any part of the United States and Canada. Our systems of construction are adapted for Public Buildings, Offices, Theatres, Hotels, Schools, Banks, Libraries, Hospitals, Residences, etc., and are approved by the National Board of Fire Underwriters, and the Bureau of Buildings of all principal cities in the United States.



ROEBLING SYSTEM A, TYPE 1, ARCH CONSTRUCTION.

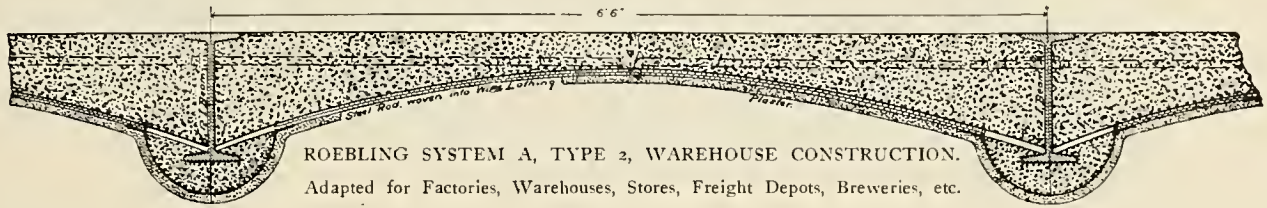
Capacity in 6 ft. spacing of beams, 4,000 lbs. per square foot

SYSTEM A, TYPE 1, ARCH CONSTRUCTION, consists of a wire cloth arch, stiffened by *woven-in* steel rods, which is sprung between the floor beams, and abuts into the seat formed by the web and lower flange of the I beams. On this wire centering, Portland cement concrete is deposited and allowed to harden. The result is a monolithic construction, admirably adapted for a fireproof floor. The standard concrete as adopted by this Company after ten years' experience and as the result of numerous tests and a careful study of actual conflagrations, is composed of 1 part high grade Portland cement, $2\frac{1}{2}$ parts clean, sharp sand and 6 parts steam boiler cinder.

The ceiling construction consists of a system of supporting bars attached to the lower flanges of the floor beams by a patent clip which offsets the bars below the I beams. Under these bars, and securely laced to them, is the Roebling Standard Wire Lathing, with the *Woven-in* $\frac{1}{4}$ -inch solid steel stiffening ribs crossing the supporting bars at right angles. This construction produces a ceiling absolutely free from any of the usual defects.

The standard methods of fireproofing columns and girders are also shown. The methods usually employed are defective, in that the protecting material peels off and falls away when exposed to a hot fire and subsequent drenching with water.

This construction is particularly well adapted to all buildings intended for fine interior finish. The arches, being monoliths, can never settle. This prevents the unsightly cracks so common in the mosaic, tile, cement, or other floor finish, when laid over assembled arches. The ceiling construction being independent of the floor arches, it is not in any way affected by the loading or jarring of the floor above it. Cracks in the plastered ceiling are therefore avoided. The isolation of the plaster from any materials that yield coloring matter positively prevents discoloration. These are important *desiderata* where expensive and elaborate ornamentation is contemplated.



SYSTEM A, TYPE 2, is particularly adapted where great strength and economy in space and cost is desired; also for any building which may become the repository of large quantities of inflammable goods. By dispensing with the flat ceiling finish, the cost is considerably reduced. A further saving is effected in the plastering, owing to the fact that only two coats are necessary in plastering against the under surface of the arch. When the beams are not spaced too far apart and no piping is to be placed transversely over the beams, the sleepers may be depressed below the top flanges of the beams, thus reducing the total depth of the floor by the depth of the nailing sleepers. Air spaces under the beams can be conveniently provided if desired.

The concrete around the soffits of the beams and girders being filled in at the same time as that in the arches, the whole construction becomes a monolith completely encasing the steel-work and protecting it more effectually than by any other method in use at the present time.

A flat ceiling can also be erected under the System A, Type 2 construction, if desired. This type of floor with a soffit protection is the most effective fire-resisting construction at present available at a reasonable cost.

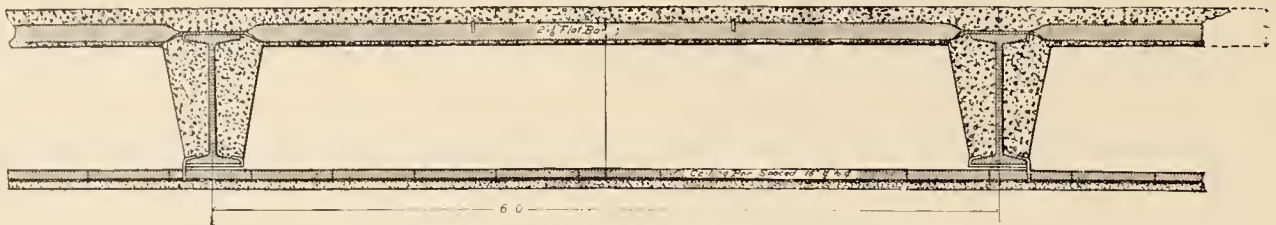
The permanent wire centering, is a distinctive feature of this system. This is always erected in advance of the concreting and enables the work to progress continuously. It allows the superfluous water to drip out of the concrete as soon as it is in position, and as both the upper and lower surfaces of the concrete are exposed to the air, the most favorable conditions for rapid drying are secured. The wire centering is, besides, a valuable safeguard, having saved the lives of many workmen who have fallen on it from aloft.

The concrete in System A is never rammed but is spread in position and leveled with shovels. This insures lightness and preserves its highly porous character—an essential property for a fire and water resisting material if it is to withstand the crucial test without disintegration. The porosity of the material, the rapid elimination of moisture after it is placed in position and other special conditions, permit the installation of this system of fireproofing at lower temperatures than any other.

TABLE OF WEIGHTS, SPACING OF BEAMS, ETC. ROEBLING SYSTEM A

When concrete is to be leveled above under side of floor beams to a height of	Maximum spacing of steel floor beams (independent of size of beams) should not exceed	Thickness of crown at center of arch	Weight per square foot including only concrete and wire.
8"	4' 0"	4"	33 pounds.
9"	4' 6"	4"	34 "
10"	5' 0"	4"	36 "
12"	6' 0"	4"	41 "
15"	7' 6"	4"	47 "

The weights given are for the concrete filled to the level indicated in the first column, with a thickness of 4 inches at the crown of the arches, and include the wire centering.

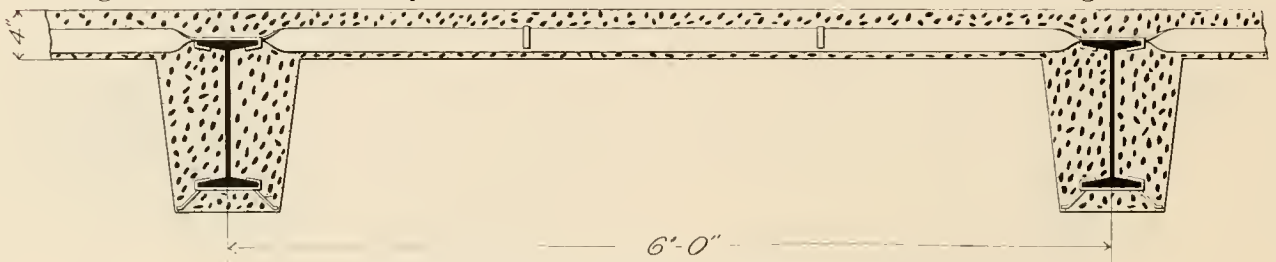


ROEBLING SYSTEM B, TYPE 1, FLAT SLAB CONSTRUCTION
Adapted for Public Buildings, Offices, Theatres, Churches, Schools, Hospitals, Hotels, Residences, etc.
Capacity in 6 ft. spacing of beams, 1500 lbs. per square foot

SYSTEM B, TYPE 1, is intended to meet the requirements of a light, economical and low priced floor.

System B consists of a light steel framework imbedded in concrete. The light steel consists of flat bars set on edge and spaced 16" center to center with a ¼ turn at both ends where the bars rest upon the steel beams. Spacers of ½"x½" steel are placed at suitable intervals to separate and brace the bars. At the under side of the steel bars, temporary wood centering is erected on which cinder concrete consisting of High Grade Portland Cement, sharp sand and clean steam cinder is deposited to a thickness of not less than 4".

All floor beams projecting below or above the top surface of the concrete are thoroughly protected by filling concrete around both sides of the webs and sloping it from the edges of the flanges. A flat wire ceiling similar to that employed in the System A Construction is then erected at the under side of the floor beams. The ends of the floor bars being bent around the iron beams, the entire tensile strength of the bars is developed before the floor can fail. This method of attaching the bars ties the



ROEBLING SYSTEM B, TYPE 2, PANELED CEILING
Adapted for Stores, Warehouses, Depots, Factories, etc.

iron beams rigidly together every 16 inches and obviates the necessity of tie rods. In loft buildings, factories, etc., where the flat ceiling may be dispensed with, a concrete soffit protection can be furnished, as shown.

SYSTEM B, TYPE 2, is used where very shallow floors are desired. The beams may be set on the lines of the partitions and the plaster applied directly to the under side of the concrete, omitting the wire ceiling.

SYSTEM B, TYPE 3, is the same as Type 2, with a flat wire ceiling attached to the under side of the beams.

SYSTEM B, TYPE 4, has the concrete slab at the lower flange of the beam, with a cinder fill on top of slab to the desired level. The latter construction is frequently used for Apartment Houses and Hotels, and in cases where a light, thin floor construction is desired.

SYSTEM B, TYPE 5, is a long span construction adapted for spanning the intervals between girders and omitting the intermediate beams. While a less expensive flooring than any of the other long span methods that have yet been offered, its cost is considerably greater than the short span methods on account of the heavier centering, additional steel bars, careful superintendence, etc., necessary to install it. This type of flooring is economical only in Canada and the Rocky Mountain region of the United States, where high freight charges render the cost of structural steel abnormally high.

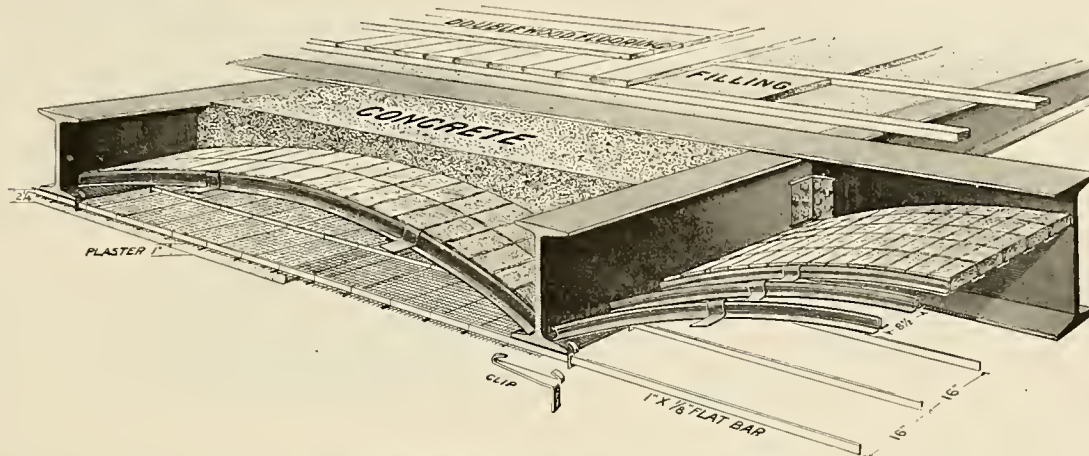
TABLE OF WEIGHTS, SPACING OF BEAMS, ETC. ROEBLING SYSTEM B.

Type of construction	Spacing of beams	Depth of beams	Thickness of concrete	Weight per sq. ft. of concrete imbedded iron and wire	Weight of ceiling including plaster	No. of coats of plaster required
Type 1	8' 0"	10"	4"	30 lbs.	10 lbs.	3
" 2	5' 0"	10"	4"	35 lbs.	9 lbs.	2
" 3	7' 0"	15"	4"	38 lbs.	10 lbs.	3
" 4	6' 0"	8"	4"	28 lbs.	7 lbs.	2
" 5	up to 16'	15" to 20"	5 1-2"	45 lbs.	7 lbs.	2

THE RAPP FIREPROOF FLOOR

THE RAPP FIREPROOF FLOOR SYSTEM, TYPE A—(Brick laid flat side down). With flat wire ceiling construction. Adapted for public buildings, offices, theatres, schools, churches, banks, libraries, hospitals, residences, etc.

Capacity in 10 ft. spacing of beams, 3,000 lbs. per sq. ft.



THE RAPP FIREPROOF FLOOR SYSTEM, TYPE A
(Brick laid flat side down)

THE RAPP FIREPROOF FLOOR SYSTEM combines the well known strength of the rowlock brick arch, with that of the steel tee ribs, producing a flooring of enormous strength. These tees perform the double function of increasing the strength of the arch and of serving as a centering. The tees abut into the seat formed by the web and lower flange of the steel floor beams and are held rigidly in position by steel separators, as shown. Common bricks are then laid flat side down between the tees, forming a segmental brick arch. The usual cinder concrete fill is then placed over the arch, flush with the top of the beams. This type of flooring requires only one-half the number of bricks necessary for the ordinary rowlock arch and is correspondingly lighter. It is approved by the New York Building Department for an ultimate distributed load of 3,000 lbs. per sq. ft. in spans up to 10 feet.

TYPE B, is similar to Type A, with the brick set on edge.

TYPE C, is similar to Type A, with a special skewback protecting the soffits of the beams.

TABLE OF WEIGHTS, ETC. RAPP SYSTEM.

Depth of beams	Type A	Type B	Type C	Thickness at Crown of Arch
7"	36 lbs.	43 lbs.	40 lbs.	4"
8"	38 lbs.	45 lbs.	42 lbs.	4"
9"	40 lbs.	48 lbs.	44 lbs.	4"
10"	43 lbs.	51 lbs.	47 lbs.	4"
12"	48 lbs.	55 lbs.	52 lbs.	4"
15"	55 lbs.	63 lbs.	59 lbs.	4"

This Company also furnishes solid concrete partitions of various thicknesses; also hollow wire lath partitions, consisting of upright studs at 16 inch centers and wire lath applied to both sides. A steel stud and lath partition finishing 2" thick after plaster is applied is also supplied by this company. Further detailed information, including complete specifications, detailed drawings, etc., will be supplied promptly upon request.

NOTE—This Company does not bid on so-called "armored concrete" construction in which structural steel columns, girders and beams are omitted and reinforced concrete substituted for these members.

STANDARD CONCRETE-STEEL COMPANY

JOHN F. HAVEMEYER, *Pres.*

HARRY L. MCGEE, *Sec'y.*

GUY B. WAITE, *Gen'l Mgr.*

OFFICES

MAIN OFFICE, 100 BROADWAY, NEW YORK CITY, N. Y.

FACTORY AND YARDS

31st and 32d STREETS, E. R.
NEW YORK CITY

PRODUCTS.

Engineers and Contractors for FIREPROOF CONSTRUCTIONS and REINFORCED CONCRETE STRUCTURES. This Company is also in a position to take entire contracts for reinforced concrete Cold Storage plants, factory buildings, etc.

Besides being extensive constructors of the ordinary forms of fireproof and reinforced constructions, this Company is the exclusive manufacturer and contractor for FACTORY-MADE SLABS and FIREPROOF CONSTRUCTION adapted for use in buildings erected during winter months. All types illustrated have been approved by the New York Bureau of Buildings.

PROVEN QUALITY.

The systems of this Company have been subjected to the severest fire and strength tests of the Department of Buildings of New York City, and have been approved as possessing the greatest strength and highest fireproof qualities of any system tested.

REINFORCED CONSTRUCTION; we were the builders of the *first* concrete building in Manhattan, New York City.

FACILITIES.

This Company has the most modern and extensive factory for preparing all kinds of constructions for use in fireproof and reinforced steel structures. It also possesses the most up-to-date organization for executing contracts.

TERRITORY.

This Company is equipped to execute in any part of the United States, Canada or Mexico the construction of all kinds of fireproofing for buildings and to erect reinforced concrete structures of every description.

ILLUSTRATIONS.

On the following page are illustrated the most popular standard fireproof constructions. Special designs are made to suit any condition.

TYPES OF FIREPROOFING CONSTRUCTION.

ARCHES.

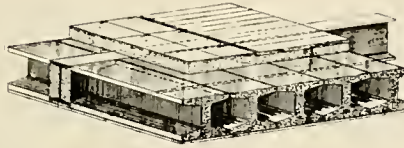
250 lbs. per square foot.
Spans 4' to 8'.

"A"



150 lbs. per sq. ft.
Lightest construction.
7' 0" span.

B



120 lbs. per sq. ft.
Spans up to 6' 0".

A2



For heavy loads,
Spans up to 16' 0".

C



SPECIFICATION

CONCRETE	REINFORCEMENT
Port. Cement, 1	Steel Channels,
Sand, 2	1" x 3/8", 16"
Cinders, 5	on centers.

ADAPTABILITY

Hotels, Offices, Apartment Houses, where beams do not exceed 10" in depth.

Port. Cement, 1	Steel Channels,
Sand, 2	1" x 3/8", 16"
Cinders, 5	on centers.

Offices, Manufactories, Storage Houses.

Hollow Concrete Floors, blocks made in factory.

Offices and Lofts where floors are deep. Lightest weight.

Concrete Slabs, made in factory, adapted to winter work.

Apartments and buildings requiring light loads.

Port. Cement, 1	Steel bars, 1 lb.
Sand, 2	per square foot.
Cinders, 5	

Heavy Warehouses and Storage.

PARTITIONS METAL.



Single Lath.

2" plaster finish.

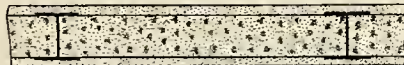
PARTITIONS METAL.



Double Lath.

4" plaster finish. Lightest weight.

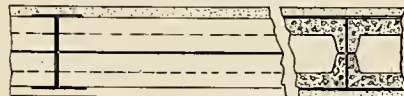
BLOCKS WITH METAL RIBS.



Solid blocks, 1" to 2".

2" to 4" plaster finish. Most economical.

BLOCKS WITH METAL RIBS.



Hollow blocks, 3" to 4".

4" to 5" plaster finish. Most economical. Sound proof.

WALL FURRING BLOCKS WITH METAL RIBS.



Hollow blocks, 1" to 2".

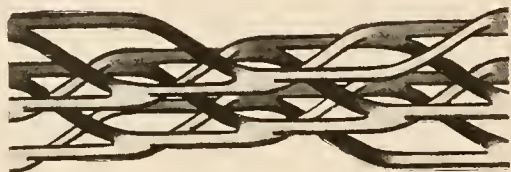
1 1/2" to 2 1/2" plaster finish.

TRUSS METAL LATH COMPANY, Inc.

NEW YORK OFFICE
15-25 WHITEHALL STREET

LOCAL AGENTS IN PRINCIPAL
BUILDING CENTERS

PITTSBURG OFFICE
1112 FRICK BUILDING



TRUSS METAL LATH
Kuhne's Structural Element (Ptd.)



CLINCHER METAL LATH
Kuhne's Single Lath (Ptd.)

PRODUCTS.

Manufacturers of KUHNE'S SHEET METAL STRUCTURAL ELEMENT (Truss Metal Lath) Patented, and KUHNE'S SINGLE LATH (Clincher Metal Lath) Ptd.

USES OF PRODUCT.

For FIREPROOFING of BUILDINGS and for STEEL CONCRETE CONSTRUCTION.

STRUCTURAL FEATURES.

Our Truss Metal Lath is a double lath and entirely different from any other lath made, since it serves as a centering, while, with most other material used for reinforced concrete, wooden centering is necessary to form a proposed structure. In erecting solid plaster partitions, we erect Truss Metal Lath without the iron uprights which are necessary in all other metal lath partition-construction. The iron uprights do not add anything to the strength of the partition, but rather weaken it, for the reason that where used the plaster must be in an uneven body over the surface of the lath, and after the partition is finished cracks are invariably found just over these uprights. No cracks appear in partitions made of Truss Metal Lath, such partitions being a rigid, firm and even body, or slab, of uniform strength in all its parts. Our Truss Metal Lath being directly in the center of the partition, renders such partition impervious to the effects of expansion and contraction in case of fire, and it has been fully demonstrated that a Truss Metal Lath partition will pass through the severest fire without warping or other injury; where iron uprights are used, the partition will invariably warp and twist out of shape when subjected to severe heat. The structure for testing partitions, at the Columbia University Testing Station, is reinforced with Truss Metal Lath only and has already stood ten different tests of one hour each.

The truss shape of our lath gives the material, with the incorporated concrete or mortar, unquestionable uniform and united forces of tension and compression.

APPLICATION.

The sheets of our Truss Metal Lath are set up with broken joints and fastened by wire to a temporary studding, as shown on the other page, which studding is removed when one side of the partition is plastered and the scratch coat applied between the studding on the other side; after allowing a reasonable time for setting, the partition will then be found to be rigid and firm, ready for the brown coat on the other side. The peculiar structure of the Truss Metal Lath prevents the plaster from being forced through the body of the lath, and falling to the floor on the other side, which trouble plasterers have to contend with.

When piping of partitions is necessary, the loops on one side are cut and bent open, the pipes inserted and the loops closed again. Thus the pipe is placed directly in the center of the partition, without in the least impairing the strength of the material.

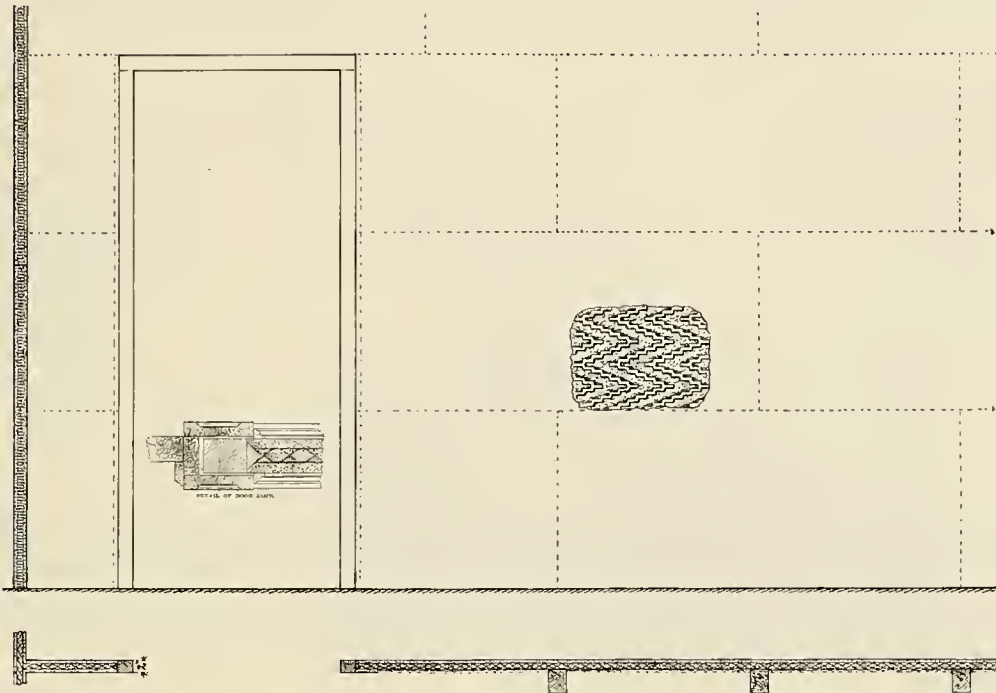
Partitions up to 12 feet high are sufficiently strong with a thickness of two inches, but in increasing the height above this, the thickness should also be increased.

APPROVED BY
BUILDING
DEPARTMENTS.

As a result of severe tests, under the supervision of the New York Building Department, our Truss Metal Lath has been approved for general use in the several Boroughs of New York City for fireproof partitions, elevators, dumb-waiters and vent shafts and bulkheads. It was *Awarded a Silver Medal at the World's Fair, St. Louis, 1904.*

INSTALLATION.

Installation of Truss Metal Lath can be effected by any contractor.



ELEVATION AND PLAN OF SOLID PLASTER PARTITION REINFORCED WITH TRUSS METAL LATH

NOTE. The temporary studding is removed when one side is plastered, and the scratch coat is put on between the studs on the other side.

SIZES AND
WEIGHTS.

Our Truss Metal Lath is made in sheets of: 24, 26, 28 and 30 inches wide and 68, 79, 101 and 112 inches long. Packed in crates containing about 400 square feet.

No. 24 Gauge has a cross section of 0.3 square inch per foot in width, and weighs 1.06 pounds per square foot.

No. 26 Gauge has a cross section of 0.216 square inch per foot in width, and weighs 0.80 pounds per square foot.

No. 28 Gauge has a cross section of 0.18 square inch per foot in width, and weighs 0.67 pounds per square foot.

Our Clincher Metal Lath (Kuhne's Single Lath) is made in grades A and B and shipped in bundles of 9 sheets each, containing 16 square yards.

Size of sheets, 24x96 inches.

ROSS F. TUCKER, *M. Am. Soc. C. E.*

THOS. M. VINTON, *Assoc. M. Am. Soc. C. E.*

TUCKER & VINTON CORPORATION

156 Fifth Avenue
NEW YORK CITY, N. Y.

ENGINEERS AND CONTRACTORS—For STEEL CONCRETE STRUCTURES, BUILDINGS, FOUNDATIONS, WALLS, DAMS, BRIDGES, FILTRATION PLANTS, FIREPROOF CONSTRUCTION, ORNAMENTAL CONCRETE, etc.

GENERAL INFORMATION—We have no set system, using all the standard methods of reinforcement, thereby insuring our clients unbiased opinions. We use the systems best adapted for each problem undertaken, often embodying two or three systems in one structure, according to the existing conditions.



BERTINE TRUSS REINFORCEMENT FOR FLOORS



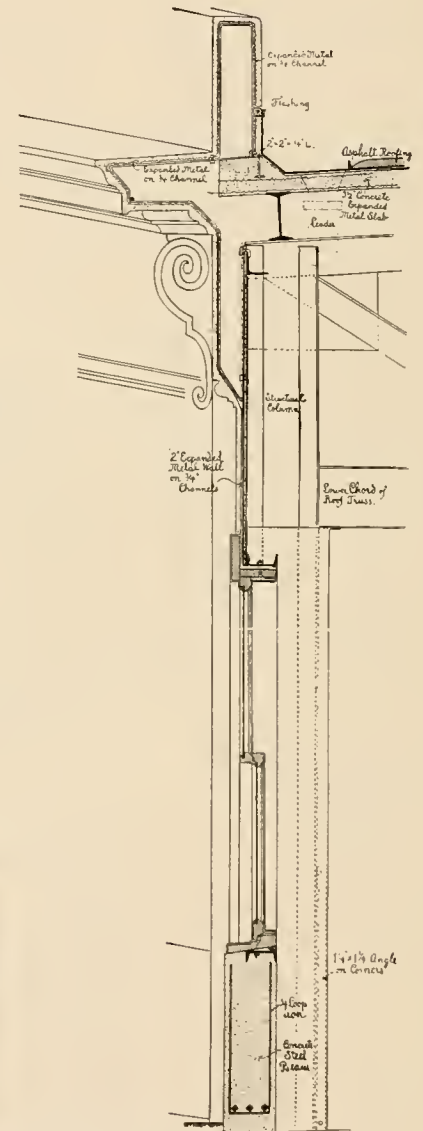
DERBY BRIDGE



SCHUYLERVILLE DAM



ORNAMENTAL CONCRETE



SECTION THROUGH EXTERIOR 2" CONCRETE EXPANDED METAL WALL

REPRESENTATIVE WORK

Dams, Ithaca and Schuylerville. Bridges, Derby and Mamaroneck. Filters, Ithaca, Cornell University, Yonkers. Buildings, Inspection Shops, Main Power House, Interborough R. R. Power House, Massena. Vault Light Installation, New York Rapid Transit Tunnel, Philadelphia Rapid Transit Tunnel, N. Y. Central R. R. Improvement, etc.

UNIT CONCRETE STEEL FRAME CO.

COMMONWEALTH BUILDING
Twelfth and Chestnut Streets
PHILADELPHIA, PA.

PRODUCTS.

Manufacturers of "UNIT" GIRDER FRAMES and "UNIT" SOCKETS for CONCRETE REINFORCEMENT; also dealers in all types of METAL for REINFORCING CONCRETE. We supply to the trade the entire REINFORCEMENT required for any CONCRETE STRUCTURE, or if requested, will erect same.

ADVANTAGES OF THE "UNIT" SYSTEM.

The "Unit System" is an American method of concrete construction scientifically designed to secure *Safety, Accuracy, Economy* and *Speed* in the erection of factories, warehouses, stores, office buildings, bridges, etc., providing the architect and the owner with the advantages of fireproof construction at a cost a little over that of wood.

The "Unit" Girder Frame is the best reinforcement for concrete girders, beams, lintels, etc., because of the following advantages: The constructional members are—
1, Designed as a "Unit." 2, Built as a "Unit." 3, Delivered as a "Unit." 4, Sup-

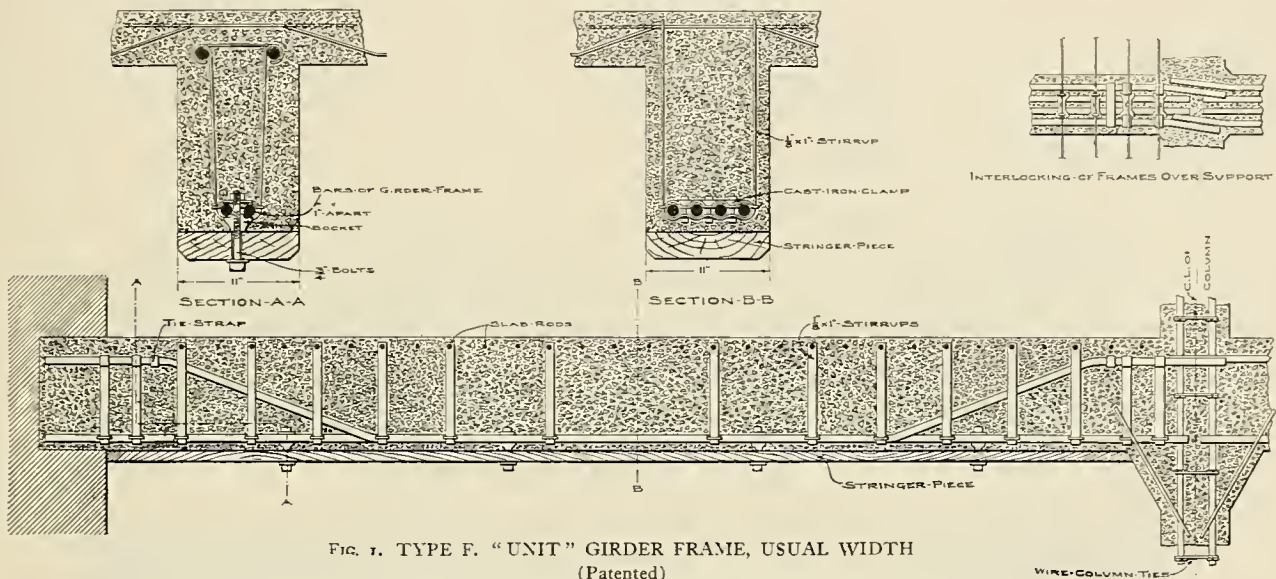


FIG. 1. TYPE F. "UNIT" GIRDER FRAME, USUAL WIDTH (Patented)

ported as a "Unit." 5, Erected as a "Unit." 6, Act as a "Unit." 7, Are carefully designed for each span. 8, Each member is of the necessary size. 9, It is of the proper shape. 10, Tension and shear members are scientifically spaced. 11, All parts are securely held. 12, No part can be forgotten. 13, Neither can it be omitted. 14, The entire frame is placed in position at once. 15, Ours is the only system in which the concrete can be thoroughly tamped without disturbing the reinforcing members. 16, Our system is adapted for use with every conceivable system of slab reinforcement. 17, The slab reinforcement is laced through stirrups making therefore a complete T-section. 18, By the "Unit system," the steel beam is replaced with absolute safety, and there is no other "girder frame" made and delivered as a "Unit."

The "Unit" Girder Frame is to a reinforced concrete structure what a steel beam is to a steel structure, except that the "Unit" Girder Frame requires only about one-third the steel, the concrete saving the other two-thirds of that material. The "Unit" Girder Frame can be used in any span up to 75 feet.

ADVANTAGES OF REINFORCED CONCRETE CONSTRUCTION.

Our leading architects and engineers are now convinced that, by the use of this essentially modern material, the cost of an edifice may be reduced from fifteen to thirty per cent. below the cost of one built of steel and terra cotta. The first cost is almost as cheap as wood construction and cheaper in the long run.

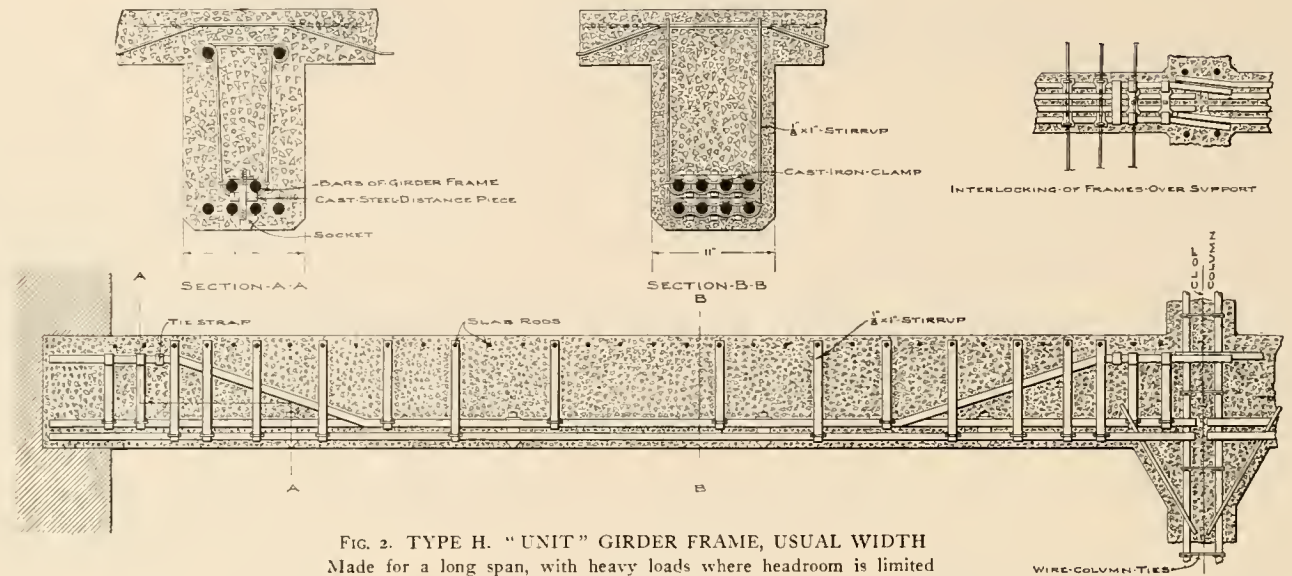


FIG. 2. TYPE H. "UNIT" GIRDER FRAME, USUAL WIDTH
 Made for a long span, with heavy loads where headroom is limited
 (PATENTED)

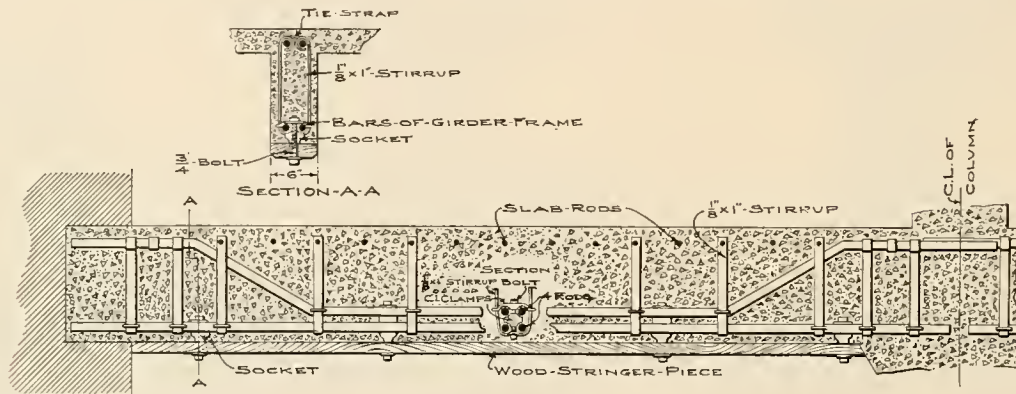


FIG. 3. TYPE G. "UNIT" GIRDER FRAME FOR VERY NARROW BEAMS
 (PATENTED)



FIG. 4. GIRDER FRAMES
 Ranging from 20 to 30 feet long, delivered as a "Unit"
 (PATENTED)

SPECIAL
FEATURES OF
THE "UNIT"
SOCKET.

"Unit" Socket for concrete reinforcement (Fig. 5) is designed: 1, To locate the center of action of the steel reinforcement before a particle of concrete is put into the mold, avoiding all guess-work. 2, To allow careful inspection of the reinforcement before concreting. 3, To make sure the exact amount of concrete for fireproofing is there. 4, To prevent the reinforcement from being moved to the right, or to the left, or up or down while tamping the concrete. 5, To save time in erection.

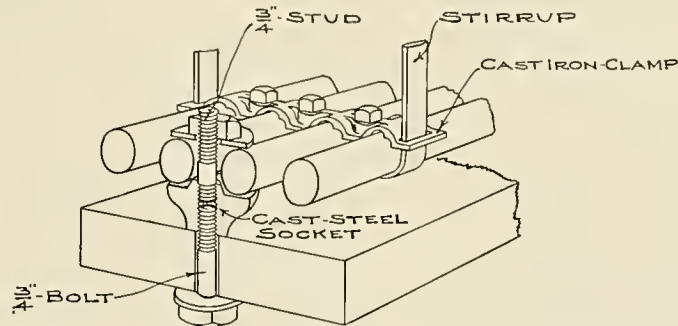


FIG. 5. "UNIT" SOCKET SUPPORTING "UNIT" GIRDER FRAME
Of one quadruple bar. "Ready for Concrete"
(Patented)

No wiring or banding or blocking of reinforcement required. 6, That when the beam is finished and the centering removed, it can be used to support suspended ceilings, partitions, shafting, steam pipes, gas or electric fixtures, fans or motors, without the use of expansion bolts. 7, To avoid the injury to a beam, often caused by drilling when using expansion bolts. 8, Each socket will support any load carried by a $\frac{3}{4}$ -inch bolt. 9, Can be placed as close as desired without injury to the beam.

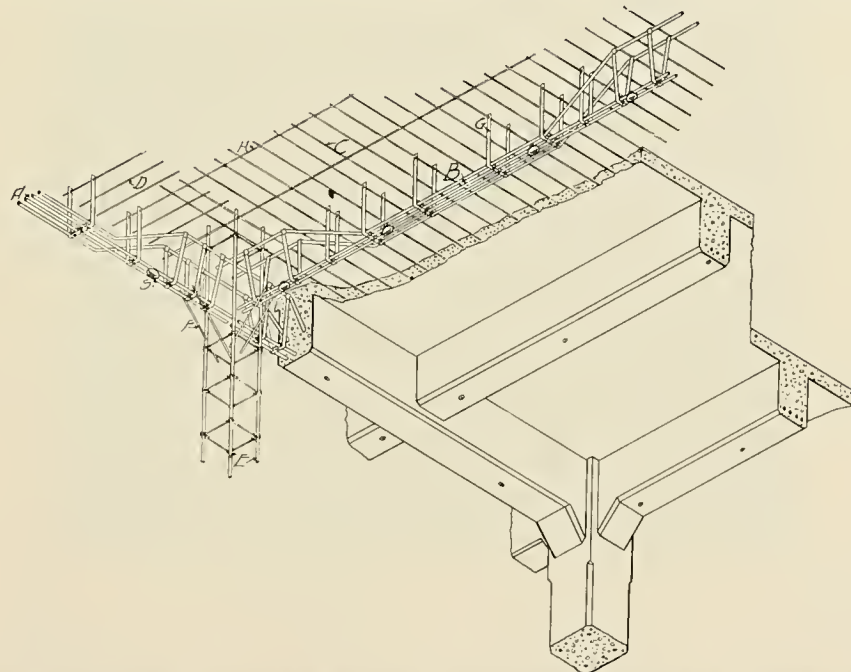
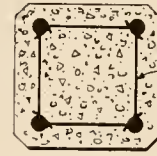


FIG. 6. ISOMETRIC VIEW OF PORTION OF "UNIT SYSTEM" REINFORCED CONCRETE FLOOR

Figure 6 shows the design of reinforced concrete for heavy floor loads, showing the arrangement of the columns, girders and beams and the details of the columns for a building carrying a heavy load. The steel core is used in the lower column in order to keep the exterior dimensions of the column smaller than would be the case if the column were only reinforced with small rods. This type of construction we have used in a number of buildings, with eminently successful results. (See Fig. 9.)

We issue tables giving the strength of reinforced concrete beams, girders, and columns, so that the architect can control his own design. We make the shop drawings together with a framing plan, upon which each beam is given a number or mark, so that the beams can be erected at the building by using the shop numbers, similar to steel frame construction. The frames can be checked up in advance from the shop drawings, thus insuring the accuracy of the construction. This is not possible with any other system. The girder frame is placed as a unit in the mold which has been constructed by the carpenters from the same framing plan. When the girder frame is placed in the mold, it rests upon the sockets, so that the proper amount of concrete is under the bars for fire protection; and when the nut is screwed down, the girder frame is locked into position, so that no amount of tamping can displace it.



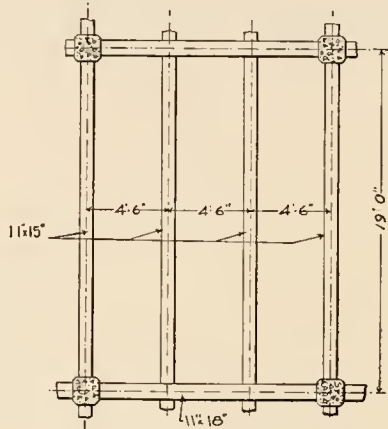
Cross Section of Reinforced Concrete Column.



Cross Section Steel Column

FIG. 8. CONCRETE COLUMNS

FLOOR LOAD 300 LBS. PER SQ. FT. (LIVE LOAD)
 BEAMS 11"x15" GIRDERS 11"x18"
 4" SLAB



TYPICAL PANEL (looking up)

FIG. 7. DESIGN OF REINFORCING CONCRETE "UNIT" SYSTEM

Floor load 300 lbs. per sq. ft. (live load),
 Beams 11"x15", Girders 11"x18", 4" Slab

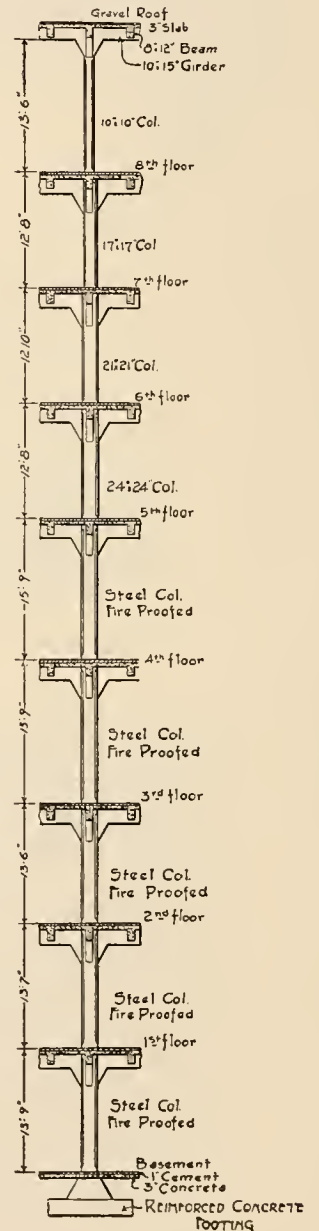


FIG. 9. ELEVATION Showing Typical Columns for Heavy Floor Loads

"UNIT" CONCRETE-STEEL FRAME CO.,
COMMONWEALTH BUILDING,
 PHILADELPHIA, PA.

Job No. 6 Requisition No. 54
 Sheet No. 12 Order No. 93

Shop Details Third Floor Framing

No. of PCS	MATERIAL	LENGTH	REMARKS
17	Quadruple Bar 1"	18'-3 1/2"	Ordered 18'-3 1/2"
17	Quadruple Bar 1"	17'-7"	Ordered 17'-7"
60	Standard Double Sockets		
204	Stirrups, 1" x 1/8" Strap	3'-2 1/2"	1/2" Holes punched 1" from each end.
102	Stirrups, 1" x 1/8" Strap	3'-1"	1/2"

In lower bar cut webs full length.
 Make 17 Girders as shown
 Marked 3G2
 Top member marked 3G2-T
 Bottom member marked 3G2-B

Ship to BLD'G FOR C.J. MATTHEWS
BODINE ST. NEAR WILLOW ST.
PHILA. PA.

Date 12-14 1904
 Drawn by R.E.P.
 Traced by _____
 Checked by H.S.
 Approved (by Architects)

FIG. 10. FACSIMILE OF SHOP DRAWING

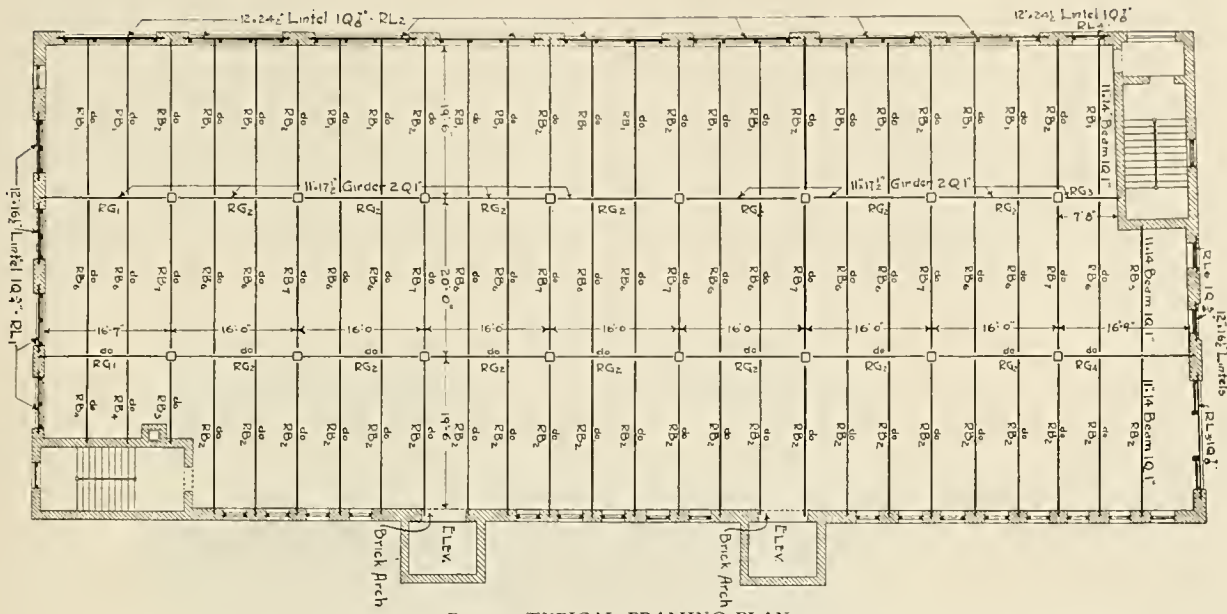


FIG. 11. TYPICAL FRAMING PLAN

Live load 200 lbs. per sq. ft. Notice that every beam and girder is lettered and numbered (marked) for its certain position

A SUCCESSFUL FIRE TEST.

A successful fire test (Fig. 12), shows a load of 650 pounds per square foot on the roof of the test house the day after the fire and water test on our system.

The test was conducted by the engineering staffs of the Building Bureaus of New York and Philadelphia, directed by Prof. Ira H. Woolson, M. E., Columbia Uni-



FIG. 12. LOADED CONCRETE ROOF AFTER FIRE TEST

versity. Certificates of approval have been issued by these cities permitting our system to be used for fireproof structures and buildings of the first class. The insurance companies have also accepted this system in lieu of steel frame, fireproofed.

Our engineering staff is at the disposal of the profession free of cost.

We make deliveries and undertake work in any part of the United States.

Additional literature and facts covering any special case will be sent upon application.

WORK
ACCOMPLISHED.

The "Unit" System has been abundantly tried and proved in buildings of importance, designed by architects and engineers of the highest standing.

Some buildings designed according to the "Unit" system are office, manufacturing building-warehouse and power house for the Victor Talking Machine Company in Camden, N. J.; warehouse for the trustees of the Johns Hopkins Hospital Estate, Baltimore, Md.; The Review Printing & Publishing Co., 4th and Locust Sts., Philadelphia, Pa.; The Crane Ice Cream Company, Manning and 23d Sts., Philadelphia, Pa.; Ketterlinus Lithographic Co., 4th and Arch Sts., Philadelphia, Pa.; Henry A. Sheip Mfg. Co., Columbia Ave. and Randolph St., Philadelphia, Pa.; A. F. Bornot & Bro., 17th and Fairmount Ave., Philadelphia, Pa.; C. J. Matthews, Bodine and Willow



FIG. 13. NEW BUILDINGS OF THE VICTOR TALKING MACHINE COMPANY, CAMDEN, N. J.
Buildings "A," "B" and "C" of Concrete reinforced with "Unit" Girder Frames

Sts., Philadelphia, Pa.; S. S. Marvin, College Ave. and Center Ave., Pittsburg, Pa.; Scovill Manufacturing Company, Waterbury, Conn.; William S. Scull & Co., Camden, N. J.; William Wharton, Jr. & Co., Inc., 25th and Ellsworth Sts., Philadelphia, Pa.; McDonald & Morrison Manufacturing Company, Dubuque, Iowa; Crane Co., American and Master Sts., Philadelphia, Pa.; Wm. Montgomery & Co., 2d and Wildey Sts., Philadelphia, Pa.

ESTIMATES AND
ADDITIONAL
INFORMATION.

We shall be pleased to furnish any estimates that may be desired and to give information liberally to any architect or engineer, who may call upon us for the same. We shall also be glad to consider special problems and furnish suggestions or plans for their solution. We have a large corps of experienced men and adequate manufacturing facilities.

WIGHT - EASTON - TOWNSEND COMPANY

ENGINEERS AND CONTRACTORS

603 West 45th Street
NEW YORK CITY, N. Y.

SERVICES.

Engineers and Contractors for FIREPROOFING SYSTEMS. Contracts taken for ENTIRE CONCRETE BUILDINGS, GRANOLITHIC and ARTIFICIAL STONE WORK, WIRE LATH, FURRING, ETC.

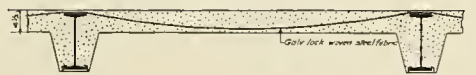
FIREPROOFING BY REINFORCED CONCRETE.

Our system comprises the use of concrete with high-carbon drawn-steel wire fabric, the latter insuring a staple and permanent reinforcement. The wire is galvanized before being woven into the fabric. A woven fabric running continuously over the beams from wall to wall, and laid in sheets 56 inches wide, insures the proper placing of the reinforce.

These forms are protected by United States patents, and all rights are reserved. The construction has been approved by the Bureau of Buildings in New York City, after a fire and water test and two weight tests.

ILLUSTRATIONS.

The following cuts show some of the various adaptations of our system:



Concrete - 1 Portland cement, 2 Sand and 5 Cinders.
Approved by Bureau of Buildings for 6'-0" Span with live load of 150 lbs.
SYSTEM N°1 TYPE A Tested to 1500 lbs. per Sq. ft.



Concrete - 1 Portland cement, 2 Sand and 5 Cinders.
Approved by Bureau of Buildings for 6'-0" Span with live load of 140 lbs.
SYSTEM N°2 TYPE C Tested to 1400 lbs. per Sq. ft.



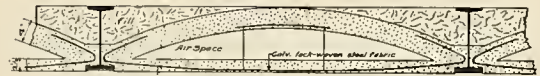
Concrete - 1 Portland cement, 2 Sand and 5 Cinders.
Approved by Bureau of Buildings for 6'-0" Span with live load of 150 lbs.
SYSTEM N°1 TYPE B Tested to 1500 lbs. per Sq. ft.



Concrete - 1 Portland cement, 2 Sand and 5 Cinders.
Approved by Bureau of Buildings for 6'-0" Span with live load of 150 lbs.
SYSTEM N°2 TYPE D Tested to 1500 lbs. per Sq. ft.



Concrete - 1 Portland cement, 2 Sand and 5 Cinders.
Approved by Bureau of Buildings for 6'-0" Span with live load of 150 lbs.
SYSTEM N°2 TYPE B Tested to 1500 lbs. per Sq. ft.



Concrete - 1 Portland cement, 2 Sand and 5 Cinders.
Approved by Bureau of Buildings for 6'-0" Span with live load of 300 lbs.
SYSTEM N°3 TYPE A Tested to 3000 lbs. per Sq. ft.

ESTIMATES.

We solicit correspondence from architects and builders, and are glad to furnish all required information and estimates of cost.

WHITE FIREPROOF CONSTRUCTION COMPANY

1 Madison Avenue
NEW YORK CITY, N. Y.

TELEPHONE, 2436 and 2437 Gramercy

PRODUCTS.

Engineers and Contractors for FIREPROOF FLOORS and CEILINGS; FIREPROOF PARTITIONS, 2, 3 and 4 inches thick; FIREPROOF ELEVATOR and LIGHT SHAFTS; METAL FURRING and LATHING, and FIREPROOF CONCRETE STAIRS.

THE WHITE SYSTEM.

THE WHITE FIREPROOF CONSTRUCTION COMPANY'S system consists of a flat steel reinforced concrete slab supported on the flanges of the I beams. In the slab are imbedded tension members of 9-16 inch round iron rods. This shape of rod offers the most efficient section for strength with least sectional area; it cannot occupy so much room vertically in the slab as to practically cut it into a number of sections, thus weakening instead of strengthening the whole construction.

DETAILS OF CONSTRUCTION.

On the succeeding page will be found cuts showing the principal forms of the "White" construction. Further variations of these types, and additional detailed information will, if desired, be furnished on request.

ADAPTABILITY.

The types shown are approved by the Bureau of Buildings of New York City, and by the National Board of Fire Underwriters.

TERRITORY.

We are in a position to estimate on the fireproofing of buildings in any part of the United States and Canada.

FORM OF SPECIFICATION.

For system "A" type 1 arch as illustrated. (This specification may be varied for other types, adding or omitting parts as may be necessary to meet the special requirements).

All floor and roof tiers of beams to be filled in with WHITE FIREPROOF CONSTRUCTION Co. SYSTEM "A" TYPE 1 cinder concrete floor construction, with metal lath ceilings clipped to under side of same, or hung down to levels shown on drawings.

FLOORS.—Arches to be of cinder concrete laid on temporary wood centering, and composed of one (1) part high grade Portland Cement, two (2) parts sand and five (5) parts steam cinders well tamped and imbedding 9-16" round rod tension members in said concrete 1" above bottom of arch, and spaced 12" on centers.

COLUMN COVERING.—All interior columns to be enclosed in concrete of same mixture as specified for arches, to be not less than 2" thick at any point, and left square or round as required.

ALTERNATE FOR COLUMN COVERING.—All interior columns to be furred and lathed using 1" angles, 1" channels and 1"x3-16" flats so applied that there will be at least an inch air space between the column and the plastering.

SLEEPER FILL.—Fill in between all sleepers with cinder fill mixed in proportions of one (1) part cement, two (2) parts sand and ten (10) parts cinders. Fill for all cement, marble or mosaic floors, etc., to be done by contractor for that work.

ROOF GRADING.—Grade roof with proper cinder fill, grading same to leaders and finish smooth with coat of cement, leaving surface ready for roofer.

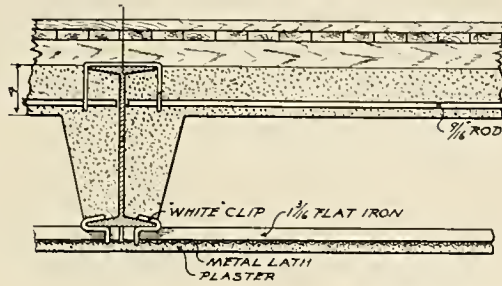
CEILINGS.—Ceiling to be clipped or hung in approved manner, using 1"x3-16" flats or 1" channels for furring bars, spaced not over 12" O. C. and galvanized metal lath attached to same with No. 18 galvanized annealed tie wire.

All cornices, false girders, arches, etc., to be furred as shown with 1½"x3-16" angles and 1"x3-16" flats and to be securely bolted together. No "tying up" of furring will be permitted. All furring covered with galvanized lath.

PARTITIONS.—All partitions shown thick on plans to be double metal lath partitions, built of 2"x½" or 3"x½" flats spaced not more than 14 O. C. securely fastened to a floor and ceiling plate and all doors furred out with 2" or 3" angles properly punched for carpenter to fasten wood jambs. Lath both sides with galvanized metal lath.

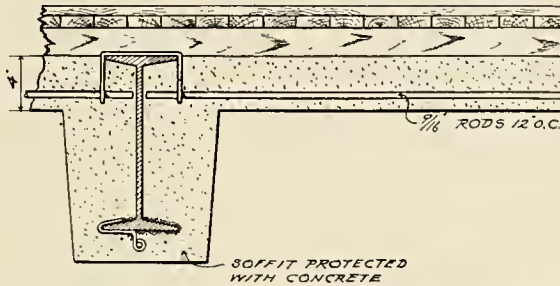
Partitions shown thin on plans to be constructed of 1"x3-16" flats spaced and fastened same as specified for heavy partitions and lathed on one side only.

WALL FURRING.—All exposed outside walls to be furred and lathed bringing same out to lines shown on plans and covering in all pipes, ducts, etc., where directed. This work to be constructed generally same as thin partitions, but where furring stands out from walls, it is to be braced to walls once every 6' 0" in height.



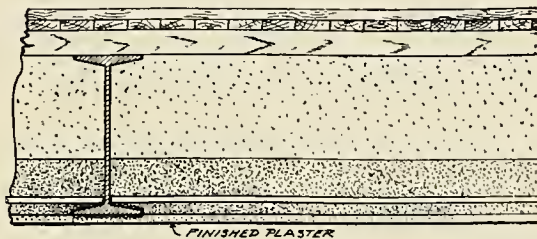
Weight of arch..... 28 lbs. sq. ft.
 " " lath and plaster ceiling... 10 " " "
 " " 2 1/2" sleeper fill including
 sleepers..... 10 " " "
 " " double flooring..... 6 " " "
 Ceiling may be dropped down or omitted.
 Specially adapted for use in office buildings, resi-
 dences and public buildings.
 Approved by N. Y. Bldg. Dept., 230 lbs. live load
 per sq. ft.

SYSTEM A, TYPE 1



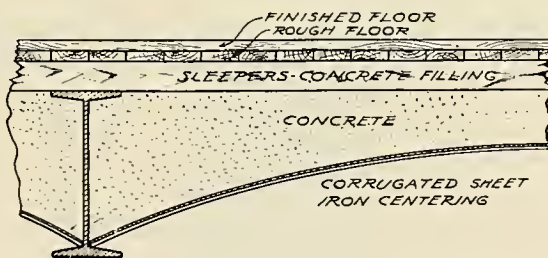
Weight of arch..... 30 lbs. per sq. ft.
 Hung ceiling may be used or plaster applied directly
 to arch.
 Specially adapted for use in stores, warehouses or
 wherever a flat ceiling is not essential.
 Approved by N. Y. Bldg. Dept., 230 lbs. per sq. ft.
 With tension rods hooked over top of beams. Ap-
 proved by N. Y. Bldg. Dept., 370 lbs. per sq. ft.
 With tension rods hooked over top of beams, 5" slab,
 approved by N. Y. Bldg. Dept., 415 lbs. per sq. ft.

SYSTEM B, TYPE 1



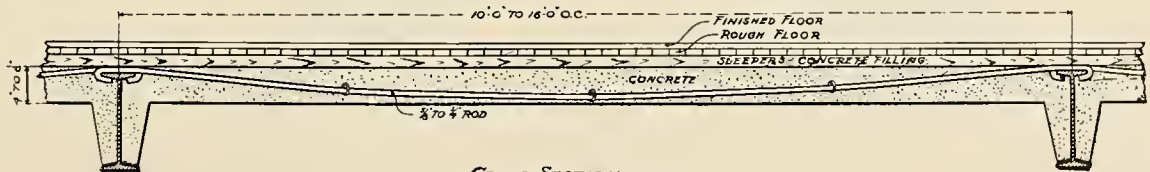
Weight of arch..... 28 lbs. per sq. ft.
 Weight of fill for each inch in height 4 " " " "
 Plaster is applied directly to arch leaving flat ceiling.
 Iron should be designed for this system with a view
 to using small size beams.
 Especially adapted for use in apartment houses,
 hotels, residences, etc.
 Approved by N. Y. Bldg. Dept., 150 lbs. per sq. ft.

SYSTEM E, TYPE 1



Weight varies with size of beams.
 Hung ceiling may be used with this arch.
 Wood centers may be used in place of corrugated
 iron and plaster applied directly to arch.
 Specially adapted for use where very heavy loads
 are required, as in warehouses, breweries, etc.

SYSTEM F, TYPE 2



CROSS SECTION

SYSTEM D, TYPE 1

Weight depends upon thickness of arch which will vary with span and kind of concrete, viz: cinder or stone.
 Especially adapted for use of roofs, etc.

THE GENERAL FIREPROOFING COMPANY

Main Office and Works
YOUNGSTOWN, OHIO

BRANCH OFFICES

156 FIFTH AVE.
NEW YORK CITY, N. Y.
420 COLORADO BLDG.
WASHINGTON, D. C.

315 OLD COLONY BLDG.
CHICAGO, ILL.
311 PENN MUTUAL BLDG.
BOSTON, MASS.

AGENCIES

MINNEAPOLIS, MINN.
SAN FRANCISCO, CAL.
LOUISVILLE, KY.
CINCINNATI, O.
NEW ORLEANS, LA.
ST. LOUIS, MO.
PHILADELPHIA, PA.

BUFFALO, N. Y.
CLEVELAND, O.
DETROIT, MICH.
TOLEDO, O.
RICHMOND, VA.
INDIANAPOLIS, IND.
OMAHA, NEB.

DENVER, COL.
ROCHESTER, N. Y.
MILWAUKEE, WIS.
NEW HAVEN, CONN.
SAVANNAH, GA.
ATLANTA, GA.
CHARLESTON, S. C.

PRODUCTS. Designers and manufacturers of OFFICE FURNITURE and FILING DEVICES in "ALL-STEEL."
Manufacturers of HERRINGBONE EXPANDED STEEL LATH and EXPANDED METAL for REINFORCING CONCRETE.

FACILITIES. Our works, located in the very centre of the steel-producing district, afford unequaled facilities for the purchase and delivery of the best grades of steel sheets. Our equipment is most complete and thoroughly up-to-date.

OUR AIM. Fire protection, broadly considered, suggests two general lines of effort, each of which demands the careful study of those who are building or buying the interior furnishings:

FIRST—PREVENTION

To prevent, we offer Expanded Metal as a reinforcing member for Concrete Construction; also Herringbone Expanded Steel Lath. To control, we offer "Allsteel" furniture and filing equipment. The blaze must be checked when incipient. It is senseless to erect a fireproof building and fill it with furnishings that feed the flames.

SECOND—CONTROL

We have a long representative list of Banks, Libraries, Insurance Offices and Public Buildings equipped with our "Allsteel" furniture, showing the excellence of our work.

The essentials in furniture and filing equipment of steel are, material, design, construction and finish. These we have and our trade mark is a guarantee of perfect manufacture; it has been adopted not alone because it is comprehensive, but by reason of the merit of the product.



TRADE MARK.

The safety of public documents and records cannot be too zealously guarded. Fireproof buildings will not protect documents if the furnishings themselves are fuel to feed the fire starting indoors.

"ALLSTEEL"
OFFICE
FURNITURE
AND FILING
DEVICES.

To meet this contingency we manufacture a complete line of office furniture and filing devices in "Allsteel" comprising Roll Top Desks in imitation Oak and Mahogany, Tables, Bookcases, Document Files, Roller Shelves for Books, Letter Files, Blank Cases, Pigeon Holes, Drawers, Counters, Library Shelving, Portable Vault Omnibuses, Card Index Systems, Map Files for Architects, Builders, Contractors, etc., Engineers' Map Drawers, Fireproof Cupboards, Wardrobes and Lockers, Note and Check Files, etc.

ADVANTAGES
AND ECONOMY.

These goods are not only fireproof but are cheaper than wood in the end, as they are indestructible; the steel is not affected by moisture nor change in temperature; they are sanitary and afford protection against rodents and vermin "and it cannot burn."

CONTRACTS.

We are prepared to contract for the complete equipment of buildings with "All-steel" products, in which work we have had a very large experience.

"List of Jobs" furnished for references.

"ALLSTEEL"
DOCUMENT
FILES.

Fig. 1 shows two views of an "Allsteel" Document File. The extreme simplicity will be noticed, likewise the valuable space that is saved in comparison with wooden devices of a like character.

Fig. 2 shows a four-drawer "Allsteel" vertical Letter File which has a much larger capacity for letters than a wooden file of the same outside dimensions. Card-Index Doors and all other Filing Devices are made in Standard Size or to order.

EXPANDED
METAL
LOCKER.

We make Lockers of any type or arrangement; but for gymnasiums, athletic and golf clubs, armories, etc., we advocate the use of the Expanded Metal Locker (Fig. 3). It is sanitary and secure, and cannot be pried open. The contents are exposed to the eyes but not to the fingers of the man without the key. Ventilation is absolute and there is none of that disagreeable odor noticeable in wood lockers which have contained damp garments.



A BIT OF THE COURT HOUSE FURNITURE PUT
IN BY US AT SPRINGFIELD, O.



FIG. 2. "ALLSTEEL"
FILE CASE
Made in any arrangement



FIG. 1. "ALLSTEEL" DOCUMENT
FILE

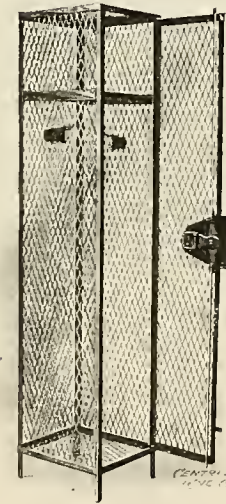


FIG. 3. EXPANDED METAL
LOCKER
Sanitary and Secure

EXPANDED
METAL.

In this age of cement, the best thought and experience have been applied to the development of the proper reinforcing of concrete. Expanded Metal (Fig. 4) is the fruit of this development. It is made of steel and is an efficient and economical device as a reinforcing member for concrete construction. The greatest satisfaction

always results from its use in floors, roofs, tunnels, abutments, cribs, side walls, fountains, reservoirs, sidewalks, pavements, fences, dams, vats, bins, coal bunkers, etc.

A large stock of standard sizes is kept on hand ready for immediate shipment. Expanded Metal of a finer mesh is much used for window guards, tree guards, railings, etc. A very clean cut, nice product in this line is furnished. Special sizes can be cut if desired.

Herringbone Expanded Steel Lath is reinforced expanded metal; reinforced with a series of parallel ribs, extending the length of the sheet; it does not overlap and waste. It furnishes a perfect key that not only locks the mortar but permits of the mortar enveloping the metal without waste of plaster.

HERRINGBONE
EXPANDED
STEEL LATH.

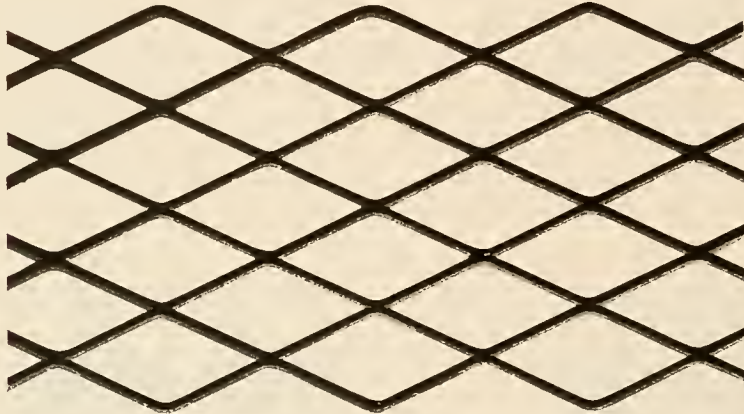


FIG. 4. EXPANDED METAL
For Reinforcement of Concrete

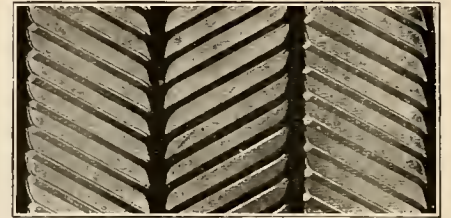


FIG. 5. HERRINGBONE EXPANDED
STEEL LATH

CEMENTINE
BUILDINGS AND
HERRINGBONE
LATH.

The Cementine type of dwelling variously called Stucco, Outside Plaster or Cement Siding, continues to grow in popularity, and Herringbone Lath has been found to meet all the requirements of this class of work. We will gladly send typical details on request.

DETAILS AND
GRADES.

Our methods of distinguishing the different grades of Lath is by naming them A, AA, B, BB, etc.:

Grade A—One sheet will cover surface 14"x96" and is sold for one yard. Approximate shipping weights are as follows: 28 gauge, 3 lbs. to 1 sq. yd.; 27 gauge 3½ lbs. to 1 sq. yd.; 26 gauge, 3⅓ lbs. to 1 sq. yd.

It is packed in bundles of 20 sheets with gauge number on metal tag attached; shipped "plain" unless otherwise specified.

Grade AA—differs from A Grade in that it has a closer mesh. In both A and AA Grades, No. 28 gauge is most used.

Grade B—Is made in sheets 20½"x96", containing 1½ sq. yards. Approximate shipping weights are as follows: 28 gauge, 2 lbs. per sq. yd.; 27 gauge, 2½ lbs. per sq. yd.; 26 gauge, 2½ lbs. per sq. yd.; 24 gauge, 3⅓ lbs. per sq. yd.

It is packed in bundles of 15 sheets, 22½ yds. with gauge number on metal tag attached.

Grade BB—Differs from the B Grade in that it has a closer mesh. In both B and BB Grades, 27 gauge is the weight most used.

SPACING AND
FURRING.

The A and AA Grades in 28 gauge (which is the standard gauge), will carry on 16" centres if securely and properly tied. Where special rigidity is required the spacing is reduced to 12". The length of the sheet, 96", accommodates either.

The 26 gauge is exceptionally rigid on 16" centres. In solid partition work, if the studding is substantial, 28 gauge will always carry on 16" centres, and 26 gauge on 20" centres.

The B and BB Grades, except in the heavier gauges, are not as well adapted to wide centres.

STAPLES AND
WIRE.

On metal studding or furring the lath is fastened by the use of 18 gauge annealed wire. To tie 100 yds. on 16" centres, 7½ lbs. of wire will be required; on 12" centres, 9 lbs. of wire.

For fastening to wood studding, a 12 or 14 gauge, 1" or 1¼" staple is used. On 16" centres, 100 yds. require 10 lbs. of 1"; 12½ lbs. of 1¼"; on 12" centres, 25% more.

COST.

We will cheerfully furnish estimates on any quantity of material desired.

Competent engineers are ready to confer with Architects relative to details of construction.

EDWARD DARBY & SONS CO.

(INCORPORATED)

Pen-Dar Metal Lockers, Window Guards, Iron Railings, etc.

233 and 235 Arch Street
PHILADELPHIA, PA.

PRODUCTS.

Manufacturers of the PEN-DAR METAL LOCKERS, WIRE and IRON WINDOW GUARDS, WROUGHT IRON RAILINGS, BRASS and IRON GRILLE WORK, ELEVATOR ENCLOSURES, ELEVATOR CARS, WROUGHT IRON and WIRE OFFICE ENCLOSURES, AREA GRATINGS, BRASS, COPPER, STEEL and GALVANIZED WIRE CLOTH, SIEVES, RIDDLERS, COAL and SAND SCREENS, everything in WIRE and IRON.

PEN-DAR METAL LOCKER.

We manufacture the Pen-dar Metal Locker of any dimensions; we are not restricted to a few sizes or shapes. We also make the Pen-dar Metal Locker in groups

of as many unit Lockers as may be specified, either in single rows or double rows back to back, or two tiers high—with or without steel rim cabinet locks, non-changeable keys and master key, or brass padlocks, or combination keyless locks. All our Pen-dar Metal Lockers, where a steel rim cabinet lock is used, are provided with our three-point bolt attachment, which allows of the door being bolted at the top, bottom and centre with one turn of the handle. Finished in standard colors, enameled black, olive green or Tuscan red—either set up or crated or erected ready for use.



FIG. 1. PEN-DAR METAL LOCKER
No. 175

Fig. 1 illustrates Pen-dar Metal Locker, No. 175. Standard sizes 12 inches wide by 12 inches deep by 60 inches in height, also 12"x 12"x 72", and 12"x 18"x 72". This is an absolutely fireproof and vermin proof Locker and is strongly recommended for use in places where dust accumulates, as it is practically dust proof.

Fig. 2 illustrates the Standard Pen-dar Metal Locker, No. 105. This Locker is made entirely of steel; its contents are absolutely secure and at the same time sub-

jected to inspection. Standard sizes, 12 inches wide by 12 inches deep by 60 inches in height; also 12"x 12"x 72" and 12"x 18"x 72".

PRICES.

As to prices of the Pen-dar Metal Locker, we would prefer to submit estimates from specifications submitted to us; as seventy-five per cent. of our Lockers are sold from special sketches which we submit with the estimate. We are always glad to prepare these at our own expense.

COST OF INSTALLATION.

The cost of installing Lockers depends greatly on the layout of the Locker-room provided for this special purpose, as well as the quantity, groupings, etc.

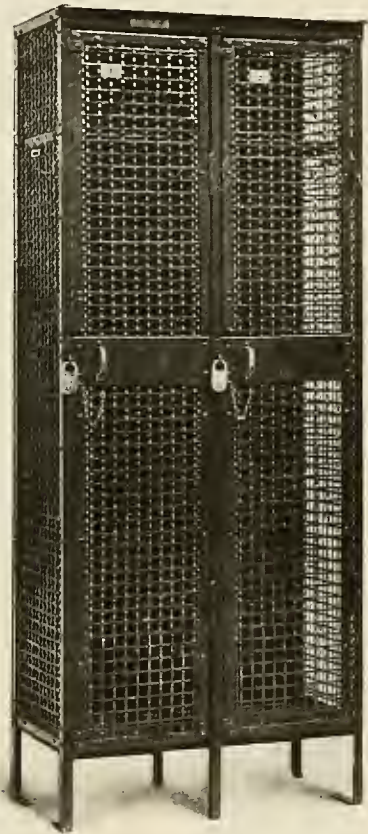


FIG. 2. PEN-DAR METAL LOCKER
No. 105

MERRITT & COMPANY

PHILADELPHIA, PA.

OFFICE
1022-1030 RIDGE AVENUE

NEW YORK OFFICE
141 BROADWAY

WASHINGTON OFFICE
COLORADO BUILDING

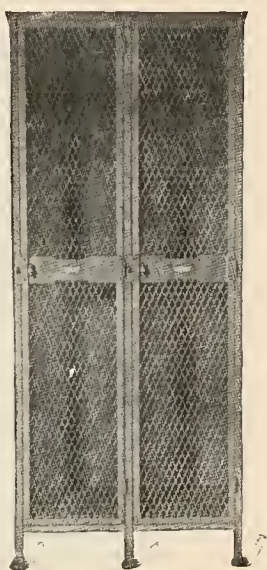
WORKS
CAMDEN, N. J.

PRODUCTS.

Manufacturers of EXPANDED METAL LOCKERS, SHEET STEEL LOCKERS and SHEET STEEL SPECIALTIES.

Also manufacturers of WIRE WORK, TOOL ROOM ENCLOSURES, SHELVING and CABINET WORK to special order. Any FINISH can be given, AIR DRIED, HOT AIR DRIED, OR BAKED ENAMEL with Pumice Rubbing between each coat.

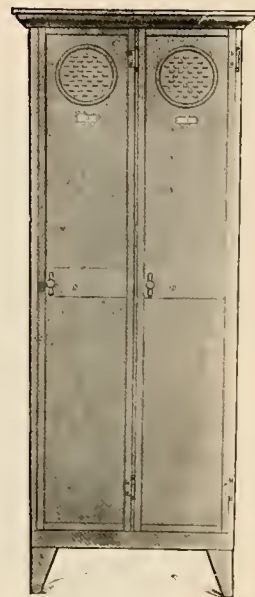
Lockers are manufactured in all sizes, to suit the pleasure of our customers, but we carry in stock the following, upon which prompt delivery and lowest prices can be promised:



No. 1206 B.
TYPICAL EXPANDED METAL
LOCKER, SINGLE TIER

SINGLE TIER					
DEPTH		WIDTH		HEIGHT	
12"	x	12"	x	60"	
12"	x	12"	x	72"	
12"	x	18"	x	60"	
12"	x	18"	x	72"	
15"	x	16"	x	72"	
15"	x	20"	x	72"	

DOUBLE TIER (One above another)					
DEPTH		WIDTH		HEIGHT	
12"	x	12"	x	36"	
12"	x	12"	x	42"	
12"	x	18"	x	42"	
15"	x	16"	x	42"	
15"	x	20"	x	42"	



No. 1406 U.
TYPICAL SHEET STEEL
LOCKER, SINGLE TIER

Expanded Metal is a perfect material for the panels of an Open Mesh Locker. Each panel is a rigid sheet, strengthening the enveloping frame instead of having to be supported by the frame. This does away with all danger of sagging and disalignment. The mesh cannot be forced apart and articles extracted through openings so made.

All our Lockers are built on the Unit and Interlocking Principle. Any desired arrangement can be had at any time, and duplicate parts made to gauge, obtained at any time. This feature makes them a positive and safe investment and they are always an asset, as even if a change is desired in the grouping, the same can be accomplished by procuring the additional parts.

We illustrate on the following page all the parts of our Standard Expanded Metal Lockers. The Sheet Steel Locker is similarly constructed.

Our Standard Expanded Metal Lockers are made with panels of $\frac{3}{8}$ " No. 13 gauge mesh Expanded Metal, but $\frac{1}{2}$ " No. 18 can be substituted if desired.

The framing is $\frac{3}{4}$ "x $\frac{3}{8}$ " angle for small Lockers, 1"x $\frac{3}{8}$ " for Lockers over 60" high.

The top and backs are of No. 24 gauge steel, the bottoms of No. 18 gauge.

The door when locked is secured at the top, bottom and centre.

Sheet Steel Lockers are made of from 22 to 24 gauge material, with angle frame, insuring strength and rigidity. Door Joints are lapped, and all angles on the surface covered, no rivets appearing.

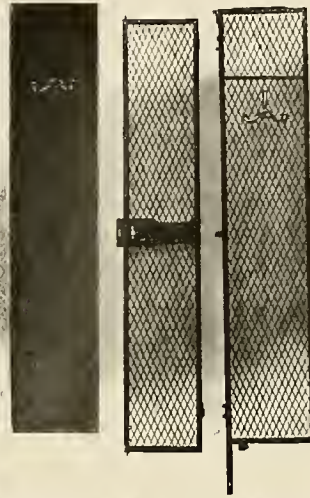
CONSTRUCTION.

Each Locker group will require in length 2" in addition to the combined widths of the Lockers.

The accompanying cuts illustrate how all our Lockers are made, whether Expanded Metal or Sheet Steel, it being understood that any parts may be made of either material.

Our Sheet Steel Lockers are artistically and mechanically correct, being dust-proof and without rivets on the surface. Door Joints are lapped and the ventilation is through louvre openings.

Our Lockers are usually shipped knocked down, to save freight, and can be erected without expert help, but we can send a man to superintend and erect when desired.



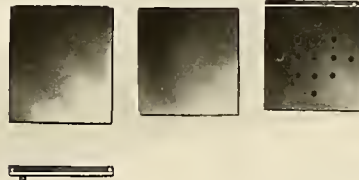
EXPANDED METAL LOCKER DOOR, SIDE AND BACK



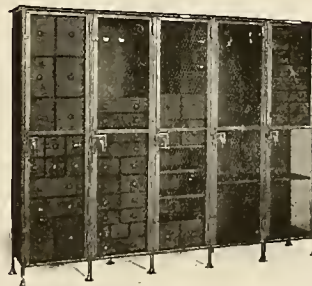
EXPANDED METAL LOCKER DOOR SHOWING THREE-WAY LATCH



No. 1235 B.
TYPICAL EXPANDED METAL LOCKER, DOUBLE TIER



METAL LOCKER TOP, SHELF AND BOTTOM



EXPANDED METAL MATERIAL LOCKER WITH SHELVES AND DRAWERS



No. 1435 S.
TYPICAL SHEET STEEL LOCKER, DOUBLE TIER

SPECIFICATIONS.

Specifications and further details will be gladly furnished on request. Also detail drawings for special types of lockers and other sheet and expanded metal work.

THE ANTIHYDRINE COMPANY

ROOM 308 WASHINGTON BUILDING
NEW HAVEN, CONN.



NEW YORK CITY OFFICE
G. W. GROTE, *General Agent*
432 East 102d Street

PRODUCTS.

Manufacturers of "ANTIHYDRINE," the only and original COATING for making WALLS DAMPPROOF AND STAINPROOF.

WHAT IT IS.

Antihydrine is a material made of a high grade of asphalt, carefully prepared in combination with several chemicals, which give it the peculiar property of forming (without heating), a continuous glossy and impervious coating upon porous surfaces. It does away with wood furrings, renders walls dampproof, and prevents staining of plastering on walls and on fireproof work, and prevents staining of limestone, brick facings, etc. Antihydrine has been used with success on a number of important edifices, including many of the buildings of Yale University.

HOW APPLIED.

It is applied as easily as whitewash. No skill whatever is required nor any preparation of the material. After being well stirred the contents are poured into a pail, and with a brush the laborer can apply it *cold*, just as it is. The only care necessary is to keep the coating continuous.

COVERING POWER.

Its covering power is extensive on account of its lack of penetration. One gallon covers about 90 square feet of brick work or fireproofing, and a single coat, properly applied, is sufficient for preventing dampness and stains.

WHAT ARE ITS USES?

Applied to the inside of outside walls, it will save the cost of and room taken up by wood furrings. Save the dangerous places provided for fire, also for vermin, where wood furrings are used. Render outside walls absolutely damp-proof. Make the building warmer and more easily heated. Prevent staining of and efflorescence on the plastering.

Applied to fireproof blocks in ceilings and partitions, it will prevent all staining and efflorescence. Save much time, as the plastering dries quickly. Allow of the decoration of all plastered surfaces, without danger of damage from dampness. Prevents discoloration of plastering from smoky brick.

Applied to built-in surface of iron, limestone, marble, face brick, etc., it will preserve all iron work built in walls. Prevent staining and efflorescence on the exterior of limestone, marble and brick. Allow the use of ordinary cement mortar in backing. Save time and money, as it is not necessary to use and prepare separately expensive cement mortar for the backing.

DIRECTIONS FOR USING. COST.

Full directions for applying "Antihydrine" will be furnished on request.

The Antihydrine will be forwarded in casks of ten and fifty gallons. The cost, F.O.B. New Haven, is \$1.00 per gallon; 20% off on orders of 100 gallons or more.

REPRESENTATIVE WORK.

A few of the Buildings in which Antihydrine was used:

Addition to Hotel Patterson, (12 story) West 46th Street, between Fifth and Sixth Avenues, New York City, N. Y. Buchman & Fox, architects.

B. Altman's Residence, corner Fifth Avenue and 50th Street, New York City, N. Y.

Carlisle Dwellings (6 story Apartments), West End Avenue and 82d Street, New York City, N. Y. Carlton Strong, architect.

Building of M. C. Henry & Co., 403 East 104th Street, New York City, N. Y.

W. W. & T. M. Hall (4 story Dwellings), 2 and 4 West 74th Street, New York City, N. Y. Welch, Smith & Provot, architects.

Edward Holbrook (5 story), 4 East 52d Street, New York City, N. Y. C. P. H. Gilbert, architect.

Manson & Tait Building, 226 West 47th Street, New York City, N. Y.

National Park Bank, 214 Broadway, New York City, N. Y. Don Barber, architect.

New Police Station, Bath Beach, L. I.

A. R. Whitney Co.'s New Building, Hoboken, N. J.

Yale University Buildings, New Haven, Conn.

GROSS & HORN

Damp Resisting and Waterproof Compounds

247 Front Street

NEW YORK CITY, N. Y.

TELEPHONE, 3973 JOHN

PRODUCTS.

The DEHYDRATINE COMPOUNDS for Water and Damp-proofing Underground Passages, Cellars, Foundation Walls, Vault Arches, and for Damp-proofing the inner face of Exposed Walls of a Structure; for making the outer face of Concrete, Brick, Stone or Terra Cotta Walls Impervious to Moisture and Dampness, and for the Protection of Bedford Stone from Discoloration.

SYMENTREX—A cold water cement paint for coating, filling, and weather-proofing rough masonry.

DEHYDRATINE No. 1—Applied to the inside of an exposed wall, it forms a continuous waterproofing sheet that completely isolates a plastered wall from weather exposed masonry. Its use dispenses with furring and lathing, furring tiles or hollow bricks, resulting in a saving of floor space and a more sanitary structure. An air space offers refuge for vermin and smouldering fires, and requires floor area which is often valuable.

DEHYDRATINE No. 2—(Colorless). A super-saturated solution of paraffin, which impregnates the surface of any porous building material to which it is applied, locking the pores and making them impervious to either dampness or moisture. By coating the exterior surface of brick, stone, terra cotta, or concrete walls with No. 2 Dehydratine, the same are insured against disintegration due to attacks of charged moisture and the exudation of salts usually caused by brick and concrete absorbing large quantities of water.

DEHYDRATINE No. 3—An acid, alkali and waterproof coating applied to the unexposed sides of Bedford stone to protect it against discoloration usually caused by dampness and the chemical action of the domestic Portland cements. Non-staining cements are not necessary where No. 3 Dehydratine is employed.

DEHYDRATINE No. 4—A heavy waterproofing compound to be applied to surfaces contacting with earth and water, that will protect the same against water and dampness indefinitely. Where a water pressure is developed, No. 4 Dehydratine, in conjunction with specially saturated wool-felt should be employed, and these must be covered with concrete equal in weight to the exact amount of pressure exerted by the water.

REFERENCES.

The Dehydratines have been extensively used by the leading architects and contractors throughout the country, and to whom we can refer.

PRICES, ETC.

Data as to cost, method of application, and efficiency furnished on request.

NATIONAL WATERPROOFING & CLEANING COMPANY

42 EAST 23d STREET



NEW YORK CITY

TELEPHONE, 2852 GRAMERCY

PRODUCTS.

We operate the well-known FARNHAM PATENTS covering PARAFFINE WATER-PROOFING and SAND BLAST CLEANING.

GENERAL DESCRIPTION OF PARAFFINE WATER-PROOFING.

It is well known that the decay and disintegration of stone and other building material is due to the settlement upon the surfaces of organic and inorganic matter which, being carried by rain and damp into the pores, together with the action of the frost on such dampened surfaces, causes disintegration and decay. If, however, the pores of the exposed surfaces are filled for a short depth with a substance unaffected by either acid or alkali, and which is also hostile to organic growth, then any matter which settles upon the surfaces cannot be carried into the fabric, and further deterioration is stopped short. Pure paraffine wax handled under the patents of this Company will accomplish this result.

ADAPTABILITY AND ADVANTAGES OF PARAFFINE WATER-PROOFING.

This waterproofing as applied to all rear brick walls, is a guarantee against dampness, and every parapet wall of whatever material should have this treatment on both exposed sides. It is further almost imperative that the tops of all stone projections should be thus protected.

Factories of brick so waterproofed may be kept at a more uniform temperature and with an actual cash saving in the coal consumed, for the simple reason that damp walls are great conductors of both heat and cold.

Work on the Hammond Typewriter Factory, New York City, fully substantiates the above, and we have Mr. Hammond's written statement that the building has been more uniform in temperature, and less coal has been consumed, than in any previous winter, notwithstanding that last winter was the most severe in twenty years.

Our Paraffine Waterproofing positively prevents entrance of rain or damp, stains caused by absorption, disintegration and scaling away, and efflorescence of salts, and does not change the color or texture of the finest marble.

THE OBELISK IN CENTRAL PARK, KNOWN AS CLEOPATRA'S NEEDLE.

Early in 1884 a commission, composed of Lieutenant Colonel G. L. Gillespie, Corps of Engineers, U. S. A., and Professors R. Ogden Doremus, J. S. Newberry, Albert H. Gallatin, Alexis A. Julian, and E. E. Farnham, Esq., were appointed by the commissioners of the public parks of the City of New York to examine into the cause of the alarmingly rapid disintegration of the stone composing this famous monolith, and if possible, to suggest a remedy.

That committee, after months of careful examination, painstaking research and most elaborate experiments reported that, in their judgment, the only way to preserve the historic and priceless monument was by the proper application of paraffine to the surface of the obelisk.

This report was accepted, the paraffine was applied, the decay of the stone was stopped at once and the obelisk to-day defies the ravages of climate, thanks to the intelligent and proper use of paraffine.

OTHER EXAMPLES.

Herewith we show illustrations of work done by the paraffine process on monuments which previous to treatment were in the most advanced stages of ruinous decay, and that now stand almost completely restored in appearance, and certainly protected for a very long term of years.



OLD TOMBSTONES IN CEMETERY AT HARTFORD, CONN., BEFORE AND AFTER RESTORATION BY OUR PROCESS

SAND BLAST CLEANING.

In the cleaning of surfaces by rubbing with sandstone, wire brushes, etc., the dirt is removed only unevenly and in patches, and the outline of all carved work and mouldings is blurred. Strong acids are used occasionally for cleaning purposes, but this practice is now almost universally condemned and abandoned.

By means of the Farnham Blast as used by this Company, a steady and regular supply of sand is assured, and thus it becomes practicable to remove the whole of the soot, dirt, grime, etc., which may have been deposited upon the surface of all stone, brick, terra cotta, etc. (the pressure and grade of sand being changed to meet the requirements of the material cleaned), and enables such work to be done more efficiently, rapidly and economically than by any other process now before the public.

THE SAND BLASTING OF WOOD.

The sand blasting of wood on the interior of residences and offices has become a great feature in our work, this process removing the soft pulp and showing up the natural grain of the wood with extremely fine effect.

Decorators and architects who have used this process or seen our samples are more than pleased.

In the residence of James Pyle, Esq., in Morristown, N. J., a dining-room was so treated under the supervision of the distinguished architect Stanford White. A piece of furniture for Mr. White was also done at the same time. A library and vestibule in 69th street, New York City, were so treated. We commenced work August 8th on the interior of the Wetzel building, 2 and 4 East 44th street, New York City, of about ten thousand square feet.

Unusual interest is being manifested in this portion of our work in many of the leading cities as well as New York City.

THE SAND BLASTING OF IRON.

This process has been for a long time known to and used by many of the railways.

A large piece of work was done by us a year ago in the Park Row Building, New York City, under the direction of the eminent architects, Robertson & Potter. The iron work in the basement had become very much corroded and it was found impossible to remove the corrosion with steel brushes. The sand blast process promptly cleaned off the rust and scale down to a polished surface, when it was at once covered with asphalt and bricked up. The same process was used on iron work in the Metropolitan Life Building, Madison Avenue and 23d street, New York City.

SOME BUILDINGS TREATED BY OUR PROCESS.

NEW GOVERNMENT PRINTING OFFICE,
Washington, D. C.
U. S. TREASURY BUILDING, Washington, D. C.
U. S. GOV'T POST OFFICE, Minneapolis, Minn.
U. S. NAVAL ACADEMY, Annapolis, Md.
ROYAL EXCHANGE, London, England.
HOTEL CECIL, London, England.
EMPRESS CLUB, London, England.
MAPLE & Co., Decorators, London, England.
"PEARS' SOAP" BUILDING, London, England.
CITY HALL, New York City.
APPELLATE BRANCH SUPREME COURT, New York City.
METROPOLITAN LIFE INSURANCE BUILDING,
New York City.
KNICKERBOCKER TRUST Co., New York City.

IMPERIAL HOTEL, New York City.
STATE HOUSE, Boston.
GRANITE BUILDING, Rochester, N. Y.
BUFFALO NEWS BUILDING, Buffalo, N. Y.
STUDEBAKER MEMORIAL CHURCH,
South Bend, Ind.
TRIBUNE BUILDING, Chicago.
OREGONIAN BUILDING, Portland, Ore.
HOLLAND HOUSE, New York City.
HAMMOND TYPEWRITER FACTORY, New York City.
BELLEVUE-STRAITFORD HOTEL, Philadelphia.
BOURSE BUILDING, Philadelphia.
EQUITABLE BUILDING, Baltimore, Md.
JOHN HANCOCK BUILDING, Boston.
AND MANY OTHERS.

THE PRESERVALINE MFG. CO.

Wood Preservative

41-43 Warren Street

NEW YORK CITY, N. Y.

FACTORIES AND LABORATORIES

190 MICHIGAN STREET
CHICAGO, ILL.

JERSEY CITY, N. J., BROOKLYN, N. Y., NEWARK, N. J.

441-443 THIRD STREET
SAN FRANCISCO, CAL.

PRODUCTS—Manufacturers of PRESERVATIVES for all purposes and particularly "WOOD" PRESERVATIVE, for the preservation of wood under all conditions, for protection against decay, above or under ground or water, painted or unpainted, in any climate.

FACILITIES—We can handle orders for any quantities for any purpose and guarantee prompt shipment. We can and do supply customers in all parts of the civilized world with "Wood" Preservative.

INSTRUCTIONS AS TO ORDERS—We keep on hand at all our branches a full stock of "Wood" Preservative, and are ready to supply orders at any time direct.

QUANTITIES—Quantities needed may be estimated as follows:

For 350 sq. ft. of surface of dressed lumber—1 gallon.

For greater surfaces, proportionate quantities.

"WOOD" PRESERVATIVE

"Wood" Preservative is a liquid compound, designed for and proven to be a perfect preservative for wood under any and every condition and circumstance. It counteracts the destructive work of the elements, kills the germs of destroying worms, insects or other form of life hostile to the life of sound timber. It adds years to the length of time woodwork of any kind will last. Its excellent action is due to the property it possesses of penetrating to the heart of wood, thus making decay impossible either from within or without. It imparts to wood fibre an increased power of resistance against wear and tear. It is heavier than water; it does not evaporate—always remaining in fluid state, it is always ready for immediate use, yet can be kept for any length of time. Shingles and roofs can be said to last almost forever if the shingles be soaked in "Wood" Preservative before being put up, or if painted with "Wood" Preservative after the roof is finished. A new roof treated thus will have a handsome appearance and will not rot; old roofs can also be painted with it to great advantage.

We prepare a special grade of "Wood" Preservative to protect wood against the action of salt water, therefore we should be notified when such use is intended. This grade also protects timbers against the Teredo.

APPLICATION—"Wood" Preservative is in liquid form and is applied by either one of two methods: It may be painted upon the surface of the article or structure to be protected, exactly as ordinary paint would be applied, with a brush; or the article to be treated may be dipped in the compound. Either method is efficacious. Full directions upon all packages. Anyone may apply it. Experience unnecessary. It may be used whether article is to be afterward painted, varnished, or left unfinished.

"Wood" Preservative may be used with or without paint or other protection. It may be applied anywhere and everywhere without danger of any sort. It is easily used and inexpensive, a wonderful money saver in the long run, a means of preserving beautiful and valuable structures and articles otherwise easy prey to adverse weather conditions. It accomplishes exactly what its name implies and has never failed. Hundreds and thousands of users endorse it.

PRICE—\$1.00 per gallon, with special discounts on large quantities.

TOCH BROTHERS

R. I. W. Damp-Resisting Paints

320 Fifth Ave., cor 32d St. NEW YORK CITY, N. Y.
ESTABLISHED 1848

BRANCH OFFICES
CHICAGO, PHILADELPHIA AND SAN FRANCISCO

WORKS
LONG ISLAND CITY

PRODUCTS.

R. I. W. DAMP-RESISTING PAINTS, High Grade VARNISHES and JAPANS, ANTIQUE COPPER FINISH PAINTS, SANITARY FLOOR and DECK PAINTS, MARINE CEMENT, WATERPROOF FELT, COLORS, CHEMICALS and raw materials—"EDINBURGH" MORTAR COLORS, PURE READY MIXED PAINTS, OILS, ANTI-FOULING PAINTS, ANTI-CORROSIVE PAINTS, COPPER PAINTS, BRUSHES, etc. Also ANHYDROSOL, MARINE TOKOLITH, "LIQUID KONKERIT" CEMENT FILLER for hardening cement floors, and FRENCH ENAMELS.

OUR SERVICES.

In an expert and advisory way, are at the command of the profession. The lectures delivered by Dr. Maximilian Toch on "The Composition of Paints and Pigments," reprinted from the Journal of the Society of Chemical Industry, London, England, January, 1902, and another on "The Permanent Protection of Iron and Steel," delivered before the New York section of the American Chemical Society, March, 1903, will be forwarded gratis by this house on request.

ADAPTABILITY.

"R. I. W." DAMP-RESISTING PAINT. (Remember It's Waterproof). The material is a thick black liquid made from a fusion of gums melted to make one uniform mass, and, having no pores, it locks up the pores of any surface over which it is applied, thus positively preventing moisture or dampness from striking through. It remains elastic under any and all conditions, and the No. 232 as well as the "R. I. W." MARINE CEMENT, remain tacky almost indefinitely. The material is equal to a liquid gutta percha. Storms and dampness are positively checked from penetrating walls. The space is gained which up to now was taken up by lathing and furring.

Most architects specify "R. I. W." on hollow brick before plastering, as an additional safeguard.

"R. I. W." DAMP-RESISTING PAINT NO. 232.

Applied on brick walls for the purpose of damp-proofing. This material is so compounded that it will partially absorb into the bricks and partially remain tacky for two or three months. When the brown coat is applied thereon it adheres very firmly to the "R. I. W." which is partially absorbed by the brown coat, forming a bond between the brick and the plaster. Any moisture penetrating the brick work from the outside cannot penetrate the "R. I. W." if a good, continuous coat has been given.

E. J. WINSLOW COMPANY

MANUFACTURERS OF

Hydrolithic Coatings and Constructions

OFFICE

138 Jackson Boulevard

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, HAR. 2983

EASTERN REPRESENTATIVE
THE FOUNDATION COMPANY
151 W. 28th St.,
NEW YORK CITY, N. Y.

PRODUCTS.

We manufacture HYDROLITHIC COATINGS for insuring a WATER and DAMP-PROOF CONSTRUCTION for Basements, Subways, Reservoirs, Tanks, Concrete Vaults, Catchbasins, Sinks, Sarcophagi, Monuments, etc.

DESCRIPTION OF HYDROLITHIC COATINGS.

PURPOSE—Hydrolithic Coatings are applications to the surface of brick, stone, cement and concrete constructions, which will make them waterproof, weather-proof and damp-proof. They are cement-like coatings which are impervious to the passage of water, and are as durable as the structure supporting them and their impermeability for all time is absolute.

CLAIM AND GUARANTEE—We claim and guarantee for our Hydrolithic Coatings absolute impermeability to water and moisture; that they will not of themselves crack or scale; that, as applied by us, frost will not produce cracks in them or cause them to fall or to be pushed from their supports; that they will effect and perfectly perform their purposes so long as that which supports them remains in a sound and stable condition. We guarantee to repair all defects which may appear in our coatings within three years from the time of their application, excepting however, we will not be responsible for such defects as would be caused by an evident and indisputable settlement, weakness or instability of the structure upon which the coating is or may be applied, nor will we be responsible for damage occasioned the coating by a careless or wanton abuse of the same.

ADHESIVE STRENGTH—So securely will it bond to masonry or concrete constructions, that, although applied to the opposite side from which water pressure originated, a $\frac{5}{8}$ " coating on brick has withstood pressures of 65 and 100 pounds per square inch for months together, the equivalent of 9,360 and 14,400 pounds per square foot respectively.

CONSEQUENCES OF SETTLEMENTS—The cracking caused by a settlement of foundations is not a serious fault in localities where solid clays, rock, or soils which at first are somewhat yielding but which soon compress to a stable condition, provide the base; for repairs can be simply made, and the occasion for them will cease when the structure has found its permanent footing. But, where such bedding is not to be had, and only such as, with the best of preparation and construction, continue for long periods to settle, we employ an independent thin wall and light, anchored floor construction, amply able to perform every requirement, and which, when completed, constitutes a water-tight tank that will allow the foundation, columns, floor beams, and pipes piercing the foundation, to settle independently of it.

PATENT FLOOR CONSTRUCTION—We build lighter, thinner, and yet stronger basement cement floors than perhaps anybody. Twelve inches thick is the heaviest floor

FACTS
CONCERNING
METHODS AND
CONDITIONS OF
APPLICATION.

of our construction, yet it will keep dry and waterproof, and withstand an uplifting pressure which a 300 feet hydrostatic head would exert. A full description of these two special constructions is now being prepared and will be issued upon application.

Hydrolithic Coatings are prepared and applied exclusively by ourselves, or by our qualified agents.

PREPARATORY MEASURES—Cleanliness of surfaces to be coated is essential; the droppings of dirt and missiles upon fresh, unset work is detrimental, so it should be arranged that the waterproofing in basements be done after the arches for the floor above are in, or else when other temporary covering may be employed, and when all, or a considerable section, of the basement can be set aside for the exclusive use of the waterproofers.

To insure efficiency Hydrolithic Coating must be applied direct to perfectly clean, nude surfaces of stone, concrete or brick; all other coatings, such as paint, white-wash, lime mortar, and most cement mortar coatings, must be left off or removed. This, in connection with the cement mortar coatings mentioned, means that on interior surfaces opposite to the source of pressure, such coatings are never sufficiently bonded to the masonry to reliably resist the pressure which will come after an application of the impermeable Hydrolithic Coating. To bear a guarantee, Hydrolithic Coating must have nothing interposed between itself and that which is known to have the stability and strength to support it.

PRESSURE COATINGS—For resisting actual water pressure in basements, elevator pits, tunnels, subways, reservoirs, aqueducts, locks, dams, and conduits, or receptacles for electrical apparatus, the Coating is applied in mortar form to either the inside or outside surfaces, and in thickness of from $\frac{5}{8}$ " to 1" according to the position and the duty to be performed.

PROPER POSITION—For basement, tunnel work and the like, where the structures are built of materials that water will not soften and disintegrate, the application of the mortar coating is preferably made to the interior surfaces, for the reason that there is thus saved an amount of excavating that would otherwise be necessary, and also because it is there always immediately and economically accessible in case of repairs which settlements of foundations, etc., might necessitate. Furthermore, upon interior surfaces of foundation walls, it answers as a finished surface, entirely doing away with the necessity of hollow tile, or of other furring materials.

While for the reasons previously stated, preference is given to interior surface positions, the coating will prove just as efficient and just as durable if applied to outside surfaces. Indeed, the better place for it, upon foundations that are built of some of the common grades of brick (especially if these be laid in lime mortar), is upon the outer or earth side, for the reason that both of these building materials will positively disintegrate when subjected to the constant action of water.

APPLICATION AGAINST PRESSURE—On interior wall work it is not essential that water pressure be relieved while the mortar coat is being applied, although it is usually in the interest of economy somewhat to do so; but upon floor work it may perchance be necessary to relieve it entirely, for all of which we employ processes of our own devising (patents pending) that simplify and insure success.

NO LOADING—There is no loading of this waterproofing to hold it in place, whether it be upon floors or upon walls, for it furnishes its own support by its unparalleled strength of adhesion. Neither is there any necessity for running pumps night and day, year in and year out. Hydrolithic work is not merely damp-proof, as perchance, with the aid of continuous pumping, the old method of asphalt and felt is, but it is impermeably water and damp-proof without any pumping auxiliaries.

SOUNDNESS OF SUPPORTING STRUCTURES—It is absolutely essential that the sup-

port which is to receive the coating, shall itself be capable of withstanding any possible hydrostatic pressure without springing or cracking, as outside of our own constructions no guarantee is given to cover leaks which would be occasioned by a weakness or instability of the support.

EXTENT OF COATING ON WALLS—Considering the possibilities of capillary action, especially within brick constructions, the Coating should extend from the base of walls to at least 12" above the possible level at which subterranean water might reach in seasons of unusual wet weather, or from the bursting or leaking of water-mains or sewers.

DAMP-COURSE THROUGH WALLS—In connection with outside wall applications the Coating should extend as a horizontal damp-course through the wall section, at or about the level at which the surface level of the deepest basement floor will be, and, should it ever be likely that this depth would be lower than the height of the subterranean water, the Coating should extend from the damp-course out upon and over the entire floor surfaces. It is well calculated for serving as a wearing surface of any floor.

RAKED JOINTS—In the laying of brick work, preparatory to receiving Hydrolithic Coating, the mortar joints should be raked.

SUITABLE AND UNSUITABLE MORTARS—Lime mortar is wholly unsuitable for the laying of masonry in locations that will necessitate waterproofing, because when immersed for any length of time it softens, becomes mushy and produces settlements, which later become very pronounced in coatings over corbled footings of foundations. Furthermore, a saturated mortar, at times of freezing weather, expands and disrupts whatever tends to confine it, and it would, under some conditions, do the same for a covering of Hydrolithic Coating.

Masonry that is to be laid in watery situations should be always laid in Portland Cement Mortar, but milk of lime may be used to temper with, provided the proportion of lime to cement is not made to exceed one to four.

Pozzuolan and Slag Cements containing large percentages of sulphur, or which, after setting, crumble (as many of them do in air-exposed places), should not be employed in laying walls which are to bear a guaranteed Hydrolithic Coating.

SPECIAL POSITIONS.

PLUMBERS' WORK—The plumbers' work and that of the steam fitter should all be in before the floor is laid, and this is imperative where a reinforced anchored floor is necessary.

Hydrolithic Packing Glands of special construction should always be set for pipes that are to pass through outside walls below a possible water level, especially in connection with pipes for steam and hot water, and if possible these should be set when the wall is being constructed.

FLOORS—Floors should be laid entirely without joints. No guarantee is given for coating on floors which will be subject to more water pressure than their own weight will overcome, unless the same be entirely of Hydrolithic Construction.

Floors should be integral or monolithic. There is no call for splitting a floor longitudinally in the middle to place there felt-asphalt stratum, as some in preparing specifications have supposed. Strength to resist the upheaving of water is thus lost, and nothing at all in waterproofing is gained.

COLUMNS—Masonry or concrete footings for columns that might perhaps settle somewhat, should be based below the basement floor and rise above it for at least six inches, and the floor finish (Hydrolithic Coating) should be carried upon the sides of this footing. If the footing be of concrete, or of brick, its top should also have an inch of Hydrolithic damp-course applied before the metal base of the steel columns is set.

The sides and top thus treated, the footing may sink to the floor level without causing a greater disturbance than a few cracks in the Hydrolithic Coating at the floor line which, as has been elsewhere explained, can be readily repaired.

Columns inside a Hydrolithic basement tank should be based similarly as above described, but the steel part should be sand blasted and Hydrolithically Coated, after which it will be surrounded by an independent Hydrolithic Cylinder, firmly and impermeably connected with the floor of the tank and made to extend to a height above the possible water level. The column will thus be perfectly and permanently protected from corrosion or oxidation, and may settle independently of the Hydrolithic tank, causing no leaks thereby.

ADVANTAGES
OF SIMPLICITY
AND ECONOMY.

Considering in a comparison every auxiliary which is essential to perfect an asphalt, or a felt-asphalt method of waterproofing, the Hydrolithic system is much the simpler, and considerably more economical from the following standpoints: First, that of installation under conditions that will require preparation for constant duty, especially heavy duty, and second, that of maintenance and repairs. For an installation where conditions will allow of a Hydrolithic Coating being applied direct to foundation walls, as in actual practice they do for fully 95% of the work done, but one construction is required or desirable; *i. e.*, one wall, the carrying, foundation wall, and but one integrally made floor of thin construction. This means much less of excavation for floors, and more usable space along the foundation wall than would be possible with any other system of waterproofing, and such advantages will certainly be appreciated in cities where real estate is worth its thousands a front foot, and mason labor worth a dollar an hour.

PRESSURE.

Frequently it has been said to us "There is no pressure of any consequence whatever," although there may at the time be twelve or more inches head of water affecting the premises. It would seem from this that the force exerted by water-heads is but slightly understood and for the purpose of demonstrating how really serious a seemingly slight head may prove, we submit the following table:

HYDROSTATIC HEAD	PRESSURE PER SQUARE INCH	LIFTING PRESSURE PER SQ. FT. (UNDER FLOOR)	AVERAGE PRESSURE PER SQ. FT. ON WALL SURFACE AFFECTED
Feet	Lbs.	Lbs.	Lbs.
0.5.....	0.217	31.25	15.625
1.0.....	0.434	62.5	31.25
2.0.....	.868	125.0	62.50
3.0.....	1.302	187.49	93.75
4.0.....	1.736	250.00	125.00
5.0.....	2.170	312.50	156.25
10.0.....	4.34	625	312.50
20.0.....	8.68	1250	625.00
40.0.....	17.36	2500	1250.00
60.0.....	26.04	3750	1875.00
80.0.....	34.72	5000	2500.00
100.0.....	43.40	6250	3125.00

METHODS OF
APPLICATION.

NON-PRESSURE BRUSH COATING—For excluding moisture, frost, air, odors and gases from structures above ground, the Coating is applied as a wash or paint to either or both sides of the walls. Its application to the outside of a wall will absolutely stop present, and prevent future disintegration. Under its protection soft grades of brick will last equally as well as hard, vitrified, pressed brick, and absolutely dry conditions will be thus secured. Walls so treated are constant fuel economizers. In appearance this Coating is light, dark or greenish gray, and covers opaquely. It may also be applied in several other colors, but not unless two coat work is to be done. An application of this Hydrolithic Coating, prior to ceiling or mural decoration; *i. e.*, plastering, kalsomining, etc., will prove an efficient protection against discolorations that are frequently caused by dampness and efflorescences.

REFERENCES—The following list shows some of our more important work and gives some idea of the wide range of the problems we have been called upon to handle:

NAME	LOCATION	WORK	DATE OF CONTRACT	ARCHITECT
AMERICAN RADIATOR Co.	Chicago, Ill.	Basement walls	5-25-'05	
AMERICAN RADIATOR Co.	Chicago, Ill.	Additional basement walls	8-14-'05	
A. H. ANDREWS & Co.	Chicago, Ill.	Passenger elevator pans	1902	JENNEY & MUNDIE
A. H. ANDREWS & Co.	Chicago, Ill.	Additional passenger elevator pans	1903	JENNEY & MUNDIE
AMERICAN GLUE COMPANY	Chicago, Ill.	Basement and engine room walls	1903	
AHRENS & OTT	New Orleans, La.	Freight elevator pits	1903	STONE BROS.
BROWN & SHARPE MFG. Co.	Chicago, Ill.	Basement walls	1903	
BROWN, SAM, JR., ESTATE	Chicago, Ill.	Basement walls, 40 houses	1902	
BRUNCKWICK-BALKE-COLLENDER Co.	Chicago, Ill.	Underwriter tank	1901	
BELT ELEVATOR	Chicago, Ill.	Grain elevator boots, replacing steel	5-17-'04	ROSENBAUM BROS., Owners
BELT ELEVATOR	Chicago, Ill.	Grain elevator boots, replacing steel	7-13-'04	ROSENBAUM BROS., Owners
BELT ELEVATOR	Chicago, Ill.	Grain elevator boots, replacing steel	8-25-'04	ROSENBAUM BROS., Owners
BELT ELEVATOR	Chicago, Ill.	Grain elevator boots, replacing steel	6-15-'05	ROSENBAUM BROS., Owners
CALVERT BUILDING	Baltimore, Md.	Exterior stucco	1904	J. EVANS SPERRY
CHICAGO SAFE DEPOSIT COMPANY	Chicago, Ill.	Basement walls	1901	JENNEY & MUNDIE
CHICAGO SAFE DEPOSIT COMPANY	Chicago, Ill.	Vault	1903	JENNEY & MUNDIE
CITY BANK & TRUST BUILDING	Mobile, Ala.	Basement walls and floors	1904	Geo. B. ROGERS
CHAPEL, COLUMBIA UNIVERSITY	New York City, N. Y.	Brush coating above ground	1905	HOWELLS & STOKES
CRANE COMPANY	Chicago, Ill.	Underwriter tank	1901	CLIFT WISE, General Contractors
CRANE COMPANY	Chicago, Ill.	Coal hoppers	1903	CLIFT WISE, General Contractors
CHICAGO EDISON COMPANY	Chicago, Ill.	Power house basement	1901	
CHICAGO TELEPHONE Co.	South Chicago, Ill.	Basement walls and floor	1902	
EMANUEL BUILDING	Mobile, Ala.	Basement walls	1904	Geo. B. ROGERS
DELANO, FRANCIS	Chicago, Ill.	Basement walls and floor	1902	W. A. OTIS
FIRST NATIONAL BANK BUILDING	Chicago, Ill.	Section of basement walls	9-9-'04	JNO. GRIFFITH & SON, Gen. Conts.
FORT DEARBORN BUILDING	Chicago, Ill.	Section of basement walls	1905	JENNEY & MUNDIE
FAIR, THE DRY GOODS STORE	Chicago, Ill.	Section of basement walls	1903	JENNEY & MUNDIE
FIRST NATIONAL BANK BUILDING	St. Joseph, Mo.	Section of basement walls	1902	JENNEY & MUNDIE
GAYOSO HOTEL, THE	Memphis, Tenn.	Outside brush and inside spray coating	1901	M. E. BELL
GIMBALL BROS. BUILDING	Milwaukee, Wis.	Entire basement	1902	Ed. STEIGERWALD, Contractor
HUTZLER BROS. BUILDING	Baltimore, Md.	Tunnel	11-12-'04	BALDWIN & PENNINGTON
HUTZLER BROS. BUILDING	Baltimore, Md.	Basement and engine room walls	2-7-'05	BALDWIN & PENNINGTON
HENRY HORNER GROCERY Co.	Chicago, Ill.	Basement walls	1905	S. A. TREAT
HAMILTON PARK	Chicago, Ill.	Swimming pool	1905	SOUTH PARK COMMISSION
HIBBARD, SPENCER, BARTLETT & Co.	Chicago, Ill.	Basement walls	1903	
HUEBSCH, A., STORE	Chicago, Ill.	Basement walls	1903	
INTERBOROUGH POWER HOUSE	New York City, N. Y.	Section of basement walls	1905	Geo. THOMAS, Eng.
LAKESIDE PRESS BUILDING	Chicago, Ill.	Basement wall	1902	HOWARD VANDOREN SHAW
MARYLAND TRUST BUILDING	Baltimore, Md.	Exterior stucco and cornices	1904	BALDWIN & PENNINGTON
MERCHANTS' BANK BUILDING	Mobile, Ala.	Basement wall and floor	1904	Geo. B. ROGERS
MAGNUS METAL WORKS	Chicago, Ill.	Fuel oil tank	1903	W. C. ZIMMERMAN
MONTGOMERY WARD & Co.	Chicago, Ill.	Basement walls	1901	R. E. SCHMIOT
MONTGOMERY WARD & Co.	Chicago Heights	Factory basement	1903	R. E. SCHMIOT
MONTGOMERY WARD & Co.	Chicago, Ill.	Curb walls	1903	R. E. SCHMIOT
MONTGOMERY WARD & Co.	Chicago, Ill.	Flat building, basement walls	1904	
METROPOLE HOTEL, THE	Chicago, Ill.	Flat building, basement walls	1902	NIMMONS & FELLOWS
MARSHALL FIELD & Co.	Chicago, Ill.	Retail store, basement walls	1901	D. H. BURNHAM
MARSHALL FIELD & Co.	Chicago, Ill.	Wholesale annex, basement walls	1902	JNO. GRIFFITHS & SON, Gen. Conts.
MARSHALL FIELD & Co.	Chicago, Ill.	Freight elevator pits, wholesale annex	1902	JNO. GRIFFITHS & SON, Gen. Conts.
MCCORMICK BUILDING	Chicago, Ill.	Basement walls	1900	HOLABIRD & ROCHE
MCGOWAN, J. G.	Mobile, Ala.	Residence, basement	1904	
MANDEL BROS. BUILDING	Chicago, Ill.	Basement walls	1901	HOLABIRD & ROCHE
NEWTON MILK Co.	Chicago, Ill.	Underground cooling tank	1903	HOEFFER & Co., Contractors.
NISSEN BROTHERS	Austin, Ill.	Section of basement walls	1-30-'05	
NISSEN BROTHERS	Austin, Ill.	Section of basement walls	5-24-'05	
NISSEN BROTHERS	Austin, Ill.	Section of basement walls	9-30-'05	
ORIENTAL MFG. Co.	Chicago, Ill.	Basement walls	1905	J. L. BOLEN, Owner
PASSAVANT HOSPITAL	Chicago, Ill.	Boiler and engine room walls	1902	PONO & PONO
PONTIAC BUILDING	Chicago, Ill.	Basement walls	1901	HOLABIRD & ROCHE
RITCHIE, W. C., BOX FACTORY	Chicago, Ill.	Boiler and engine room walls	1901	
REVELL, A. H. & Co.	Chicago, Ill.	Passenger elevator pits	1902	W. T. & W. I. CLARK, Conts.
ROCK ISLAND R. R. Co.	Moline, Ill.	Boiler riveting pit	1903	Geo. B. SWIFT & Co., Gen. Conts.
SEARS, ROEBUCK & Co.	Chicago, Ill.	Section of basement walls	1902	NIMMONS & FELLOWS
SEARS, ROEBUCK & Co.	Chicago, Ill.	Additional section of basement walls	1903	NIMMONS & FELLOWS
SOCIAL HALLS BUILDING	New York City, N. Y.	Exterior stucco	1905	HOWELLS & STOKES
ST. CHARLES HOTEL	New Orleans, La.	Entire basement	1903	STONE BROS.
SCHLESINGER & MAYER BUILDING	Chicago, Ill.	Basement walls	1902	LOUIS SULLIVAN
ST. MARY'S HOSPITAL	Chicago, Ill.	Exterior stucco	1901	J. F. & J. P. DOERR
STUYVESANT DOCKS	New Orleans, La.	Elevator Boots	1902	Geo. B. SWIFT & Co., Gen. Con.
SULLIVAN MACHINE Co.	Chicago, Ill.	Underwriter tank	1902	RAEDER & COFFIN
SULLIVAN MACHINE Co.	Chicago, Ill.	Three boring mill pits	1902	RAEDER & COFFIN
SPRINGER, WARREN	Chicago, Ill.	Underwriter tank	1901	
ST. ADELBERT CEMETERY	Chicago, Ill.	Mausoleum	1901	Jos. MOLITOR
UNITED HEBREW CHARITIES	Chicago, Ill.	Section of basement walls	1902	
UNITED HEBREW CHARITIES	Chicago, Ill.	Section of basement walls	1904	
VENDOME APARTMENTS	Chicago, Ill.	Promenade roof	1903	L. E. STANHOPE
VENDOME APARTMENTS	Chicago, Ill.	Addition promenade roof	1904	L. E. STANHOPE
WALDORF-ASTORIA HOTEL	New York City, N. Y.	Section of wine cellar walls	1905	H. J. HARDENBERGH
WELLS, COLONEL J. H.	Jersey City, N. J.	Residence basement walls	1905	CLINTON & RUSSELL
WEBER WAGON Co.	Chicago, Ill.	Fuel oil tank	1903	
Y. M. C. A.	Oak Park, Ill.	Wall and floor swimming tank	1902	POND & POND

ASBESTOS AND MAGNESIA MANUFACTURING CO.

MAIN OFFICES

Land Title Building
PHILADELPHIA, PA.

FACTORIES
PORT KENNEDY, PA.

PHILADELPHIA WAREHOUSE
13th and CUMBERLAND STREETS

PRODUCTS.

Sole makers of EHRET'S 85% MAGNESIA and other Sectional and Plastic Steam Pipe and other Coverings.

BRANCH OFFICES.

We have a branch office or agency in every important city in the United States; the addresses will be furnished on application.

FACILITIES.

Our factories at Port Kennedy, Pa., are the most complete and modern plants in existence, built for the sole purposes of manufacturing Pipe and Boiler Coverings. Our equipment is thoroughly up-to-date in regard to machinery, moulds and mechanics. Competent and thoroughly experienced men are in charge, insuring a perfect product. We manufacture coverings for high and low pressure services, cold water and brine; in fact for all purposes.



EHRET'S
85% Magnesia Sectional Coverings. Straight Joint.
Standard Thickness. For Wrought-Iron Pipe in Canvas-Jacketed Sections 36 inches in length



EHRET'S
85% Magnesia Sectional Blocks

FORM OF SPECIFICATION.

Architects, when specifying Magnesia Coverings, should incorporate the following words in their specifications, thereby avoiding any possibility of substitution, and assuring themselves and their clients that they are obtaining the best permanent, economical, non-heat-conducting product known to man. The name "Ehret" is the hall-mark of quality and fair dealing.

"All heated surfaces to be covered with Ehret's 85% MAGNESIA Steam Pipe Coverings, manufactured by the Asbestos & Magnesia Manufacturing Company, of Philadelphia, Pa."

SUPERIORITY OF 85% MAGNESIA.

Carbonate of Magnesia is a mineral that is absolutely fireproof and light in weight; alone, it would make an ideal covering for pipes, were it not that it cannot be moulded into a permanent and indestructible shape. Asbestos is also thoroughly fireproof and is light in weight, but it does not insulate heat sufficiently to allow its use alone. When used as a binder for Carbonate of Magnesia, the combination (85% Magnesia) makes the best fireproof, insulating and economical pipe covering on the market.

PRACTICAL EXPERIENCE.

The great number of large contracts with which we have been, and are still favored, from our United States Government, as well as from railway and shipping companies, mining, manufacturing and electric light companies, theatres, hotels, infirmaries, and other public institutions, is a guarantee of the splendid qualities of "Ehret's 85% Magnesia," the manufacture and sale of which we control throughout the world.

CONTRACT DEPARTMENT.

We contract for the application of our products in any part of the United States. For this purpose we employ a large force of skilled mechanics. Estimates for work anywhere are cheerfully furnished by our Contract Departments, located in every prominent city in the United States.

F. W. BIRD & SON

MAKERS OF

Roofing, Special Papers and Paper Boxes

ESTABLISHED 1817

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EAST WALPOLE, MASS.

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PRODUCTS.

Manufacturers of the original NEPONSET RED WATERPROOF PAPER, NEPONSET BLACK WATERPROOF PAPER, FLORIAN SOUND DEADENING FELT and PAROID ROOFING.

NEPONSET
RED WATER-
PROOF PAPER.

This paper is absolutely waterproof and vermin-proof, and is a non-conductor of heat and cold. It is used for sheathing under clapboards, shingle, slate, metal and all kinds of roofs. It is also largely used as a back-plaster and roofing for temporary buildings.

NEPONSET
BLACK WATER-
PROOF PAPER.

This paper, relatively speaking, has the same general qualities as Neponset Red Waterproof Paper and can be used with good results in all work where the latter paper is found to be too expensive.

FLORIAN
SOUND
DEADENING
FELT.

Florian Sound Deadening Felt is vermin-proof and is an excellent fire-resistant. Its use will always give the best results when installed between floors and partitions, and under metal ceilings and roofs.

PAROID
ROOFING.

Paroid Roofing is fireproof against sparks and cinders. There is absolutely no tar in Paroid to melt under heat or crack in the cold. This Roofing is used on all kinds of buildings—foundries, tanneries, lumber sheds, warehouses, porches, etc.

PRICES AND
WEIGHTS.

Following are the prices and weights of our above mentioned products:

	PRICE	WEIGHT
Neponset Red Waterproof Paper.....	\$1.00 per square,	12 lbs. per square
Neponset Black Waterproof Paper.....	.35 per square,	9 lbs. per square
Florian Sound Deadening Felt.....	.70 per square,	9 lbs. per square
Paroid Roofing, 1-ply.....	2.25 per square,	35 lbs. per square
Paroid Roofing, 2-ply.....	3.00 per square,	45 lbs. per square
Paroid Roofing, 3-ply.....	3.75 per square,	55 lbs. per square

C. B. HEWITT & BROS.

Building, Roofing and Insulating Papers

48 Beekman Street

NEW YORK CITY, N. Y.

PRODUCTS.

BUILDING, ROOFING and INSULATING PAPERS.

VENETIA RED
ROSIN SIZED
SHEATHING.

A superior grade of Red Rosin Sized heavy sheathing, specially made of rag stock, and recommended for use in high class work. Each pound covers 8 sq. ft.; put up in rolls of 500 sq. ft.

VENETIA
INSULATING.

Specially adapted for Cold Storage, Ice Houses, and other insulating purposes, etc. Being flexible it will not break or crack in angles or corners. Sufficiently waterproof without being coated or saturated. Each pound covers 8 sq. ft.; 500 sq. ft. rolls.

COTTAGE RED
ROSIN SIZED
SHEATHING.

A high grade solid Red Rosin Sized Sheathing made without filling, being of the same material throughout; an excellent paper for all building purposes, also for covering and protecting floors. Each pound covers 8 sq. ft., 500 sq. ft. rolls.

FIBRE PLASTER
BOARD.

The best substitute for Plaster for Ceilings, Walls, etc. Can be painted, kalsomined or decorated. Not injuriously affected by dampness or salt air. 500 sq. ft. rolls.

QUAKER
SHEATHING.

A solid sheathing made of gray fibres, used for outside work, also for ceilings, where a light colored paper is required; each pound covers 12 sq. ft., 500 sq. ft. rolls. Also double rolls containing 1000 sq. ft.

NEPONSET
WATERPROOF
RED ROPE
ROOFING.

Put up in rolls containing 250 and 500 sq. ft. each, with nails and tin caps for applying. Cartage added for less than 5 roll lots.

NEPONSET
INSULATING.

Put up in rolls containing 1000 sq. ft. each, in 2 and 3 ply.

"OLD HICK"
FIBROUS RED
ROPE.

A very strong and durable paper, made from the best rope stock; a desirable paper for sheathing and insulating purposes where an extra strong moist-proof paper is required. Four thicknesses. Rolls containing 500 and 1000 sq. ft.

FLORIAN
FIREPROOF
DEAFENER.

Made of fireproof material and heavily embossed, forming air cells, which makes it a good sound deafener. 48 inch rolls 500 sq. ft. each.

BLACK HAWK
BLACK
WATERPROOF.

A thoroughly waterproof building paper; used under slate, shingles or clapboards; made in 1, 2, 3 and 4 ply. Put up in rolls containing 500 sq. ft.

RED HAWK
RED ROPE
WATERPROOF
ROOFING.

A strong, durable, waterproof paper for roofing, sheathing or insulating purposes. Used for poultry houses, sheds and all buildings where an economical roof is required; cheaper and better than tar papers. Put up with nails and tin caps in rolls containing 500 sq. ft. each.

"NO NOISE"
DEAFENING
FELT.

Made of wool stock, is soft and elastic, and used specially for deafening between floors and partitions. Will prevent dampness, and add greatly to the warmth of buildings. Largely used in Public Buildings, School Houses and Dwellings. Also used for carpet lining. Put up in rolls containing 450 sq. ft. each; 1, 1½ and 2 lbs. to the yard.

THE PHILIP CAREY MANUFACTURING COMPANY

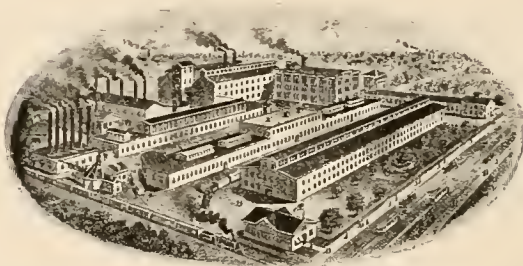
GENERAL OFFICES

Lockland, Station R

CINCINNATI, OHIO

FACTORIES

PLYMOUTH MEETING, PA., BALDWINVILLE, MASS., LOCKLAND, O.



OUR BRANCHES.

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 PITTSBURG, PA., 433-435 First Ave.
 PHILADELPHIA, PA., 1018 Real Estate Trust Bldg.
 BUFFALO, N. Y., Ellicott and South Division Sts.
 CLEVELAND, O., 123 Water St.
 ATLANTA, GA., 34 West Alabama St.
 BALTIMORE, MD., 332 North St.
 CHARLOTTE, N. C., 216 South College St.
 SCRANTON, PA., 301 Seventh St.
 WHEELING, W. VA., 1505 Main St.
 LITTLE ROCK, ARK., 418 East Markam St.
 KANSAS CITY, MO., 526 Delaware Ave.
 ERIE, PA.

DALLAS, TEX., Camp and Lamar Sts.
 TOLEDO, O., 319 Water St.
 BIRMINGHAM, ALA., 2014 Avenue A.
 DETROIT, MICH., 17 Jefferson Ave.
 CHATTANOOGA, TENN.
 YOUNGSTOWN, O., 123 North Hazel St.
 TORONTO, ONT., 112 Bay St.
 LONDON, ONT., 227 York St.
 MONTREAL, QUE., 22 Victoria Square
 MEXICO CITY
 LONDON
 HAMBURG
 PARIS
 MELBOURNE

SPECIAL REPRESENTATIVES AND CONTRACTING DEALERS

Western Roofing & Supply Co., 177 Randolph St., Chicago, Ill.; C. W. Trainer Mfg. Co., 89-91 Pearl St., Boston, Mass.; W. S. Nott Co., 200-206 First Ave., South Minneapolis, Minn.; R. E. Kraming & Co., 415 East Pearl St., Cincinnati, O.; Woodward, Wight & Co., Ltd., 400-418 Canal St., New Orleans, La.; Mine & Smelter Supply Co., 17th and Blake Sts., Denver, Colo.; Grant & Co., 404-406 Mission St., San Francisco, Cal.; Mine & Smelter Supply Co., Salt Lake City, Utah; Mine & Smelter Supply Co., El Paso, Texas; Warren & Bailey Mfg. Co., 359 N. Main St., Los Angeles, Cal.; Sunderland Roofing & Supply Co., 1208 Farnam St., Omaha, Neb.; Robert A. Keasby Co., 100 North Moore St., New York City, N. Y.; Grant & Co., San Francisco, Cal.

PRODUCTS.

We manufacture everything pertaining to HEAT AND COLD INSULATION—CAREY'S 85% CARBONATE MAGNESIA SECTIONAL AND PLASTIC STEAM PIPE AND BOILER COVERINGS, MINERAL WOOL, FIREPROOF PAINTS, ASPHALT VARNISH, in addition to the following articles all made of Asbestos: ASBESTOS PAPER (BUILDING FELT), ASBESTOS MILLBOARD (SHEET AND ROLL), ASBESTOS WICK AND ROPE PACKING, ASBESTOS FURNACE CEMENT, ASBESTOS FIBRE (CRUDE AND CARDED), ASBESTOS CLOTH, TWINE AND CORD, ASBESTOS THEATRE CURTAINS, ASBESTOS TABLE COVERS, ASBESTOS-METALLIC PACKINGS, ASBESTOS POWDER AND GRIT, ASBESTOS AIR CELL BOARD, ASBESTOS AIR CELL PAPER (IN ROLLS), ASBESTOS AIR CELL COVERINGS, STANDARD ASBESTOS MOULDED COVERINGS, ASBESTOS FURNACE PIPE COVERING, ASBESTOS TRAIN PIPE COVERING, ASBESTOS CEMENT (PLASTIC), PERFECTO WOOLEN FELT COVERINGS, BRINE AND AMMONIA PIPE COVERINGS, COLD WATER AND FROSTPROOF COVERINGS, HOT WATER PIPE COVERING, LOCOMOTIVE BOILER LAGGING, MAGNESIA CEMENT AND HOT BLAST CEMENT (for Superheated Surfaces).

CONTRACT WORK.

We have a corps of expert workmen connected with each branch, and assume and execute contracts of any magnitude promptly and in the most approved manner.

DETAILS
REGARDING
PRODUCTS.

Carey's Magnesia Flexible Cement Roofing is the oldest original composition roofing on the market. It has been in use for twenty years on the largest and best known factories, mills, foundries, warehouses, elevators, railroad buildings, apartments, stores, etc., in the United States. It is in short, the roof "Famous for Durability." It is put up in rolls (see Fig. 1), containing sufficient material to cover 100 square feet of surface. It is furnished complete with all materials ready for application and weighs 90 lbs. per square complete.



FIG. 1. CAREY'S MAGNESIA FLEXIBLE CEMENT ROOFING

Carey's Black Asphalt Paint is recognized as a standard among paints of this class for painting tin, iron, steel, felt or composition roofing, also for use on structural iron or steel, such as bridges, railings, tanks, stacks, fences, boiler fronts, etc. (see Fig. 2).

Carey's "Stop-A-Leke Styck" is one of the most convenient products on the market, always ready for immediate use, practical, permanent and efficient. It requires no heating. All that is necessary is simply to rub the composition into the leak, and a leak once repaired with "Stop-A-Leke Styck" is permanently repaired and never leaks again.



FIG. 2. CAREY'S BLACK ASPHALT PAINT

INFORMATION
AND SAMPLES.

Special catalogues, detailed information, and samples will be furnished upon request.

We shall also be glad to send upon application "Prof. Stott's paper on Pipe Covering and its Relation to Station Economy."

ORDERS AND
DELIVERIES.

We will furnish estimates upon request and execute contracts for work as well as material. Prompt deliveries guaranteed.

H. W. JOHNS-MANVILLE COMPANY



100 William Street
NEW YORK CITY, N. Y.

LOS ANGELES, CAL.
203 E. Fifth St.
SEATTLE, WASH.
550 First Ave., South
MINNEAPOLIS, MINN.
26 Washington Ave.
LONDON, E. C.,
81 Fenchurch St.

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MILWAUKEE, WIS., 217-231 Clybourne St.	PITTSBURGH, PA., 218-220 First Ave.
CHICAGO, ILL., 171-173 Randolph St.	CLEVELAND, OHIO, 14-16 S. Water St.
BOSTON, MASS., 77-79 Pearl St.	SAN FRANCISCO, CAL., 127 New Montgomery St.
PHILADELPHIA, PA., 21-25 Second St.	KANSAS CITY, MO., 1410 Main St.
ST. LOUIS, MO., 914-916-918 N. Broadway	LITTLE ROCK, ARK., 117 E. Markham St.

FACTORIES

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PRODUCTS.

FIREPROOF BUILDING MATERIAL

Manderite Decorated Fireproof Board,	Asbestos Building Felt and Mill Board,
Nonburn Building Paper,	Asbestos Fire and Damp Proof Sheathing,
Niagrite Fireproof Cable Wrapping,	Transite Asbestos Fireproof Lumber,
Ceilinite Asbestos Fireproof Flexible Fabric.	



FIG. 1. FIREPROOF BUILDING MATERIALS

- A—Transite Asbestos Fireproof Lumber
- B—Transite Asbestos Fireproof Lumber Curved to Order
- C—Manderite Decorated Fireproof Board
- D—Ceilinite Asbestos Fireproof Flexible Fabric

ASBESTOS FIRE-RESISTING CEMENTS

"Fireite" Furnace Cement,	Plastic Stove Lining,
"Vitrex" Retort Cement,	"Phœnix" (Dry) Stove Lining,
"Brickline" Fire Brick Setting.	

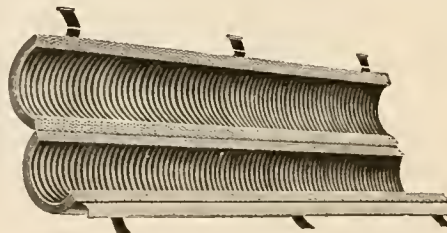


FIG. 2. ASBESTOCEL SECTIONAL REMOVABLE FIREPROOF COVERING

STEAM PIPE and BOILER COVERINGS

FOR HIGH PRESSURE STEAM	FOR HEATING SYSTEMS	MISCELLANEOUS
Asbesto-Sponge Felted	Asbestocel Paper	Hot and Cold Water and Brine and
85% Magnesia Sectional	J.-M. Moulded	Ammonia Pipe Coverings, "Zero"
Fire-Felt Sectional	Air-Cell	Pipe Covering, Mineral Wool, Asbesto-
"Safety"	Champion and Aqua	Sponge and Standard Hair Felts, As-
Blow Off	Asbestos Cement Feltings	besto-Sponge Filling.
	Roll Fire-Felt	

ASBESTOS ROOFING MATERIALS
 Roofings, Coatings, Cements, Asbestoside.
 INSULATING SHEATHING, SOUND-DEADENING AND COLD STORAGE INSULATION

Keystone Hair Insulator



FIG. 3. KEYSTONE HAIR INSULATOR



FIG. 4. "KEYSTONE" AS APPLIED TO WALL CONSTRUCTION

ELECTRICAL SUPPLIES

Noark Fuse Devices; Electric Cable Conduit.

FACILITIES.

This company is the largest concern in the world manufacturing Asbestos and Magnesia products and its line of materials embraces a greater variety than any other. By reason of its superior manufacturing and shipping facilities, it is prepared to handle contracts of any size, with equal facility and dispatch. A large stock of materials is kept constantly on hand at each of the branch houses of the company, so that prompt deliveries can be made in any part of the United States.

ADAPTABILITY OF PRODUCTS.

All the standard products of the company are acceptable to all Building Boards and Underwriters.

The various forms of our Asbestos and Magnesia Heat Insulating Coverings possess every essential requisite for their purposes, high non-conductivity, lightness, strength, durability and superior fireproof qualities.

INSTRUCTIONS AS TO ORDERS.

All goods of standard sizes are kept in stock and can be supplied immediately, either direct from the factories or through the branch houses.

Any irregular condition, requiring special treatment, should be accompanied with full data, sketches, or blue prints



FIG. 5. "J.-M." STANDARD ROOFING

We have unequalled facilities for all special work in Asbestos and Magnesia and are prepared to quote prices on any special materials or special sizes or shapes of otherwise standard materials.

FACTS IN REGARD TO INSTALLATION.

All of our products are of easy application and can be installed by any ordinary mechanic. We, however, contract to apply our products in any part of the United States by skilled mechanics in our employ.

KEASBEY AND MATTISON COMPANY

General Offices and Laboratories

AMBLER, PA.

BRANCH OFFICES

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NEW YORK CITY, N. Y.
BOSTON, MASS.
CHICAGO, ILL.
NEW ORLEANS, LA.

CLEVELAND, O.
CINCINNATI, O.
WASHINGTON, D. C.
ST. LOUIS, MO.
KANSAS CITY, MO.

PITTSBURG, PA.
MINNEAPOLIS, MINN.
HOUGHTON, MICH.
ATLANTA, GA.

PRODUCTS.

Manufacturers of PHARMACEUTICAL PRODUCTS, 85% MAGNESIA STEAM PIPE and BOILER COVERINGS, 85% MAGNESIA SECTIONAL LOCOMOTIVE LAGGINGS, ASBESTOS PAPERS and MILLBOARDS, STEAM and AIR PUMP PACKINGS, GASKETS, ASBESTOS CLOTH, THEATRE CURTAINS and ASBESTOS TEXTILES of every description, etc. In short, "*If it's Made of Asbestos We've Got it.*"

We are also factors for the distribution of the Products of the Asbestos Shingle, Slate and Sheathing Company, manufacturers of ASBESTOS "CENTURY" SHINGLES and SHEATHING for roofing and general construction work.

FACILITIES.

Our plant is the largest of its kind in the world. Our facilities for promptly filling all orders entrusted to us, regardless of quantity, are unequalled.

TERRITORY.

The operations of the Company penetrate into every part of the world.

ADAPTABILITY.

The products of this Company conform strictly to the Building Law requirements of New York City, N. Y., Chicago, Ill., Philadelphia, Pa., Boston, Mass., and all other Cities and Towns.

Our products also conform to the rules and requirements of Boards of Underwriters, and similar bodies. Architects specifying our products obtain for their clients absolute freedom from all liabilities and disabilities of any kind whatsoever.



"CENTURY" SHINGLES APPLIED TO STABLE ROOFS

INSTRUCTIONS AS TO ORDERS.

All goods of standard size are kept in stock, and can be supplied immediately, either direct from the manufacturers, or through local agents authorized to accept contracts on behalf of this Company, a list of whom will be supplied upon request.

INSTALLATIONS.

Our goods can be installed by any contractor or local workman, or the work will be undertaken by ourselves, or through our local agents.

FORM OF SPECIFICATIONS.

When writing specifications for Steam Pipe and Boiler Coverings, specify "85% Magnesia Sectional Covering, 'K & M.'" Specify also for your roofing requirements, "Ambler Asbestos 'Century' Shingles."

JOHN R. LIVEZEY

MANUFACTURER OF

Cork and Asbestos Coverings

1936 Sansom Street

PHILADELPHIA, PA.

BRANCH OFFICE
612 E STREET, N. W.
WASHINGTON, D. C.

FACTORIES
CAMDEN, N. J.
BEAVER FALLS, Pa.

PRODUCTS.

Manufacturer of and dealer in NONPAREIL CORK COVERING for Steam, Water and Brine Pipes. ASBESTOS AIR CELL and ASBESTOS, MAGNESIA, WOOL FELT and SPECIAL PIPE COVERINGS, BOILER LAGGING and PLASTIC CEMENT.

SERVICES.

DESIGNER and CONTRACTOR for COLD STORAGE and BREWERY INSULATION.

COST.

Our price list on all steam covers is the Universal Pipe Covering list. We have a special price list on brine and cold pipe coverings, which will be mailed on application, with samples. Prices on cold storage insulation will be furnished after plans and specifications and buildings are examined.

FACILITIES.

Our facilities enable us to take orders of any size, to handle them with despatch and to furnish the best workmanship and material.

We either supply the material for the various grades of work or are prepared to estimate to complete the contract.

NONPAREIL CORK.

No other insulator is as efficient as Nonpareil Cork. By its use with our waterproof cement finish, in cold rooms, all exposed woodwork is done away with. This prevents the destruction of the insulation by dampness or dry rot.

SPECIFICATIONS FOR ARCHITECTS.

Architects, engineers and contractors wishing to secure the use of our products should incorporate in their specification for cold storage work, "Nonpareil Sheet Cork," of a thickness to meet the conditions.

For brine, ammonia or ice water pipes specify "Nonpareil Cork" for whatever kind of service, and insist on it being applied by us.

For moulded, air-cell, and other coverings use our name in connection with the particular grade you require, and thereby assure your clients of the highest grade of workmanship.

SATISFIED USERS.

From a long list of satisfied users of our products, we mention the following:

PIPE COVERING

BELLEVUE-STRATFORD, Philadelphia, Pa.
PENNA. HOSPITAL, Philadelphia, Pa.
UNIVERSITY HOSPITAL, Philadelphia, Pa.
REAL ESTATE TRUST BUILDING, Philadelphia, Pa.
MARLBOROUGH HOTEL, Atlantic City, N. J.
BRIGHTON HOTEL, Atlantic City, N. J.
INSANE HOSPITAL, Harrisburg, Pa.
FRICK BUILDING, Pittsburg, Pa.

SHEET CORK AND COLD STORAGE INSULATION

READING TERMINAL MARKET, Philadelphia, Pa.
RIEGER & GRETZ BREWERY, Philadelphia, Pa.
BERGOOLL BREWING Co., Philadelphia, Pa.
FUHRMAN & SCHMIOT, Shamokin, Pa.
READING BREWING Co., Reading, Pa.
WASHINGTON MARKET Co., Washington, D. C.
N. AUTH PROVISION Co., Washington, D. C.
HUTZLER BROS., Baltimore, Md.
W. MILLS & BRO., Camden, N. J.

NEW YORK ASBESTOS MFG. CO.

80 John Street
NEW YORK CITY, N. Y.

TELEPHONE, 4227 CORTLANDT

PRODUCTS.

Manufacturers of ASBESTOS PAPERS, ROLL BOARD, SHEET BOARD and PISTON ROD SHEET PACKING, ASBESTOS AIR-CELL COVERINGS, ASBESTOS AIR-CELL BOILER BLOCKS and BOARDS; STANDARD ASBESTOS MOULDED COVERING, SELECTED WOOL FELT COVERINGS and ASBESTOS AIR-CELL COVERING in ROLLS.

GAST'S ASBESTOS AIR-CELL COVERING.

Class "A" (Fig. 1), is the "standard" covering for all high-pressure steam pipes. It is especially effective and should always be used where the most thorough insulation is desired.

Its lightness, durability, ease of application, and mechanically perfect construction, makes it the ideal covering, while the "trapped air" principle renders it the acme of both internal and external protection.

It is made in sections three feet long, one inch thick, to fit any size pipe up to 24" in diameter, has removable fittings up to 8" and has a canvas, asbestos-treated cover with brass lacquered bands. Samples can be had on request.

Class "B" (Fig. 2), is identical in material and construction with Class "A," but only $\frac{3}{4}$ -inch thick.

Class "C" is of the same construction and material as Class "A" and "B" but only $\frac{1}{2}$ -inch thick.

GAST'S ASBESTOS AIR-CELL BOILER BLOCKS AND BOARDS.

Are made of the same material and on the same principle as Gast's Asbestos Air-Cell Pipe Coverings, but flat instead of cylindrical in form (Fig. 3).



FIG. 1. GAST'S ASBESTOS AIR-CELL COVERING. CLASS "A"



FIG. 2. GAST'S ASBESTOS AIR-CELL COVERING. CLASS "B"



FIG. 3. GAST'S ASBESTOS AIR-CELL BOILER BLOCKS AND BOARDS

FORMS OF SPECIFICATION.

Architects would do well to use the following short forms of Specification for all work that needs Asbestos Coverings, which will satisfy their clients in every respect.

"Cover all high pressure and low pressure steam pipes, exhaust drips and relief pipes and other hot pipes throughout the entire basement, with N. Y. Asbestos Mfg. Co.'s Covering, Class A, 1" thick, canvas cased, and finished with metal bands, and the fittings to be covered with Gast's Standard Asbestos Cement, and the same to have a canvas covering after the cement is applied.

"The covering for boilers to be one inch air-space, formed by a wire mesh over V-shaped irons, securely fastened on, and over this put one inch layer of Asbestos Air-Cell Boards one inch thick, securely wired on and covered with chicken wire netting, and finished off with one inch Gast's Standard Asbestos Cement to make a smooth hard finish. The iron smoke connections and flue to be covered in the same manner as the boilers.

"Where the covering is out of doors or exposed to the weather, it should have an extra covering of 8 oz. canvas securely sewed on, over the regular canvas covering.

"Risers and radiator branches to be covered with the N. Y. Asbestos Mfg. Co.'s Covering, Class "B," $\frac{3}{4}$ " thick, canvas cased and finished with metal bands, and the fittings to be covered with Asbestos Cement, and the same to be covered with canvas after the cement is applied."

Specification for Hot Air Furnace Work:

"Cover all the hot air furnace pipes connected with the furnace with the N. Y. Asbestos Mfg. Co.'s Asbestos Air-Cell Furnace Pipe Covering, $\frac{3}{4}$ " thick, finished off with metal bands. Cover the Furnace with Gast's Asbestos Cement $1\frac{1}{2}$ " thick, securely applied over wire netting, and the same to have a smooth finish."

Specification for Duct Work:

"Cover all hot and cold air ventilating ducts and blower casings with the N. Y. Asbestos Mfg. Co.'s Asbestos Air-Cell Boards, 1" thick, securely wired on and finished off with Resin Size Paper and 8 oz. Canvas sewed on."

UNION FIBRE COMPANY

WINONA, MINN.

BRANCH—304 Great Northern Bldg., CHICAGO, ILL.

PRODUCTS. KELLY'S LITH and LINOVELT for Deafening and Sheathing and Insulation of Cold Storage Plants, etc.

FACILITIES. We are prepared to fill orders from any part of the United States or Canada, upon architects' specifications. Estimates furnished promptly.

ABOUT DEAFENING. A great many people have accepted the term "deafener" as applied to many of the so-called articles, literally, without further investigation, and have afterwards been disappointed at the results or lack of results derived from these articles. There would be less disappointment afterwards if there was more common-sense applied beforehand.

EFFICIENCY. The principal requisites to produce the highest efficiency as a sound deafener are: The material must be a fairly good heat and cold insulator, but not necessarily the best Thermal non-conductor, as that is too open to be the best deafener.

The highest Thermal non-conductor, which would be fowl feathers or any material of a similar nature, would be so open that sound would pass through an equal thickness with greater rapidity than it would through a material of greater density, and naturally a lower Thermal standard.

This demonstrates that too many air cells, or imprisoned spaces, are as bad as an insufficient amount of spaces, in a sound deafener. On the other hand, the material must not be too dense or it will be of little value.

The above, then, is the "happy medium" necessary to the best deafening results.

While sound is a series of motions, or vibrations, and must be treated in a similar manner to heat, yet the "jumping off" place at which the highest efficiency is attained is at a different point.

It took years of experience and experiment to demonstrate the above.

The result is Standard Lith, with Roll Rock Wool, No. 1 and No. 2 Linofelt following in their ranking order of efficiency. Referring to volume of material, too many people put in a thin layer, and because it is sold under the caption of "deafening material" they expect it to give them results that can only be obtained by using many times this amount of material.

VOLUME OF MATERIAL. You cannot get 4 cents worth of deafening for 1 or 1½ cent per sq. ft. We can give you any deafening results that you are willing to pay for.

However, we agree, and hereby go on record for the statement, that we will furnish more deafening for the money than anyone else in the business.

APPLICATION. In these days of hot competition, it is a frequent occurrence that the efficiency of a good deafener is reduced by careless workmen through ignorance of application, or on account of a contractor who has his weather-eye on the profit end of his contract *only*.

If the following points are closely observed, the best results will be assured:

In the first place have false floor laid as tightly as possible. If walls are hollow, have the false floor laid into the space and some deafening, or about three or four inches of mineral wool packed into the space before plastering. This is to avoid the possibility of communicating sound from one floor to another through the hollow wall.

In either case, wherever possible, have some deafening material inserted at the back of the baseboards.

When laying deafening, have all joints closed as tightly as possible.

If any folding doors, see that the space is deafened between the double walls as efficiently as the floor of the room.

All partitions should also be deafened between the studding before they are plastered. If a prepared deafener cannot be used in these irregular places, always pack in a couple of inches of loose mineral wool.

Remember that the *maximum efficiency of a deafened floor does not exceed its weakest point*. Therefore, if these details are not observed, the investment in deafening material is practically wasted.

If gas or other pipes are on the floor, do not let the finished floor come in contact with them at any point. Always cut away the finished floor and insert some deafening material between it and the pipes. When laying carrying strips, see that they do not come in contact with the pipes at any point. If there are any upright pipes do not let the false floor come in contact with them; cut away about $\frac{1}{2}$ an inch and pack the space with mineral wool. This will also have a tendency to muffle communication up and down the pipe. When laying the carrying strips, do not lay them directly over the joist, but to one side, if possible, and nail the strip through the deafening to the false floor. Of course, it is only possible to stagger the joist when the stripping parallels the same, but by all means nail the strip to the floor. We know that it decreases the efficiency of a deafening material to nail through it, but one must offset this elsewhere.

Manufacturers of cheap deafening, or so-called deafening material, have invariably advised against the nailing down of this carrying strip. They do this with the idea of getting hopeless results from what, in the first place, has little value as a sound deafener unless used in quantities that would make its cost prohibitory.

Inexperienced builders following this advice have been put to the expense of relaying their hardwood floors on account of dampness causing the floors to swell and belly upward carrying the strips with it.

Remember our advice is to nail the strips.

It is a fact that there were very few, if any, buildings erected on this Continent, previous to the publication of our catalogue, in which the deafening has been properly installed.

METHOD OF APPLICATION.

We ask you to take particular notice of the methods of applying Lith, illustrated in the accompanying cuts (Figs. 1, 2 and 3).

When the strips of wood carrying the finished floor rest on the rough floor, the conditions are such that it is conducive to direct current of sound passing through, and no amount of deafening between the strips will prevent this.

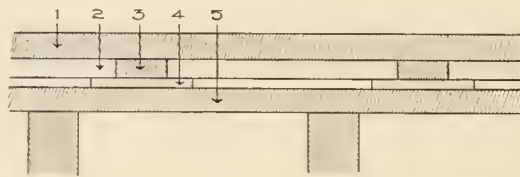


FIG. 1. METHOD OF APPLYING LITH
No. 1, Finished Floor. No. 2, 1" Lith. No. 3, 1"x2" furring strip. No. 4, $\frac{1}{2}$ " Lith in 4" strips. No. 5, False floor

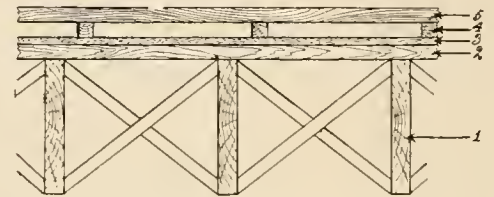


FIG. 2. ANOTHER METHOD OF APPLYING LITH
No. 1, Joist under floor. No. 2, Rough floor. No. 3, Any of Our Deafeners. No. 4, Wood strips resting on deafener. No. 5, Finished floor

We break this current (see Fig. 1), by 4-inch strips of Lith under the wood strips and the space on each side is a support for the deafener that covers the floor between the strips of wood. This assures perfectly tight joints. You will also observe that it brings the entire lower surface of the finished floor in direct contact with the deafening material. The result is that the sounds originating on the finished floor will, from the very outset, be more like a dull thud than a hollow ring. Our air space in this case is small, and it is a deafened space, as the sound is supposed to be muffled before reaching this space. The above will give satisfaction and is what we recommend.

Fig. 2 illustrates an excellent method of applying our $\frac{1}{2}$ -inch Lith, Mineral Wool, and Linofelt Roll deafeners. There are other ways of applying our deafeners in which fairly good results can be obtained.

FIREPROOF CONSTRUCTION.

We call your attention to Fig. 3, describing a highly efficient deafener for Concrete or Tile constructed buildings. Another great advantage derived from Lith in this style of fireproof buildings, is its protection to the hardwood floors. The swelling of hardwood floors is a constant source of annoyance in this style of building. Said swelling is usually caused by the fact that all cement contains a certain amount of moisture without which it would be worthless, and it is from this source that the wooden floors attract sufficient moisture to cause them to work.

In this case Lith will perform a double duty, deafen the sound and protect the finished floor, as it will absolutely obviate the danger to the upper floor above described.

Special plans will be furnished to fit special conditions.

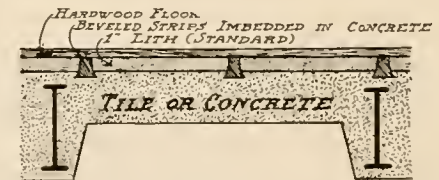


FIG. 3
DEAFENING FOR FIREPROOF CONSTRUCTION

**KELLY'S
FROST PROOF
LINOVELT.**

For years and years architects and builders have been looking for a reliable substitute for back plastering. Here it is—the only material that has met with the general approval of the craft for this purpose. It is much cheaper and more quickly applied than plaster and gives much better results every way.

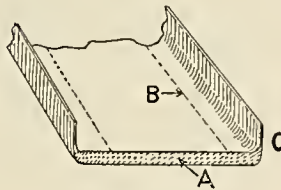


FIG. 4
SECTION OF KELLY'S
FROST PROOF
LINOVELT

A, Chemically degummed Flax Fibre. B, Stitching. C, Loop on Felt for Nailing Strips on

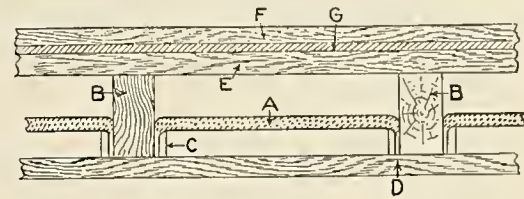


FIG. 5
MODE OF APPLYING KELLY'S FROST PROOF
LINOVELT

A, Frost proof Linofelt $\frac{1}{2}$ in. thick. B, 2 by 4 Studding. C, Lath strips holding felt in position. D, Lath and plaster. E, Sheathing. F, Clapboards. G, No. 1 Linofelt Sheathing

**COLD
STORAGE
INSULATION.**

There are two essential features to be considered in the erection of cold storage buildings.

One is the machinery and the other the insulating. All refrigerating apparatus is only a means of removing heat, and all insulation is only a means of preventing its return as far as possible. A high degree of perfection has been reached in the former, and there are many good and economical machines on the market; but perfect insulation is an impossibility. Otherwise no refrigeration would be necessary other than to freeze the goods to the desired temperature, before placing them in a perfectly insulated room. It is estimated after careful calculation that in the average cold storage building 70% of the refrigeration applied is used to remove the heat which leaks through insulated walls. As this waste is continuous it is of the utmost importance to use material which will reduce it to the minimum. It is a fact, that good insulation, aside from other advantages, affords a constant saving, which will make a large difference with the profit and loss account of a cold storage plant. Poor insulation is not only a cause of annoyance, but a continuous expense, owing to the loss of refrigeration resulting from its use. The best insulation is none too good, and hence the need of learning which is the best before purchasing.



FIG. 6. COLD STORAGE WALL

WHERE USED.

Lith and Linofelt have been adopted almost universally for the insulation of Cold Storage Plants, Packing Houses, Breweries, Molasses Houses, Vegetable and Fruit Houses, and Refrigerator Cars.

They combine the highest efficiency with the advantages of sanitary cleanliness, durability, ease of application and moderate cost.

They can be installed in conjunction with air spaces by the use of wood strips, and can be finished in the interior with boards or cement. (See Fig. 6.)

Lith can also be installed solid without the use of either wood or nails and finished with cement, as shown in the cut. (Fig. 7.)

These goods are in use in all parts of this continent, and investigation will demonstrate results in the maintenance of temperatures that have never been otherwise equalled.

**ESTIMATES
AND PLANS.**

Special plans and estimates on construction will be furnished on application.

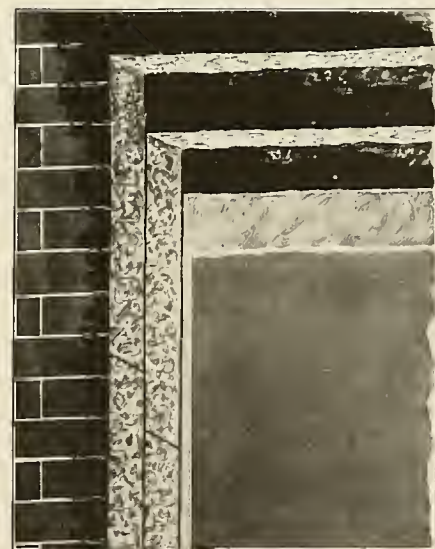


FIG. 7. SOLID CONSTRUCTION

UNITED STATES MINERAL WOOL CO.

143 Liberty Street
NEW YORK CITY, N. Y.

FACTORY, NETCONG, N. J.

TELEPHONE, 6714 CORTLANDT.

PRODUCT. MINERAL WOOL.

CHARACTER OF MINERAL WOOL.

This is essentially a vitreous substance converted to a fibrous condition. In appearance it consists of a mass of very fine fibres interlacing each other in every direction, thus forming an innumerable number of minute air cells. It is made by converting scoria and certain rocks, while in a melted condition, to a fibrous state. In this process the material increases in bulk so that the resulting fibres encase a quantity of air amounting to from 92 to 96 per cent. of the volume of the product. It is certain that this proportion of air is not encased by any other product, natural or artificial, which is at the same time indestructible.

USES.

Mineral Wool is used for lining walls, floors, roofs and ceilings, as shown in the accompanying illustrations. It is cheap and easily applied. We are glad to send free samples upon request.

A house lined with Mineral Wool, as shown in Fig. 1, is warm in winter, cool in summer, and is thoroughly deafened. The lining is vermin proof; neither rats, mice nor insects can make their way through or live in it. Mineral Wool checks the spread of fire and keeps out dampness.

TABLE OF BULK AND PRICES.

The following table shows the relative bulk and weight of Mineral Wool, and prices at the factory, Netcong, N. J., on the D. L. & W. R. R.

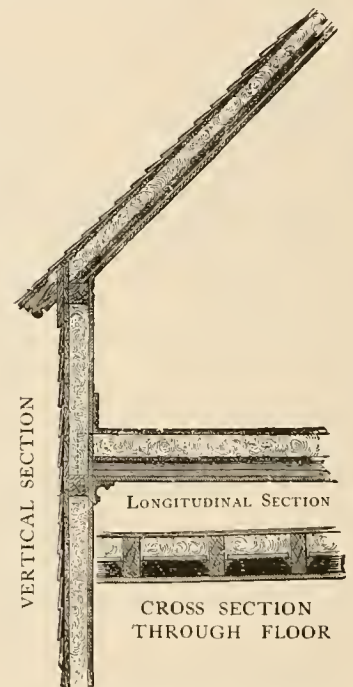


Fig. 1. Semi-Fireproof Construction for Walls, Floors and Roofs

GRADE	AVERAGE			Cost per 100 lbs. (in ton lots) at Factory	Cost per Cubic Foot at Factory in ton lots
	Lbs. per Cubic Foot	Square Foot 1 inch thick	Cubic Feet to Ton		
Ordinary Slag Wool	12	1 lb.	166	\$1.00	12c.
Selected "	9	3/4 "	223	1.67	15c.
Extra "	6	1/2 "	333	4.00	24c.
Ordinary Rock "	12	1 "	166	2.00	24c.
Selected "	8	2/3 "	250	4.00	32c.
Extra "	6	1/2 "	333	7.00	42c.

In less than ton lots add 25c per 100 lbs. to Factory prices.

TERMS: NET CASH. Orders amounting to less than Three Dollars should be accompanied by a check or P. O. Money Order.

NOTE.—We keep a stock in New York from which we can make quick shipments of small lots. For price, ex. store, add 25c. per 100 lbs. to this list, in ton lots, or 50c. in less than ton lots.

PACKAGE.—The material is packed in three-bushel burlap bags, for which a uniform price of 10c. each is made. If returned to us free of all expenses (freight prepaid) and in good order, we credit them at full price charged. This privilege of allowance for empty bags is open only for thirty days after receipt of goods.

HOW TO ESTIMATE.

To find the quantity of Ordinary Mineral Wool required to fill the outside walls the full thickness of studding:

RULE—One pound per square foot for each inch in thickness.

Take the entire distance around the building on a horizontal line and multiply by the height of the studding, which will give the square feet of outside surface. Deduct ordinarily one-third to one-half for space occupied by doors, windows, chimneys, studding, bracing, etc. Multiply the remainder by the thickness of the studding; the result will be the number of pounds of Mineral Wool required to fill the space.

Find the number of square feet of surface of the partitions. Deduct the square feet of openings and the space occupied by thickness of studding. The remainder will be the square feet of space to be filled with Mineral Wool. Multiply the remainder by the width of studs to ascertain the number of pounds required.

EXAMPLE.—House 30 x 50; studding 2 x 4; 20 feet high.

60
100
—
160 feet around.
studs 20 feet high.
—
3) 3,200 square feet.
1,066 square feet out for openings (1/3).
—
2,134 square feet net.
4 inches thick.
—
8,536 lb wool will fill outside walls
full thickness of 4 inch studding and from sill to plate.

CEILING CONSTRUCTION.

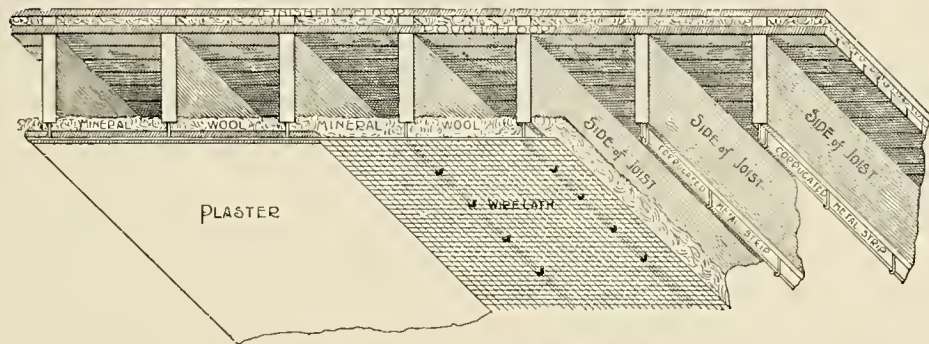


Fig. 2. Semi-Fireproof Construction for Ceilings Partition

By the use of Mineral Wool applied as shown in Fig. 2, the cost of ceiling, including lath put up and two inches of Mineral Wool on same, would be from 50 to 60 cents per square yard, according to locality.

SPECIFICATION FOR CEILING.

Fur below the bottom of each joist, longitudinally, with a metal furring strip not less than one inch wide, said strip, if corrugated, to be of No. 20 gauge band iron, and if not corrugated, to be of No. 10 gauge band iron. After fastening said furring strips, lath the ceiling with metal lath; *the lath must be put on running crosswise of the joist*; and fill on top of lath with two (2) inches of Mineral Wool. The furring strips and lath to be fastened in place with staples long enough to drive at least one inch into joists.

INSTRUCTIONS.

Any kind of wire or metal lath can be used with this ceiling. Lath with an open mesh, such as the Roebling lath or expanded metal lath, can be put on with the least trouble, for the reason that the staples can be driven more readily.

Mineral Wool is placed upon the metal or wire lath, carefully packed underneath the joist, and extending up between them to any desired height. *The Wool should be put in place before plastering*, and it will be found the most economical to put in when the lathing is done. The lath is plastered underneath as usual. The Mineral Wool is soft and pliable, and the plaster forms a perfect key when applied after the Wool is placed.

NONPAREIL CORK WORKS

ARMSTRONG CORK COMPANY

CABLE ADDRESS
STONDUR, N. Y.

105 Hudson Street
NEW YORK CITY, N. Y.

CODES USED
A B C 4TH AND 5TH EDITIONS
WESTERN UNION, LIEBER'S

BOSTON,
PHILADELPHIA,
CHICAGO,

PITTSBURG,
ST. LOUIS,
NEW ORLEANS,

CINCINNATI,
SAN FRANCISCO,
LONDON.

PRODUCTS.

NONPAREIL CORK, in sheets for Cold Storage Insulation of every description.

NONPAREIL MARBLE CEMENT, fireproof and damp-proof interior finish for refrigerated rooms.

NONPAREIL CORK SECTIONAL COVERING for all cold pipes.

NONPAREIL CORK FLOOR TILING (densely compressed), especially adapted for hospitals, libraries and electric power plants.

GRANULATED CORK. CORK SPECIALTIES.

FACILITIES.

We carry continuously a stock of 500,000 square feet Sheet Cork of insulation quality, and complete stocks of our other lines. We are prepared to execute promptly orders or contracts of any size. We make a specialty of insulating Fur Vaults and Brewery Storage Cellars. Estimates, specifications and detail drawings furnished free of charge, or quotations on material only will be made.

We shall be glad to answer all inquiries we receive from architects and we recommend that they be made at the time they are making plans for cold storage work. We have spared neither time nor expense to obtain positive knowledge of cold storage insulations and their values, and are glad to give facts regarding the subject.

WHAT IT IS.

Nonpareil Cork is the best insulation for Cold Storage Warehouses, Refrigerator Cars, Ice Plants, Breweries; Brine Tanks and wherever a non-conductor of heat is required. It is manufactured of nothing but cork, no foreign cementing substance of any kind being used. It is compressed in iron moulds and baked at a high temperature. This liquifies the natural gum of the cork; as the mould cools, this gum hardens and forms a solid sheet or block of natural cork.

POINTS OF SUPERIORITY.

Nonpareil Cork is the most efficient non-conductor of heat known, being from 15 to 40 per cent. better than artificial cork, 13 per cent. better than hair felt, 25 per cent. better than mineral wool, 40 per cent. better than sawdust, 50 per cent. better than spruce wood, and 100 per cent. better than pitch or asphalt.

It does not disintegrate and is not affected by moisture, heat or cold, nor by constant vibration. It does not settle and leave unprotected spaces, but is permanent and will last as long as the building in which it is used.

It is the lightest insulation that can be used, weighing about one pound per square foot for each inch of thickness. It is easy and rapid of application. It can be sawed to fit irregular spaces. Less thickness is needed than of any other material, thus saving a great amount of space. It has no capillary attraction whatever, which is the chief cause of the deterioration of sawdust, shavings and mineral wool. It is odorless, a very important point.

COST.

The saving of labor in applying it, and of piping needed to refrigerate the rooms, brings the first cost down to a low point; and the continual saving in operating expense, due to superior efficiency and permanence, makes it the cheapest material that can be used.

USERS OF NONPAREIL CORK.

They include the U. S. Government, leading Cold Storage and Ice Making Plants, Breweries and Packing Houses throughout the United States. We shall be glad to furnish references which will satisfy prospective customers that Nonpareil Cork has proved to be all we claim.

BARRETT MANUFACTURING COMPANY



Coal Tar Products, etc.

NEW YORK CITY
CINCINNATI, OHIO
ALLEGHENY, PA.
BOSTON, MASS.

CHICAGO, ILL.
PHILADELPHIA, PA.
ST. LOUIS, MO.
NEW ORLEANS, LA.

CLEVELAND, OHIO
MINNEAPOLIS, MINN.
KANSAS CITY, MO.

PRODUCTS—Manufacturers of ROOFING AND PAVING PITCH, TARRED ROOFING FELTS, SHEATHING FELTS, BUILDING PAPERS, READY ROOFING, WEATHERPROOF ROOFING and COAL TAR PRODUCTS.

SINGLE-PLY TARRED ROOFING FELT—Made in "BB" and "Columbian" brands in rolls 32" wide, containing 324 sq. ft., and weighing about 45 and 50 pounds respectively. For use in laying a Barrett-Specification Pitch and Gravel or Slag Roof. The felt is laid from four to six-ply with Coal Tar Pitch between the layers and Pitch and Slag or Gravel on the surface.

SINGLE-PLY TARRED ROOFING FELT—"Diamond" Brand. Made in rolls 32" wide, containing about 324 sq. ft., and weighing about 40 lbs. For use in laying a four to six-ply Felt, Pitch and Gravel or Slag Roof. This is an old, established brand that is known to every roofer.

SINGLE-PLY TARRED ROOFING FELT—"Double Thick" brand. Made in rolls 36" wide containing 108 and 216 sq. ft., and weighing about 25 and 50 lbs. respectively. This is an extra heavy grade of Single-Ply Tarred Felt and is largely used for sheathing under clapboards and for roofing temporary buildings. It is also used, in several thicknesses, for gravel roofs.

TWO AND THREE-PLY READY ROOFING—Two and three-ply "*Red Seal*" and "*Black Diamond*" 32" wide containing 108 sq. ft., and weighing 40, 60 and 45, 67 lbs. respectively. Used for temporary roofing on buildings of all kinds; also for sheathing purposes and for inside and outside coverings for poultry houses.

"AMATITE" READY ROOFING—Manufactured in rolls 32" wide, containing 110 sq. ft., and weighing about 95 lbs. This is used for roofing buildings of all kinds; being especially adapted for steep roofs and farm buildings. It is all ready to lay, requiring no coating or surface covering. Nails and cement for the laps furnished free with each roll.

"AMAZON" READY ROOFING—Made in $\frac{1}{2}$, 1, 2, and 3-ply, rolls 36" wide, containing 216 sq. ft., and weighing 42, 65, 85 and 105 lbs. respectively. Cement, nails and caps packed in the centre of each roll. This is used largely for temporary roofing and is clean and easy to handle.

"No. 45" CARBOLIZED SLATERS' FELT—In rolls 36" wide, containing 500 sq. ft., and weighing about 40 lbs. This is a well seasoned Felt and is made especially for sheathing under slate.

"BARRETT'S" 4-PLY ROPE INSULATING PAPER—Made in rolls 36" wide, containing 1000 and 500 sq. ft., and weighing about 80 and 40 lbs. respectively. This paper is especially adapted for lining cold storage warehouses and refrigerator cars, ice houses and all buildings where an even

temperature is required. It is a non-conductor of heat; thoroughly waterproof, air-tight and is unaffected by change of climate and temperature.

"BARRETT'S" BLACK WATERPROOF SHEATHING PAPER—Manufactured in rolls 36" wide, containing 500 and 250 sq. ft., and weighing about 40 and 20 lbs. respectively. This is a waterproof and air-tight paper for sheathing purposes. It is used also under iron and tin roofs to prevent corrosion, as well as under slate roofs.

"CHILDS" BLACK WATERPROOF SHEATHING PAPER—Made in rolls 36" wide, containing 500 sq. ft., and weighing about 30 lbs. This is a very high grade sheathing paper of excellent quality and beautiful finish. There is no better black waterproof paper on the market.

"EXCELSIOR" AND "EMPIRE" PARCHMENT—Made in 1, 2, and 3-ply rolls 36" wide, containing 900, 500 and 275 sq. ft., and weighing each twenty pounds. These are waterproof sheathings resembling parchment. They are saturated with a solution of Pine Tar, which render them air-tight, moisture and vermin-proof.

"CYCLONE" BLACK SHEATHING—In rolls 36" wide, containing 500 sq. ft., one and two-ply and weighing 20 and 24 pounds respectively. A good waterproof sheathing paper.

"O UNXLD" AND "OO UNXLD"—Made in rolls 36" wide, containing 500 sq. ft., the "o" weighing 18, and the "oo" 25 lbs. A good quality paper and inexpensive. Used for sheathing frame buildings.

"DEFENDER" FELT SHEATHING—In rolls 36" wide, containing 225 sq. ft., and weighing about 45 lbs. A good, strong waterproof sheathing paper and sound deadener. It is made of thick wood felt and a sheet of manilla paper cemented together with a layer of waterproof composition. Used extensively in dwellings, public buildings, etc. It not only makes a building sound-proof and waterproof, but adds greatly to its warmth.

"SACKETT'S" WATERPROOF SHEATHING PAPER—In rolls 36" wide, containing 1000 and 500 sq. ft., and weighing about 80 and 40 lbs. respectively. Composed of two sheets of manilla paper, cemented together with a layer of waterproof composition, making a durable sheathing paper, clean to handle and impervious to moisture and gases.

"B SECURITY" ENAMELED LEATHER SHEATHING—Made in rolls 36" wide, containing 500 sq. ft., and weighing about 32 lbs. Consisting of a good, strong rosin paper, black enameled on one side, and forming a first-class building and case lining paper.

"D" AND "E" LINING PAPERS—In rolls 36" wide, containing 1000 sq. ft., the "D" and "E" rolls weighing about 38 and 18 lbs. respectively. These are waterproof papers, used extensively for lining cases, particularly for export shipment. Cases exposed to moisture, if lined with the "D" and "E" papers, will always keep the contents dry and safe.

"NOX-EM-ALL" RED ROSIN SIZED SHEATHING PAPER—Nos. 8, 12, 16 and 20, rolls 36" wide, containing 500 sq. ft., and weighing 60, 40, 30, and 25 lbs. respectively. A 3-ply sheathing paper, of excellent quality and uniform color. This is probably the most widely used Rosin Sized Sheathing Paper on the market and is noted for the good results obtained from its use.

"TOMB" BRAND DEADENING FELT—In rolls 36" wide, containing 450 sq. ft. ($4\frac{1}{2}$, 6 and 9 sq. ft. to the pound). Made from all wool stock, free from lumps and foreign matter. Used as sound deadener for walls and between floors. All well built dwellings and public buildings are made sound proof with this material.

THE BARRETT SPECIFICATION—The following specification is for a Standard Slag or Gravel Roof laid over boards. A Roof of this kind is adapted for use on all kinds of buildings (except where the roof is very steep), and is pre-eminently the best roof for most purposes. Its cost per year of service is much less than any other form of reliable roof covering known. As compared with Tin or Metal Roofing, it is immeasurably superior and more economical, as it requires no painting and no repairs of any kind for year after year after it has been laid. In fact, any reputable contractor will guarantee such a roof for at least ten years. This may seem a long time but experience has proven that, with ordinary care, most roofs laid according to this specification will give good service for nearer twenty years.

THE BARRETT SPECIFICATION FOR STANDARD SLAG OR GRAVEL ROOFING, OVER BOARDS—“To follow Description of Roof Sheathing . . . Over the foregoing shall be laid a (5) five-ply Coal Tar Pitch, Felt, and Slag or Gravel Roof to be constructed as follows:

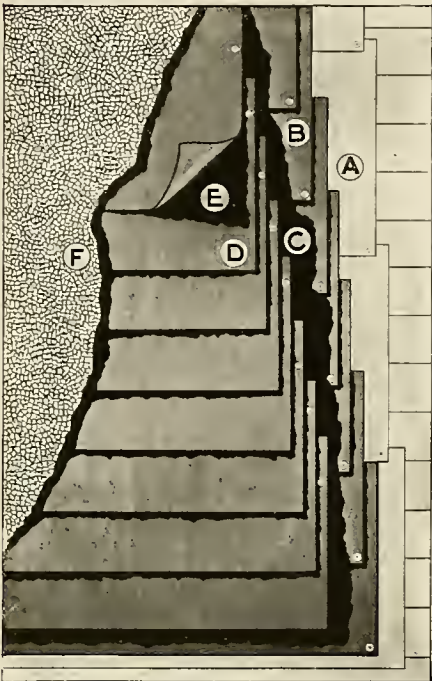


DIAGRAM SHOWING CONSTRUCTION OF STANDARD SLAG OR GRAVEL ROOFING

“The Rosin Sized Sheathing Paper or Unsaturated Felt to be used shall weigh not less than five (5) pounds per one hundred square feet.

“The Tarred Felt shall weigh not less than fourteen (14) pounds per one hundred square feet, single thickness.

“The Pitch shall be of the best quality of straight run coal tar pitch, distilled direct from American coal tar, and there shall be used not less than one hundred and twenty (120) pounds (gross weight) per one hundred square feet of completed roof.

“The nailing shall be done with three-penny barbed wire roofing nails driven through tin discs.

“The Slag or Gravel shall be of such a grade that no particles shall exceed five-eighths ($\frac{5}{8}$) of an inch or be less than one-fourth ($\frac{1}{4}$) of an inch in size. It shall be dry and free from dust and dirt. In cold weather it must be heated immediately before using. Not less than three hundred (300) pounds of Slag or four hundred (400) pounds of Gravel shall be used per one hundred square feet.

“The material shall be used as follows: (See diagram.)

“First lay one thickness of Rosin Sized Sheathing Paper or Unsaturated Felt (A) lapping each sheet one inch over the preceding one, and nailing only so often as may be necessary to hold in place until covered with the Tarred Felt (B) and the nailing may be omitted entirely if practicable.

“Over the Rosin Sized Sheathing or Unsaturated Felt lay two (2) full thicknesses of Tarred Felt, (B) lapping each sheet seventeen (17) inches over the preceding one, and nailing along the exposed edges of the sheets only so often as may be necessary to hold the sheets in place until the remaining Felt can be applied.

“Over the entire surface of the Felt thus laid, spread a uniform coating of Pitch (C), mopped on. Then lay three (3) full thicknesses of Felt (D), lapping each sheet twenty-two (22) inches over the preceding one, and nailing, as laid, every three (3) feet, not more than ten (10) inches from the upper edge.

“When the felt is laid and secured mop back with pitch (E), the full width of twenty-two (22) inches under each lap. Then spread over the entire surface of the roof a uniform coating of Pitch, into which, while hot, imbed Slag or Gravel (F).”

NOTE—When this roof is to be laid over hydraulic cement concrete as in fireproof construction, we furnish a special Specification for this kind of work.

ADDITIONAL INFORMATION—We are at all times prepared to submit additional information on the subject of either Roofing or Waterproofing, and to substantiate our position in any further way that may be desired.

We will furnish, on request, The Barrett Specification in typewritten form, so that it can be easily incorporated into any building specification.

We should be very glad to hear from architects and engineers regarding this specification and will welcome criticism or suggestion. All such communications should be addressed to The Specification Department of the Barrett Manufacturing Company, 17 Battery Place, New York City.

AMERICAN SHEET AND TIN PLATE COMPANY

General Office, Frick Building
PITTSBURG, Pa.

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J. A. SMITH, JR., Penobscot Bldg., Detroit, Mich.

PRODUCTS.

Manufacturers of BLACK SHEETS of every description and for all purposes; W. Dewees Wood Company's Cleaned Refined Smooth Finish; W. Dewees Wood's Patent Polished Iron; Wellsville Polished; Apollo Best Bloom, and Charcoal Hammered Bloom Galvanized Sheets; Trunk Iron; Morton Polished Steel; American Coke and Charcoal Bright Tin; Tinned Dairy Stock; American Old Style, American Nume-thodd, "MF." and "U. S. Eagle" Terne Plates; Continuous Roofing Tin; Corrugated Sheets for Roofing and Siding; Formed Steel Roofing Materials; Formed Metal Siding; Cambridge Rigid Reversible, and "Aetna" Expanded Metal Lath.

INSTRUCTIONS AS TO ORDERS.

Prices and additional information can be procured by writing to the General Offices, or to any one of the District Sales Managers.

GENERAL INFORMATION.

On the following pages we furnish some general information relative to the well known products made by us. Their standing and superior quality are so thoroughly appreciated by the building trades throughout the country that it is not necessary for us to go into a detailed account of their points of merit.

REGARDING OUR TERNE PLATES.

The MF process is the oldest of "old style" methods, and MF Terne Plates are made to-day just as they were nearly a century ago.

The same hand-dipping, palm-oil process which first made MF Tin the best and most widely known of all roofing materials, is to-day strictly adhered to, and the fact that a greater quantity was sold last year than ever before, is conclusive proof of its steadily growing popularity.

The black plate is made of the best material; it is selected pickled, annealed and re-squared by experts, and before being subjected to the tinning bath, is boiled in pure palm oil. This prepares the plate for the coating of pure tin and new lead, and also removes all impurities which otherwise might adhere to the surface.

As a labor saver for the man who lays the roof; or as a fire, wind and storm protector for the owner, MF Terne plates cannot be excelled; they are tough and pliable, absolutely square and easily joined; the coating is thick and even, free from pin holes and of a consistency which permits of the sharpest bend without breaking its surface.

If properly laid and carefully painted, MF roof will last a lifetime. MF was made famous because of its superiority; it has remained a favorite because that superiority has always been maintained.



ROOFING TIN

APOLLO
GALVANIZED
SHEETS.

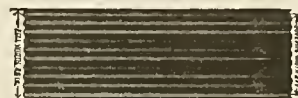
These Sheets enjoy a most favorable reputation in all parts of the American Continent, and on other continents as well. In their manufacture the most modern scientific methods are followed, and the best and most carefully selected raw materials are used. The non-corrosive coating is always reliable; the Sheets are ever true to gauge, uniform in working quality, and trustworthy in every respect.



The Apollo Best Bloom is the favorite of all Sheet-metal workers. For standard sizes, gauges, weight of sheets and bundles and number of sheets per bundle, send for our Pocket Reference Book, which contains the desired information.

CORRUGATED
SHEETS.

The experience of all users has been that for protection against fire and the elements, durability, rigidity, ease of application, and moderate cost Corrugated Sheets have no equal. Herewith we give a description of those made by this Company; all can be furnished plain, painted or galvanized, as you prefer; all are the acme of quality and workmanship.



CORRUGATED SHEETS

DETAILS.

STANDARD SIZES—These sheets are made of the very best material, thoroughly annealed and re-squared before forming. They are noted for their exactness and uniformity.

Made with the following corrugations: $\frac{5}{8}$ inch, $1\frac{1}{4}$ inch, 2 inch, $2\frac{1}{2}$ inch, 3 inch and 5 inch; in lengths of 5, 6, 7, 8, 9, 10, and 12 feet, with a covering width of 24 inches.

Special $2\frac{1}{2}$ inch *Corrugated*. As we often have a call for special sizes of Corrugated Sheets, we are prepared to furnish the following sizes in lengths of 5, 6, 7, 8, 9, 10 and 12 feet:

$2\frac{1}{2} \times \frac{5}{8}$; full width $27\frac{1}{2}$ inches; covering width 24 inches when lapped one corrugation.

$2\frac{1}{2} \times \frac{3}{4}$; full width 26 inches; covering width 24 inches when lapped one corrugation.

We also make $2\frac{1}{2}$ inch corrugations $1\frac{1}{2}$ inches deep; specially adapted for floors in fireproof construction.

$2\frac{1}{2}$ INCH PATENT EDGE—It will be noticed that the outer corrugations of this product are higher than the others. When lapped this insures a perfectly tight joint, and thereby, prevents water from rising over the lap. These Sheets are made of the same material as our Standard Sheets, and also furnished in the same lengths. Covering width, 24 inches.



$2\frac{1}{2}$ " PATENT EDGE

GENUINE REWORKED MUCK BAR IRON CORRUGATED SHEETS—Where iron instead of steel roofing is desired, we recommend the use of our well known Reworked Muck Bar Iron Corrugated Sheets.

This product is made in same sizes as the Standard pattern.

FORMED
SIDING
MATERIALS.

For store fronts and mill construction in cities, and for all kinds of building work in suburban districts, our Formed Metal Sidings are most favorably regarded by architects, builders and owners.

No better form of fire protection is known, while if the various designs are properly applied, these become most attractive and can be made so similar to the materials which they represent, that it becomes almost impossible to distinguish the imitation from the real.

To these features can also be added rapidity of application, minimum cost and continued efficiency. Products which have so much in their favor surely deserve a place in your mind and on your buildings. All there is left for us to do is to make a few suggestions which may prove valuable to you.

INSTRUCTIONS.

PRESSED AND ROCK FACED BRICK SIDING—To get the best effect from the use of this product, use care in applying, seeing that all lines are continuous and plumb. When in place give the surface a good coat of brick-red paint, then paint the mortar

a grayish white. Be careful that the red used dries to the proper color, and is neither too dead nor too brilliant.

DETAILS.

PRESSED BRICK SIDING—Is made from No. 26 gauge and lighter, black, painted or galvanized sheets, 28x60 inches. Size of each brick, $2\frac{2}{3} \times 8\frac{1}{4}$ inches.



PRESSED BRICK SIDING



ROCK FACED BRICK SIDING

ROCK FACED BRICK SIDING—Is made from No. 26 gauge and lighter, black painted or galvanized sheets, 28x60 inches. Size of each brick, $2\frac{2}{3} \times 8\frac{1}{4}$ inches..

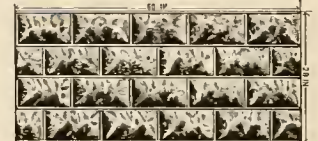
WEATHERBOARD SIDING—Is made from No. 22 gauge and lighter, black, painted and galvanized sheets. Standard lengths, 5, 6, 7, 8, 9, and 10 feet; maximum length, 12 feet; covering width, 24 inches.



WEATHERBOARD SIDING



BEADING CEILING OR SIDING



ROCK FACED STONE SIDING

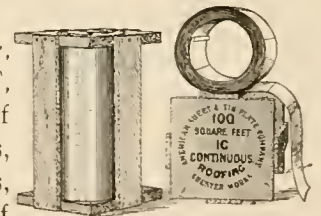
BEADED CEILING OR SIDING—Is made from No. 24 gauge and lighter, black, painted or galvanized sheets. Standard lengths, 5, 6, 7, 8, 9, and 10 feet; maximum length 12 feet; covering width, 24 inches. Beads are 3 inches from center to center.

ROCK FACED STONE SIDING—Size of single stones 7×12 inches and $9\frac{1}{2} \times 20$ inches. Made from No. 26 gauge and lighter, black, painted or galvanized sheets, 28x60 inches.

CONTINUOUS ROOFING TIN.

Made from the standard size Terne Plates.

We can furnish in prime quality only, *American Terne*, *American Old Style*, *U. S. Eagle N. M.*, *Numethodd, MF*, and other high-grade brands of Roofing Tin in the shape of Rolls, 14", 20" and 28" wide, containing one or two squares, painted with best iron oxide and linseed oil paint on both sides, on one side, or unpainted, as may suit the convenience of customers.



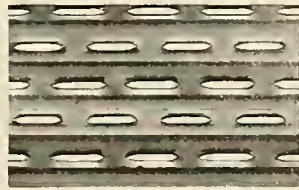
CONTINUOUS ROOFING TIN

Sheets of 14"x20" or 20"x28" are seamed together by a double lock seam, which gives strength and rigidity to the material, permits expansion and contraction, and the tight fold makes soldering unnecessary for most purposes. If desired, however, the double locked cross seam will be soldered, at an extra charge.

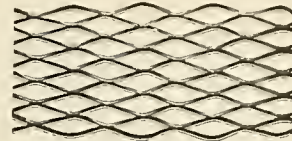
We also manufacture a second quality of Continuous Roofing from American Terne grade, adapted for special purposes, 10", 14", 20" and 28" wide, made from terne coated sheets 72", 84" and 96" long, carefully assorted. Single lock seam and soldered. Painted on one side, both sides, or unpainted. Packed in wooden crates or sheet-iron casks.

METAL LATH.

We manufacture the *Cambridge Rigid Reversible Metal Lath*; also *Aetna Expanded Metal Lath*, both of which are favorably known to the architectural profession, and are well adapted to every purpose for which metal lath can be used. As with all of our products, we guarantee the quality of these goods.



CAMBRIDGE RIGID REVERSIBLE METAL LATH



AETNA EXPANDED METAL LATH

FORMED ROOFING MATERIAL.

V-CRIMPED ROOFING—Is made from No. 20 gauge and lighter, black, painted or galvanized sheets. Standard lengths: 5, 6, 7, 8, 9, and 10 feet; maximum length 12 feet; covering width, 24 inches. Wood sticks furnished if desired.



V CRIMPED ROOFING

THREE V-CRIMPED ROOFING—Is made from No. 20 gauge and lighter, black, painted or galvanized sheets. Standard lengths: 5, 6, 7, 8, 9, and 10 feet; maximum length 12 feet; covering width 24 inches. Wood sticks furnished if desired.



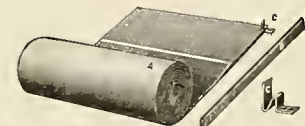
THREE V-CRIMPED ROOFING

PRESSED STANDING SEAM ROOFING—Is made from No. 24 gauge and lighter, black, painted or galvanized sheets. Standard lengths: 5, 6, 7, 8, 9, and 10 feet; maximum length 12 feet; covering width 24 inches. Cleats furnished unless otherwise ordered.



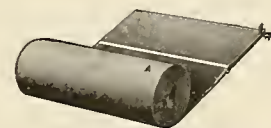
PRESSED STANDING SEAM ROOFING

ROLL AND CAP ROOFING—Is made from No. 24 gauge and lighter, black, painted or galvanized sheets, 26 inches wide. Each roll contains 50 lineal feet, and when applied in the usual manner will cover 100 square feet of surface. Caps and cleats supplied unless otherwise specified. Cross locks are single seamed, but double-seamed locks can be furnished.



ROLL AND CAP ROOFING

PLAIN OR SELF-CAPPING ROLL ROOFING—Is made from No. 24 gauge and lighter, black, painted or galvanized sheets, 26½ inches wide. Each roll contains 50 lineal feet, and when applied in the usual manner will cover 100 square feet of surface. Cleats furnished if desired.



PLAIN OR SELF-CAPPING ROLL ROOFING

AMERICAN TIN & TERNE PLATE COMPANY

50 North 23d Street
PHILADELPHIA, PA.

BELL TELEPHONE, LOCUST, 177
KEYSTONE TELEPHONE, RACE, 5201 D

PRODUCTS.

We are manufacturers of and dealers in TIN and ROOFING PLATE, SOLDER, GALVANIZED HOOPS, SHEET AND BAR IRON and NAILS; also the "Keystone" Brand of PITCH, TARRED FELT, ROSIN SIZE SHEATHING and SLAG. One of our specialties is "OLD METHOD" I. C. ROOFING. Besides all of which we maintain a large stock of the following materials:

SHEET ZINC	STEEL PLATES	BLACK BANDS
CORRUGATED SHEETS	BLACK BAR IRON	GALVANIZED BANDS
CONDUCTOR PIPE	GALVANIZED BAR IRON	POLISHED SHEETS
EAVE TROUGH	REGISTERS' AND TINNERS' SUPPLIES	ELBOWS AND SHOES

TIN AND TERNE PLATE.

The manufacture of Tin and Terne Plate in the United States is practically a new industry, as previous to 1890 little or none of it was manufactured here. Since then, however, great headway has been made, until to-day the United States has outdistanced Great Britain, the former leading producer, and is the greatest manufacturing center for Tin and Terne Plate in the world.

The American Tin & Terne Plate Co. has been an important factor in this progress, as we have led with improved methods of manufacture, and we control some of the largest plants in the country. We employ several special patent processes, which we own, and which bring our work up to a standard of perfection, creating a quality which in every way justifies our guarantee.

TRADE MARK.

To protect ourselves and the trade against possible substitution, we have adopted a trade mark, as illustrated.



ORDERS.

We keep an immense stock of our products on hand, which enables us to insure immediate delivery, or shipment of orders.

Consumers of tin should be very particular in deciding on the grade and make of tin plate to be used. As tin plate is but sheet iron "dipped" in tin, it naturally follows that on a poorly dipped sheet the coating will soon disappear, leaving the iron exposed to the effects of rust and corrosion. Our tin plate has a heavier coating than so-called same grades of different make. We keep the following grades in stock at all times, in the "Keystone," "Peerless," "Franklin," "Black Diamond," and other well-known brands: Charcoal Bright Plates, Coke Bright Plates, Old Style Terns, Charcoal Terns and Coke Terns. A quotation sheet will be sent upon application.

GALVANIZED IRON.

Galvanized Iron is made from iron sheets, thoroughly cleaned and then coated with either zinc or spelter, which prevents in a marked degree the corrosion that iron is subject to on exposure to the elements. Our improved process for cleaning the iron sheets (a method used only by us) in no way destroys the fibre. The old method, by acid or heat, invariably does. We are, therefore, able to guarantee our work to stand any test that black iron will. We desire to impress this fact upon all workers in Sheet and Hoop Iron, who find it to their advantage to use only Galvanized Iron.

PATENT SMOOTH EDGE GALVANIZED SHEET IRON.

The manufacture of Patent Smooth Edge Galvanized Sheet Iron is one of our products which has had many imitators. Our manufacture is the "Keystone" brand, and is the only iron in the market that is perfectly smooth on both edges.

We galvanize all kinds of iron work to order in the shortest possible space of time.

ESTIMATES.

We will gladly furnish estimates on orders for our goods in any quantity.

THE BASSETT-PRESLEY COMPANY

OFFICES

300-310 WESTERN RESERVE BUILDING

WAREHOUSE

15-43 CLIFTON STREET

CLEVELAND, OHIO

PRODUCTS.

Manufacturers of SUPPLIES for ROOFERS and FURNACEMEN; Dealers in METALS, IRON, STEEL and TIN PLATE WORK. We are also the manufacturers of "BASSETT GENUINE CHARCOAL IRON OLD STYLE ROOFING TIN."

ADVANTAGES OF BASSETT GENUINE CH. I. O. S. R.

Every architect and roofer knows that the STEEL BASIS PLATE as used in roofing to-day is not up to the standard of years ago, and we claim that we have, through modern processes, brought out a plate to furnish roofing which is identical with the Old Charcoal Iron Plate, as made before the advent of soft steel.

PROCESS OF MANUFACTURE.

Bassett Genuine Charcoal Iron Old Style Roofing is identical, physically and mechanically with the old iron plates, being manufactured from the raw materials in exactly the same way and by exactly the same method as follows:

The raw material is placed in an old style knobbling fire in layers alternating with layers of Charcoal made from selected hard wood. By the combustion of this fuel and the efforts of the workman, who is known as a "Knobbler," the raw materials are reduced to the form of a ball consisting of a spongy mass of almost chemically pure Iron, but containing mechanically held in the pores, a quantity of molten cinder or slag. This cinder must be removed, and in order to effect this separation, the ball, at the expiration of the knobbling process, is quickly taken to the anvil of a very large steam-hammer; here it is given a number of heavy blows, expelling the greater portion of the slag and forming the knobbler's ball into a square block or cake of iron, which, however, still contains a small portion of the slag. In order to get rid of this impurity, the block or "Bloom" as it is called, is heated to a white heat and again taken to the hammer for a second hammering, after which it is "roughed off" in the mill into a long slab, which is cut up into short lengths for piling.

These short lengths, when piled and fagotted are again heated to a white heat, welding the pile into a solid "bloom," which is then "finished off" into thin bars in the bar-mill. These bars are then rolled in the ordinary way into charcoal iron black plate, which, being finished, is coated by means of the old style palm oil process.

GENERAL INFORMATION.

We manufacture different brands of plate, which however, differ only as to the weight of their respective coatings. All our products are manufactured from the same base of Charcoal Iron.

FORM OF SPECIFICATION. SIZE AND WEIGHT.

In order to assist the architect in specifying, we name below our various brands.

"BASSETT GENUINE CHARCOAL IRON OLD STYLE."

Coating, 40 lbs. per box.

20x28 I. C. Weight 252 lbs.

20x28 I. X. Weight 308 lbs.

"BASSETT PURE CHARCOAL IRON OLD STYLE."

Coating, 25 lbs. per box.

20x28 I. C. Weight 240 lbs.

20x28 I. X. Weight 296 lbs.

"KIMBERLY WELSH CHARCOAL IRON OLD METHOD."

Coating, 14 lbs. per box.

20x28 I. C. Weight 228 lbs.

20x28 I. X. Weight 284 lbs.

MERCHANT AND EVANS COMPANY

PHILADELPHIA, PA.

NEW YORK CITY, N. Y.
BALTIMORE, MD.
BROOKLYN, N. Y.



KANSAS CITY, MO.
CHICAGO, ILL.
DENVER, COLO.

PRODUCTS.

Manufacturers of MERCHANT'S HIGH GRADE ROOFING TIN, STAR VENTILATOR and COMBINATION SKYLIGHT, MERCHANT'S "SPANISH" TILES, MERCHANT'S BRIGHT TIN PLATE.

ROOFING TIN BRANDS AND SIZES.

Our brands of High Grade Roofing Plates are: *Merchant's Old Method, Merchant's Roofing, Merchant's American Old Style, Camaret and Alaska.*

These brands are made in Philadelphia and are carried in stock at different points in our various warehouses in IC and IX thickness, and 14x20 inch and 20x28 inch in size, 112 sheets to the box. These plates are coated by the Palm Oil process, which requires the highest skilled labor and is the only reliable method of coating Roofing plates. The sheets are resquared, and with a uniform coating throughout give the most perfect roofing tin that may be procured.

THE "STAR" VENTILATOR.

The "Star" Ventilator is superior to all others for the ventilation of Churches, School Houses, Public Buildings, Out Houses, also Cotton and Woolen Mills, Machine Shops, Foundries, Dye Houses, Factories, etc. The "Star" Ventilator is simple, durable and storm-proof. It increases the draft in chimneys and ventilates sewer pipes. Manufactured of the very best quality of material throughout its entire construction.



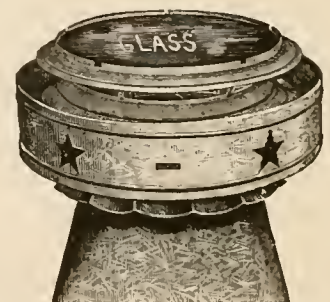
"STAR" VENTILATOR

SKYLIGHT OR GLASS TOP "STAR" VENTILATOR.

Perfection in the combination of light and pure air is attained in this form of the "Star" Ventilator, which, without sacrificing in any particular its high ventilating and storm-proof qualities, combines with these a perfect weather-tight skylight, the light area of which is actually one-fourth (25 per cent) greater than the actual area of the ventilator itself, of whatever size it may be.

It is not a compromise between a first-class ventilator and a poor skylight, but the best of both. It supplies a need which has been felt for years, and is the only ventilator of its kind.

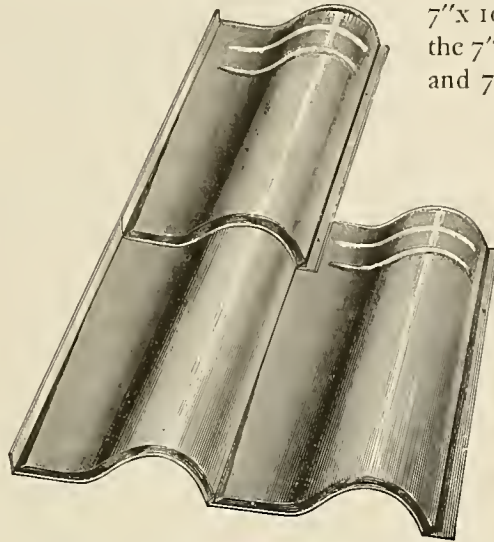
The only difference between the regular metal-top and the Combination Skylight "Star" Ventilator is the glass top of the latter. Perfection in ventilating qualities, workmanship and all else is the same. The thickness of the glass is proportionate to the size of the ventilator, and ample provision for the shedding of rain, snow, etc., is made.



SKYLIGHT OR GLASS TOP "STAR" VENTILATOR

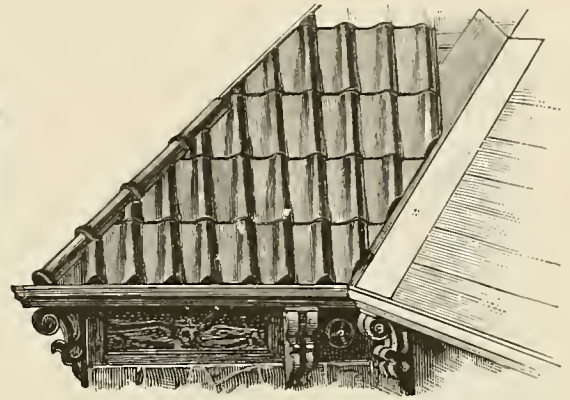
MERCHANT'S
METAL
"SPANISH"
TILE.

We manufacture "Spanish" Tiles of either 12 oz., 14 oz., 16 oz., or any other thickness of copper; also of terne plates and galvanized steel. We guarantee the copper to be uniform in quality and weight and to be strictly in accordance with the specification. There are three sizes of the tile which are adapted for straight surfaces; *i. e.* 7"x 10", 10"x 14", and 14"x 20". There are 400 of the 7"x10" size in 100 square feet, 174 of the 10"x14", and 74 of the 14"x 20".



Patented December 6, 1892

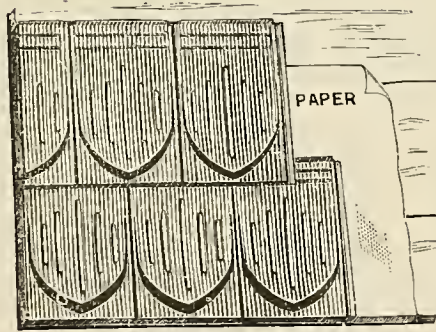
GENERAL VIEW OF INTERLOCKING "SPANISH" TILE



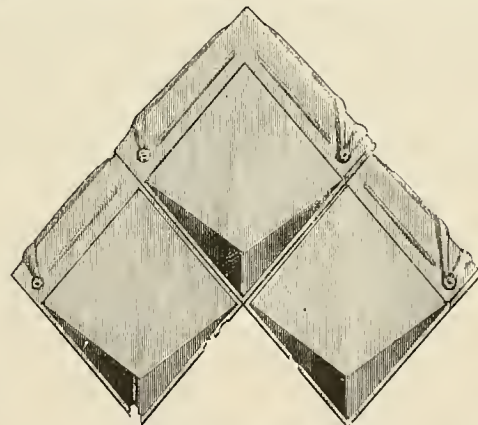
SECTION SHOWING APPLICATION OF "SPANISH" TILES

We also make a "Ten in One" Tile, which is one sheet stamped to represent ten tiles. These are made of the same material as our other tiles, except in large sheets. A cluster of tiles in one, and easily applied.

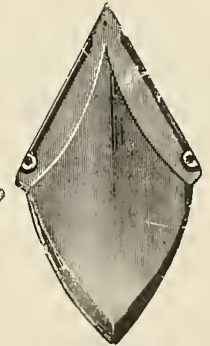
We also manufacture and supply graduated tiles for Circular Roofs, Domes, Bell-Shaped Towers, Turrets and all Conical Surfaces. These are the best Metal Tiles made for this purpose.



MERCHANT'S GOTHIC SHINGLES



DIAMOND TILE



GOTHIC TILE

MERCHANT'S
"GOTHIC"
SHINGLE
TILES, ETC.

We are also the manufacturers of MERCHANT'S "GOTHIC" SHINGLE, "GOTHIC" TILES, and "DIAMOND" TILES, which are very effective for Small Roofs, Mansards, Bulkheads, Gables, etc.

We manufacture RIDGES and HIP TILES; also TERMINALS for Hip, Gables and Dormers; likewise special VALLEYS for "Gothic" and other Shingles.

ESTIMATES.

We will submit estimates on request for our products, in any quantity. All our goods are guaranteed unconditionally to be as represented. Builders, Contractors, Owners and Architects will always be able to give satisfaction by carefully specifying our products.

N. & G. TAYLOR COMPANY

GENERAL SALES OFFICES

MARINER AND MERCHANT BUILDING, CHESTNUT AND THIRD STREETS

PHILADELPHIA, PENNSYLVANIA

FURNACES, ROLLING MILLS AND BLACK PLATE PLANT, CUMBERLAND, MD.

TIN PLATE WORKS, PHILADELPHIA

BRANCH OFFICES AND STOCKS CARRIED AT

NEW YORK
CHICAGO
BOSTON

NEW ORLEANS
ST. LOUIS
OMAHA

SAN FRANCISCO
DENVER
KANSAS CITY

AND OTHER IMPORTANT POINTS

- PRODUCTS.** Manufacturers of BRIGHT TIN and ROOFING-TIN of all kinds. Sole makers of the genuine "OLD STYLE" brand of roofing-tin.
- FACILITIES.** This company operates the largest and best equipped tin house in the United States, with facilities for making tin plate of every description.
- SPECIALTY.** N. & G. Taylor Company have always stood for high standards in their products, and are known most widely for their celebrated "OLD STYLE" brand roofing-tin.
- ADAPTABILITY OF PRODUCTS.** There are no limits to the use of this roofing-tin, since it has been found to give good, lasting service under the most trying weather conditions.
- FIREPROOF QUALITIES.** It is fully endorsed by building laws and municipal regulations in all parts of this country as being an excellent protection against fire, from the fact that a good tin roof covers the entire upper surface of the building with an unbroken sheet of metal. This renders the roof absolutely safe from flying sparks, embers, and even flames from a nearby fire.
- FIRE-DOORS AND SHUTTERS.** Tin-covered fire-doors and shutters have been found to resist fire more successfully than any other form of partition. In some cases the wood has been charred away completely under the tin but the metal casing has still held intact. A circular describing the proper form of shutter will be sent upon request.
- CARRIED IN STOCK EVERYWHERE.** Full stocks of this brand of roofing-tin are carried in all the leading cities of this country, and the brand is also handled by the prominent hardware jobbing houses in all parts of the United States.
- DESCRIPTION OF GOODS.** The tin is packed in tough wooden boxes securely strapped with band iron to stand rough handling. These boxes contain 112 sheets, either 14x20 inches, or 28x30 inches—as may be wanted.
- The tin is made in several thicknesses—IC thickness (30 gauge, U. S. standard)—for general use, roofs, decks, and large surfaces; IX thickness (28 gauge) used for valleys, gutters, down spouts, flashings, etc. This thickness is preferred by some architects for extra fine work on the roof proper.
- FORM OF SPECIFICATION.** To secure the proper use of this brand of tin simply specify as follows:
- Tin Roofing: Use IC "Taylor Old Style" roofing-tin for all roofs to be tinned, and for all flashings; and IX "Taylor Old Style" roofing-tin for all valleys, gutters and spouts, as required by design, all well soldered. Use no other soldering flux but good rosin.*
- The sheathing boards to be covered with good quality red rosin-sized sheathing-paper, lapped two inches. Use no tar paper.*
- For flat roofs make flat seams, and use plates 14x20 inches. Use 1-inch barbed and tinned roofing nails, not over six inches apart, well under the edge; nails must not be exposed.*

For steep roofs make standing seams and fasten down with cleats not over 15 inches apart. Nails must be driven into cleats only.

Paint the under side of the tin one coat before laying on the roof. When tinning is finished clean the roof of all tar and rosin spots, and give it at once a good coat of paint. When this is dry—one week later—a second coat should be applied. The paint used must be good quality metallic brown, red oxide, or Venetian red paint, ground in pure linseed oil.

All work to be done in a thoroughly workmanlike manner.

ACTUAL
RECORD OF TIN
AS A ROOFING
MATERIAL.

Tin roofs made in accordance with these specifications are giving good service after more than fifty years of actual wear. No other roofing-tin or roofing material can show so long a record of satisfactory service as this standard brand of tin. It is the only tin now made in the old-fashioned, hand-labor way, of the best materials obtainable for the purpose.

FACTS
REGARDING
INSTALLATION.

Any tin roofer can estimate on the cost of a "TAYLOR OLD STYLE" tin roof, but you should insist upon good workmanship in laying the roof, since no matter how good a tin is used it can be injured by a careless or ignorant workman. Even "TAYLOR OLD STYLE" tin may not make up for bad workmanship. A good tin roof should be laid properly, carefully, and conscientiously by a good mechanic; the result will justify the slight extra first cost.

ADVANTAGES.

A good tin roof combines advantages which are not found in any other kind of roofing material. It is light and clean—fireproof, wind-proof, weather-proof, and extremely durable; but this is true only of the best tin—such tin as was common thirty and forty years ago. The "TAYLOR OLD STYLE" brand of roofing-tin is the only brand now made which possesses all the old-time durability. Competition and labor-saving methods have lowered the general standard for all kinds of tin plate, but the quality of the genuine "OLD STYLE" brand has been constantly maintained fully up to the old-time standard. Messrs. N. & G. Taylor Company have never lowered the quality to meet competition, nor will they do so. The quality of the "TAYLOR OLD STYLE" brand will always be kept up to the standard that it has maintained for so many years.

COST.

The cost of "TAYLOR OLD STYLE" roofing-tin is a little more than other brands because it costs more to make, and it is worth a great deal more to the property owner and the house builder. Properly put on, a roof of this tin should last a lifetime. This has been proven by more than fifty years' actual experience.

IMITATIONS.

The reputation which this brand has gained during the many years it has been on the market has been responsible for the appearance of numerous imitations. Architects are cautioned against the use of these substitutes which are sold under similar sounding names and at lower prices, but which lack the excellent qualities of the genuine.

TRADE MARK.

Each sheet of the "TAYLOR OLD STYLE" brand of roofing-tin is stamped with the name and address of the makers, the well-known trade mark of the target and arrow, and the thickness. Messrs. N. & G. Taylor Company were the first to stamp tin plates in this way, for the purpose of protecting the buyer. They were also the originators of the present standard size—28x20.

This brand of tin has been used for so many years, and is giving satisfaction on the roofs of so many buildings in all parts of this country, that it is hardly necessary to refer to notable instances where it has been used.

PROMINENT
BUILDINGS
COVERED WITH
THIS TIN.

This tin covers the roofs of such buildings as the White House at Washington, old Independence Hall at Philadelphia, the Military Academy buildings at West Point, the Naval Academy buildings at Annapolis, and public and private buildings of prominence in all parts of the United States.

A STANDARD,
TIME-TRIED
ARTICLE.

Architects can rest assured that in specifying "TAYLOR OLD STYLE" tin they are serving their best interests as well as those of their clients; no other roofing material will give them the same satisfaction. So long as "TAYLOR OLD STYLE" roofing-tin is made there need be no doubt as to the proper material to use wherever a durable, satisfactory roof is wanted.

MEURER BROTHERS COMPANY

METAL ROOFING

TELEPHONE
1567-1568 WILLIAMSBURG

569-577 Flushing Avenue
BROOKLYN, N. Y.

NEW YORK CITY BRANCH
130 East 129th Street
TELEPHONE 1263 HARLEM

PRODUCTS—Manufacturers of special **GUARANTEED ROOFING PLATES**, **MEURER'S GENUINE TINNED IRON SHEETS**, **MEURER'S OLD METHOD**, **MEURER'S ROOFING**, **FLUSHING**, **PULLMAN UNIQUE METAL SHINGLES**, **SPANISH METAL ROOFING TILES**, **THE ANCHOR VENTILATORS**, **SHEET METAL**, etc.

THE MEURER METAL ROOFING TILES—Of pure copper, are exceedingly light, are practically indestructible, and can be applied by any mechanic without soldering or special tools. They furnish absolute protection from wind and weather and quickly assume a rich mellow tone that blends most harmoniously with any surroundings. The Meurer Metal Tile can be applied to a roof of any type, however complicated, and we make a large assortment of special tapered tiles to suit conical roofs. In addition to copper tiles, we make tin plate and galvanized ones.

THE UNIQUE SHINGLE—The only Metal Shingle made that does not break joints. It has our famous Side Lock, which is absolutely water-tight, and can be applied at less than one-quarter pitch and be perfectly tight. It looks like a Standing Seam Roof with the seams covered by a round moulding, and is just the thing for Porches, Cottages and general roof work where an ornamental appearance is desired. A universal roof covering. Can be put on by anyone. Made in Tin (any grade), Galvanized Iron, Zinc and Copper. Sizes 7"x10", 10"x14", 14"x20". Prices and samples furnished on application.

MEURER'S GENUINE TINNED IRON SHEETS—This Plate is of a strictly high grade, re-hammered charcoal iron, precisely such as was used before the adoption of steel as a roofing material,

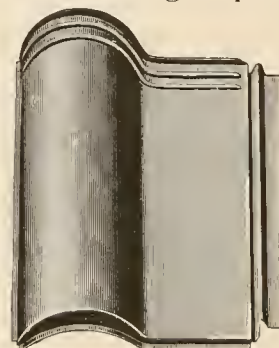
such plates receiving from the hammering process a density and homogeneity unattainable in the ordinary rolled plates. These charcoal plates are dipped singly by hand in the old fashioned open pots, genuine Palm Oil being exclusively used for their coating, and no machinery of any sort is employed in their manufacture. By the use of such old time plates and treatment, we are enabled to offer in the Meurer's Genuine Tinned Iron Sheets a roofing tin which we guarantee unsurpassed by any other in existence. Every sheet of this tin is stamped, and care should be exercised to see that no substitution is used.

ANCHOR VENTILATORS—As a positive Ventilating medium for schools, churches, theatres, mills, factories and any structure where men assemble and demand pure air, the "Anchor" Ventilator stands alone. It will furnish a never-failing supply of fresh air and will effectually prevent down draughts with their attendant smoking nuisance. The "Anchor" Ventilator is remarkably simple and durable in construction; it is absolutely storm-proof and has a greater exhausting capacity than any other make of corresponding size.

"Anchor" Ventilators can be furnished in galvanized iron or copper, also with glass tops, the latter combining a perfect air supply with a most effective weather-tight skylight.

PRICES—We will be pleased to furnish prices and discounts of our products upon application.

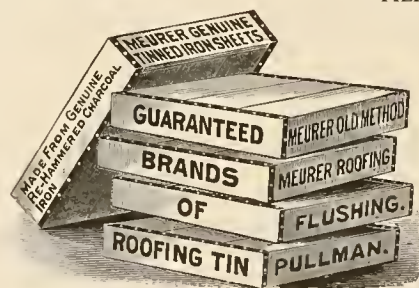
SPECIFICATIONS—If care is used in specifying "Meurer" when the above goods are wanted, the architect is sure of securing what he desires—"the best of its kind on the market."



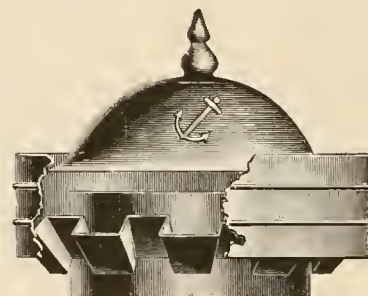
SPANISH METAL ROOFING TILE



THE UNIQUE SHINGLE



GUARANTEED BRANDS OF ROOFING TIN



ANCHOR VENTILATOR

WHEELING CORRUGATING COMPANY

MANUFACTURERS OF

Corrugated Steel Roofing and Siding

Works and Main Office
WHEELING, W. VA.

BRANCH OFFICES AND WAREHOUSES

NEW YORK, 47-51 CLIFF STREET
CHICAGO, 45-47 LAKE STREET
ST. LOUIS, 112-116 SOUTH EIGHTH STREET

PHILADELPHIA, 402-406 RACE STREET
BOSTON, 132-134 PEARL STREET
CHATTANOOGA, TENN.

PRODUCTS.

WHITAKER OLD STYLE ROOFING TIN PLATES, Black and Galvanized Sheets.
(Brand Crescent.)
STEEL ROOFING, Galvanized or Painted.
CORRUGATED STEEL ROOFING and SIDING, Galvanized or Painted.
TIN ROOFING, VALLEY, and GUTTER, in Rolls.
EAVES TROUGH and CONDUCTOR PIPE.
ELBOWS, SHOES, HOOKS and HANGERS.
METAL SHINGLES, Galvanized or Painted.
HIP SHINGLES, Galvanized or Painted.
CRESCENT STEEL LATH.
WHEELING CEILINGS, Made of Steel.

FACILITIES.

No order too large for us. Large stocks of all our products are carried at the factory and in all the warehouses.

TERRITORY.

United States and foreign markets.

WHEELING CEILINGS.

We manufacture the largest and most artistic variety of Steel Ceilings in the world and have designs to suit all requirements.

ESTIMATES AND DRAWINGS.

Estimates and drawings showing arrangements of Steel Ceilings, suitable for rooms of any size and shape, will be made without charge upon receipt of plans or sketches showing detailed measurements.

If a diagram of the room or rooms to be ceiled is furnished, with the distances from point to point, with the size, shape and location of all offsets, openings and irregularities indicated we will be able to make more intelligent estimates, and if desired submit, free of charge, a drawing showing a suitable design.

In all cases inform us of the height of the room, and the distance from the window and door casings to the ceiling so that a cornice of suitable depth may be selected.

More satisfactory results will be obtained if some choice of design is indicated when inquiry is made. However, if the customer expresses no preference, we will prepare an artistic arrangement of plates suitable for the size and shape of the room and the purpose for which it is to be used.

CATALOGUE.

On the following page, we show one of our many designs of steel ceilings. The limited space will not permit us to show our entire line of this material. To properly display the great variety of patterns we now carry in stock, requires a 200 page catalogue, which we are pleased to furnish on application.

GALVANIZED OR PAINTED ROOFINGS.

No matter what kind of metal roofing is required, we make it.

CRESCENT GALVANIZED SHEETS.

Our Crescent Galvanized Sheets are soft, well coated, clean, flat and true to gauge, this brand on every bundle:



PACKAGES OF WHITAKER OLD STYLE ROOFING TIN PLATES

OLD STYLE ROOFING TIN PLATES.

The Whitaker Old Style Redipped is made from perfect, carefully annealed black plate, and carries 47 pounds coating of pure tin and new lead to the 20x28 box, and weighs net.—IC 253 pounds; IX 312 pounds. Every sheet is resquared, inspected and packed with our guarantee. There can be no better roofing plate made.



SAMPLES.

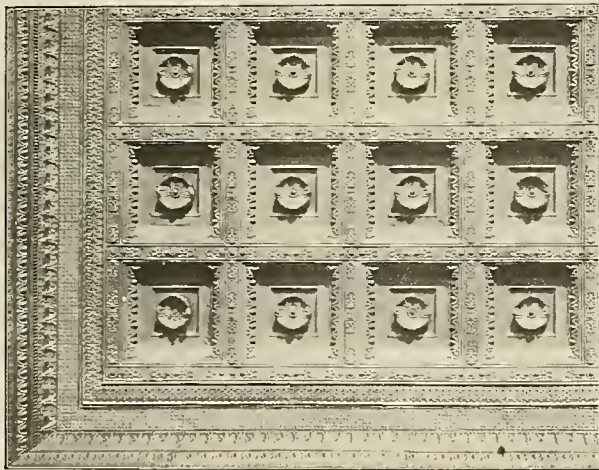
Sample sent postpaid on request. Prompt and courteous reply to any inquiry.

WHEELING
CEILINGS

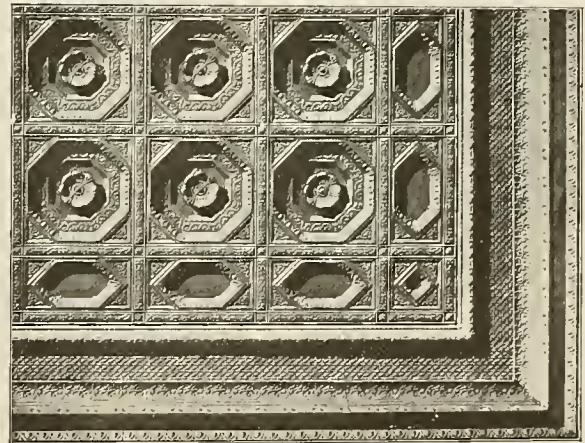
Made of Steel. The largest and most artistic variety of Steel Ceilings in the world.



Interior of SS. Peter and Paul's Church, Rochester, N. Y. "WHEELING CEILINGS" used, Designs No. 1203 and No. 1244. Designs suitable for rooms of any size or style.



Ceiling Design, No. 1203



Ceiling Design, No. 1244

These designs used in SS. Peter & Paul's Church, Rochester, N. Y.

Panels of these designs made without cutting the corners as is the case in other ceilings of equal depth.

Panels in Design No. 1203, 2½ inches deep; in design No. 1244, 2 inches deep.

GLOBE ROOFING TILE CO.

NEW YORK OFFICE
 1135 Broadway
 JAS. M. WATSON, *Manager*
 PITTSBURG OFFICE
 Bank for Savings Building
 CHAS. R. PORTER, *Manager*

CHICAGO OFFICE
 218 La Salle Street
 J. C. & L. C. SHARP, *Managers*
 BOSTON OFFICE
 Old South Building
 FRANK E. COOMBS, *Manager*

PRODUCTS.
 TERRITORY.
 ILLUSTRATIONS
 OF PRODUCTS.

We handle all best designs of VITRIFIED ROOFING TILES and TRIMMINGS.

Any part of the United States.

We give below a partial list of the tiles we handle. They are made in beautiful shades of red, light, dark and medium. They are not clay-slipped, painted or artificially colored, but are one color clear through and will not fade.

U. S. SHINGLE
 TILE.

These tiles (see Figs. 1, 2, 3, 4), are made with extra thick butts to produce a bolder effect than the thinner shingle tile. They are thinned in their upper portion and hollowed out under their butt-ends to render them lighter. They are all 7x14½ inches, lay 7x6 inches to the weather, with 344 tiles, weighing from 1100 to 1175 lbs., to the square. With these tiles we can furnish terra cotta ridge rolls (see Figs. 5, 6), to number with and match the tiles; also hip saddles of a pattern to match that of the tile. We also make a flat roof or promenade (6x9x¾" and 6x9x1") tile.

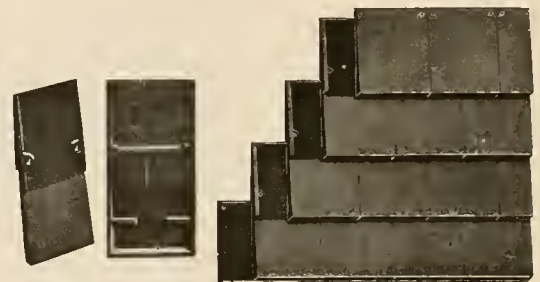


FIG. 1. U. S. SHINGLE TILE, PATTERN A

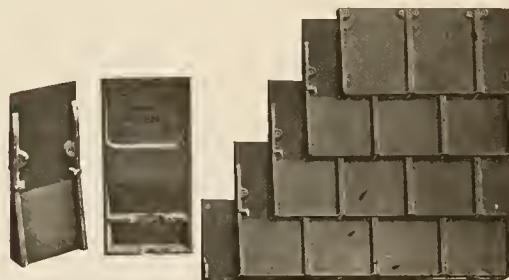


FIG. 2. U. S. SHINGLE TILE, PATTERN B



FIG. 3. U. S. SHINGLE TILE, PATTERN C



FIG. 4. U. S. SHINGLE TILE, PATTERN D



FIG. 5. RIDGE ROLL



FIG. 6. HIP FINIAL

PLAIN SHINGLE TILES.

These tiles are made of uniform thickness $\frac{7}{16}$ of an inch throughout, are $6 \times 13\frac{1}{2}$ inches, lay $6 \times 5\frac{1}{2}$ inches to the weather. There are 436 tiles, weighing about 1100 lbs. to the square. (See Fig. 9.)

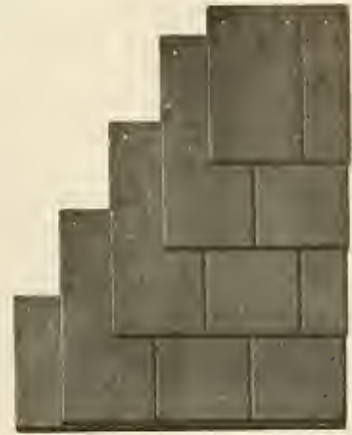


FIG. 9. PLAIN SHINGLE TILE

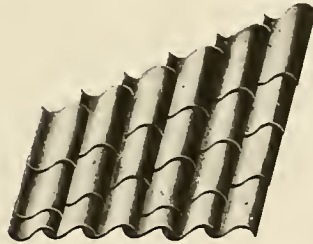


FIG. 7. AMERICAN "S" TILE

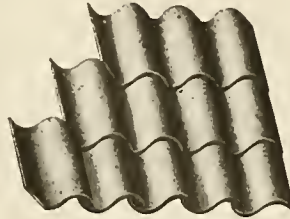


FIG. 8. AMERICAN MODEL SPANISH TILE

AMERICAN "S" AND AMERICAN SPANISH MODEL TILE.

These tiles (see Figs. 7 and 8), are 10×13 inches and lay $8\frac{1}{4} \times 10$ inches to the weather. There are 180 tiles, weighing about 950 lbs., to the square. These tiles are made in different shades of green and in light, dark and medium red, and can be wired on steel purlins in open construction, or on the sheathing boards in closed construction.

CHICAGO "A" AND "B" SAFETY INTERLOCKING TILE.

These tile (see Figs. 10 and 11), are the newest and safest of any similar interlocking tile on the market. They are provided with nail holes for nailing to sheathing boards, and also have plugs on their under sides with a hole for a wire for securing them on steel purlins in open

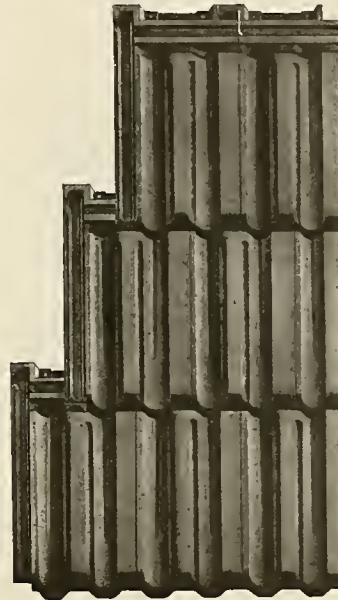


FIG. 10. CHICAGO A SAFETY INTERLOCKING TILE
9 in. x 16 in.

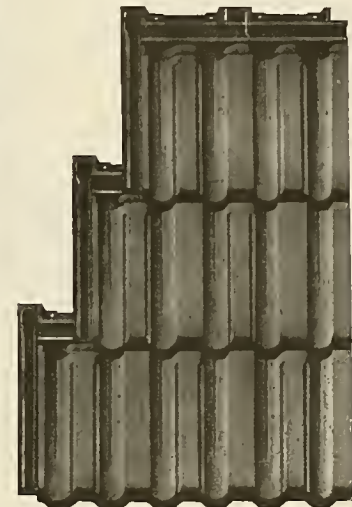


FIG. 11. CHICAGO B SAFETY INTERLOCKING TILE
9 in. x 13 in.

construction or on sheathing boards. The "A" Tiles lay 8×13 inches to the weather, with 135 tiles, weighing about 950 lbs., to the square. The "B" Tiles lay 8×10 inches to the weather, with 180 tiles, weighing about 1000 lbs., to the square.

QUALITY

All our material is manufactured of very best shale, and burned to a very high degree of heat, so as to make our products absolutely non-absorbent of moisture and indestructible under all conditions of climate, from the most extreme heat to the most extreme cold. As a result they can be depended on not to disintegrate, as soft-burned material will do in a very short time.

ORDERING AND ESTIMATES.

We usually carry the more common styles of our products in stock, but it is never safe to depend upon ordering them at the last moment when wanted. To insure prompt shipment, early and specific orders should be given, allowing time for making whatever may not be on hand.

Quotations will be cheerfully furnished.

Write for any further information desired.

THE W. J. BURTON CO.

MANUFACTURERS OF

“Eastlake” Shingle and “Octagon Fluted” Shingle, etc.
DETROIT, MICH.

PRODUCTS.

We are manufacturers of METAL ROOFING. Our two special outputs are the “EASTLAKE” SHINGLE and the “OCTAGON FLUTED” SHINGLE. These include various patent specialties, such as our “STARTER,” “SPECIAL VALLEY” and “TELESCOPIC SIDE LOCK.” We also manufacture FIREPROOF WINDOWS and SKYLIGHTS.

FACILITIES.

We are headquarters for goods in our line and carry a large supply at Detroit for the benefit of our customers who wish to avoid the annoyance of indefinite mill shipments and long distance slow delivery.

REGARDING INSTALLATION.

Our “Eastlake” and “Octagon Fluted” Shingles can be easily and quickly laid by anyone, no special skill or experience being required. We do not recommend the “Eastlake” for general use on roofs of less than one-fourth pitch, but it has been laid on many porch and large roofs of less than one-sixth pitch. The “Octagon Fluted” Shingle is adapted to roofs of one-third or more pitch.

PRICES.

The large quantities in which we contract for materials and supplies secures for us the lowest cash price and freight rates, and enables us to sell at favorable prices.

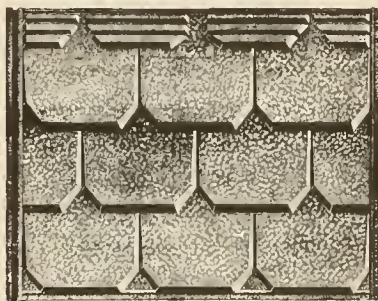


FIG. 1. “Eastlake” Shingle

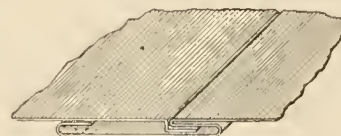


FIG. 2. Cross Section of Side-Lock

**DESCRIPTION OF PRODUCTS.
THE “EASTLAKE” SHINGLES.**

Fig. 1 represents the best roofing ever manufactured. The “Eastlake” is made in plates 20”x 28”, each embossed with the pattern of nine slates or shingles $5\frac{1}{2} \times 8\frac{1}{2}$ inches to the weather. When painted black they closely duplicate the appearance of the most expensive black slate with cut corners.

One of the most important features of these shingles is their patent “Telescopic Side Lock” (Fig. 2), which provides for all contractions and expansions without wear or strain on the metal. It is provided with a self-draining concealed gutter, making leakage absolutely impossible. The shingles are usually bent down about one inch over the rake (along the sides of roof from eave to ridge) and nailed to the edge of roof boards or moulding. When desired we furnish a Rake Strip made of galvanized iron, formed into a one inch angle. One Flange of the Rake Strip is nailed to the rake of the roof, and the shingles hooked over the other flange.

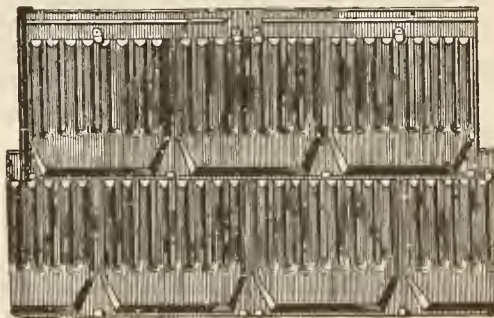


FIG. 3. “Octagon Fluted”



FIG. 4. Starter

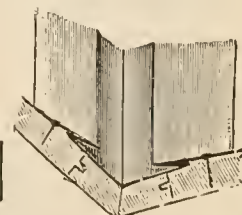


FIG. 5. Special Valley

OCTAGON FLUTED SHINGLES.

The “Octagon Fluted” Shingles (see Fig. 3), are very handsome, and if repainted red closely resemble Terra Cotta Tile. They are made in plates one-half as large as the “Eastlake,” each plate representing three shingles or tiles. The system of fastening is the same as the “Eastlake.” To avoid nailing the lower edge of shingles at eave course, and leaving the nails exposed, we make a narrow Starting Strip (see Fig. 4) with the flange formed at the bottom which can be projected one inch over the lower edge of the roof to provide a drip, or the flange can be placed tight against the edge of sheeting. The starter is nailed at the upper edge, and the nails covered with the first course of shingles.

Fig. 5 shows our “Special Valley” made with a lock on each apron, into which the shingles or tiles are hooked. It cannot leak or get out of repair.

THE GLOBE MANUFACTURING COMPANY

Brass Goods and Hardware Specialties

PAINESVILLE, OHIO.

PRODUCTS.

We are the manufacturers of the DENSMORE PATENT ROOF GUTTER. We also make STAIR PLATES, STAIR NOSINGS and MATTING ENDS.

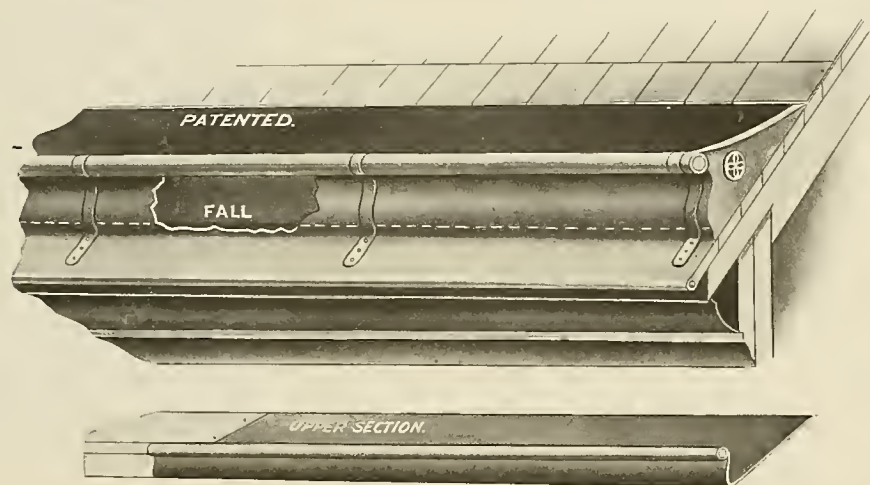
TERRITORY.

We accept orders for our products to be delivered to any point in the United States.

**DENSMORE
PATENT
ROOF GUTTER.**

This Gutter is made from the best grade of galvanized iron. It consists of two parts, an upper and a lower, besides steel brackets. The upper part is the Gutter proper. This is made with a bead extending along the upper edge and is bent on an incline (as can be seen in the illustration), with a vertical flange of required height giving sufficient pitch to carry off the water, a fall of about an inch to ten feet.

The lower part is the shield. This extends along the edge of the roof, back and upward under the bead of the upper part, completing the roof from the lower edge, fifteen inches back.



DENSMORE PATENT ROOF GUTTER

The upper and lower parts are supported by the steel brackets placed at intervals of two feet, which securely fasten the two parts together and also to the roof.

ADAPTATION.

The Densmore Patent Roof Gutter can be furnished in copper if desired, and is especially adapted to fine residences.

ORDERING.

In ordering it is necessary to give only the lengths of runs and the location of down pipes. The lengths are marked first, second, third or fourth, right or left, designating their position in the run.

PRICE.

The price of the Densmore Patent Roof Gutter is 14 cents per foot complete, f.o.b. factory.

KANNEBERG ROOFING AND CEILING CO.

711-714 East 7th Street
CANTON, OHIO

PRODUCTS.

Manufacturers of ARCHITECTURAL SHEET-METAL WORK, GALVANIZED COPPER CORNICES, CURVED MOULDINGS, FINIALS, BAY WINDOWS, SKYLIGHTS, WINDOW and DOOR CAPS, PATENT EAVE TROUGHS, CONDUCTOR PIPE, ROOF GUTTERS, EAVE TROUGH MITRES, ART METAL CEILINGS and SIDE WALLS, METAL SHINGLES, METAL PRESSED BRICKS, METAL ROCK-FACED BRICKS, SPECIAL SHEET METAL WORK, METAL SPUN WORK, CRIMPED, CORRUGATED and ROLL ROOFING.

FACILITIES.

Surrounded with exceptional facilities for manufacturing, including a modern equipped plant, operated under an aggressive policy of advanced and modern ideas, growing out of a practical experience covering a period of twenty years, we feel assured of the achievement of the most economic and successful results.

APPLYING.

We send a drawing or working plan with every ceiling design, showing location of centers, panels, mouldings, coves, furring strips and wood brackets; showing where to start, and all other information necessary to apply ceiling. With the aid of this drawing the ceiling can be applied by any sheet metal worker. If desired, we will furnish experienced men to apply the ceiling, charging for their time, board and transportation.

ART METAL CEILINGS AND SIDE WALLS.

Our complete line of Ceilings and Side Walls shows designs suitable for any class of architecture.

Our complete classified designs secure an artistic, harmonious effect that makes the selection of a ceiling or a side wall an easy matter. The style we produce includes the best of ancient and modern architecture, and an almost endless variety of attractive and harmonious combinations can be secured in each style.

They are easily and quickly applied, require no repairs, do not jar or fall off from settling of building, will not warp, crack or burn nor absorb infectious germs, and form a permanent basis for the highest decoration.

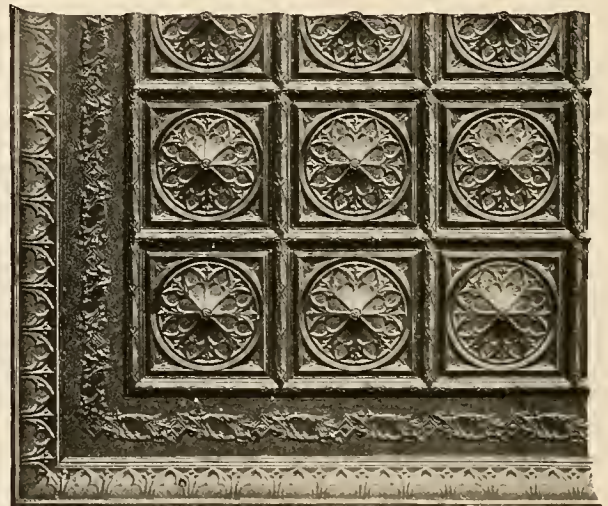
We claim superiority and simplicity in construction and perfection in the method of application: The plates, after being stamped, are resheared on all sides; thus they will line perfectly straight and regular and are therefore interchangeable, which will admit of a variety of combinations with pleasing effect. The joints being so close fitting and accurate are water and dust proof. The distinctness and clearness in which every detail of the figure in the ornamental design is brought out constitute one of the many features of excellence of our ceiling designs and combinations appreciated by architects and experts.

WEIGHT.

The weight of ceiling material crated is about sixty-five pounds per square of one hundred square feet, and of wood furring strips $\frac{3}{4} \times 1$ ", about thirty-five pounds.

ESTIMATES AND DESIGNS.

If no choice of design is named, we will prepare an artistic arrangement of plates suitable for the size and shape of room for which it is to be used and will submit estimate of cost and plan of such design without charge.



ART METAL STEEL CEILING
Gothic Design

BROSCHART & BRAUN

MANUFACTURERS OF

Architectural Sheet Metal Ornaments

601-607 West 130th Street, Near Broadway

NEW YORK CITY, N. Y.

TELEPHONE CONNECTION

Cable address, "Brosbraun," New York

- PRODUCTS.** Manufacturers of ARCHITECTURAL SHEET METAL ORNAMENTS in ZINC, COPPER and BRONZE, STAMPED and SPUN, specially manufactured from Architects' designs and details.
- FACILITIES.** Equal to any demand. We are prepared to accept and promptly execute orders of any size.
- TERRITORY.** Our products are used all over the United States and Canada, and penetrate into the South American markets.
- INSTALLATION.** Our Ornaments can be erected or installed by any first-class craftsman.
- INSTRUCTIONS AS TO ORDERS.** All goods of standard size are kept in stock and can be supplied almost immediately; full catalogue will be furnished on request. Each article required should be accompanied by its catalogue number especially stating the metal required. On special orders a full size detail is preferred, but we can work from scale details.
- GENERAL INFORMATION.** Our goods are of the highest grade of excellence, finish and artistic workmanship, and the greatest care is used in the crating, packing and shipping.
- ILLUSTRATIONS.** The following cuts show a few of the many designs we have executed, all having been specially made from Architects' drawings. The ones numbered we carry in stock; the others we do not carry, but are reproduced to show their quality and artistic workmanship. All cuts are approximately 1½ inch to 1 foot scale.



4960

Made for Astor Hotel Roof Garden
New York City. Clinton & Russell,
Architects



3099



274



Made specially for Astor Hotel Roof Garden, New York City. Clinton & Russell, Architects



2303



Made specially for Public Library, East 110th St., New York City. Herts & Tallant, Architects



3077

Made for Pier A North River, New York City



3080



3076

Made for Pier A North River, New York City

HUNTINGTON ROOFING TILE COMPANY

OFFICE AND FACTORY

South 16th Street

HUNTINGTON, WEST VIRGINIA

FORMERLY

THE OHIO VALLEY CLAY SHINGLE CO.

PRODUCTS.

Manufacturers of HUNTINGTON SHINGLE TILE, HUNTINGTON FLAT ROOF TILE, TERRA COTTA ROOF TRIMMINGS, etc.

HUNTINGTON SHINGLE TILE.

Our tile are best known as THE HUNTINGTON SHINGLE TILE. They weigh about 1100 pounds per square, are 6x13½ inches and ¾ of an inch full in thickness. When laid 5½ inches to the weather, only 436 tile are required for a square of roof. As compared with shingle tile that are only 11¾ to 12 inches long, and laying but 5 inches to the weather, THE HUNTINGTON SHINGLE TILE afford a longer, safer and better top-cover, and effect a saving of fully 10% in the cost of laying.

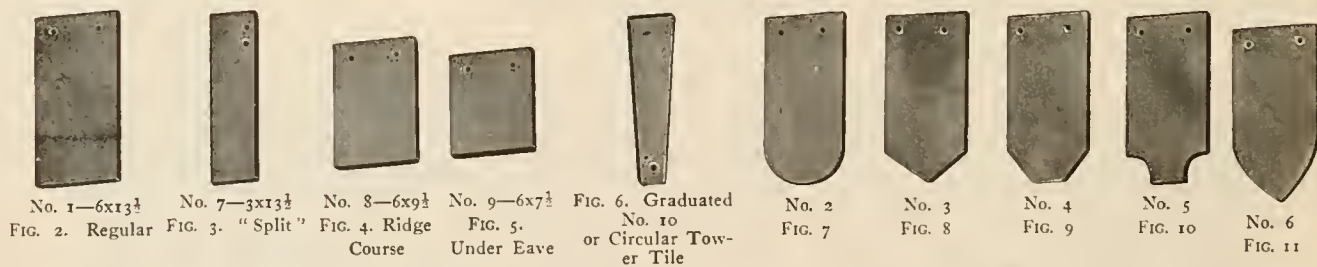
COLOR.

The color of THE HUNTINGTON TILE is a permanent red in several shades of unsurpassable beauty. These tile can be furnished in lots all of a uniform shade, or in assorted shades to produce a mottled roof, as may be desired.

SHAPES AND SIZES.



FIG. 1. HUNTINGTON SHINGLE TILE



No. 1—6x13½
FIG. 2. Regular
No. 7—3x13½
FIG. 3. "Split"
No. 8—6x9½
FIG. 4. Ridge Course
No. 9—6x7½
FIG. 5. Under Eave
FIG. 6. Graduated No. 10 or Circular Tower Tile
No. 2
FIG. 7
No. 3
FIG. 8
No. 4
FIG. 9
No. 5
FIG. 10
No. 6
FIG. 11

SHAPES FOR FITTING

ORNAMENTAL SHAPES

THE HUNTINGTON TILE are slightly curved to cause them to lie down closer at their butts, and have the upper and under corners of their sides rounded off, thus forming grooves or channels which enable any water that may get into the side joints to escape more freely from under the tile without spreading so much. This rounding of the corners also very nicely brings out the side joint lines. Our regular size is 6x13½ as shown in Fig. 2. The special shapes for fitting are shown in Figs. 3, 4, 5 and 6. Ornamental shapes are shown in Figs. 7, 8, 9, 10 and 11.

RIDGE AND HIP COVERINGS, ETC.

Figures 12 to 20 very clearly illustrate the superiority of our RIDGE and HIP COVERINGS, ETC. We make special designs to order and will be pleased to receive suggestions from architects regarding plans for the same.

FINIALS.

In the manufacture of our FINIALS, we always endeavor to combine decorative effect and utility. See Figs. 21 to 24. We also make special designs to order.

ORDERING.

When the tile and terra cotta trimmings are ordered for a roof, blue prints of the four elevations and a roof plan should accompany the order.

In all cases where graduated tile for circular towers or circular roofs are desired, these, and all terra cotta trimmings that must fit the pitch of roofs, are necessarily made to order and require from four to six weeks time to make, dry and burn them properly.

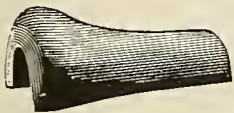


FIG. 12
No. 11—3 x 9"
No. 12—5x13"
No. 13—7x13"
No. 14—9x13"



FIG. 13
No. 15—6x13"
No. 16—7x13"



FIG. 14
No. 18—3½x13"
No. 19—4½x13"



FIG. 15
No. 26—SQUARE LIP
Length 13"



FIG. 16
No. 27—GABLE SADDLE
Length 13"



FIG. 17
No. 28—ROUND LIP
Length 13"



FIG. 18
No. 29—GABLE SADDLE
Length 13"

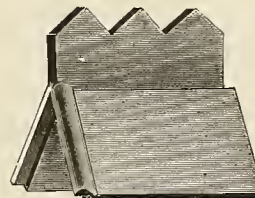


FIG. 19
No. 33
Length 13"

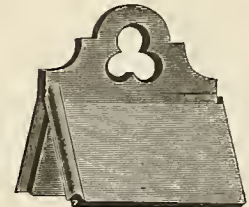


FIG. 20
No. 34
Length 13"



FIG. 21
TOWER FINIAL No. 45

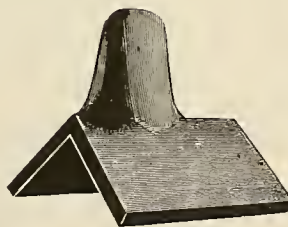


FIG. 22
GABLE FINIAL
No. 36

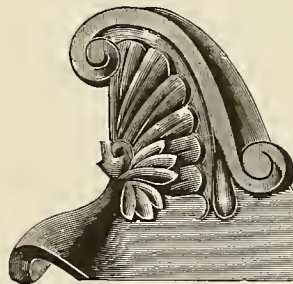


FIG. 23
HIP FINIAL, 2 POCKETS
No. 38

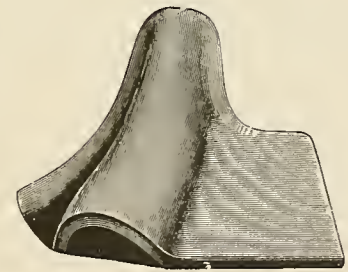


FIG. 24
HIP FINIAL, 2 POCKETS
No. 35

INSTALLATION.

As is customary with all tile and slate, the sheathing or roof boards are first covered with a suitable asphalt or roofing felt, and the HUNTINGTON ROOF TILE are then secured to the sheathing by means of two large headed barbed nails in each tile; in some cases galvanized iron nails, and in others, copper nails are used.

No cement is required to lay the HUNTINGTON SHINGLE TILE.

COST.

Estimates will be cheerfully furnished.

SPECIFICATION.

Architects who wish to be assured of unflinching satisfaction in the use of tile should specify THE HUNTINGTON SHINGLE TILE.

CELADON ROOFING TILE COMPANY

OFFICES

NEW YORK CITY

156 Fifth Avenue

CLEVELAND

717 Cuyahoga Building

PITTSBURGH

409 Bessemer Building

CHICAGO

1001 Marquette Building

WORKS

ALFRED, NEW YORK

NEW LEXINGTON, OHIO

PRODUCTS.

The Celadon Roofing Tile Company are manufacturers of ROOFING TILE and FACE BRICK.

CAPACITY.

Our facilities for manufacture enable us to produce daily 100 squares of Roofing Tile and 40,000 Brick.

STOCK AND DELIVERY.

It often happens that contractors are pressed for time and require immediate delivery of goods. We can assure this, as a large supply of our manufactures is constantly kept on hand.

ROOFING TILE.

Many roofs are covered with slate, metal or shingle roofing, but for beauty and durability Roofing Tile are greatly preferable. Every advantage from the æsthetic view point or that of utility will be found in our Roofing Tile. The best proof of this is that their specification and use by prominent architects and builders is constantly growing.

DESIGNS.

The following is a list of the various designs of our Tile:

CONOSERA

GOTHIC

IMPERIAL SPANISH

OLD ROMAN

FRENCH

COMBINATION SHINGLE

GERMAN

FLAT SHINGLE

PROMENADE OR ROOF PLATES

In our Face Brick we make three designs: Wire Cut, Repressed and Devonshire.

COLORS.

In the color of Tile, we have a beautiful rich Red, which for artistic effect, is most striking. We also manufacture Mottled effect, Buff, Grey, Brown and Chocolate.

In our Face Brick we make Red, Chocolate and Clinker effects.

PRICES AND ESTIMATES.

We have agencies in all the principal cities of the United States. From these agents can be obtained detailed information relative to prices on Tile laid on the roof or delivered on cars at destination, as required. They will also furnish estimates from roof plans.

REFERENCES.

Residences, Depots, Churches, Libraries and Government Buildings in every part of the country are covered by our Tile. Upon application to the Sales Office, a list of such buildings will be forwarded.

GRIFFIN ROOFING COMPANY

MANUFACTURERS OF

Griffin's Plastic Cement Roofing

506 West 26th Street
NEW YORK CITY, N. Y.

NEWARK, N. J., OFFICE,
MILLER AND BROAD STREETS

PRODUCTS. ROOFING—SLAG, TILE and all kinds of COMPOSITION ROOFING. Manufacturers of GRIFFIN'S PLASTIC CEMENT ROOFING.

FACILITIES. Our facilities are sufficiently ample and elastic to meet any demand.

TERRITORY. We accept orders from any part of the country, but prefer that installation be effected by the Company, as trained supervision is necessary.

Work outside of New York will be done at a very slight advance of cost over the New York City prices.

GUARANTEE. Griffin's Plastic Cement Roofing is guaranteed for ten years. It has, in fact, a minimum life of about fifteen years.

FORM OF SPECIFICATION. The following form of specification is suggested to architects as a safeguard for themselves and their clients and a prevention of any substitution for Griffin's Plastic Cement Roofing:

"First, second and third courses to be composed of one (1) layer of three (3) ply ready roofing felt, consisting of three (3) ply felt and two courses of asphaltum; each sheet over-lapping the preceding one two (2) inches and nailed with barbwire nails through tin heads four (4) inches apart.

4th. A heavy trowel course of plastic cement.

5th. Imbed firmly in same a layer of heavy single felt with laps and cross-seams well troweled down.

6th. Another heavy trowel course of plastic cement.

7th. Another layer of heavy single felt.

8th. Another heavy trowel course of plastic cement.

9th. A layer of hard wearing felt to weather.

(If roof is not walked on within one year, 9th course of wearing felt can be omitted).

Flashings on walls, chimneys, etc., to be carried up 12" with alternate courses of plastic cement and felt. Each course of felt carried up two inches higher than courses preceding.

All work to be done in a thorough and workmanlike manner and guaranteed to be kept water-tight for ten (10) years."

T. NEW CONSTRUCTION COMPANY

518 and 520 West 29th Street
NEW YORK CITY, N. Y.

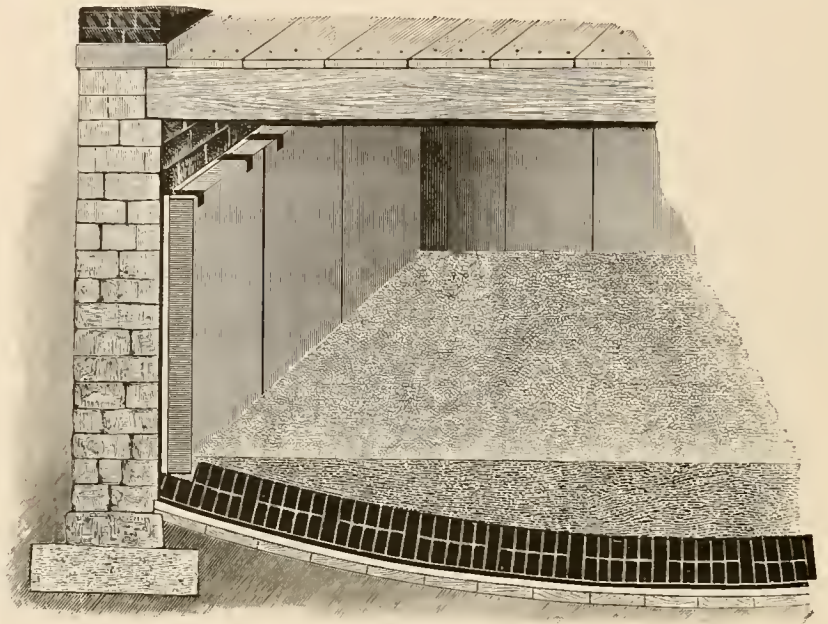
PRODUCTS—WATER-TIGHT CELLARS, BRICK and TILE ROOFS, and WATER-TIGHT FLOORS for Stables, Laboratories, Breweries and Battery Rooms, etc.

T. NEW'S PATENT WATER-TIGHT CELLARS—Our patent system is a perfect method of reclaiming cellars and basements from the influence of tide, spring or surface water.

We can make any cellar permanently water-tight, no matter where located.

Useless cellars are made ten-antable by T. New's Patent System.

Our system of construction, although thirty-five years old, has never been improved upon by others, and is to-day the standard system of waterproof construction.



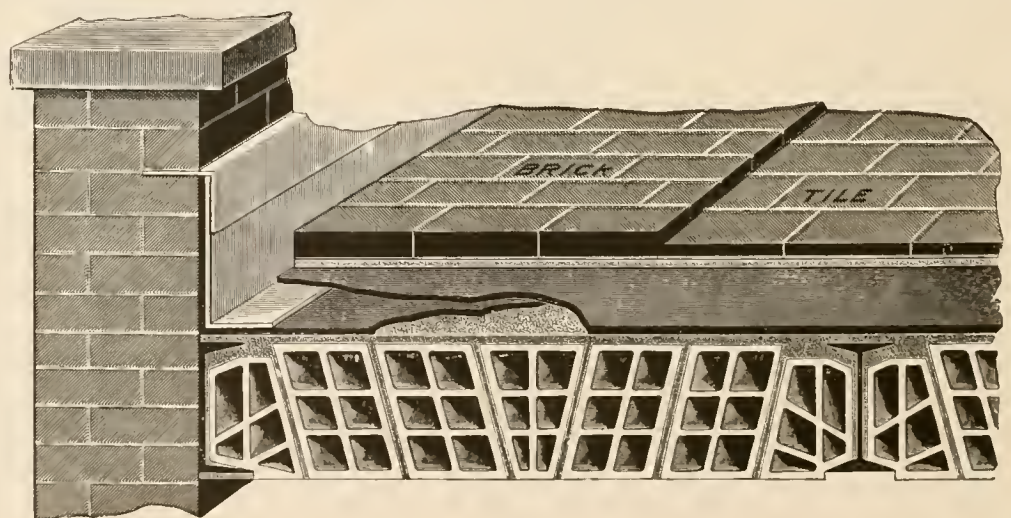
T. NEW'S PATENT WATER-TIGHT CELLARS

T. NEW'S PATENT BRICK AND TILE ROOFS—Absolutely proof against fire and water. They will stand quite as long as the buildings they cover. They make a clean and sanitary pavement, which may be used either for pleasure or business purposes.

The Brick Roof is the only roof that has proved equal to the wear and abuse of tenement houses.

We have them on for thirty years without repairs.

Can be used on either *wood* or *fire-proof* construction.



T. NEW'S PATENT BRICK AND TILE ROOFS

ESTIMATES FURNISHED AND WORK EXECUTED ANYWHERE

SALL MOUNTAIN ASBESTOS MFG. CO.

Rubber Roofing and Shingle Stain

123-125-127 Ontario Street

CHICAGO, ILL.

AGENCIES

KANSAS CITY PAPER HOUSE
KANSAS CITY, MO.

S. P. CONKLING,
DETROIT, MICH.

FACTORIES, PORTER, IND.

PRODUCTS. Manufacturers of RELIANCE and MIKO RUBBER ROOFING, and UNIVERSAL SHINGLE STAIN.

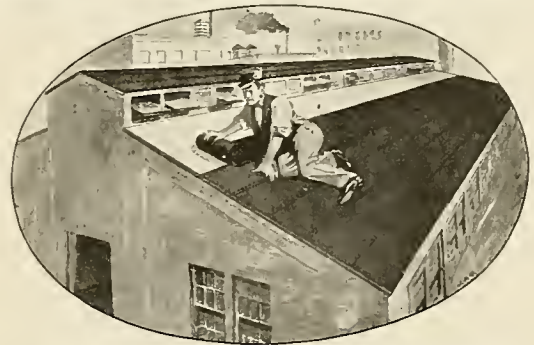
ADAPTABILITY. Our products conform to the requirements of Boards of Underwriters, and to the Building Laws of Chicago and other large cities.

INSTRUCTIONS AS TO ORDERS. We keep a large stock of all our products constantly on hand and can make prompt shipments. In ordering roofing, designate trade name, and shingle stain by color and number.

APPLICATION. Any intelligent workman can apply our roofing of either brand by following the directions which accompany all packages. Universal Shingle Stain is made ready for use and anyone can apply it.

RELIANCE RUBBER ROOFING. This roofing is made of the finest grade of Wool Felt, densely compressed and saturated and coated with our own special compound. No coal tar, residuum pitch, rosin or sulphur is used in its manufacture. This roofing is not effected by any of the destructive acids, such as nitric, sulphuric and muriatic, and cannot dry up or oxidize. Summer or winter temperature does not affect it. Reliance Rubber Roofing is a "reliable ready roofing" and stands in a class by itself as a roofing which is satisfactory in every respect.

Everything required to successfully lay this roof is sent with each roll.



METHOD OF APPLYING RELIANCE RUBBER ROOFING

PRICES. Prices and samples will be furnished upon application.

MIKO RUBBER ROOFING. For those who want a flint-coated roofing, we offer the "Miko," a somewhat higher priced roofing than the "Reliance." The "Miko" is made with the same standards as the "Reliance" and under the same guarantee of workmanship and material.

PRICES. Prices and samples will be sent upon request.

SHINGLE STAINS. Our "Universal Shingle Stains" are made of creasote and other wood-preserving and penetrating oils. They are designed for use on all shingled or wood surfaces (rough or smooth) bringing out the grain as well as the light and dark portions of the wood in an artistic manner. For their soft velvety effects, these stains are unequalled. They are made ready for use in sixteen colors. One gallon of Universal Shingle Stain will dip 500 shingles, or cover 200 square feet of surface if applied with a brush. Rough sawed shingles require forty per cent. more stain than smooth shingles.

COLORS AND NUMBERS. Special shades made to order, and samples on wood sent upon request.

- | | | | |
|-----------------------|---------------------------|----------------------------|----------------------|
| No. 500—Indian Red. | No. 504—Dutch Yellow. | No. 510—Bright Green. | No. 514—French Gray. |
| No. 501—Light Red. | No. 505—Olive. | No. 511—Moss Green. | No. 516—Green Stone. |
| No. 502—Terra Cotta | No. 506—Light Yellow. | No. 512—Dark Bronze Green. | No. 518—Oak. |
| No. 503—Golden Brown. | No. 508—Light Moss Green. | No. 513—Seal Brown. | No. 520—Silver Gray. |

PRICES. Barrels and half barrels, 70c. per gallon. Less than half barrels, 75c. per gallon.

THE BARBER ASPHALT PAVING COMPANY

Asphalt Roofing and Waterproofing Materials

New York, N. Y.

PHILADELPHIA, PA.

Chicago, Ill.

Branches in All Large Cities

PRODUCTS.

GENASCO POSITIVE-SEAL WATERPROOFING FELT, ASPHALT SATURATED FELT, ROOFING CEMENT and TILE CEMENT, for waterproofing and the construction of built-up slag, gravel or tile roofs.

GENASCO MODEL READY ROOFING, STONE SURFACED READY ROOFING, SMOOTH SURFACED READY ROOFING in four weights, WHITE ROCK READY ROOFING, Two-ply and Three-ply FELTS, LIQUID ROOF COATING and ROOF PAINT.

TRADE MARK.



ADAPTABILITY.

These products are manufactured from genuine Trinidad Lake Asphalt, the "Standard of Excellence," the best waterproofing agent known. They are attractive in appearance, suitable for use on buildings of any form of construction. They are durable under all climatic conditions, and acids, gases, steam, etc., have no injurious effect upon them.

INSTALLATION.

The Genasco Roofing Company is organized for executing roofing and waterproofing contracts with these materials throughout the country and solicits the opportunity to estimate on work anywhere in the United States. This Company may be reached through any office of The Barber Asphalt Paving Company.

Genasco materials are also supplied by us to any reputable roofer.

Genasco Ready Roofings are furnished in rolls of 108 or 216 square feet, complete with nails, cement and directions for laying, inside each roll. They can be readily applied by any intelligent person.

SPECIFICATIONS.

We will be glad to make suggestions for roofing specifications.

REFERENCES.

Investigation of our financial responsibility will prove the value of our guarantee. Genasco materials are very generally in use, and we will send to any address upon request a list of prominent buildings on which Genasco roofs have been laid, with the names of the architects for reference.

THE SICILIAN ASPHALT PAVING COMPANY

EXECUTIVE OFFICES

41 Park Row

NEW YORK CITY, N. Y.

HOWARD CARROLL, *President*
 GEORGE C. CLAUSEN, *Vice-Pres't and Treas'r.*
 H. HÄGGERTY, *Secretary*

TELEPHONE CALL, "930 CORTLANDT"
 CABLE ADDRESS, "RYQUAD, NEW YORK"

PRODUCTS.

SICILIAN ROCK ASPHALT PAVEMENTS for STREETS; BERMUDEZ ASPHALT PAVEMENTS for STREETS; TRINIDAD ASPHALT PAVEMENTS for STREETS; SICILIAN ROCK ASPHALT MASTIC for FLOORS, PAVEMENTS and ROOFS.
 CARBORON COLD WATERPROOFING.

ADAPTABILITY OF SICILIAN ROCK ASPHALT MASTIC.

Sicilian Rock Asphalt Mastic is especially adapted for paving floors which receive severe usage, such as those of breweries are subjected to.

Architects and engineers should specify Sicilian Rock Asphalt Mastic, brand of "The United Limmer & Vorwohle Rock Asphalte Co., Limited," for Floors and Pavements of Hospitals, Cellars, Kitchens, Breweries, Warehouses, Ice Houses, Factories, Railroad Platforms, Sidewalks, Slaughter Houses, Stables, etc.

The Mastic blocks should be stamped with the brand of the above-named Company.



ADVANTAGES.

Utter imperviousness to water or dampness, and its elasticity, which prevents cracking, especially from the influence of frost. Also from a sanitary point of view, the advantages of a Rock Asphalt pavement are incontestible, for it possesses great antiseptic properties, and owing to its having no joints, it is impossible for particles of animal or vegetable matter to lodge in crevices and putrefy.

It greatly promotes cleanliness, as it can be easily washed, and owing to its resistance to heat, a roof or floor laid with Rock Asphalt Mastic becomes practically fire-proof.

ESTIMATES.

Estimates for the work complete, furnished to builders and contractors.

CARBORON COLD WATER-PROOFING.

This is a new process evolved from our experience in water-proofing the New York Rapid Transit Subway, and consists in the use of a bituminized textile fabric, applied in successive layers with intervening coats of a cold "Amalgamating" Asphaltic Solution.

In addition to its many advantages over the hot process as a water-proofing in foundation work, it is especially adapted to attain the best results in water-tight concrete floor construction, as well as flat concrete roof construction for high-grade buildings.

Detailed information, prices and samples may be obtained upon request.

THE FILBERT PAVING AND CONSTRUCTION COMPANY

General Offices, Pennsylvania Building
PHILADELPHIA, PA.

SERVICES AND PRODUCTS.

This Company contracts for laying all kinds of PAVEMENTS, such as STUART'S GRANOLITHIC, ARTIFICIAL STONE, and all ASPHALTUMS (embracing NEUCHATEL SEYSEL, SICILIAN, KENTUCKY ROCK, TRINIDAD, BERMUDAS, VENEZUELA and CALIFORNIAS).

It also makes contracts for the PAVING of ROADWAYS with VITRIFIED BRICK and BLOCK PAVING, and the MACADAMIZING of HIGHWAYS and PRIVATE ROADWAYS, and CONCRETE WORK of all kinds, including REINFORCED CONSTRUCTION and FOUNDATIONS.

The Company also undertakes WATERPROOF FLOORS, WATERPROOFING and LINING of RESERVOIRS, WATERPROOFING of TUNNELS and VIADUCTS and IRON TROUGH BRIDGES. It contracts also for the CONSTRUCTION of CONCRETE BRIDGES, SEWERS, ETC.

FACILITIES AND TERRITORY.

The Filbert Paving and Construction Company has abundant facilities for handling promptly the largest and most important contracts for any of the above classes of work.

The Company is thoroughly equipped with stationary and portable plants convenient to all parts of the country, and as a consequence, is ready to accept orders in any section.

INSTRUCTIONS AS TO ORDERS.

We solicit correspondence from Architects, Builders, Engineers and others, and are ready to furnish estimates and (when desired) plans on short notice for work of every character included in the general enumeration given above.

GENERAL INFORMATION.

The work of this company is of the highest grade. It is performed in a thoroughly scientific manner and with the highest grade of materials. We have a large staff, and none but skilled workmen is employed by us. As a result of our methods and system, we are enabled to guarantee our work up to ten years, according to the nature and class of work involved in each particular job.

SPECIFICATIONS.

Architects desiring guaranteed work of the highest standard may specify with safety the work of "THE FILBERT PAVING AND CONSTRUCTION COMPANY of Philadelphia." The profession may be assured that in this way they will secure for their clients only the highest grade of materials, and the highest class of workmanship.

OUR CUSTOMERS.

This Company, in the course of its existence, has handled thousands of big contracts with invariable success. Of these, it may be of interest to mention the following:
New stone arch bridge of the Pennsylvania Railroad over the Raritan River at New Brunswick.

Stone arch bridge over Delaware River at Trenton.

New Bridge of Pennsylvania Railroad at Coatsville, Pa.

Brilliant Line bridges at Pittsburg, Pa.

Tunnels at East Liberty; viaduct at Wilmington, Del.

New shops of the Pennsylvania Railroad at Millham Junction, Trenton, N. J.

STOWELL MANUFACTURING CO.

Trinidad Asphalt Roofing

MAIN OFFICE AND WORKS

JERSEY CITY, NEW JERSEY

PRODUCTS.

Manufacturers of TRINIDAD ASPHALT ROOFING.

ROOFING.

In the manufacture of roofing it is essential to build a foundation of materials possessing durability, strength, permanent adhesiveness and fire-resisting qualities that will stand proof against severe weather exposures and climatic changes. The Natural Vegetable Oils found only in Pitch Lake Trinidad Asphalt is the base and simple secret that gives to our Roofing its toughness and flexibility—its superiority over all other Roofings containing coal tar, or Domestic Asphalt.

We manufacture a line of Roofings of the same high standard that are celebrated for tenacious durability, and one of the points we wish to impress is this: we are not manufacturers of Coal Tar products.

SLAG ROOFING.

Our Slag Roofing in all its details of material and workmanship cannot be surpassed by any other makes of Roofing on the market, for the reason that it possesses every conceivable feature for a perfect Roofing, adapted to any style of building from a Bungalow to a Castle. Rolls contain 108 square feet—weight 100 lbs.

FELSPAR ROOFING.

Felspar Roofing is a counterpart to our Slag Roofing, but is built to meet the wants of those seeking a lighter weight Roofing that still retains the same degree of durability. Two-plys of Wool Felts with Natural Asphalt construction, weigh 80 lbs., rolls containing 108 square feet.

MONARCH ROOFING.

Monarch Roofing, although in the smooth surfaced class of Roofings, is manufactured from the same grade of Wool Felts and Natural Trinidad Asphalt Saturation, surfaced with ground Slate and Mica rolled into the hot asphalt in a way that gives to the Roofing a permanency of years' wear. Put up in rolls containing 108 or 216 square feet. Special nails and cement packed inside of rolls.

CORK ROOFING.

Roofings must not only possess all the essential features that withstand the ravages of weather exposure, but must possess ornamentation. In our Cork Roofing is embodied this feature that appeals so strongly to those seeking harmony of colors, still possessing lightness, durability and fire-resisting qualities. Rolls contain 108 square feet; weigh 70 and 85 lbs.

FELTS.

In our Gravel surfaced, Asbestos surfaced, and Plain Asphalt Saturated Felts is to be found the same high standard of materials, manufactured by machinery of the highest state of perfection.

We solicit your correspondence and will gladly furnish upon request samples and prices, or any information desired.

ECONOMY PAVING AND CONSTRUCTION CO.

Improved Sanitary Stall

1222-4 Broad Street

NEWARK, N. J.

TELEPHONE, 2940 J.

NEW YORK CITY OFFICE
506 West 26th Street
Telephone, 2860 Chelsea

PRODUCTS.

THE ECONOMY IMPROVED SANITARY STALL, FACTORY and STABLE FLOORS, SLAG and ASPHALT ROOFING, WATER-TIGHT FLOORS and CELLARS, ARTIFICIAL STONE WALKS, CONCRETE CURBING, REINFORCED and CONCRETE FIREPROOF CONSTRUCTION, ENGINE BEDS, RETAINING WALLS, IMITATION STONE CEMENT PLASTERING.

THE ECONOMY IMPROVED SANITARY STALL.

Our modern and improved Sanitary Stall is a long stride in advance of the many stalls upon the market. As this stall is put on the market only after 15 years of experience in this line, we know that its practicability and economy will appeal to the horse-owner and architect, and we solicit inquiries for any work in this line.

Figure 1 shows the floor plan of our stall. The stall proper from wall to passage in the rear is 9 ft. 6 in. long by 5 ft. wide. In the front of the stall is a 2 ft. border of finished cement and a like strip, 1 ft. wide, is laid on each side of the slats, the surface being level with the wooden slats, which take up a space 3 ft. wide by 7 ft. 6 in. long, completely covering the gutter which is constructed in the cement and graded to the traps.

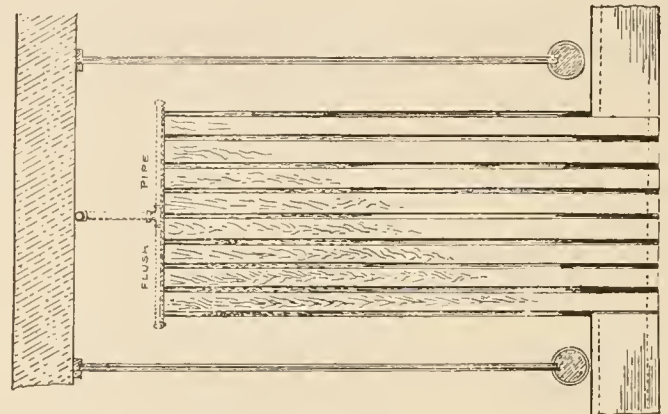


FIG. 1. SHOWING FLOOR PLAN AND SOCKET, ECONOMY SANITARY STALL

The only iron necessary in the making of the Economy Stall is that of the Post Sockets and Gutter Traps, which are furnished and set by us. We will furnish either Circular or Square Socket Posts.

Figure 2 shows the unique and entirely original method of draining the stall. It will be noticed that points A and C at the two extremities of the stall are perfectly level. There is absolutely no pitch to the floor until we get to point B, 3 ft. 6 in. from the outside of cement border in the front of stall. Starting at point B, we have graded the Cement floor to point D at the beginning of the gutter. This leaves a space of 2 in. between the cement floor and the slats at D. As the slats are held firmly in place by being made to fit tightly between the points A and C and resting on the level cement floor in the front half of the stall and on the seat made in the floor at C, there is absolutely no fear of the slats shifting or becoming warped.

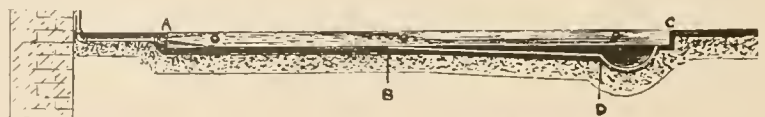


FIG. 2. SHOWING SECTION OF CEMENT FLOOR AND SLATS

As the slats in our stall completely cover the drain in the rear of the stall, we do away with the extra gutter-board and eliminate the open drain, which is found very troublesome, and gives the space saved for the horses' room.

There is a section of the gutter between stalls which is not covered by the slats. This space is covered by a gutter-board, under which the traps are located, and by lifting this board any waste which may accumulate at the trap can be taken out.

AMERICAN MACHINERY COMPANY

The Anti-Pluvius Skylight

1135 Broadway
NEW YORK CITY, N. Y.

EUROPEAN BRANCH, LINDENSTR. 3
BERLIN, GERMANY

FACTORIES
NEW YORK, BRIDGEPORT AND BERLIN
CABLE ADDRESS,
AMACHINE, NEW YORK

TELEPHONE
5329 MADISON SQUARE

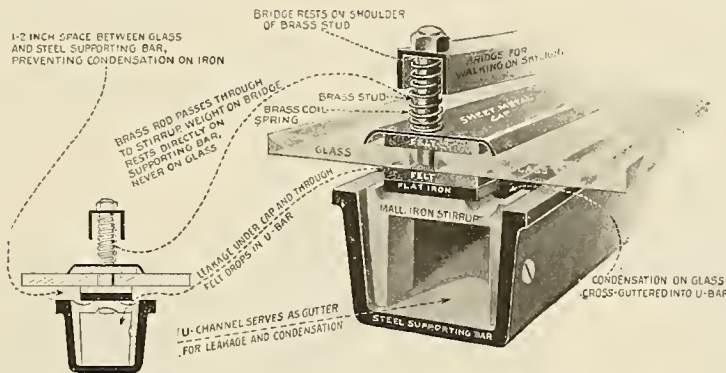
PRODUCTS.
ADVANTAGES.

Manufacturers of THE "ANTI-PLUVIUS" SKYLIGHT.

The "Anti-Pluvius" Skylight is *permanently* impervious against rain and dust (also in the severest storm) without the use of putty or cement. There can be no formation of condensation on the metal (steel U-Bar); therefore no corrosion of the latter. All condensation on the glass is cross-guttered into the U Channel, which carries it off. Weight of a man on the skylight is carried by the bridge, which rests on shoulder of brass stud, and his weight is carried directly by the steel U bar and without the least pressure on the glass. The glass rests between two layers of pure cow hair felt (which will never rot). It is held with a firm, elastic pressure, but allowing expansion, contraction, vibration and shock of any kind.

The skylight protects the glass from breakage and the metal from corrosion; thus possessing the greatest durability and subject to the least deterioration from time and wear.

Each glass rests independently of every other, and never comes in contact with metal or rigid surfaces.



2,000,000 sq. ft. in use

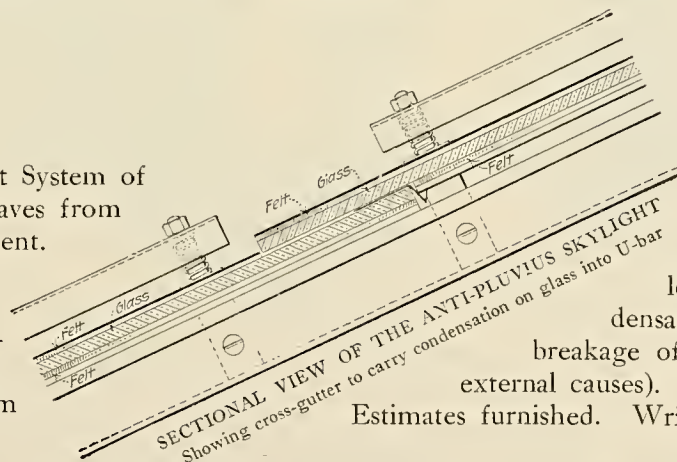
Cross-section view
CROSS SECTION VIEW OF THE ANTI-PLUVIUS SKYLIGHT

ECONOMY.

The Unit System of construction saves from 30 to 50 per cent. of labor in erecting

GUARANTEE.

We guarantee positive immunity from



leakage and condensation, and from breakage of glass (excepting external causes).

Estimates furnished. Write for catalogue.

The new D. L. & W. Railway Terminal Station, in Hoboken, will contain about 125,000 sq. ft. of Anti-Pluvius Skylight.

GEO. HAYES COMPANY

ESTABLISHED BY GEO. HAYES, 1868
 Skylights, Windows and Metal Lathing
 71 Eighth Avenue
 NEW YORK CITY, N. Y.

TELEPHONE, 32 CHELSEA

CABLE, "MYTILITE," NEW YORK

PRODUCTS.

The "HAYES" SKYLIGHTS and other GLAZED STRUCTURES. The "HAYES" WIRE GLASS FIREPROOF WINDOWS. CORRUGATED EXPANDED METAL LATHING.

THE "HAYES" METAL SKYLIGHTS.

Thirty-seven years ago what is known as the "Hayes Skylight" was invented, and its introduction wrought a revolution in this branch of the building trade. Notwithstanding the vast amount of effort and experiment devoted to the subject by many persons, including Mr. Hayes, not a single improvement in this method of construction of skylights has since been made, and in no way has it been rivaled. It has been for many years the adopted standard of the civilized world. The report accompanying the award at Philadelphia, in 1876 reads, "For the ingenuity displayed in the construction of the various articles, based on sound principles, and especially for the perfection arrived at in the construction of skylights," since which time the substance of this report has been upheld and over one hundred medals awarded, the latest being London, Eng., 1903, and St. Louis, 1904.

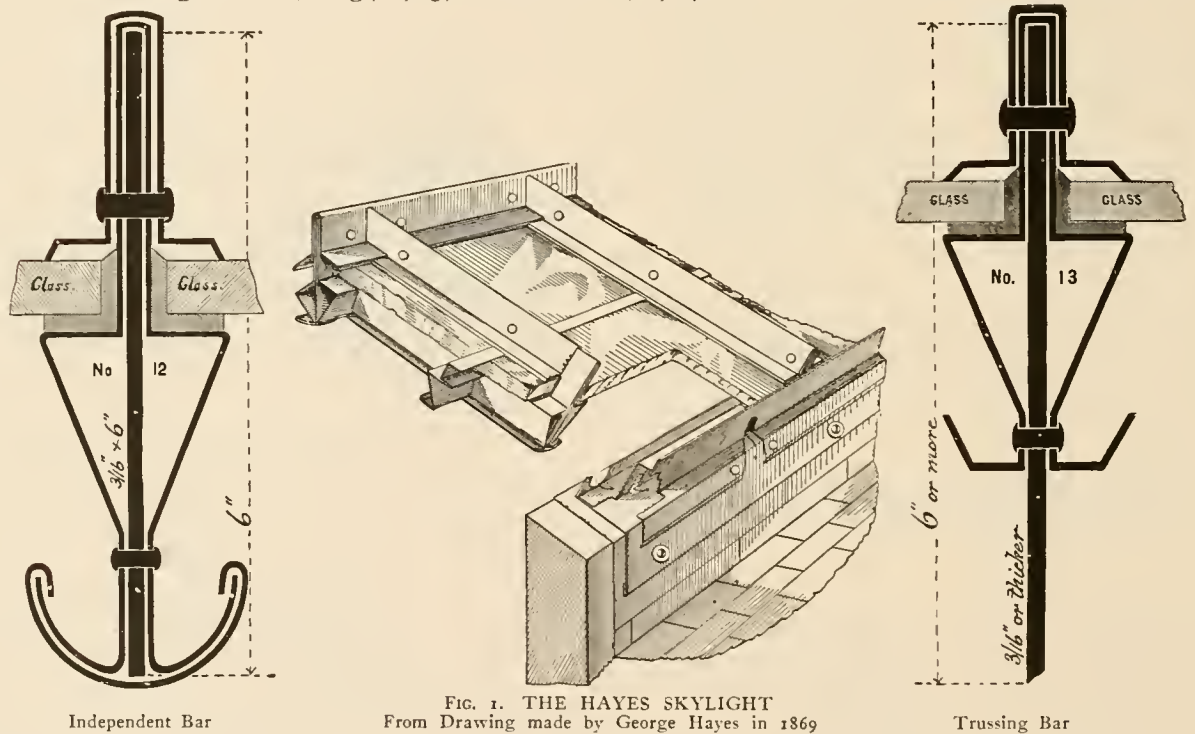


FIG. 1. THE HAYES SKYLIGHT
 From Drawing made by George Hayes in 1869

EXTENSIVE USE WITHOUT REPAIRS.

1,250,000 square feet of Hayes Metal Skylight was successfully used on the Exposition Buildings at Chicago and St. Louis. No expense was incurred for care or repairs during the Exposition; but large expenditures were necessary in all previous Expositions, where other systems were employed.

DETAILS OF CONSTRUCTION.

Figure 1 is a perspective section of the "Hayes" skylight, showing a portion of one side of a skylight, and exhibits the general principle adopted throughout, modified and made to conform to conditions and to meet the requirements of heavy construction.

**CORRUGATED
EXPANDED
METAL
LATHING.**

This lathing is corrugated, expanded and punctured, having lipped and tongued apertures and arched loops (concave in cross section), and it possesses all the elements combined and which are essential to a perfect mortar-holding device, bracing and sustaining the walls of the building to which it is applied.

It is rigid and fireproof.

It has been extensively applied on many of the most important buildings in the various cities of this and other countries including Japan, South America and Australia.

**WIRE-GLASS
FIREPROOF
WINDOWS.**

The "Hayes" Wire Glass Fireproof Windows are made in every conceivable shape. The same method of construction is employed for Exterior Walls, Partitions, Elevator Shafts, Doors and wherever light is required and the ravages of fire retarded.

The dual function of shutter and window is accomplished.

They were the first ever made; have withstood the most severe tests, and have the official endorsement of the Boards of Underwriters and Building Departments.

These windows are made to any form or arrangement of opening, having sashes stationary, hung or hinged or pivoted on the sides or at top and bottom, their whole construction being of hollow metal, glazed with wire-glass, and so constructed that they will resist intense heat and withstand the application of water upon the heated metal and glass when used to extinguish fire. We have installed our windows in many of the most important buildings in New York and other cities.



FIG. 2. HAYES METAL LATHING
One-half of full size

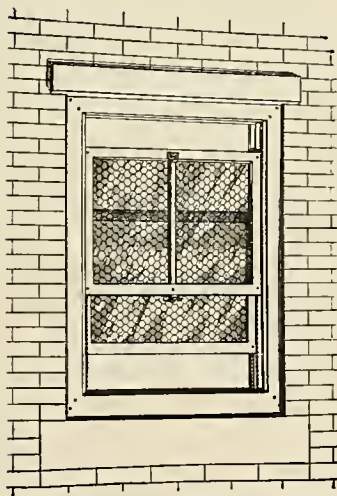


FIG. 3. HAYES WINDOW WITH
HUNG SASH



FIG. 4. HAYES WINDOW IN
REVERSED POSITION

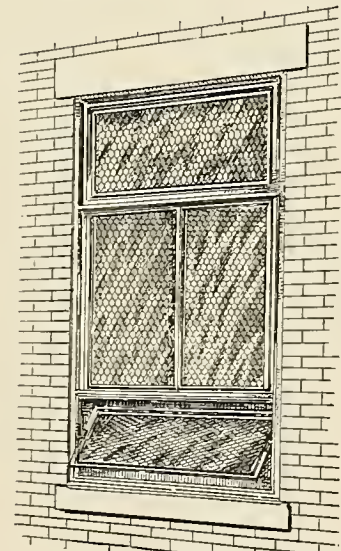


FIG. 5. HAYES WINDOW WITH STATION-
ARY, HINGED AND PIVOTED SASH

FIRE TESTS.

Successful tests were made: First, at Newark, N. J., Jan. 17th, 1893. Second, again with same windows, Jan. 24th, 1893. Third, May 17th, 1901. Fourth, upon the same windows, June 6th, 1901. These tests were conducted by the Building Departments in the presence of representatives of various Boards of Fire Underwriters, the illustrated account of which is very interesting.

G. BICKELHAUPT SKYLIGHT WORKS

243-245 West 47th Street
 NEW YORK CITY, N. Y.
 TELEPHONE 675 38TH STREET

PRODUCTS.

Sole manufacturers of the "G. B." specialties: AUTOMATIC SELF-LOCKING SCUTTLE-OPENER, SKYLIGHT-LIFT and LOCK, FIREPROOF VENTILATING, METAL SKYLIGHTS and PRISM LIGHTS.

ADAPTABILITY.

Our products are such that few, if any, alterations are necessary for their adaptation.

INSTALLATION.

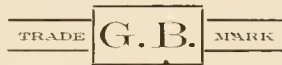
In Greater New York, we usually do the installing ourselves, or superintend the outside work at a minimum cost. Installation can be made by any good mechanic.

GENERAL INFORMATION.

Our products are recommended by architects, builders and owners. We are prepared to accept contracts of any size.

TRADE MARK.

To protect our clients from substitution, we have adopted the following trade mark:



AUTOMATIC SELF-LOCKING SCUTTLE-OPENER.

The "G. B." Automatic Self-Locking Scuttle-Opener gives absolute security from scuttle thieves and affords a quick method of escape in case of fire. There is no need to climb ladders, to open rusty bolts or catches, as it is opened with a rope from the floor level (Fig. 2). When closed, it is securely locked by two automatic bolts. It is made of wrought and malleable iron, and guaranteed not to break or get out of order.

AUTOMATIC SKYLIGHT LIFT AND LOCK.

The "G. B." Patent Automatic Skylight-Lift and Lock (Fig. 3) is a very useful device. It is automatic throughout and can be raised to any angle desired; it works as easily as a weighted window; whether open or closed, it is always locked. It can easily be applied to either hipped or flat skylights and like our "Scuttle-Opener," is operated by a rope from the floor.

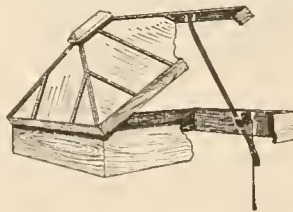


FIG. 3. "G. B." PATENT AUTOMATIC SKYLIGHT LIFT AND LOCK

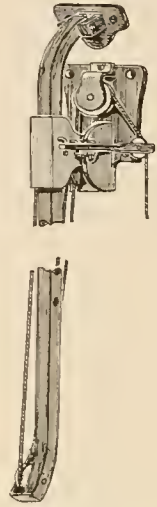


FIG. 1. "G. B." SKYLIGHT LIFT AND LOCK



FIG. 2. "G. B." AUTOMATIC SELF-LOCKING SCUTTLE-OPENER

REFERENCES.

All prominent architects and builders.

NATIONAL VENTILATING COMPANY

MANUFACTURERS OF

National System of Ventilating Devices and National System Steel Puttyless Skylights

1 Madison Avenue

NEW YORK CITY, N. Y.

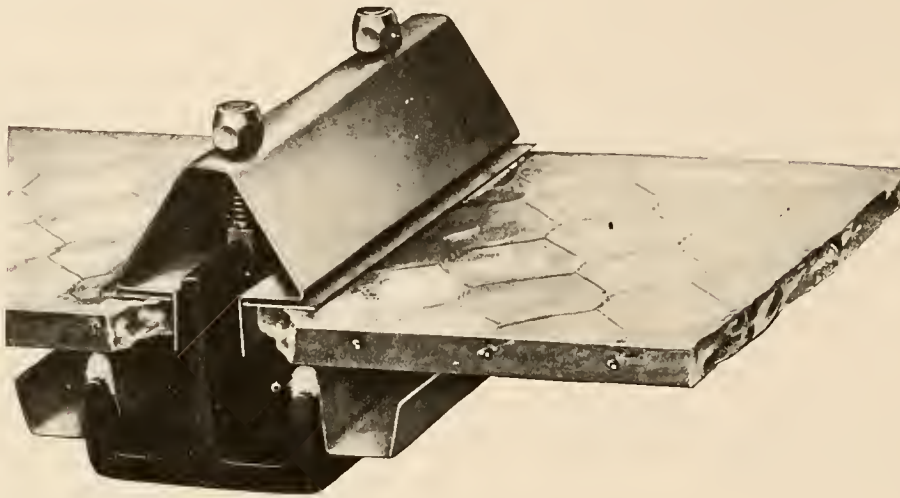
Boston, Mass., 811 Paddock Building
 Baltimore, Md., 349 Equitable Building
 Pittsburg, Pa., 715 Empire Building

Philadelphia, Pa., 512 Heed Building
 Chicago, Ill., Knisely Bros. Building
 Rochester, N. Y., 6 Gibbs Street

FACTORY

HARRISON, NEW JERSEY

- PRODUCTS.** NATIONAL SYSTEM VENTILATING DEVICES AND APPLIANCES and NATIONAL SYSTEM STEEL PUTTYLESS SKYLIGHTS.
- FACILITIES.** Ample for the reasonably prompt filling of all orders of any size.
- OPERATIONS.** Not confined to any section.
- INSTALLATIONS.** Our products may be installed and erected by local builders or contractors, but we prefer to do the work ourselves.
- ADAPTABILITY.** The National System of Ventilation may be applied with equally good results in all types of construction, such as office buildings, schools, hospitals, stores, factories, dwellings, etc., etc. It may be scientifically adapted to the special requirements of the building to which it is applied and perfect ventilation guaranteed, even in buildings of the largest size and where mechanical methods have been tried and failed.
 The National System of Puttyless Skylights is specially adapted to Railway Terminals, Power Stations, Factories, Foundries, Machine Shops, Libraries, Museums, Art Galleries, or wherever permanent water-tight skylight work is required.
- CONSTRUCTION.** See detailed description on following pages.
- PLANS AND ESTIMATES.** Plans and estimates will be submitted to any architect without expense or obligation on his part, or one of our expert engineers will be sent to confer with the architect upon the subject of either ventilation or skylight work.
- CATALOGUES, ETC.** Standard Detail Sheet showing full size longitudinal and cross sections of the National Puttyless Glazing Construction of Skylights, and special blue prints; also a sumptuously illustrated 64-page book upon "Natural Ventilation," will be sent on application.

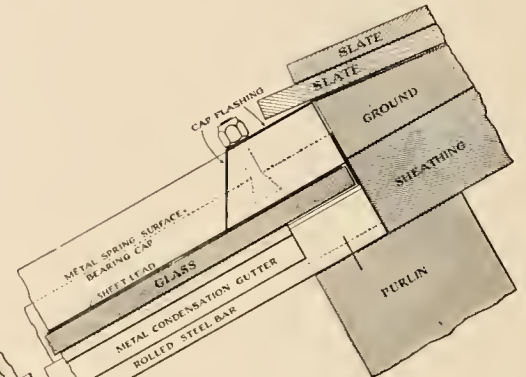


FULL SIZE CROSS SECTION

Of the National System of Steel Puttyless Construction for Skylights, showing rolled steel bar, resilient bearing condensation gutters, with asbestos cushions for glass to rest upon, spring surface bearing caps, and held by brass bolts and nuts, securely dovetailed into centre stem of the steel supporting bar

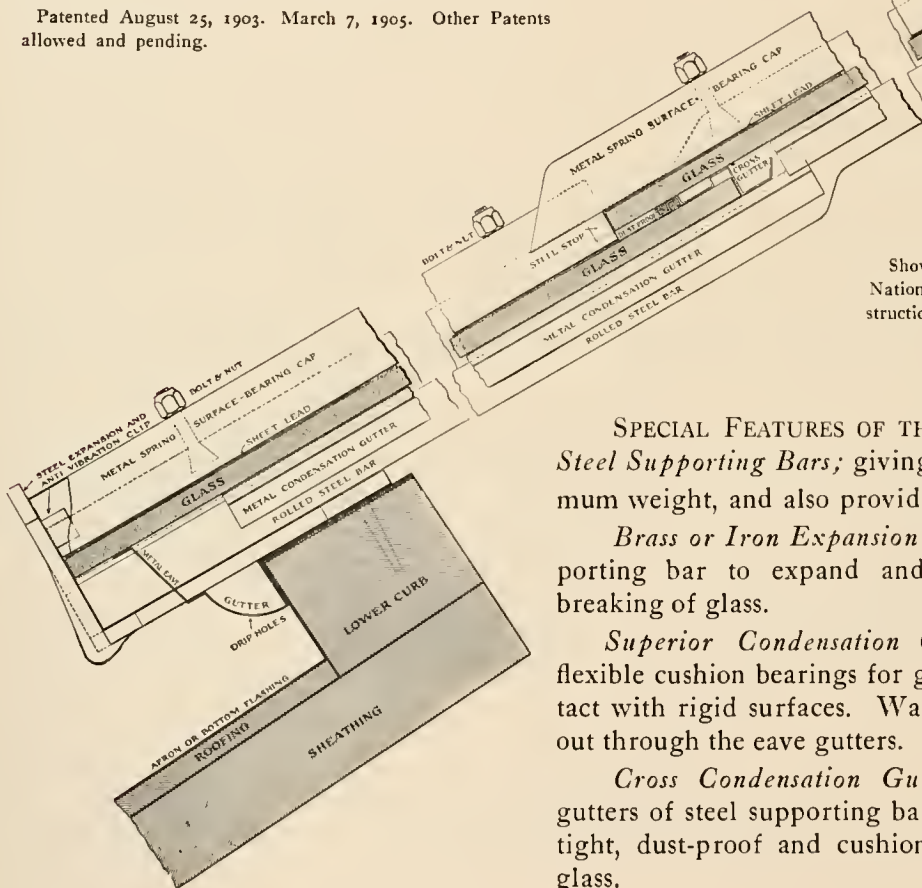
Patented August 25, 1903. March 7, 1905. Other Patents allowed and pending.

Ordered by the United States Government for buildings at Pensacola and Charlestown Navy Yards; New York Central Railroad for Power Stations at Port Morris and Yonkers, New York; new Walters Art Gallery, Baltimore, and many others.



DETAIL DRAWING

Showing half-size longitudinal section of the National System of Steel Puttyless Glazing Construction for Skylights



SPECIAL FEATURES OF THE NATIONAL SYSTEM—*Rolled Steel Supporting Bars*; giving maximum strength with minimum weight, and also providing enclosed drainage gutters.

Brass or Iron Expansion Clips, permitting the steel supporting bar to expand and contract, thus obviating the breaking of glass.

Superior Condensation Gutters, providing permanent flexible cushion bearings for glass, which never comes in contact with rigid surfaces. Water or condensation is delivered out through the eave gutters.

Cross Condensation Gutters; emptying into drainage gutters of steel supporting bar and furnishing a permanently tight, dust-proof and cushion bearing between each lap of glass.

Spring Surface-Bearing Caps; providing a broad bearing surface upon the glass (with sheet-lead intervening) having a spring-like action, making a permanently tight joint. The legs of the cap prevent the glass from binding or coming in contact with the steel supporting-bar.

NATIONAL SYSTEM OF STEEL PUTTYLESS SKYLIGHTS

MANIFOLD ADVANTAGES.

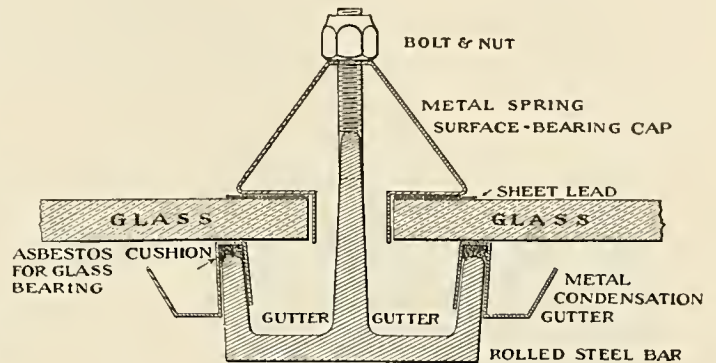
Permanent Weather-Proof Condition under the most severe and trying tests of wind and weather.

Freedom from the Breakage of Glass due to expansion and contraction of either the glass or of the steel frame.

Resilient, Cushion-Bearings for the glass to rest upon.

Water and Dust-Proof Joints, with cushion bearings where glass laps.

Elimination of Repairs, and of all putty, roof cement or other filling material, incidental to other skylight construction.

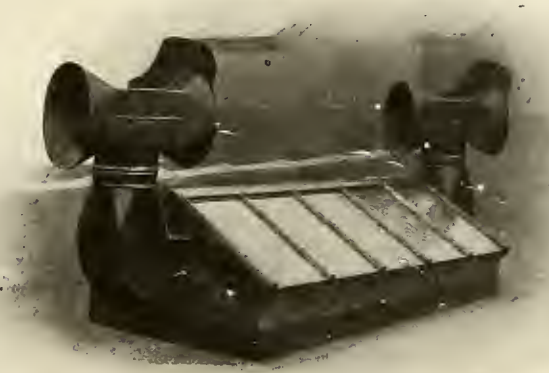


PUTTYLESS SKYLIGHT CROSS SECTION

Perfect provision for allowing each light of glass to expand freely in any direction and find its own position when affected by any vibration of the roof or otherwise.

COST OF CONSTRUCTION.

The cost of construction of the National System of Steel Puttyless Skylights is moderate. Because of this fact and of its manifest advantages over any other skylight construction, it meets all requirements wherever a permanent water-tight skylight is required.



SKYLIGHT WITH "ARIEL" VENTILATORS ATTACHED.

SPECIFICATIONS.

SKYLIGHTS—All curb and roof flashings shall be included under heading of "Sheet Metal Work." They must be well connected, ready to receive the skylight work, and must include all necessary counter flashing, well secured to roof flashings and made water-tight.

All skylight sheet metal work shall be [specify copper, zinc or galvanized iron].

The skylight shall be of approved puttyless construction.

The supporting bars shall be of rolled steel, of a shape capable of a lateral resistance equal to the vertical supporting resistance when in use.

The steel supporting bars shall be securely fastened at their upper ends and held in place at their lower ends by a properly constructed expansion clip, which, while allowing for free expansion and contraction of the bars, shall be so devised as to insure the bars being firmly held in position.

The glass shall be [specify thickness and whether wire, plain or ribbed].

The bearing surface for glass shall be flexible, so as to adjust itself to warps or irregularities in the glass, and shall be so devised as to prevent glass from resting against rigid surfaces.

All joints of glass shall be dust-proof, and yet permit of expansion and contraction.

Spring surface bearing caps shall be held in place by brass bolts and nuts, spaced not more than six inches apart. The bearing surface of caps shall be resilient and not less than $\frac{1}{2}$ inch in width, and the edges of glass shall be so held that they cannot come in contact with rigid surfaces.

The steel supporting bars shall be provided with [specify copper, zinc or galvanized iron] condensation gutters, which shall carry the water into eave gutters and shall discharge on to roof through drip holes.

NATIONAL SYSTEM OF NATURAL VENTILATION

The National System of Natural Ventilation is a complete and perfect one in itself. It operates continuously—day and night—incessantly removing the foul, vitiated air, and providing, without draught, a constant and abundant supply of fresh air.

DESCRIPTION.

The System consists primarily of two units, the Mobile Ventilator, placed at the bottom, and the Victor Ventilator, placed at the top of the window.

MOBILE VENTILATOR.

The Mobile Ventilator in turn consists of two parts, the hood (Fig. 1) and the air diffusion box (Fig. 2).

The hood, which projects into the open air, is provided with a two-winged valve, pivoted in the centre. When a current of air strikes either end of the valve that end immediately closes the windward opening of the hood, effectually preventing all entrance of air from that end, at the same time opening the opposite end of the hood. The air enters the leeward side of the hood in an indirect way, without dust, dirt or moisture, such elements being picked up and swept along by the stronger current of air, while that entering the open end of the hood, being weaker, is freed from all extraneous matter.

OPERATION.

The air, thus broken in its force, and freed from the elements, passes from the hood to the air diffusion box, where it is broken up into jets by a coarse screen, deflected upward and thoroughly diffused without draught.



FIG. 1. MOBILE HOOD



FIG. 2. AIR DIFFUSION BOX

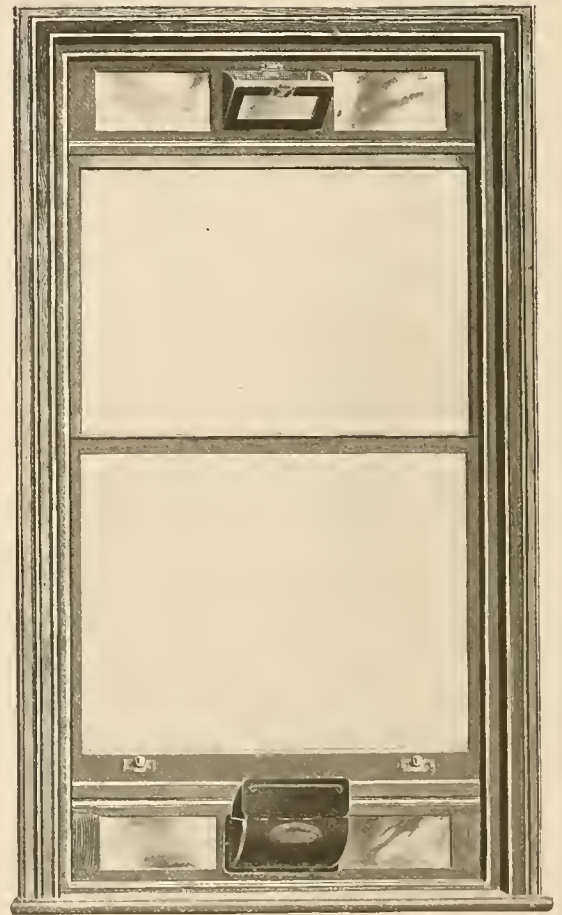


FIG. 3. INSIDE VIEW OF MOBILE AND VICTOR INSTALLATION

The air diffusion box is provided with a piano-hinge shutter, by which the air supply can be regulated and controlled at will.

One or more of these hoods and diffusion boxes are mounted on a glazed panel or false sill (Fig. 3), or installed directly in the lower sash-rail of the window; or, in the case of a plate-glass window, as also in that of a swinging window, the devices are mounted on a skeleton frame and installed directly in the glass (Fig. 4).

THE VICTOR VENTILATOR.

The Victor Ventilator, which is placed at the top of the window (Fig. 3), is so constructed as to best extract the foul and vitiated air.

NATIONAL SYSTEM OF NATURAL VENTILATION.—*Continued.*THE PRINCIPLE
OF THE
SYSTEM.

The principle of the National System is to provide a larger number of small openings for the intake and extraction of the air, rather than a small number of large openings, and to inject without draught only about as much air as is actually consumed and to extract only about as much foul air as is actually created. Under these ideal conditions the volume of the fresh air necessary to maintain good ventilation is reduced to a minimum, as is also the expense of warming it to any degree desired.

HOW THE
SYSTEM WORKS.

The System works as follows: The Mobile Ventilator at the bottom of the window admits the fresh air without draught, dust, smoke, or other extraneous matter. The air current is then deflected upward and is immediately diffused throughout the room, replacing the foul air that is extracted by the Victor Ventilator at the top of the window, thus securing ideal ventilation.

HOW TO
SPECIFY.

Place at the bottom of each window frame a glazed panel or false sill, finished to harmonize with the wood-trim of the window. Upon these panels or false sills, mount on the outside one ventilating hood to each 19 inches of width of window

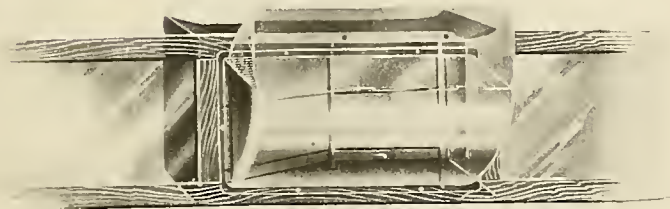


FIG. 4. MOBILE VENTILATION DEVICES MOUNTED DIRECTLY IN THE GLASS



FIG. 5. MOBILE VENTILATION DEVICES INSTALLED IN WALL OF A BUILDING

sash (*i. e.*, windows less than 36 inches wide, one hood; windows 37 to 58 inches wide, two hoods; windows 59 to 76 inches wide, three hoods, etc.). These hoods to be 6" wide by 10½" long of 18 gauge steel, painted and varnished (or if preferred, specify 18 gauge copper, natural or with verd-antique finish). Hoods to be fitted with adjustable angular brass valves mounted on pivoted brass rods, and each fitted with three ¼" tie-rods. On the inside of the panel place a corresponding number of air diffusion boxes, 3"x6"x18", of oxidized 20 gauge steel (or, if preferred, 20 gauge brass, polished, gun-metal, or verd-antique finish). The diffusion boxes to have piano-hinge shutters for regulating the air supply.

At the top of each window frame fit a glazed panel, equipped on the outside with hoods corresponding in number to those on the lower panel of same window. These hoods to have flaring ends, metal deflectors and perforated metal screens. On the inside of panel, mount an equal number of glazed and brass-hinged drop-doors, 5"x8", having metal sides and catch-locks.

PATENTS.

All the devices shown are covered by Letters Patent

THE JOSEPHUS PLENTY SKYLIGHT WORKS

MAIN OFFICE, FACTORY AND IRON WORKS

215-221 Randolph Avenue

JERSEY CITY, N. J.

TELEPHONE, 422 R. BERGEN

PRODUCTS.

Manufacturers of PATENT SYSTEMS of CONTINUOUS SKYLIGHTS and GLASS ROOFING, CONSERVATORIES, PLANT-HOUSES, HORTICULTURAL BUILDINGS, etc.; VENTILATING APPARATUS, WROUGHT IRON WORK and FIREPROOF FRAMES. SOLE AMERICAN AGENTS of the "HELLIWELL" PATENT SYSTEM of IMPERISHABLE GLAZING.

"HELLIWELL" PATENT SYSTEM OF IMPERISHABLE GLAZING.

The "Helliwell" Patent System of Imperishable Glazing is extensively used on Railway Passenger Stations and Sheds, Armories, Machine Shops, Boiler Shops, Ship Sheds, Weaving Sheds, Factories, Foundries, Museums, Art Galleries, Billiard Rooms, Engine Rooms, Markets and Horticultural Buildings of all descriptions.

ADVANTAGES.

The principal advantages of this system of Glazing are:

1. It can be used on iron and wood roofs, circular or straight.
2. No perishable material is exposed, nor is outside painting necessary.
3. The Glass can easily be taken out and reglazed in case of breakage, or for cleaning off smoke, etc.
4. There is no breakage from expansion, contraction or vibration.
5. There is no opening around the edge of the glass.
6. There is no rattle or looseness of glass, and as each pane is secured by an iron stop and a cap, it is impossible for them to slide down or fall out.
7. There is no drip from condensation or leakage, there being double gutters on each side of the glass.
8. There is an increased light over other methods, the horizontal laps being less than with other systems and the vertical bars offering about the same obstruction of light.
9. The vertical ribs or bars are bolted to the purlins or small jack rafters and it is impossible for the glass to be blown off
10. Circular roofs can be glazed with straight glass.

With all these striking advantages, combining the requirements of a durable roof, coupled with the fact that the ribs or bars are made of steel with zinc or copper caps of gauge and weight corresponding to the thickness of glass required, I unhesitatingly recommend it to the consideration of architects and engineers having charge of the erection or fireproof and durable structures. All work is guaranteed water-tight and contracts will be taken for keeping roofs in repair by the year.

SIZE OF GLASS
TO BE USED.

It is not necessary that the glass should be of the length of the distance between the purlins, as several lengths of glass are often used in one space.

Double thick, clear glass is usually used in sheets 18x24 to 20x40 inch.

Ribbed or rough plate glass is usually used one-eighth, three-sixteenths and one-fourth inches in thickness and from 20 inches by 40 in. to 24 in. by 100 in. in size. (20x40 to 24x100.)

FORMS OR
STYLES OF
SKYLIGHTS.

The simpler and plainer the construction of a skylight, the better the result will be. Glass being a brittle, unyielding material, is most conveniently used in square or rectangular shapes. All fancifully designed structures should be covered with a more pliable and yielding material (this remark applies also to hipped skylights) for both time and material are lost in cutting and fitting the glass to the angles, while in cases of breakage, additional expense is incurred from the necessity of procuring an experienced person to measure the sizes correctly and from the fact that a triangular piece costs double as much per square foot, as it is sold at the same price as a square piece having like dimensions on two sides.

SHIPPING
SKYLIGHTS.

The application of this system is so simple that any mechanic can use it, thus rendering it unnecessary to send a skilled workman any distance to erect work. This places within the reach of those living in distant States a perfect skylight at small cost.

No special preparation of the roof is required for a skylight. On receipt of sizes the bars and glass are prepared, packed separately (occupying but little space), and shipped to the required destination. Full details and instructions are sent with all goods, and if the directions are followed, it is impossible for the skylight to leak. Some of our most important work has been shipped in this way.

THICKNESS OF
GLASS.

This system has an advantage in permitting the use of thinner glass for roofs and skylights than has formerly been considered advisable. For instance, many architects are in the habit of specifying glass from three-eighths to five-eighths of an inch in thickness, thus adding considerably to the weight of the roof. One-half of this weight may be saved and the structure improved by using glass from three-sixteenths to one-quarter of an inch in thickness, thereby economizing in cost and material. Where the glass used does not exceed forty inches in length, a thickness of one-eighth is sufficient.

PITCH OR
SLOPE OF ROOF.

In designing a skylight, it is always desirable to give it as good a pitch as possible. One-quarter pitch (*i. e.* 6 in. to foot) gives a good slope; but from my experience, a slope of 30° gives a better slope, as it allows snow and ice to slip easily from the roof. I would not advise a greater slope than 45° in ordinary circumstances.

ELECTRIC OR
GALVANIC
ACTION.

It may be urged against the use of steel and zinc in combination that a galvanic action may be set up destructive to both; but exhaustive experiments have proved that the very slight action resulting is a benefit rather than a detriment. The steel bar and the zinc cap are connected with a brass tee bolt and nut. During dry weather there is no electrical action; but when there is dampness or moisture in the air, there is a slight electric action between the two metals carried from the steel to the zinc. This acts as a preservative to the steel supporting-bar, and is so slight that no effect can be observed upon the zinc.

USE OF ZINC
AND COPPER.

Zinc resists corrosion from thirty to forty years, while copper may be said to be imperishable. In the United States copper is found in a purer condition than anywhere else in the world; in fact, it comes from our mines with less alloy than it is possible to contain after smelting, as in that process it takes up a slight trace of iron or sulphur from the crucible.

Galvanized or zinc-coated iron has been largely used for roofs and skylights; but the acid galvanic action necessary to make the zinc cleave to the iron still continues when it is exposed to the atmosphere, and results in soon destroying the metal sheet. This is especially observable wherever the iron has been bent in working or applying it, as in such places the zinc will crack and peel off.

When zinc is exposed to the weather it begins to oxidize until it is covered with a white coating. This oxidization only forms on the surface and makes an impervious protection for the centre of the metal, preventing further decay. Thus, by using zinc sufficiently thick to allow for oxidization and give required strength, it becomes practically imperishable.

GENERAL INFORMATION.

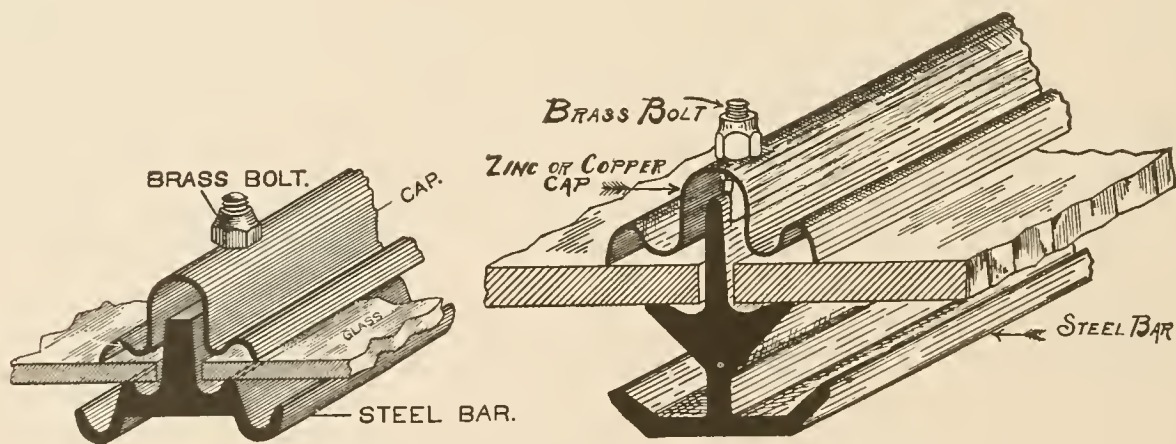
Since my introduction to the American public in 1886 of the "Helliwell" Patent System of Glazing, it has met with universal favor and acceptance throughout our large country (over half a million square feet of glass having been glazed by me on Horticultural Buildings and Skylights), and I am happy to say this system has given universal satisfaction, as attested by the repeated orders given to me by the same parties, and the fact that it is specified constantly by the leading architects and engineers throughout the country for their best and most important work. It has also been practically demonstrated that this system is well adapted to the varying exigencies of our climate from the far North to the extreme South.

For beauty, economy and durability, this system eclipses all rivals.

FORM OF SPECIFICATION.

Engineers and architects when using this system, in order to avoid any possible substitution, should specify as follows:

Specifications—To be glazed with Helliwell Patent Steel Bar No. (here state section) with zinc (or copper) caps and (here state the kind of glass to be used). The whole to be fixed by Josephus Plenty, Sole Agent and Licensee, Jersey City, N. J.



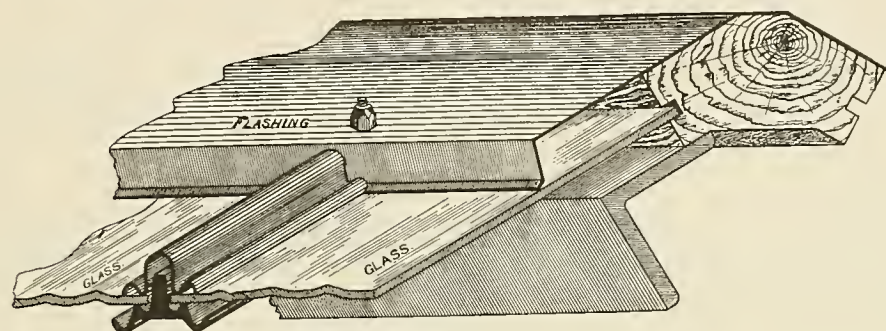
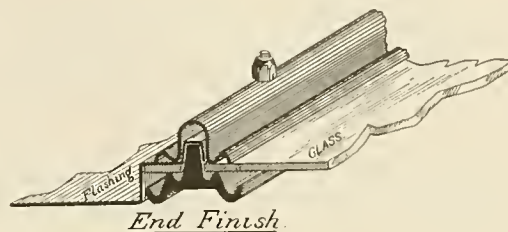
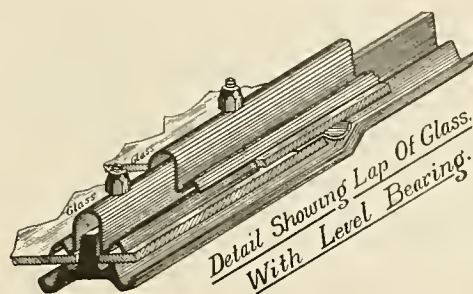
"HELLIWELL" PATENT SYSTEM OF IMPERISHABLE GLAZING

STANDARD FORMS OF HELLIWELL PATENT IMPERISHABLE GLAZING BARS.

It will be observed that the lower or supporting part of these bars is made of solid steel, and may form part of the structure of the roof. It also forms a very strong and rigid support for the glass; while the cap is made of sheet zinc or copper, which forms an elastic covering for the glass—allowing free play for expansion or contraction. Each light is held by an iron stop to prevent slipping down.

PLENTY'S NEW
"SECUNDUS"
SKYLIGHTS.

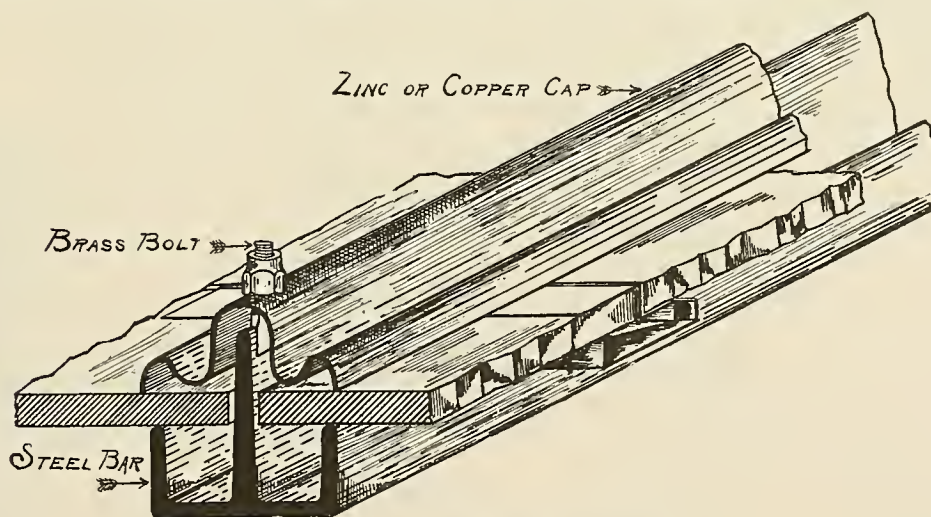
Plenty's New "Secundus" Skylights have undeniable advantages over other makes of skylights of this class. They have increased strength and rigidity of construction and the glass cannot be crowded over or allowed to drop from side bearings. Either lapped or butted joints can be used.



Detail at Ridge.

DETAILS OF CONSTRUCTION OF THE "HELLIWELL" PATENT PUTTYLESS GLAZING

While this system has not the special advantages of the double gutters of the Helliwell patent "B" bar in preventing drip from condensation, it must appeal to architects who have used or specified Skylights of somewhat similar form or class



PLENTY'S NEW "SECUNDUS" SKYLIGHT

that most of the objectionable features of other makes are removed, and it is confidently recommended as a cheap, durable skylight. The above is full sized section of bar and glass for bearings 5' to 9' 6" apart.

J. F. BLANCHARD COMPANY

MANUFACTURERS OF

Metal Covered Doors, Frames, Sashes, etc.

Offices: Fuller Building

NEW YORK CITY, N. Y.

Factory: 229 to 237 Borden Avenue, and 218 to 226 Third Street

LONG ISLAND CITY, N. Y.

OFFICE TELEPHONE: 3682-3683 GRAMERCY

FACTORY TELEPHONE: 1656 GREENPOINT

PRODUCTS.

Manufacturers of METAL COVERED DOORS, FRAMES, SASH AND TRIM, RICHARDSON'S PATENT SEAMLESS DOORS, STANDARD UNDERWRITERS DOORS AND SHUTTERS, METAL FRAMES AND SASH.

PLANT.

Our factory is the most modern of its kind, equipped with new machinery throughout, and the most perfect facilities for the prompt execution of fireproof work of every nature in the best possible manner. A large dry-kiln, connecting directly with our manufacturing floor, insures the use of thoroughly kiln-dried stock for all cores, without which it is impossible to produce first-class results. Direct railroad connection on our property gives unsurpassed shipping facilities.

RICHARDSON SEAMLESS DOORS.

The Richardson Door is a high grade ornamental fireproof door, composed of a wood core, covered with asbestos, enclosed by two seamless paneled sheets of 26 gauge steel, secured by a heavy continuous steel band on the edge of the door, the two face sheets locking underneath. It is particularly adapted for use throughout all fireproof buildings making of each room a fireproof compartment. It is the "missing link" in fireproof construction.

HOSPITALS should be equipped throughout with this door, as it meets every conceivable demand. It is absolutely fireproof, offers no lodgment for disease germs, dust or dirt, and can be washed without retaining moisture.

MINIMUM INSURANCE.

Our Seamless Door has been tested by the National Board of Fire Underwriters, sustaining a temperature of 1535° for one hour *without destroying* its efficiency. Based on this test, the door is accepted by the New York Fire Insurance Exchange as *Standard* in elevator, pipe and wire shafts, stair enclosures and fire-



Standard Type of Richardson Door

proof partitions of every nature, and *is the only Ornamental Fireproof Door* in the market that will secure the *minimum insurance rate*. This reduction applies not only to the building, but also its contents, enabling the owner to secure higher rentals and the best class of tenants.

DETAILS OF ERECTION.

We will submit to architects on request, working details showing types and methods of erection of our Seamless Doors, that are approved by the Insurance Exchange and which *we guarantee* will secure the *minimum insurance rate*.

ORNAMENTAL WORK.

We are prepared to execute all kinds of metal covered work from architects' details, and guarantee the highest possible grade of construction. Our facilities are unequalled in this particular branch of the work.

FINISHES.

Unless otherwise specified all work is furnished in plain Steel or Kalamein Iron, to be finished by the painter at the building. We are, however, prepared to furnish work in handsome Duplex Electro Copper or Brass plated finish, or in Copper or Bronze, oxidized to any color desired.

WINDOWS.

We make a specialty of exterior frames and sash, both metal and metal covered. We recommend in all cases the use of copper for this purpose, as being the most durable and satisfactory; although if properly painted, iron will last for many years. We are in position to comply with all requirements of the Board of Fire Underwriters and Building Department, and guarantee prompt execution of contracts.

UNDERWRITERS' DOORS AND SHUTTERS.

We have given particular attention to this branch of fireproof work, and are perfectly familiar with the various rulings of the Underwriters and Insurance interests. It is impossible to set forth these rules in a comprehensive manner, as nearly every building presents different conditions. Architects may safely leave their clients' interests to us in this line, feeling sure that that they will be properly protected.

A FEW PROMINENT CONTRACTS.

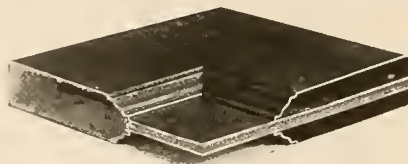
BUILDINGS	ARCHITECTS	CONTRACTORS
HOTEL BELMONT	WARREN & WETMORE	M. EIOLITZ & SON
HARMONIE CLUB	MCKIM, MEAD & WHITE	TIDE WATER BUILDING CO.
REPUBLICAN CLUB	YORK & SAWYER	TIDE WATER BUILDING CO.
CRITERION CLUB	S. B. EISENROTH	
EDISON POWER HOUSE	EDISON CO.	MURPHY CONSTRUCTION CO.
NEW AMSTERDAM THEATRE	HERTS & TALLANT	GEO. A. FULLER CO.
42 BROADWAY, OFFICE BUILDING	HENRY IVES COBB	GEO. A. FULLER CO.
MERCANTILE BUILDING, 23d STREET AND 4th AVENUE	JAY H. MORGAN	GEO. A. FULLER CO.
COCKCROFT BUILDING, NASSAU AND JOHN STREETS	JAY H. MORGAN	GEO. A. FULLER CO.
NAVAL LABORATORY, BROOKLYN, N. Y.	ERNEST FLAGG	GEO. VASSAR, SON & CO.
ASTOR BUILDING, 34th STREET	BORING & TILTON	TIDE WATER BUILDING CO.
LAWYERS TITLE INS. CO. BUILDING	CHAS. C. HAIGHT	J. C. VREELANO BUILDING CO.
SILK STORAGE WAREHOUSE	ADOLPH MERTIN	J. C. LYONS BUILDING CO.
COMMERCIAL HIGH SCHOOL	C. B. J. SNYDER	REMINGTON CONSTRUCTION CO.
R. H. MACY & Co.'s STORE	DELEMONS & CORDES	GEO. A. FULLER CO.

The engineers of the Subway Construction Co. stipulated that our work should be used, and none other. It is installed throughout the Main Power Station, all Sub-Power Stations, and all Passenger Stations of the Subway System.

DAHLSTROM METALLIC DOOR COMPANY

JAMESTOWN, N. Y.

New York City Office
299 Broadway



UPPER LEFT HAND CORNER

Factory and Main Office
Jamestown, N. Y.

TELEPHONE, 4466 FRANKLIN

PRODUCTS.

Manufacturers of the patented DAHLSTROM FIREPROOF DOORS and TRIM, PARTITIONS, DRAWN STEEL MOULDINGS for all purposes, particularly CHAIR RAILS, PICTURE MOULDINGS, CASINGS, RAILINGS, etc., from stock patterns and also from Architects' special designs.

Designers and manufacturers of METAL DOORS under other construction, such as SASH DOORS, LIGHT and THIN DOORS for dumb-waiters, wardrobes, partitions, etc., etc.

FACILITIES.

Our factory is well equipped with special machinery for the speedy and economical execution of orders.

TERRITORY.

We ship goods to any part of the world, and give equal attention to home and export trade.

ADAPTABILITY.

The "Dahlstrom" is designed to provide a door of the highest type, *aesthetically* as well as with reference to its unsurpassed fire-resisting qualities, for use throughout office buildings, hotels, theatres and all fireproof and semi-fireproof buildings. It has been officially tested and accorded a hearty reception by the Underwriters, and the Building Departments of our various cities.

INSTALLATION.

Our work can be installed by any contractor or local workmen, or will be undertaken by ourselves, or through our local representatives.

CONSTRUCTION.

As will be seen from the sectional view, the "Dahlstrom" door is constructed of two single sheets of steel (No. 20 gauge) running the entire length, and has only two joints. These are invisible lock joints, arranged so that they will not come opposite one another. The steel is specially treated so as to secure absolute rigidity in the door. The depressed panel formation is filled out at top and bottom with rails, slipped on in one piece and fastened to the panel by means of screws, and to the stiles by rivets. Thus objectionable joints or seams on the edges (such as appear on so-called "seamless" doors) are obviated. Hinges are let in from the sides of the door and fastened to the edges by means of a reinforcing strip of band iron. Another similar strip of band iron is used to secure the lock. These strips run inside the stiles and the entire length of the door. Small channel irons are used for closing up the hollow ends of the stiles at top and bottom of the door. These also run inside the rails and the whole width of the door.

SOUND, RUST, AND FIREPROOF QUALITIES.

To guard against rusting, the inside is painted with asphalt or enameled. A felt lining or strip of cork deadens the metallic sound and the panel is packed with asbestos or mineral wool. This form of construction secures air spaces in the stiles, and

independence of the two sideplates of one another, so that, in case of fire, while the exposed plate may suffer from the heat the other remains cool and retains its shape and position in the door-opening. In fact, similar action to that of two doors is secured in one. Solid iron doors will, under the strain of heat and their own weight, spring away from the door-openings, and curl at top and bottom. Practical demonstrations have shown that our door will not curl or spring under strain of excessive heat. Even should the top and bottom rails be exposed to heat intense enough to cause them to be burned off, the door would still be in efficient condition to resist the progress of the flames. Experts on fire-retardants regard the "Dahlstrom" a far better fire-stop than any other door on the market.

PANELING.

In galvanized iron coverings of wooden doors small panels have to be pressed, for if large fields were attempted the metal would buckle and wrinkle. With the "Dahlstrom" door our method of construction turns the buckling tendency of the steel into a force that strengthens the door. We are therefore able to produce a door in the Colonial style, as strong and firm as if divided into eight or ten small panels or sections. Where desired, however, we use loose steel mouldings to secure a panel effect. These mouldings are also made under our own process, and can be made to architects' designs.

FINISH.

We turn our doors out with a baked enamel surface, and they can, of course, be grained in any manner possible to grain wood. The fitting of hardware should be done here at the factory, as we have special tools for doing this work neatly and at small expense. Almost any locking device is admissible.

GENERAL INFORMATION.

Our products are not of the ordinary so-called Kalamein class. While steel as light as No. 20 gauge is used in our doors, the construction and process peculiar to our door render it more rigid than solid steel plates, enable the use of high grade finish, and admit of any graining or decorative effects. These doors compare favorably in price with fireproof wood, and are, of course, more durable.

As to fireproofness, the Engineers of the National Board of Underwriters, after one of their usual severe one-hour fire and water tests, state that the door "was securely in position, and still capable of affording effective protection as a fire-stop. It was also capable of resisting the force of heavy fire streams."

ORDERING.

Partly built up doors, 7'-6" and 7'-0" in height by 30", 32", 34" and 36" in width and 1½" in thickness are carried in stock, and can be finished up quickly in any of our various styles. Special sizes built to order. Quotations include the fitting of hardware. Hardware supplied at current prices, as specified.

As these doors are hung as readily as any kind of doors, architects may specify kind of buck-work desired. Structural work to be provided in place by general or iron contractor. We provide the sheet steel casing and framework, and also transom bars where required.

In specifying and ordering, please bear in mind that our doors are not made up in fractional inches in width, but the sheet steel framework will admit of some adjustment, as will be seen from sectional cut (Fig. 9).

PRICES.

Estimates from blue prints and specifications cheerfully given, the cost of complete door openings depending upon finish desired, thickness of walls, style of framework, casings, etc.

ILLUSTRATIONS.

The following cuts serve to give an idea of some of the various styles possible in the "Dahlstrom" door construction. Nos. 1 to 4 are regular "Dahlstrom" doors. Sash doors 5 and 6 are regular styles. Nos. 7 and 8 are specimens of special styles.



STYLE 1
FULL PANEL DOOR



STYLE 2
TWO-PANEL DOOR



STYLE 3
PANEL DOOR
Beveled Effect



STYLE 4
TWO-PANEL DOOR
Beveled Effect

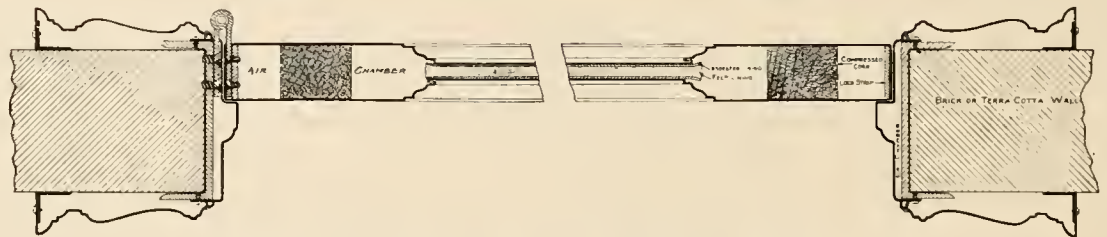
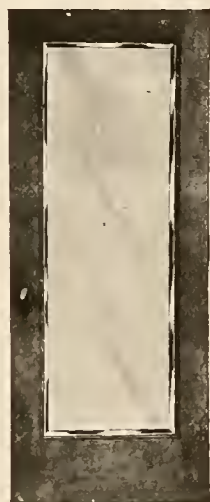


FIG. 9. SECTIONAL VIEW OF THE "DAHLSTROM" FIREPROOF DOOR
Showing sheet steel frame, casing, and one method of securing same to the wall



STYLE 5
SASH DOOR



STYLE 6
SASH DOOR
With Beveled Effect Panel



STYLE 7
FIVE-PANEL DOOR



STYLE 8
SIX-PANEL DOOR

" RICHARDSON " DOORS MAKE EACH ROOM A SEPARATE BUILDING

FIRE PROOF DOOR COMPANY

401-411 Twelfth Avenue South
MINNEAPOLIS, MINN.

REPRESENTED AT

BOSTON
LOMBARD & TRACY
161 Devonshire Street

BALTIMORE
C. D. PRUDEN CO.
Bldrs. Exchange

TORONTO
METALLIC ROOFING CO.

ST. LOUIS
HUNKINS-WILLIS CO.

SALT LAKE CITY
W.M. S. BURTON
118 So. 2d West Street

SEATTLE
S. W. R. DALLY
Colman Building

SAN FRANCISCO
WATERHOUSE & PRICE CO.
29 New Montgomery Street.

LOS ANGELES
Stimson Building

PRODUCTS.

" RICHARDSON " FIREPROOF DOORS and FINISH for Office Buildings, Hotels, Hospitals, Theatres, Schools, Court Houses, etc. FRAMES, CASINGS, CORRIDOR WINDOWS, METAL MOULDINGS, and METAL COVERED WINDOW FRAMES and SASH. ORNAMENTAL ENTRANCE DOORS are made a specialty.

FACILITIES.

Our factory is the pioneer in this class of work and is equipped with special machinery built to meet our individual needs. We fill orders of any size from one door up to the thousands.

TERRITORY.

Richardson Doors and Finish are shipped to all parts of the Continent and to foreign countries.

ADAPTABILITY OF PRODUCTS.

Richardson Doors are built to meet the approval of local building departments, and we aim to follow changes in same. Purpose for which door is to be used should be stated.

INSTRUCTIONS AS TO ORDERS.

When writing for estimates or ordering work, state whether "Richardson" Standard or Special Detail is wanted; if Special, give sketch of elevation. State finish, Old Copper or Brass, or painted the priming coat. Give exact size of door or of rough opening, naming allowance to be made for threshold; give swing. State if hardware will be forwarded for application or sample for fitting. We fit or apply without charge if hardware is furnished us with all charges prepaid. Hardware must be furnished promptly when called for. If desired we will furnish hardware according to whatever allowance is made. Give width of frame; give width and style of casing.

FACTS IN REGARD TO INSTALLATION.

The "Richardson" Door and Finish are erected in the same manner as ordinary finish, but with a saving to both owner and contractor. The hardware having been applied to both door and frame at the factory, all that is necessary to do at the building is to set the frame, replace the pins in the butts, and the door is hung; the casing is mitred. The lock, striker and butts are all fitted.

We furnish full sized details to general contractors for locating grounds, etc.

We do not furnish glass or glaze doors or transoms, but doors and transoms are moulded ready to receive the glass.

GENERAL INFORMATION.

For Hospitals, the "Richardson" Door, painted white, makes an ideal finish. It offers no lodging for germs or dirt and can easily be washed off without affecting the finish and without leaving a trace of dampness.

The "Richardson" Door gives an air of solidity and safety and adds a general tone to a building not obtainable with a wood door. It impresses tenants favorably and adds to the rental value.

Economy in insurance is gained and maintenance expense reduced, as the doors cannot swell and stick, or shrink and require altering of hardware.

"RICHARDSON" DOORS MAKE EACH ROOM A SEPARATE BUILDING

FEATURES OF CONSTRUCTION—The "Richardson" Door is made of three thicknesses of pine "A," laid crosswise, covered with asbestos paper "B," the whole enclosed with sheet steel "C," *One Sheet* to a side. The panels, "D," are stamped by hydraulic pressure *Without Joints or Seams*. The steel band, "F," continuous all around the Door, is held in place by screws "G," which go *Through Both Sheets*, locking them together, "E."

The panels are $5\frac{3}{4}$ inches high, with $4\frac{1}{2}$ -inch rails; they are 16 inches and 26 inches wide, making a Door up to 3 feet 4 inches wide and up to 8 feet high out of *One Sheet* to a side. For Doors over 3 feet 4 inches wide two sheets are locked together with a *flush double lock joint*, giving a double row of panels.

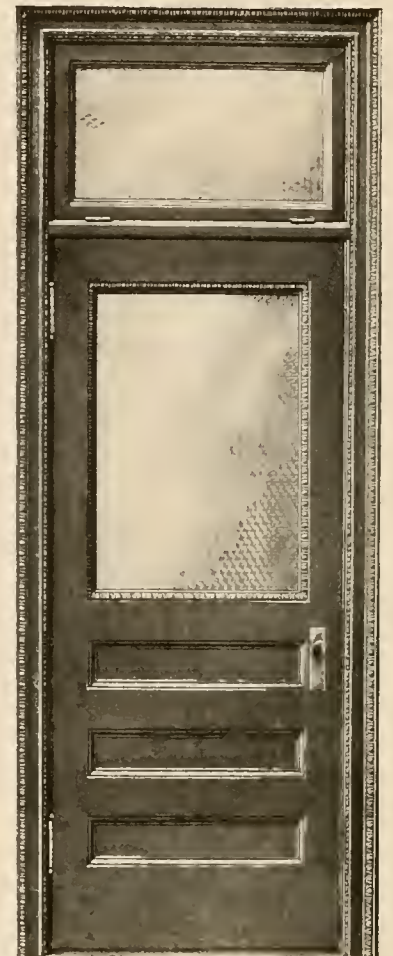
The frame and casing are also metal covered made to any detail and size.

We fit and apply hardware to Doors and frames, using the same as is applied to wood doors.

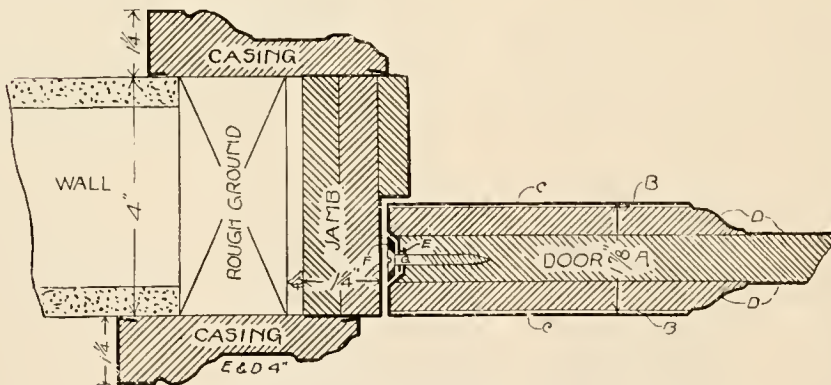
The "Richardson" Door is handsomely finished in duplex plated Old Copper, of a deep rich tone, or Brass, which gives a bright handsome effect; both finished with a heavy coat of the highest quality of lacquer; or painted a priming coat at the factory, to be finished by the owner as desired, whether grained or solid color. As there are no seams or joints the "Richardson" door is easily kept clean and free from dust and may be readily refinished.



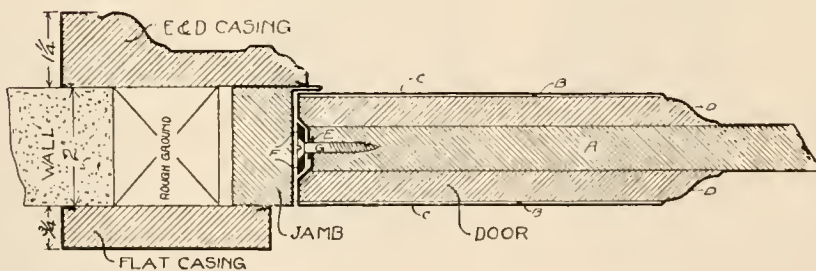
"RICHARDSON" STANDARD SOLID PANEL DOOR



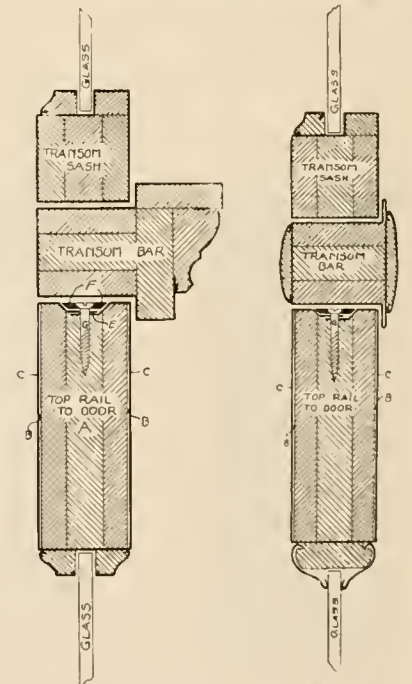
"RICHARDSON" STANDARD GLASS PANEL DOOR AND TRANSOM



"RICHARDSON" DOOR JAMB AND CASING
Jambs can be made any width



"RICHARDSON" SPECIAL JAMB FOR 2-INCH PARTITIONS



TRANSOM BAR
In Partitions over 2
inches wide

TRANSOM BAR
In 2-inch Partition

**"RICHARDSON"
DOORS MAKE EACH
ROOM A SEPARATE
BUILDING**

RICHARDSON CORRIDOR WINDOW—The elevation shown in Fig. 1, applies for single windows in corridors not connected with doors. Detail shown in Fig. 2, applies for single windows not connected with doors. Casings to detail.



FIG. 1.

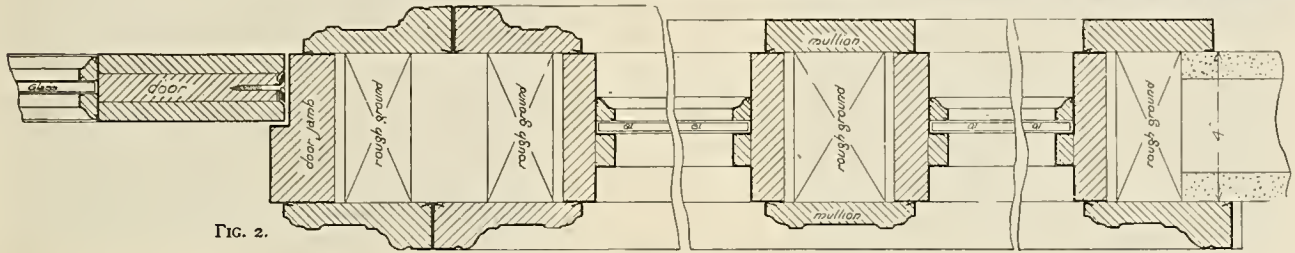
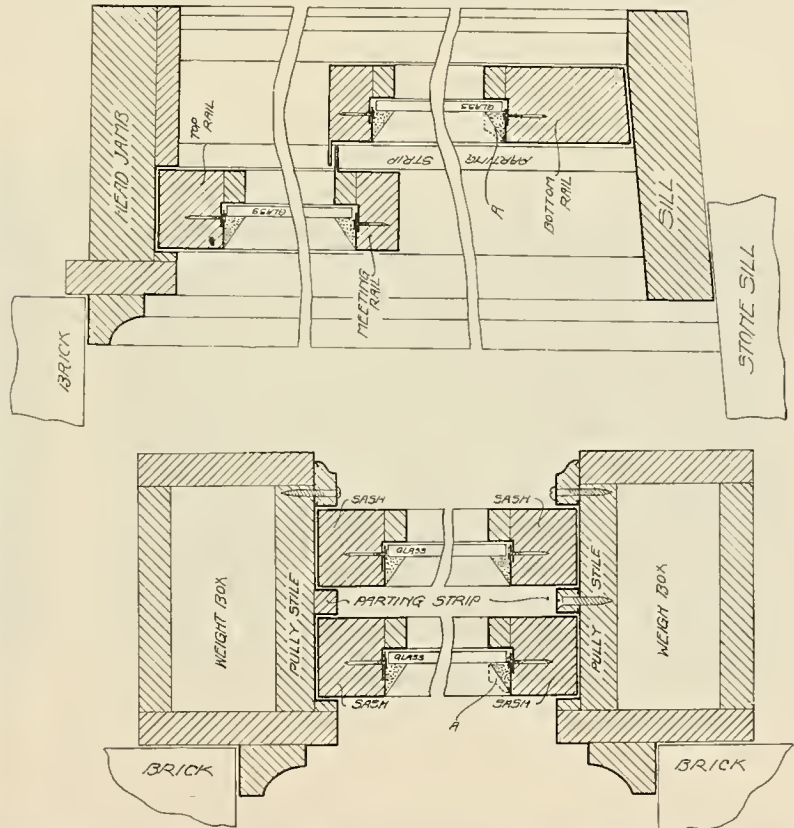


FIG. 2.



"RICHARDSON" STANDARD WINDOW—Our window is a wood frame and sash covered with steel, galvanized iron or copper, giving the same appearance when set as the wood window, thus enabling it to be used where hollow frames and sash can not be. There are no exposed nails or rivets; no soldering; no rattling; as noiseless as wood sash; does not dent; requires no special fixtures.

“RICHARDSON” DOORS MAKE EACH ROOM A SEPARATE BUILDING



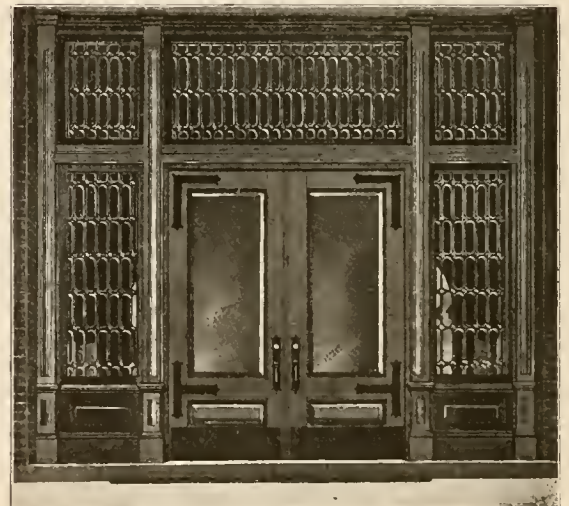
ENTRANCE TO IMPORTERS BUILDING, NEW YORK CITY



ENTRANCE DOORS
Harry W. Jones, Architect



COPPER ENTRANCE DOORS, UNIQUE THEATRE, MINNEAPOLIS
Bertrand & Chamberlain, Architects



COPPER ENTRANCE DOORS, GROVES HOSPITAL,
SALT LAKE CITY, UTAH
F. M. Ulmer & Sons, Architects

“Richardson” Doors, Copper Covered, make Handsome, Durable and Attractive Entrances. They are made to the Architects’ detail and finished light or Old Copper. The finish does not crack or peel, nor the doors swell or stick.

THE KINNEAR MANUFACTURING COMPANY

COLUMBUS, OHIO

BOSTON
85 Water Street

CHICAGO
112 Clark Street

PHILADELPHIA
1011 Chestnut Street

AGENCIES

NEW YORK CITY
PITTSBURG
SEATTLE

SAN FRANCISCO
CLEVELAND
LOS ANGELES

INDIANAPOLIS
ST. LOUIS
ROCHESTER

CINCINNATI
LOUISVILLE
BUFFALO

LONDON, ENGLAND
PUEBLO, MEXICO

DENVER

ANTWERP, BELGIUM
OSAKA, JAPAN
SANTIAGO, CHILI

NEW ORLEANS
MEXICO CITY, MEXICO
MONTREAL, CANADA

PRODUCTS.

Manufacturers of STEEL ROLLING DOORS, SHUTTERS and PARTITIONS.

IMPROVED CONSTRUCTION.

With the desire of maintaining the high standard of excellence acquired by the Kinnear Steel Rolling Doors and Shutters, we have embodied many improvements in the constructions shown herewith.

FIRE PROTECTION.

Our material is particularly designed and adapted to afford fire protection for outside window and door exposures, and for openings in elevator shafts. Our doors and shutters are built entirely of steel and are absolutely fireproof.

ADVANTAGES.

The accompanying illustrations clearly show the advantages to be derived by the use of "Kinnear" Doors in Warehouses, Factories, Freight Depots, etc., wherever economy of space and efficient service are desired.

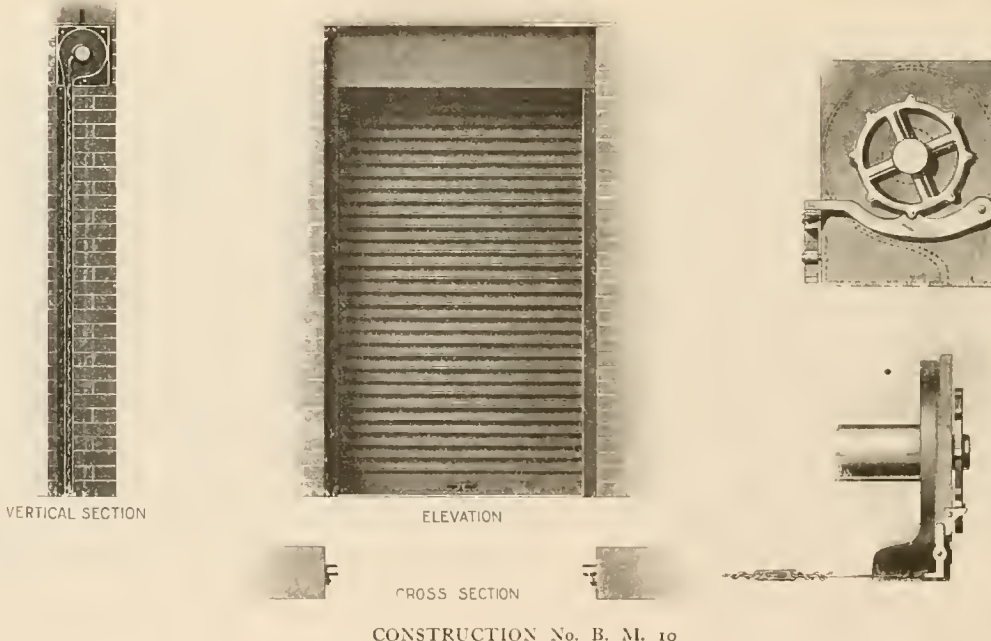
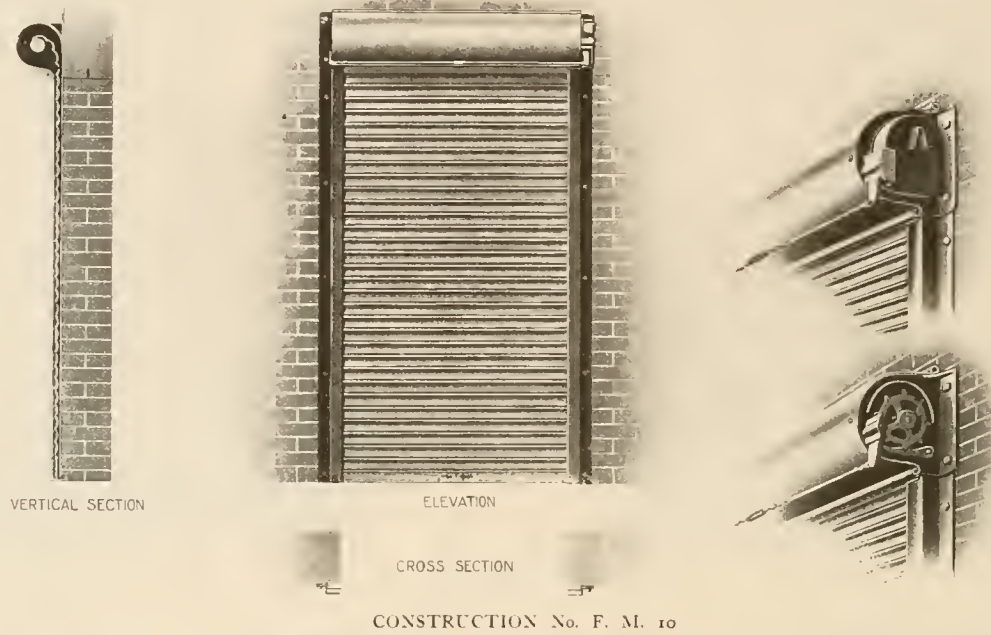
INSTALLATION.

Any good mechanic can install our material. Blue prints accompany every job showing our construction and its application.

TYPES OF CONSTRUCTION.

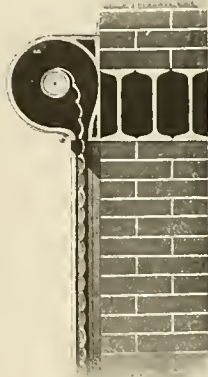
Following are diagrams of our Types of Construction, which we have named and numbered thus: "Construction No. F. M. 10," "B. M. 10," "B. H. 40," etc.

CONSTRUCTION F. M. 10—Shutters of this construction overlap the opening on the sides and top and are especially well adapted for fire doors. Coil and grooves are placed on the face of the wall; the shutter is counterbalanced by springs and operated by hand. In connection with the manual operation, the door can be equipped with an automatic release, which operates at a temperature of 150 degrees. This device is shown by illustration to the right.



CONSTRUCTION B. M. 10—Shutters of this construction are counterbalanced by springs and operated by hand. The grooves and coil are placed between the jambs. The coil is enclosed in a plain galvanized hood, or, if specified, an ornamental hood can be furnished. These Shutters can be equipped with an automatic release if desired.

CONSTRUCTION F. H. 20—In this construction the grooves and coil are placed on the face of the wall. Shutter is counterbalanced by springs, and operated by means of an endless chain, sprocket and gear. We recommend this form of construction as a fire door, and if desired, it can be supplied with an automatic release. Special designs will be furnished upon application.



VERTICAL SECTION



ELEVATION

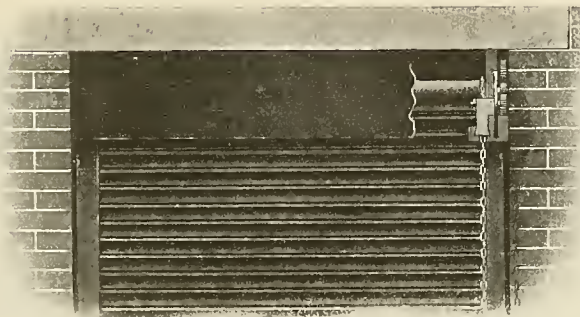


END VIEW

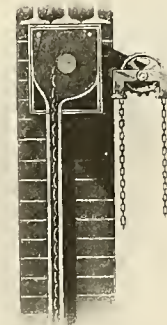


CROSS SECTION

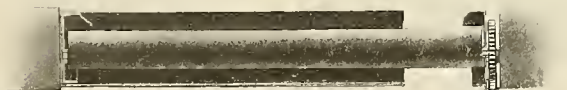
CONSTRUCTION No. F. H. 20



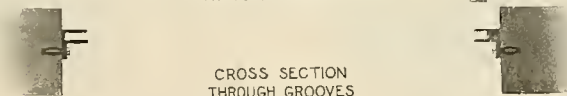
ELEVATION



VERTICAL SECTION



CROSS SECTION THROUGH BRACKETS

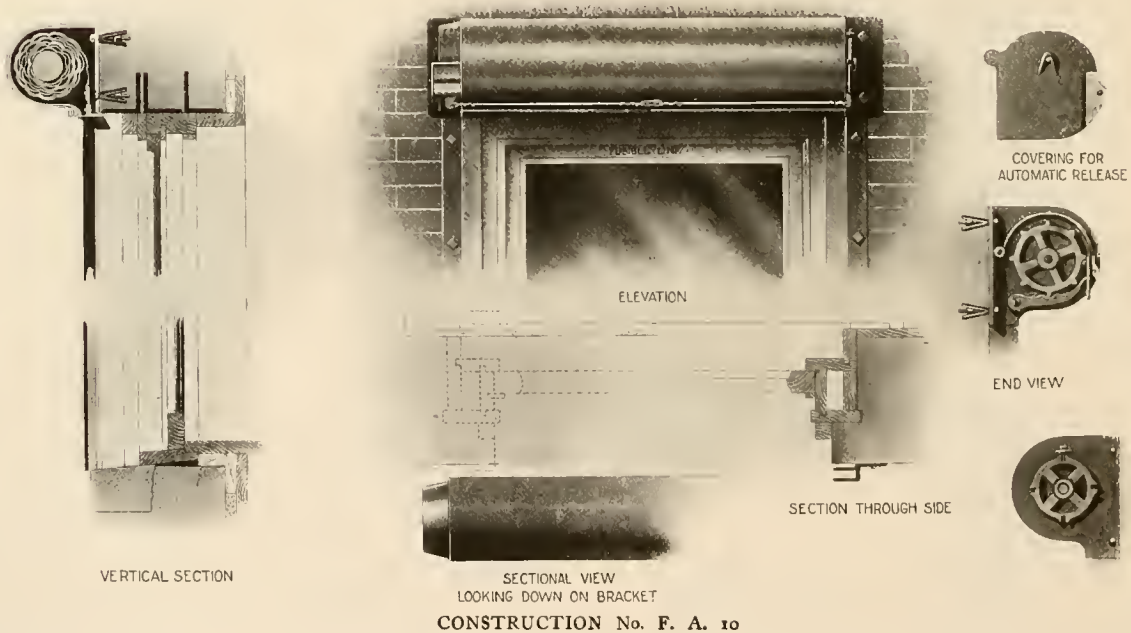
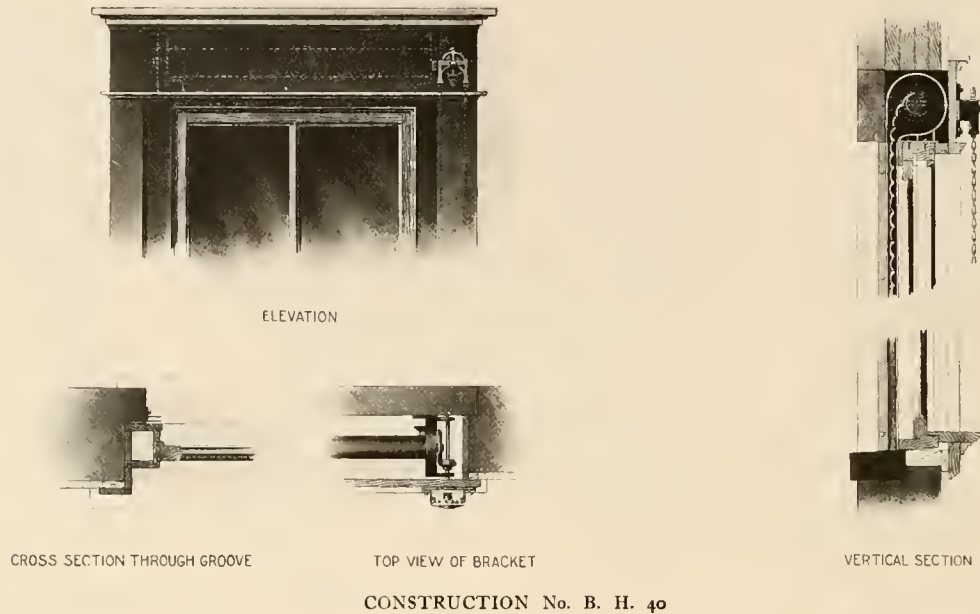


CROSS SECTION THROUGH GROOVES

CONSTRUCTION No. B. H. 20

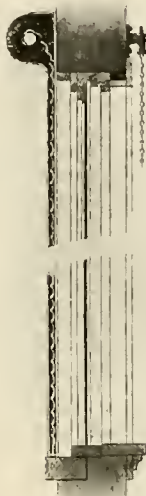
CONSTRUCTION B. H. 20—In this construction the coil and grooves are placed between the jambs, with a galvanized hood enclosing the coil. It is counterbalanced by springs and operated by an endless chain and gear. Upon application, details showing the hood, and grooves encased in wood to correspond to the interior finish, will be furnished.

CONSTRUCTION B. H. 40—This is a very desirable construction for new buildings where the frame can be arranged to receive the shutter. It is neat and compact. The coil is concealed over the head of the frame, and the grooves extend down the jambs on the outside of the frame. The casing can be designed to correspond to the finish of the building. The top casing should be removable, so that access to the coil can be had at any time.



CONSTRUCTION F. A. 10—This construction is designed especially for fire protection. The Shutter closes automatically at a temperature of 150 degrees. It is positive in its action. Cast-iron housing encloses the release, protecting it from the weather. Means are provided for nicely adjusting the spring counterbalance. The coil and grooves are placed on the face of the wall. This type of Shutter construction can be arranged to operate manually in combination with the automatic feature.

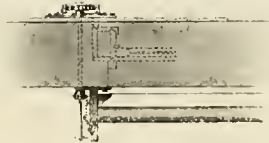
CONSTRUCTION F. C. 60—In this construction the coil and grooves are placed on the outside face of the wall and are operated from the inside by means of a crank. Shafting and bevel-gears are used to transmit the power. This construction can be used to architectural advantage, as no mechanism on the interior is required.



VERTICAL SECTION



ELEVATION



TOP VIEW OF BRACKET

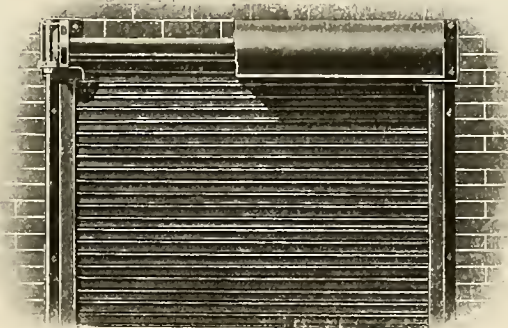


CROSS SECTION THROUGH GROOVE

CONSTRUCTION No. F. C. 60



VERTICAL SECTION



ELEVATION



TOP VIEW OF BRACKET

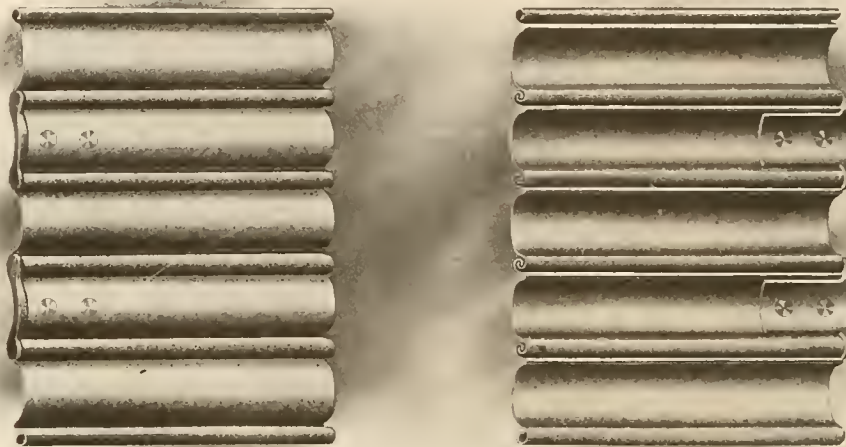


CROSS SECTION THROUGH GROOVE

CONSTRUCTION No. F. H. 60

CONSTRUCTION F. H. 60—In this construction the coil and grooves are placed on the face of the wall. The Shutter is counterbalanced by a spring and operated by means of an endless chain, bevel-gear and shaft through the wall.

These two cuts represent the concave and convex sides of the interlocking steel slats, of which the Kinnear Doors and Shutters are composed. Special attention is called to the malleable iron reinforced edges, which not only prevent longitudinal separation, but also provide a most excellent wearing surface for the curtains.



CONCAVE AND CONVEX SIDES OF THE INTERLOCKING STEEL SLATS



SCHEDULE OF SIZES

Width 3'-0" to 6'-0"		6-0" to 10-0"		10-0" to 15-0"		15-0" to 20-0"		Width 3'-0" to 6'-0"		6-0" to 10-0"		10-0" to 15-0"		15-0" to 20-0"			
Height	Groove Depth 1 7/8"		Groove Depth 2 3/8"		Groove Depth 2 7/8"		Groove Depth 3 3/4"		Height	Groove Depth 1 7/8"		Groove Depth 2 3/8"		Groove Depth 2 7/8"		Groove Depth 3 3/8"	
	X	Y	X	Y	X	Y	X	Y		X	Y	X	Y	X	Y	X	Y
6'-0"	8 3/4"	10 1/2"	8 3/4"	10 1/2"	9 1/2"	11"	10"	11 3/4"	14'-0"	12"	13 3/4"	12"	13 3/4"	12 3/4"	14 1/2"	13 1/2"	15"
8-0	9 1/2	11	9 1/2	11	10	11 3/4	10 3/4	12 1/2	16-0	13	14 1/2	13	14 1/2	13 1/4	15	14 1/4	16
10-0	10 1/4	12	10 1/4	12	11 1/4	13	11 3/4	13 1/2	18-0	13 3/4	15 1/2	13 3/4	15 1/2	14	15 1/2	14 3/4	16 1/2
12-0	11 1/2	13	11 1/2	13	12	13 3/4	13	14 3/4									

We would suggest that for small openings (up to 8x8 feet or 10x10 feet) a push-up type of construction be used. When the automatic feature is required for fire protection, it can be combined with this push-up type. The chain hoist should be used for larger sizes. Regarding any further details, we would suggest direct correspondence.

R. W. PALTRIDGE & CO.

88-90 La Salle Street
CHICAGO, ILL.

TELEPHONES, MAIN 3510 AUTO 5320

PRODUCTS.

Designers and manufacturers of FIREPROOF "STEEL" THEATRE CURTAINS, ELECTRIC HOISTS FOR STEEL, ASBESTOS and DRAPE CURTAINS, etc., and ELECTRIC HOISTS for OPERATING SHADES IN LECTURE ROOMS, "Easy-adjusting" IRON OR WOOD SHELVING for Libraries, Banks, Schools, Stores, etc., and Western Managers for Fred. Frick Clock Co., Waynesboro, Pa.

FRICK MASTER AND PROGRAM CLOCK SYSTEMS.



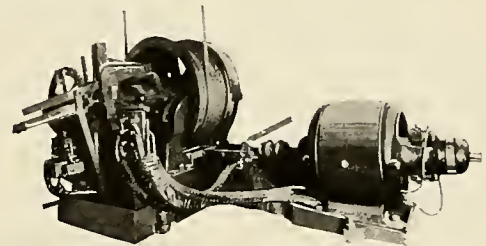
The secondary clocks have electrically actuated movements operated from the master clock and any number will work successfully on one system, keeping accurate and uniform time. Any possible combination of signals with 1, 2½ or 5-minute intervals may be rung from the program clock and signals may be changed at any time by moving pins on the program dial. We can furnish master and program clocks complete in one case for the operation of secondaries and bells; program clock only for the ringing of signals; or master clock only for the operation of secondaries. Send for information blank to be filled out for estimates.

PRICES.

Master clocks \$45.00 and up. Secondaries, \$8.00 and up.

FIREPROOF STEEL THEATRE CURTAINS.

A "steel" curtain consists essentially of a substantial angle and channel iron framework, having sheet or corrugated iron front, asbestos backing and 2" air space between. It is guided by angle irons and hung on steel cables. Chemical tests have proved it an almost absolute barrier to heat, and it has passed rigid inspection by Chicago City Inspectors and Fire Underwriters. The machine for operating the curtain may be placed in the basement or on the "fly floor." It is regularly operated at switch-board or by push buttons located at any points in the house and will automatically stop at the top and bottom. The winding drum may also be released, allowing curtain to drop without power.



ELECTRIC HOIST FOR THEATRE CURTAIN

OPERATED BY ELECTRIC HOIST.

The motor used on this machine is a special make designed by the Northwestern Mfg. Co., Milwaukee, Wis. After thorough investigation, we have found that the Browning motor, manufactured by this company, is superior to other direct current motors, in point of durability and strength. It always carries more than its rated load and is therefore of great value for our work.

MOTOR OF SPECIAL DESIGN.

Our apparatus has been installed in the following Chicago theatres: Haymarket, Trocadero, Alhambra, Columbus, Great Northern, Powers, Folly, Illinois, Criterion, Chicago Opera House and Calumet. We install complete apparatus. By its use windows of any size, height or number may be easily darkened and a large auditorium may thus be used for stereopticon or other dark room purposes where without this device it would be impossible. This apparatus requires special design for window casing, for which we furnish sketches. We manufacture and install complete.

REFERENCES.

ELECTRIC SHADE HOIST.

The name "Easy-adjusting" signifies its merit. The stacks are portable, single or double, one or more decks, any height or width, wood or iron shelves, each section independently adjusted, and any finish. We manufacture and install.

IRON SHELVING.

MANHATTAN FIREPROOF DOOR COMPANY

412 E. 125th Street
NEW YORK CITY, N. Y.

- PRODUCTS.** Manufacturers of FIREPROOF DOORS, WINDOW FRAMES and SASH in COPPER, BRONZE or KALAMEIN IRON, and of KALAMEINED PRODUCTS generally.
- FACILITIES.** Our plant is sufficiently large to accept and promptly execute orders of any size.
- TERRITORY.** Practically, the World.
- INSTALLATION.** Our product can be installed by first-class craftsmen anywhere. We prefer, within reasonable distances, to supervise, and should supervision be asked at great distances, the cost would be only that actually above New York prices.
- INSTRUCTIONS AS TO ORDERS.** We work entirely from Architects' details. Full size drawings are preferred, but, if occasion requires, we can execute orders to scale, and will submit shop drawings.
- GENERAL INFORMATION.** This is not a hollow, but a solid construction. The metal is drawn over the wood (which is thoroughly kiln dried and perfectly seasoned), through dies, so closely that the fit and adjustment conform entirely to the model lines, true and accurate to a hair, solid, dignified, safe.
- By our process, flat, smooth surfaces are secured. No bolts or screws are shown at all, except for the mouldings and panels. The door is keyed together with iron dowels.
- When finished, the metal readily accepts oil paints, and any ornamentation to correspond to the finish of the rooms.
- Our "Manhattan Standard" is a special construction, conforming, in all respects, to the rules of the Board of Fire Underwriters.
- Our product has been most severely tested, and has demonstrated in every case its absolute reliability as a fireproof material, and has equally demonstrated its immunity from interior dampness. The metal is drawn over the wood core so tightly through the dies that the pores of the wood are stopped, thus rendering it proof against fire, as well as impervious to moisture.
- EXAMPLES.** Some examples of our work may be seen in the following places in New York City:
- The Barclay Building, Broadway and Duane Street. We installed the entire work in this building, consisting of window frames and sash, doors, trim, base moulding, etc.
- Nos. 60-62 Wall Street. We installed the window frames, sash and doors.
- Manhattan Hotel. We installed some very handsome doors in this building, in the palm garden, of bronze kalameined work.
- American Exchange National Bank. Doors in the banking room, window frames and sash of copper in the first story.
- Seaboard National Bank. Bronze covered doors in the banking room.
- Ethical Culture School Building. Bronze covered doors for enclosure of elevators in the main stairway, for which we received a letter of highest appreciation from the builder.

We are installing, at the present time, the window frames, sash and doors at the Carnegie Technical Schools at Pittsburg, Pa.; also the window frames and sash in the Woodbridge Annex, John and Platt Streets, New York City, and the Tribune Building, New York City.

ILLUSTRATION
OF FIRE TEST.

This is a picture of two doors that were tested under the supervision of Prof. Norton, of the Institute of Technology, of Boston, Mass. The test was a most severe one, and shows the result in comparison between the door of the Manhattan Fireproof Door Co.'s construction and a stamped metal door.

It will be observed that the kalameined door of the Manhattan Fireproof Door Company has remained straight and true, not a line or any section of surface altered, while the stamped metal door is expanded, drawn and warped.



Manhattan Door

Stamped Door

RESULT OF COMPARATIVE FIRE TEST

It will be seen that the stamped door *expanded* by the heat of the fire, and that the kalameined door has remained perfectly straight; also that the stamped door is blistered.

The doors were placed, as shown, in the same kiln at the same time, and subjected to an open fire whose sustained heat was 2000° Fah.

SPECIFICATION.

Architects who desire to protect themselves and their clients from substitution or the risk of it, should use the following form of specification:

“The core shall be of white pine, thoroughly seasoned, air seasoned as well as kiln dried.

“The envelope shall be of the best grade of kalameined metal, drawn and moulded on the core through dies.

“No bolts or screws to be shown on the surface except those necessary to fasten mouldings and panels.

“The metal shall be drawn on the core in sections, and the parts shall be assembled and held in place by steel or iron dowels.

“All in accordance with the system and process of the Manhattan Fireproof Door Company—or its equal.”

JOHN W. RAPP

MANUFACTURER OF

“Standard” Fireproof Doors, etc.

GENERAL OFFICE AND WORKS

COLLEGE POINT
Borough of Queens, N. Y.

SHOW ROOMS AND SALES DEPT.

METROPOLITAN LIFE BUILDING
1 Madison Ave., New York City, N. Y.

TELEPHONE CONNECTIONS

PRODUCTS.

This firm is the pioneer manufacturer and patentee of Fireproof covered DOORS, WINDOWS, SHUTTERS and INTERIOR TRIM of the “STANDARD” quality required by the National Board of Fire Underwriters.

CAPACITY.

The factories of the firm are the largest in the United States, covering three entire city blocks and employing hundreds of skilled workmen, thus putting the firm in a position to handle and promptly execute orders of any size.

TERRITORY.

The operations of the firm cover the whole of the United States, and orders from foreign countries can be handled with the same advantage and promptness. During one of the largest and most complete strikes the Trade ever experienced, we were, with little interruption, in full swing on the following contracts:

MANHATTAN LIFE BUILDING.....	New York City, N. Y.
METROPOLITAN LIFE BUILDING.....	New York City, N. Y.
NEW YORK STOCK EXCHANGE BUILDING.....	New York City, N. Y.
CHAMBER OF COMMERCE.....	New York City, N. Y.
BLAIR BUILDING (new).....	New York City, N. Y.
NEW YORK TIMES BUILDING	New York City, N. Y.
MONMOUTH COUNTY COURT HOUSE.....	Freehold, N. J.
JEFFERSON COUNTY PROBATE BUILDINGS.....	Watertown, N. Y.
COUNTY COURT HOUSE, MARTINEZ.....	Centra Costa Co., California

And many others, which space will not allow us to enumerate.

ADAPTABILITY OF PRODUCTS.

Our products conform to the rules and requirements of the Board of Fire Underwriters, the Bureau of Buildings of New York and all the principal cities of the United States. “The Rapp Standard” Doors are in a class distinct from any other. Nothing in design, workmanship or material is sacrificed in order to maintain their quality and they are a money saving investment to all who use them.

INSTALLATION.

Our goods can be installed by any contractor or local workman, or we will undertake the work ourselves.

IN ORDERING.

Please give Catalogue Number of goods required, stating finish desired, viz: Copper or Kalamein Iron, as all goods of standard sizes are kept in stock and can be supplied immediately.

INSURANCE.

On goods by ocean routes if so desired.

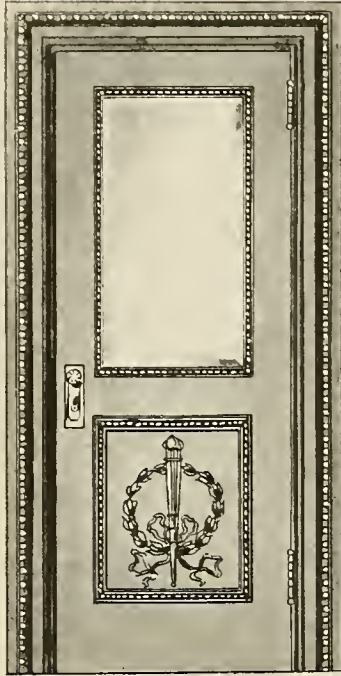
DELIVERY.

Our responsibility ceases upon delivery of merchandise to Carriers—received for in “good order.” If any preference of route, kindly give us shipping directions.

ESTIMATES.

Estimates for every description of work very cheerfully given. In sending material list, kindly state the width of trim, size of doors, with or without transoms, styles as selected from catalogues and also the width of base, chair rail, etc., and quality required. It is our aim to keenly compete with hardwood interior woodwork, and architects contemplating the erection of fireproof buildings will confer a favor by sending a detailed list of the material required for their buildings, and we are quite sure they will be interested in our low figures.

ILLUSTRATIONS



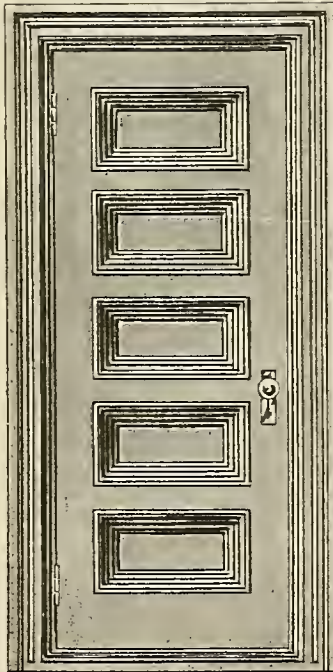
DESIGN 62. VESTIBULE DOOR
Sheet Bronze Covered. With or without Grille



DESIGN 26. COMBINATION ELEVATOR DOOR
Swing and Slide. Patent Stamped Panel



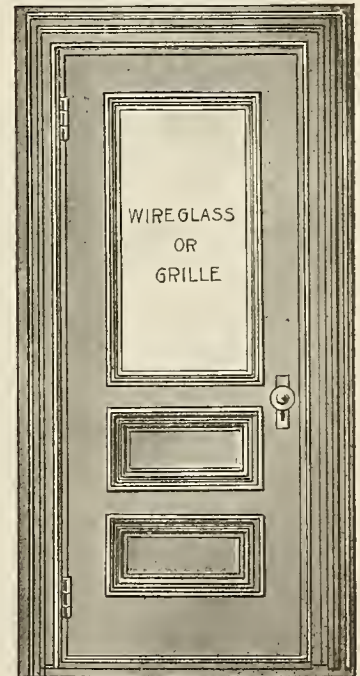
DESIGN 105. ENTRANCE DOORS
Sheet Bronze Covered. With or without
Wrought Bronze Grille



DESIGN 5. SEAMLESS DOOR
Patent Stamped Panel



DESIGN 87. ELEVATOR OR VESTIBULE DOOR
Sheet Metal Covered. Made up to Design



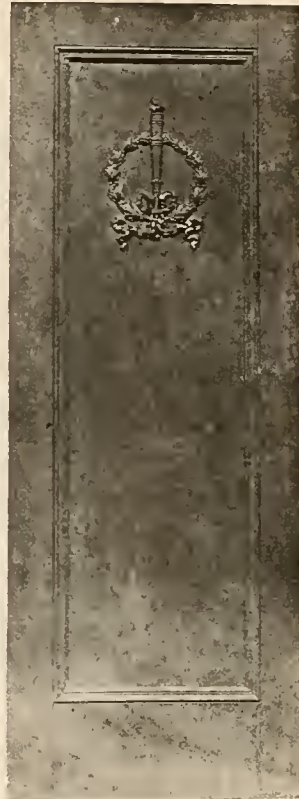
DESIGN 19. SEAMLESS DOOR WITH
PLATE OR WIRE GLASS
Patent Stamped Panel

All our "Standard Doors" are seamless. Panels are stamped under a pressure of 250 tons, and the metal is stretched over the door and locked, giving them a perfectly smooth finish, every detail showing up equal to the best hardwood finish and making them absolutely fireproof.

ILLUSTRATIONS—Continued.



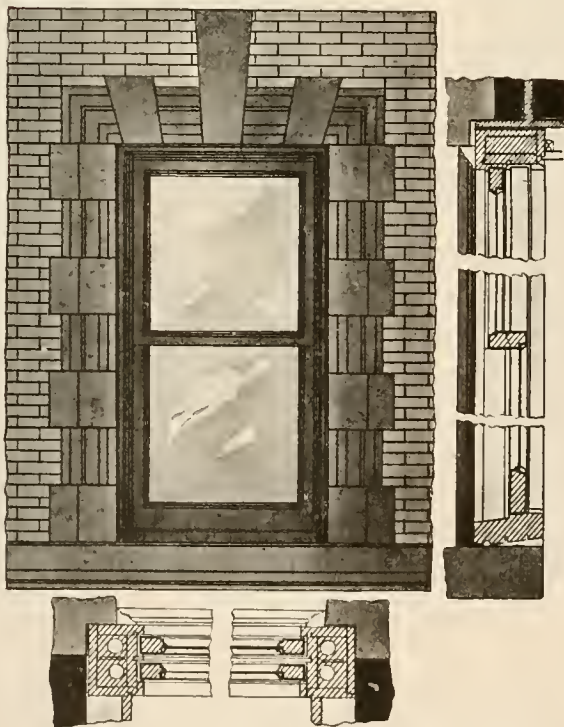
No. 1000. HIGHLY FINISHED ONE PANEL DOOR, SHOWING TRIM AND WREATH ORNAMENT



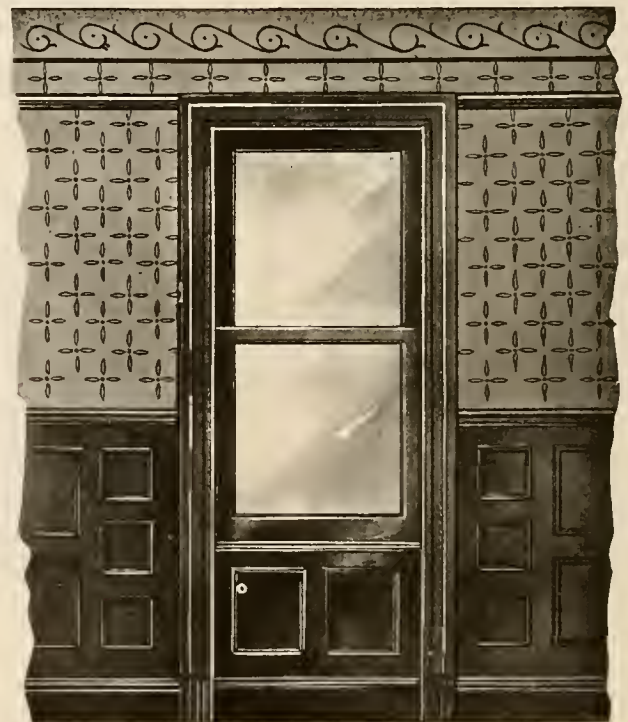
No. 1000A. ONE PANEL DOOR, WITHOUT TRIM



No. 1001. ONE PANEL DOOR WITHOUT TRIM OR WREATH

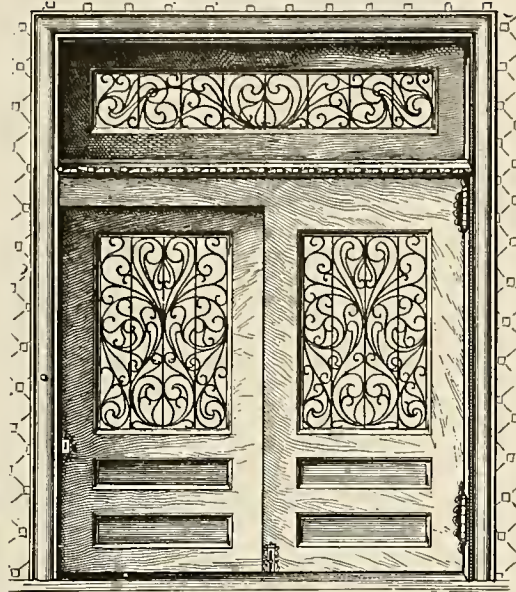


EXTERIOR No. 7. WINDOW FRAMES AND SASH With Plate or Wire Glass. Sheet Bronze or Copper covered. For Exterior or Interior Installation, Courts and Elevator Shafts, etc.



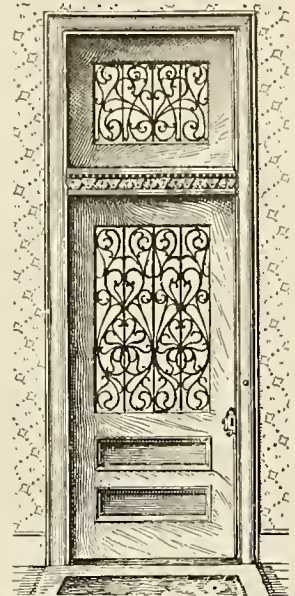
INTERIOR No. 21. WINDOW FRAMES AND SASH Sheet Metal Covered. Also Interior Trim. For Assembly Rooms, Court Rooms, Mansions, Office Buildings, etc.

ILLUSTRATIONS—Continued.



No. 41. COMBINATION ELEVATOR DOORS
With or without Iron Grille

These Doors may be built up to any Design or size—
and covered Copper, Bronze or Kalamein Iron as
directed



No. 42B. SINGLE ELEVATOR
DOOR

With or Without Grille



No. 1002. SLIDING DUMB-WAITER DOOR
WITH TRIM

Size 2' 0" x 27' 0"

This door may be built in flush with wall or
built inside shaft to show a reveal
finish outside



No. 1003. SWING DUMB-WAITER
DOOR

Size 2' 0" x 4' 0"

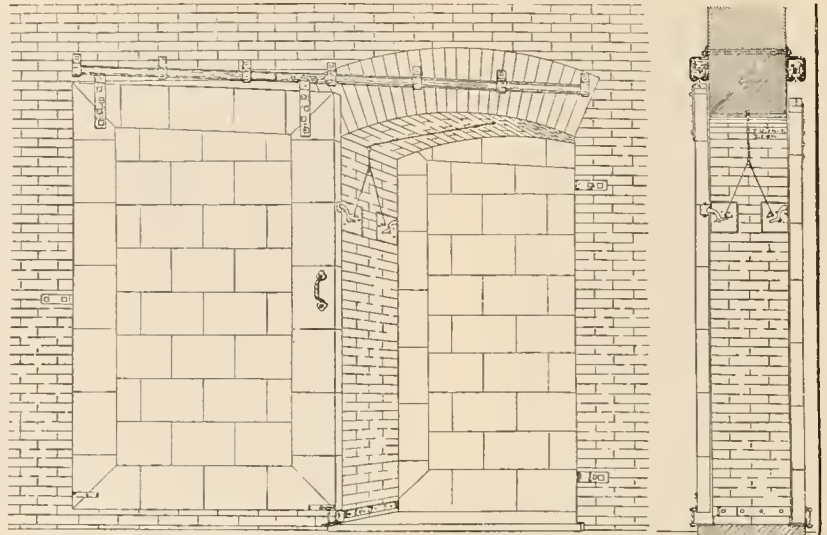


No. 1002A. SLIDING DUMB-WAITER
DOOR WITHOUT TRIM

Size as No. 1002

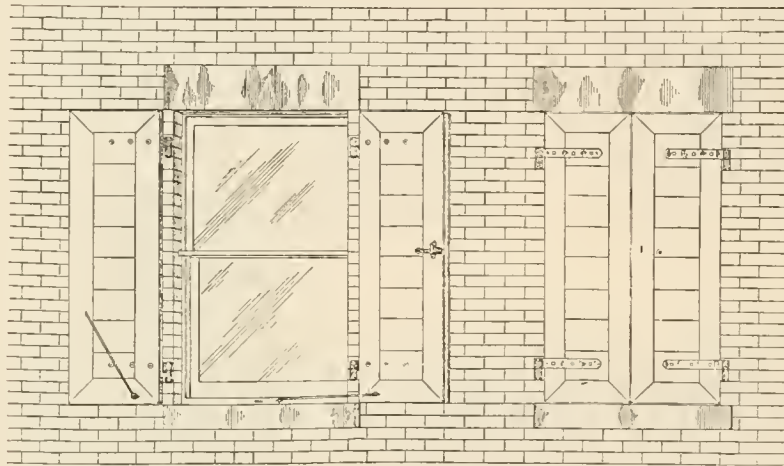
ILLUSTRATIONS—Continued.

AUTOMATIC SLIDING FIRE UNDERWRITER DOORS, TRACKS AND HANGERS.



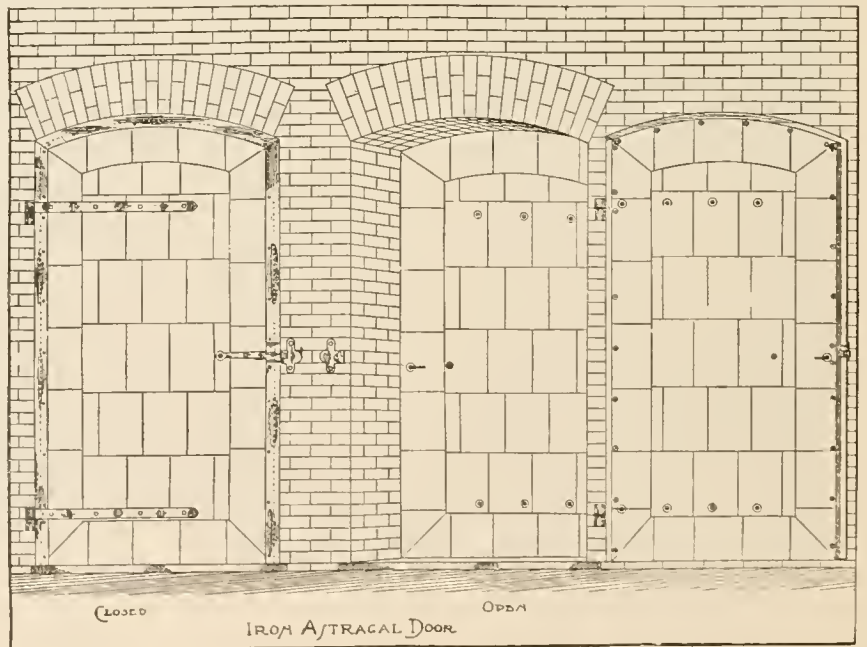
AUTOMATIC FIRE DOOR

SECTION SHOWING AUTOMATIC ROLLER LOCK & RETURN LINK



FIRE UNDERWRITER SHUTTERS, OPEN AND CLOSED.

AUTOMATIC FIRE UNDERWRITER SWING DOORS.



CLOSED

IRON ASTRAGAL DOOR

OPEN

VARIETY MANUFACTURING COMPANY

Elevator and Other Doors, Window Shutters, Fans, Motors, etc.

77-83 West Lake Street

CHICAGO, ILL.

NEW YORK CITY, N. Y.
George N. Cole
277 Broadway

MINNEAPOLIS, MINN.
Variety Manufacturing Co.

ST. LOUIS, MO.
St. Louis Fire Door Co.

PRODUCTS—CROSS ELEVATOR and FREIGHT-HOUSE DOORS. Manufacturers of CROSS PATENT HORIZONTAL FOLDING DOOR, CROSS PATENT IMPROVED ELEVATOR DOOR, ROLLING STEEL SHUTTERS, IRON FIRE DOORS and WINDOW SHUTTERS, BLACKSMITH and WROUGHT IRON WORK, STEEL FLOOR CLIPS, BLACKMAN and CROSS EXHAUST FANS, CROSS IMPROVED DESK and OFFICE FANS, DIRECT CONNECTED OUTFITS, STEEL PLATE BLOWERS, MOTORS and ENGINES, FIREPROOF WINDOW FRAMES, STIRRUPS, ANCHOR BOLTS and TIE RODS, etc.

CROSS HORIZONTAL FOLDING DOORS—(Figs. 1, 2 and 3.) *Advantages.* The Cross Horizontal Folding Door is an improvement over the old fashioned rolling door, with its inherent physical dis-

ability in its unsupported edges; likewise over the rolling steel or coiling shutters whose life depends upon the integrity of its curtain, which is built of many slats or sheets; if any one of these units becomes disarranged or damaged the whole shutter is permanently affected. The sheet metal covering of a Cross Horizontal Folding Door may be damaged or disappear entirely and the frame will still be perfect in operation and ready at a convenient time to have a new covering attached. Constant friction on a door coiling up and down, one part scraping against another, etc., is a source of unavoidable abrasion and rust, both of which cause destruction. One part of the Cross Horizontal Folding Door never touches another, and the covering is therefore not subject to such injury.

The same fixtures of the Cross Horizontal Folding Door may be used again if it is decided that, after one of our doors is installed, it is too small, too large, or not placed in the most desirable position. Our doors will give a maximum of service under the most adverse circumstances. Ease of action increases with age, saving engineer and architect worry as to subsequent service. When the doors are opened, they are at the top of the opening, out of the way, and cannot be damaged or disabled. When closed down they leave no supporting scaffold or brackets behind to take up room. The walls are entirely free and clear of any obstruction.

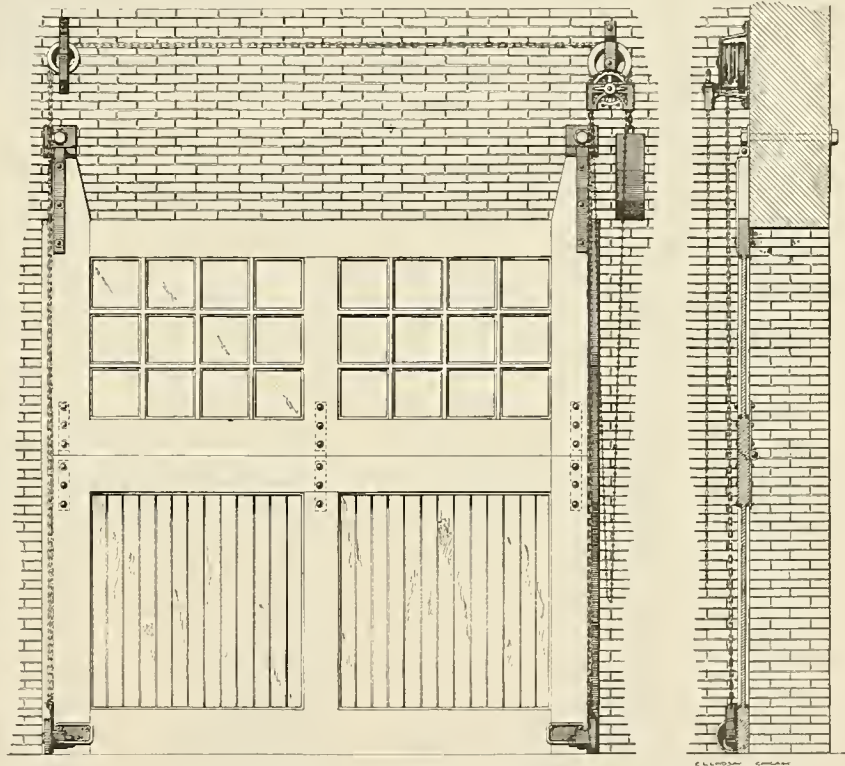


FIG. 1. CROSS HORIZONTAL FOLDING DOOR
Combination Style, upper half glass, lower half wood. Working Parts Exposed

The door is hung to the wall at the top ends of the continuous and extension stiles (side framework of the door proper), by an offset or other substantial hinges (Fig. 4). Half way down, between these supports and the floor-line, it is divided horizontally into two parts connected by strap-hinges of exceedingly strong design (Fig. 5). At the extreme lower corners of the door, on the outside edges, a shoe-casting is affixed, upon the axle of which revolve specially devised roller wheels (Fig. 6). The tracks for these wheels to run up and down the door jambs at the side of the opening (Fig. 7), and are heavy angle iron, securely bolted to the wall, and make a deep rabbet, into which the door closes.

To each of the shoes, at the lower corners of the door, one end of the counterbalance weight-chain or cable is attached. These chains or cables run up over pulley wheels or sheaves (Figs. 8 and 9) fixed to the building wall at one side, about even with the top of the door, and are there fastened to a single counterbalance weight. This counterbalance weight is absolutely constant, and holds the door positive in all positions. (No variation is apparent in a door weighing five tons.)

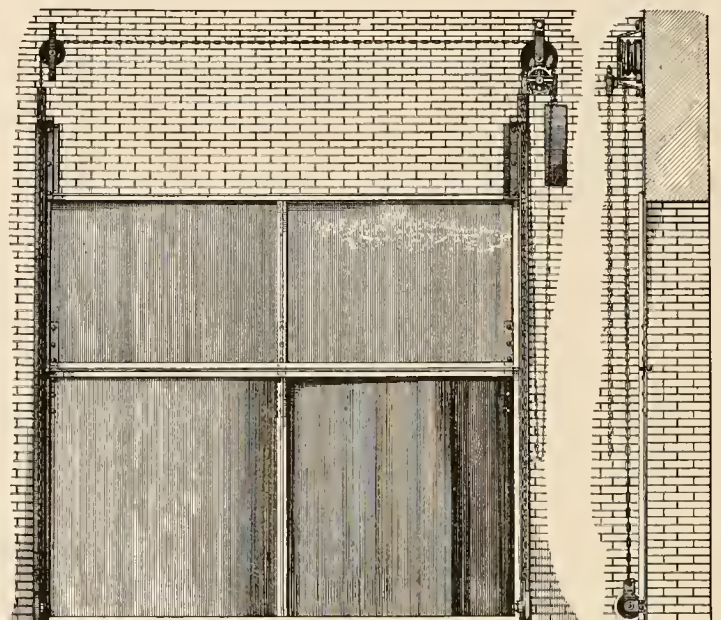


FIG. 2. CROSS HORIZONTAL FOLDING DOOR
Iron Construction. Working Parts Exposed.

CROSS HORIZONTAL FOLDING DOOR—Material for Construction. The Cross Horizontal Folding Door can be furnished in practically any style of material desired, from the extreme of total glass sash to an iron framework with terra cotta fireproofing. The usual construction is all wood (Fig. 3) or wood frame with galvanized iron covering, or all iron (Fig. 2). For use in cold storage plants, chemical laboratories and the like, full wood construction may be adopted as a base. This may be covered with sheet copper, zinc or other refractory metal or metal plates of suitable composition. Whatever the requirements and conditions to be considered from this standpoint, we can satisfactorily and economically solve the problem at issue. This is a very great advantage over any other door on the market.

CROSS HORIZONTAL FOLDING DOOR. Operation. The operation of the Cross Horizontal Folding Door is simplicity itself. To open or close, a slight pull on the handles, up or down, is all that is necessary; it pulls out in the center and folds up over the top of the opening on the jackknife principle. When closed, an "L" shaped auxiliary track attached to the face of the roller track for about three feet from the floor line, serves to maintain the rollers firmly against the upright tracks and prevents the bottom edge of the door from swinging away from

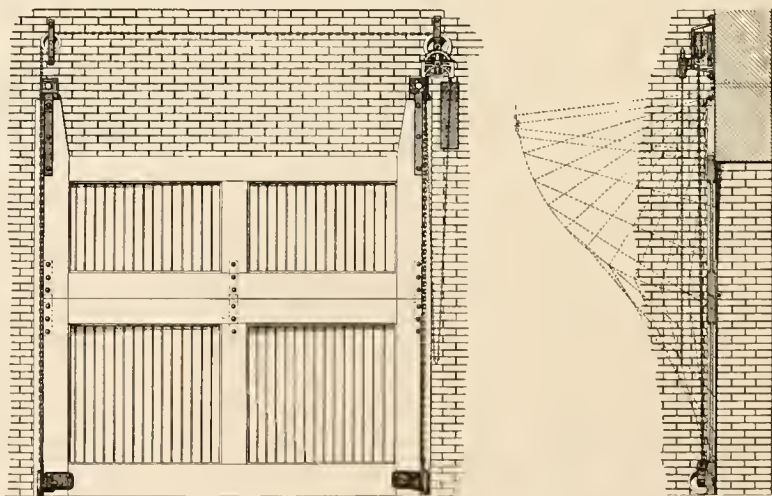


FIG. 3. CROSS HORIZONTAL FOLDING DOOR
Wood Construction, with diagram showing Economy of Space Used in Operating

the wall. When the door is down, the wall is left clear and plain, without any projections or obstructions, so that maximum storage space is available and the general appearance of the whole installation materially enhanced. Fig. 3 will show how goods may practically be stored up against the door without interfering with its action. There is no necessity of maintaining a passage-way on the floor to lock these doors as they use less floor-space than rolling steel-doors, because the locking passage-way of the latter is dispensed with. The handles of the door lock into the guides on each side when closed, which makes it more secure than padlocks or any other method of fastening. (Fig. 10.)

USERS OF THE CROSS HORIZONTAL FOLDING DOORS—Among the many firms and corporations who have had our doors installed in their warehouses or on their shipping platforms are:

Marshall Field & Co., Chicago.
 Sears, Roebuck & Co., Chicago.
 Montgomery Ward & Co., Chicago.
 Hibbard, Spencer, Bartlett & Co., Chicago.
 Butler Bros., Chicago.
 Kelley, Maus & Co., Chicago.
 Western Electric Co., Chicago.
 Scully Steel & Iron Co., Chicago.
 Jos. T. Ryerson & Son, Chicago.
 Wm. J. Moxley & Co., Chicago.
 Metropolitan Express Co., New York City.
 Adams Express Co., New York City.
 United States Express Co., New York City.
 Wells, Fargo & Co.'s Express, New York City.
 American Can Co., Cleveland, Ohio.
 J. I. Case Plow Works, Racine, Wis.
 Deere & Weber Co., Minneapolis, Minn.
 Belknap Brothers, Louisville, Ky.
 Butler Brothers, St. Louis, Mo.
 Chicago & Northwestern Ry.
 Chicago & Alton Ry.
 Chicago Terminal Transfer Co.
 Chicago, Burlington & Quincy Ry.

Chicago, Milwaukee & St. Paul Ry.
 Lake Shore & Michigan Southern Ry.
 Chicago, Rock Island & Pacific Ry.
 Chicago & Great Western Ry.
 Delaware, Lackawanna & Western Ry., Used as standard.
 Pennsylvania Ry., Chicago to New York City.
 Lehigh Valley Ry.
 Long Island Ry.
 Erie Ry.
 White Star Line.
 New York Central Ry.
 Illinois Central Ry.
 Baltimore & Ohio Ry.
 Central Ry. of New Jersey.
 Metropolitan Express Co.,
 Adams Express Co.
 Louisville & Nashville R. R.
 American Express Co.
 U. S. Express Co.
 Chicago, Indianapolis & Louisville Ry.
 Chicago Junction Ry.
 Des Moines Union Ry.
 And many Others.

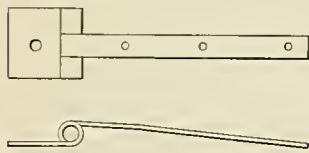


FIG. 4. SUPPORTING HINGES
Which hold top of door to wall



FIG. 5. CENTER HINGES
Which join the two sections of the door, and allow lower section thereof to lap in under top half when door is opened

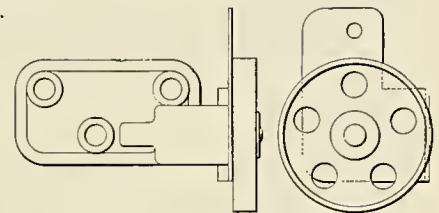


FIG. 6. GUIDE WHEELS AND SHOES
Affixed to lower corners of lower half of door. When door is opened and closed these wheels run up and down tracks and facilitate operation of door

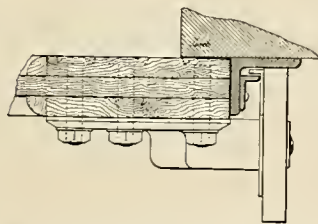


FIG. 7. DETAIL SHOWING GUIDE WHEEL AND SHOE IN PLACE

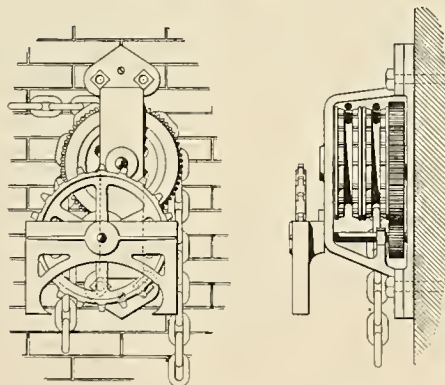


FIG. 8. PATENT HOIST APPARATUS
Which materially assists counterweight device in holding door constant, and facilitates ease of operation.

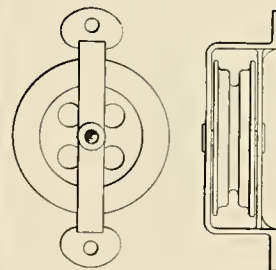


FIG. 9. SINGLE CHAIN WHEELS
Usually furnished for chain to off-side wheel and shoe. Where this wheel cannot be used, we furnish one supported from top only.

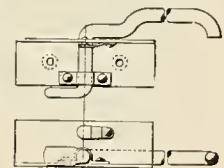


FIG. 10. HAND LOCKS
Or bolts furnished on all doors unless otherwise specified.

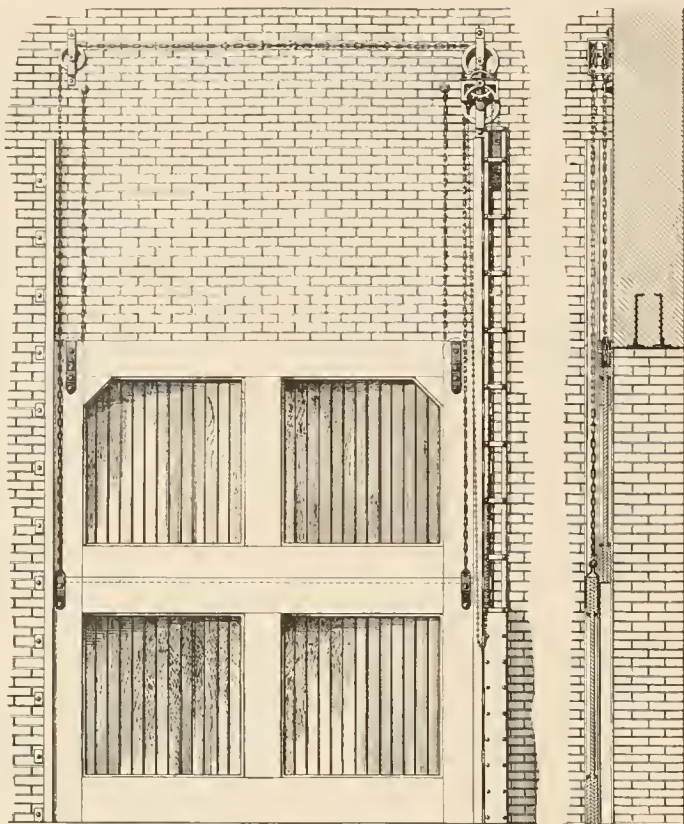


FIG. 11. THE CROSS COMPOUND SLIDE-UP DOOR
Wood Construction

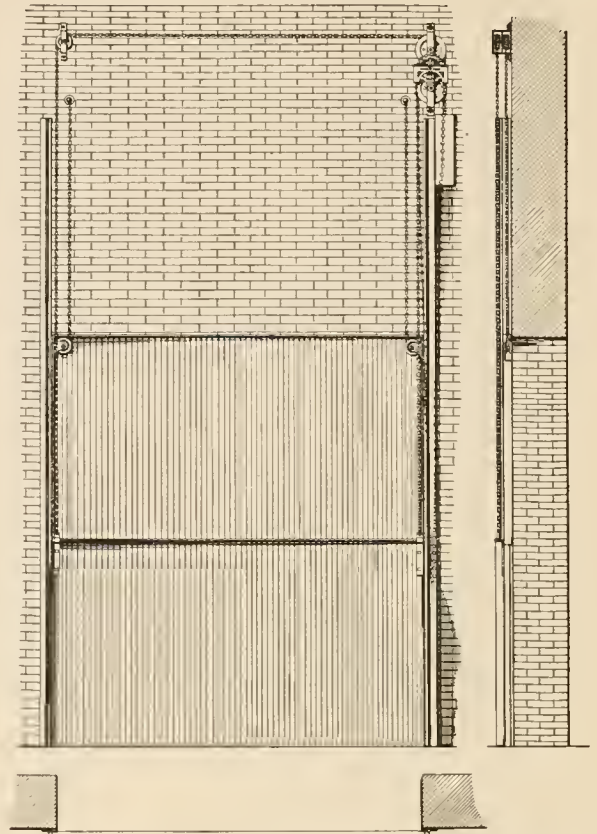


FIG. 12. THE CROSS COMPOUND SLIDE-UP DOOR
Iron Construction

THE CROSS COMPOUND SLIDE-UP DOOR—Figs. 11 and 12 show the Cross Compound Slide-up Door in wood and metal. The salient features of this style of door are identical with those of the Cross Horizontal Folding Door, with the exception that this door requires more head room above the opening for the door to slide up into. Like the folding door, it is built in two sections, but instead of folding up horizontally, both sections slide up vertically. The upper section is so hung by double chains passing around the pulleys (Fig. 13) attached to the upper corners, that the bottom section maintains a speed ratio of two to one compared with that of the upper section. This arrangement also permits of both sections being counterbalanced by one weight.

The weight necessary for counterbalancing a door of this character is equal to but three-fourths of the weight of the total doors, plus a slight additional amount necessary to overcome the friction of the several pulleys. This is made possible by the aforementioned suspension of the upper sections, whereby one-half of the weight of same is carried by the stationary supports, suspending one end of the chains passing around the sheaves attached to the upper section of the door. This counterbalancing arrangement is perfect, and doors sufficiently large for locomotive round-house purposes have been erected, which could be operated with one hand without any undue exertion. Above every other consideration, the low cost of maintaining a door of this character appeals to both the layman, architect and engineer.

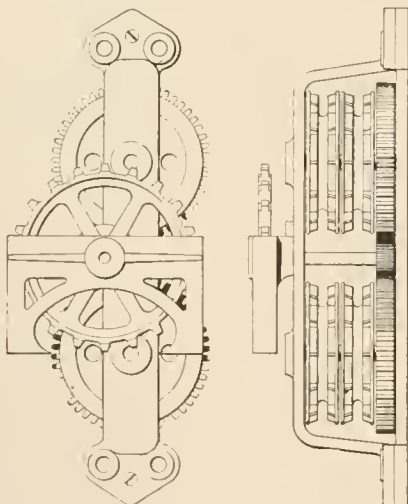


FIG. 13. DOUBLE CHAIN HOIST APPARATUS

Which increases the speed of the bottom section of Slide-up Door and also facilitates ease of operation

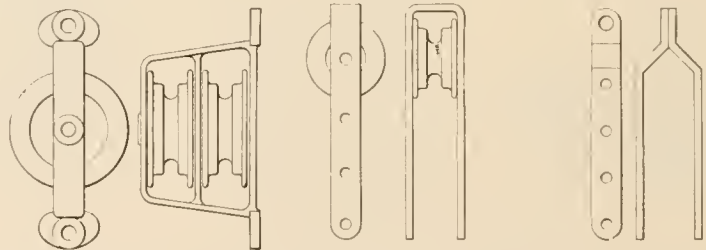


FIG. 14. DOUBLE CHAIN PULLEY

For chain to off side wheel and shoe

FIG. 15. UPPER SECTION PULLEY HANGER

Attached to upper section of slide-up door

FIG. 16. LOWER SECTION HANGER

Attached to upper part of lower section of slide-up door

THE CROSS COUNTERBALANCE FREIGHT ELEVATOR DOOR—This elevator door (Figs. 17 and 18), is made in two parts, of corrugated iron riveted to an angle iron frame (size of frame depending on size of door), or of wood tin clad. It slides on the inside of the shaft, extending only $2\frac{3}{4}$ " from the wall. The upper and lower halves of the door are fastened together with a strong, flexible chain, which is attached to the side of the lower half of the door passing up over a pulley fastened to the guide in which the door slides, where the other end is securely attached to the top half of the door. In opening the door, half of it slides up, the other half sliding down; both halves, being constructed exactly alike, weigh the same, thereby making the door a counterbalance in itself, which makes it very easy to open and close, yet simple and very durable.

The fact that all the doors slide in the same guide, prevents any two consecutive doors being open at the same time; for instance, when the door on the third floor is open, the upper half occupies the space between the top of the opening and the floor line of the fourth floor, and the lower half occupies the space between the floor line of the third floor and the top of the second floor opening; now, in order to open the second floor door, or the fourth floor door, the elevator operator would have to close the third floor door; thus almost insuring a closed shaft under any conditions.

This door is in use in hundreds of large buildings, including:

Western Electric Co., Chicago and New York City.
 Marshall Field & Co., Chicago.
 Sears, Roebuck & Co., Chicago.
 Montgomery Ward & Co., Chicago.
 Hibbard, Spencer, Bartlett & Co., Chicago.
 Butler Bros., Chicago and St. Louis.
 Kelley, Maus & Co., Chicago.
 Studebaker Brothers Mfg. Co., Chicago and New York City.
 Patrick Bldg., Duluth, Minn.
 Kiloren Construction Co., Duluth, Minn.
 American Can Co., Cleveland, Ohio.
 J. I. Case Plow Works, Racine, Wis.
 Parkersburg Chair Co., Parkersburg, W. Va.
 Weissinger Tobacco Co., Louisville, Ky.
 American Tobacco Co., Louisville, Ky.
 R. J. Reynolds Tobacco Co., Winston Salem, N. C.
 Vaunegut & VonKake, Indianapolis, Ind.
 Rockwell Tannery, Brooklyn, N. Y.
 Barton Brothers, Kansas City, Mo.
 Bell Telephone Co., Philadelphia, Pa.
 Bell Telephone Co., Montreal, Canada.
 Joseph Joseph Bldg., Cincinnati, Ohio.
 Standard Sewing Machine Co., Norwood, Ohio.
 St. Louis Transfer Co., St. Louis, Mo.
 L. S. McCabe & Co., Rock Island, Ill.
 Nock & Garside, Denver, Colo.
 A. S. Fuller, Buffalo, N. Y.
 Peter Keeler, Albany, N. Y.
 Deere & Mansur Co., Moline, Ill.
 Commercial Gazette Bldg., Pittsburg, Pa.

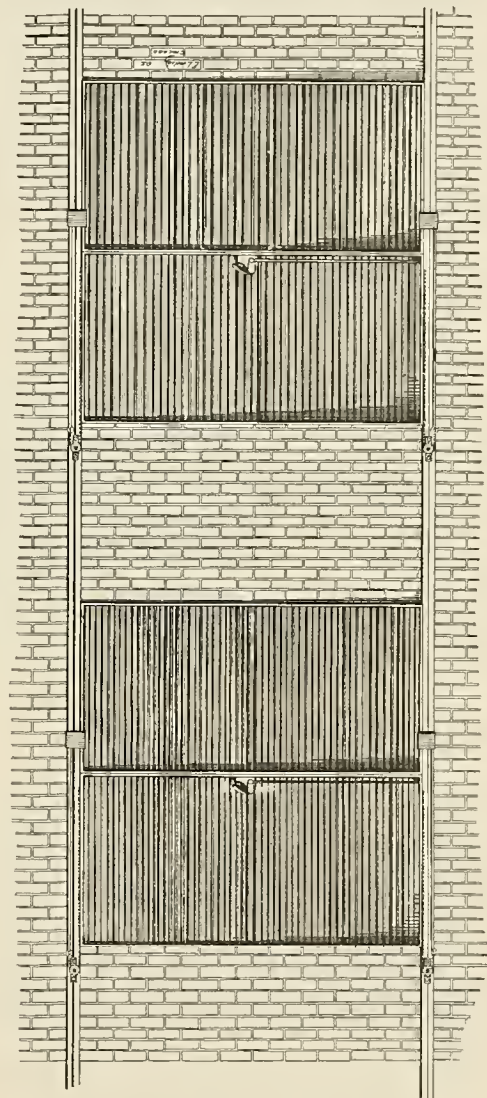


FIG. 17. ELEVATOR DOORS
 Showing Doors as they would appear in line on inside
 of shaft

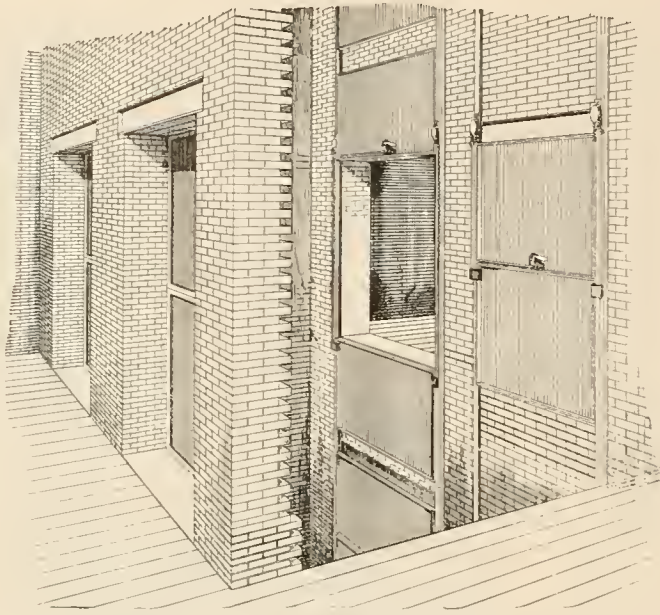


FIG. 18. ELEVATOR DOORS

Looking through double shaft, showing doors opened and closed from inside

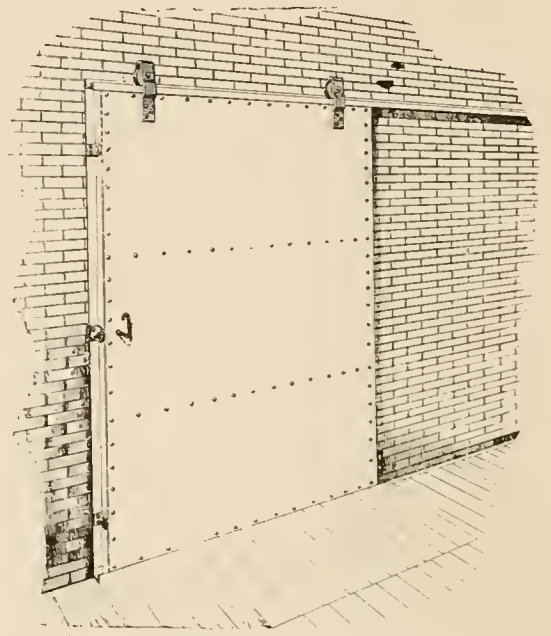


FIG. 19. IRON CLAD SLIDING FIRE DOOR

IRON AND TIN CLAD FIRE DOORS—We are the largest manufacturers in the West of Iron and Tin Clad Sliding and Swinging Doors. We guarantee every door or fitting to be up to the specification of the National Board of Fire Underwriters in every particular. We sell the fixtures alone, or we will furnish the fixtures and doors f.o.b., Chicago, or we will contract to erect the entire equipment. In any case, we positively guarantee satisfaction to the owner, architect and underwriter.

With each order for doors and fixtures, we supply a blue print, showing just where each piece is to be placed.

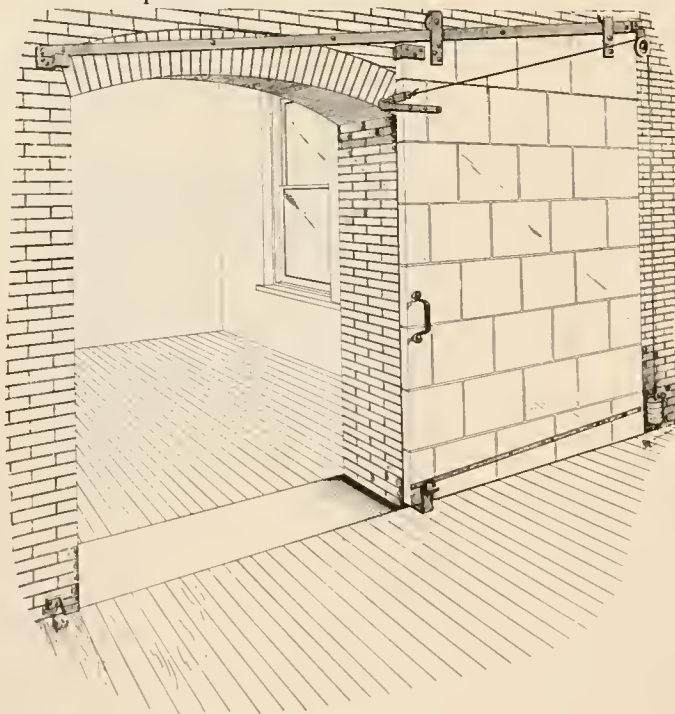


FIG. 20. TIN CLAD SLIDING FIRE DOOR
With Counterweight

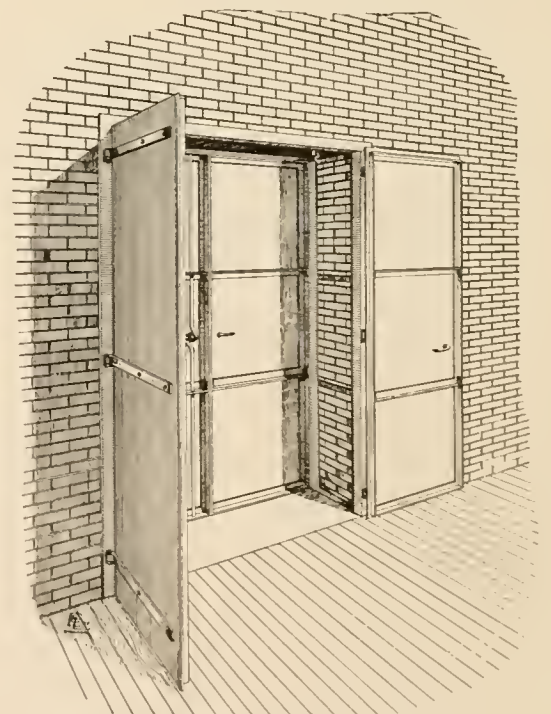


FIG. 21. IRON SWINGING FIRE DOOR

GEORGE N. COLE, M. E.

Cross Warehouse Doors

277 Broadway,

NEW YORK CITY, N. Y.

TELEPHONE, 3076 FRANKLIN

PRODUCTS—Sole agents for CROSS WAREHOUSE DOORS in States of NEW YORK, PENNSYLVANIA, MARYLAND, NEW JERSEY, DISTRICT OF COLUMBIA and DELAWARE.

A full description and the advantages of the Cross Warehouse Doors will be found elsewhere. All we can add is that they are permanent and need no repairs. Write direct to us for sketches and estimates.



FIG. 1

UNITED STATES GOVERNMENT APPRAISERS WAREHOUSE, 9TH AND CHRISTOPHER STREETS, NEW YORK CITY
REPLACING ROLLING STEEL DOORS



FIG. 2

ILLUSTRATIONS—Fig. 1 is a view taken from the inside of the United States Government Appraisers Warehouse and shows the Cross Horizontal Folding Doors in use. These doors are 18 x 16 feet in size. Fig. 2 shows the platform doors in the same building, from the outside.

Fig. 3 illustrates one section of the car shops of the D. L. & W. R. R. under construction. The whole building is supplied with Cross Horizontal Folding Doors.

Fig. 5 shows full sized backing-in doors, large enough for the biggest hooded wagons. Fig. 4 shows a full sized trolley entrance, also small platform doors. Rolling steel doors lasted less than a month at this location.

In both figures 4 and 5 it will be noted that the Cross Horizontal Folding Door is erected outside of the opening, forming a perfect rain shed. No tracks on posts at all. The fixtures are inside the building.



FIG. 3
SECTION OF CAR SHOPS D. L. & W. R. R.
UNDER CONSTRUCTION

Erected inside the Buildings or erected outside the Building, forming Canopy. Fixtures inside.

For Warehouses, Piers, Garages, Platforms, Stables, Freight Houses, Express Rooms.



FIG. 4
AMERICAN EXPRESS CO., WASHINGTON AND DEY STREETS, NEW YORK CITY
REPLACING ROLLING STEEL DOORS



FIG. 5

JAS. G. WILSON MFG. CO.

CHIEF OFFICE

3 West Twenty-Ninth Street
NEW YORK CITY, N. Y.

TELEPHONE, 1160 MADISON SQUARE

CHICAGO OFFICE, 108 LA SALLE STREET
PITTSBURG OFFICE, 807 FARMERS BANK BLDG.
PHILADELPHIA OFFICE, 1011 CHESTNUT STREET

FACTORY ADDRESS
MAIL, NORFOLK, VA.
TELEGRAPH, BERKLEY, VA.

ARTICLES MANUFACTURED

STEEL ROLLING DOORS AND SHUTTERS—These may be made self-coiling, gear operation, or to close automatically when a given temperature is attained. This applies to the several types manufactured, viz: "Corrugated," "Loop-jointed" and "Salamander" (the only positive fire stop rolling metal shutter).

WOOD ROLLING DOORS—Made of heavy slats, with bronze bands and springs. Specially recommended for round-houses and other places where metal doors are undesirable by reason of prevailing fumes and gases.

SWING SLIDING DOORS—Can be built if desired to fulfill specifications of Fire Underwriters. A splendid door for hard usage.

PARTITIONS—Wood Rolling Partitions for churches, schools, etc. Are made to roll to the side or overhead.

ROLLING BLINDS—Open or closed slats. Are used for book cases, shelving fronts, windows, piazzas, etc.

AWNING VENETIAN BLINDS—Combining in one article the qualities of both blind and awning in a most beautiful, simple but durable construction.

INSIDE VENETIAN BLINDS—Of the highest type, trimmed with linen or metal ladder tape.

ENGLISH WOOD BLOCK FLOORING—Usually laid on concrete underfloors, giving a practically fireproof parquetry effect at minimum cost.

HYGIENIC VENTILATED WARDROBES—Obtaining the greatest economy of space in conjunction with hygienic conditions of clothing in schools, etc.

TERRITORY.

Our products are shipped all over the world.

INSTALLATION.

Most of our work can be installed by workmen of ordinary skill in the various building trades. Drawings and full directions for fitting are furnished with each shipment. We naturally prefer to install our own work, and assume then all responsibility for it.

GENERAL.

Proper preparation should be made for our specialties, and we cheerfully offer the services of our draftsmen and experts. We prefer to study the particular requirements of each case, and to furnish latest blue print details applicable, or to prepare special details. Catalogue details cannot be kept up to date for such a line as ours.

S. KEIGHLEY METAL CEILING AND MFG. CO.

PITTSBURGH, PA.

BRANCHES

WASHINGTON

1335 F Street, N. W.

BROOKLYN

560 Wythe Avenue

BALTIMORE

15 and 17 W. German Street

PRODUCTS—Manufacturers of PHOENIX HOLLOW SHEET-METAL FIREPROOF WINDOW FRAMES and LOCK-JOINT METAL CEILINGS.

TERRITORY—We execute contracts in all parts of the country.

FIREPROOF WINDOW FRAMES—In calling the attention of Architects and Builders to the Phoenix Hollow Sheet-Metal Fireproof Window Frames, we wish to emphasize the special features of our product (Figs. 1 and 2):

There is an entire absence of friction. The frames are equipped with an adjustable pulley stile for fitting the frame to the sash, and all points have weather-stripping. These points are exclusive, being covered by patents of recent date.

LOCK-JOINT METAL CEILING—In the use of Steel Ceilings, there has always been one feature, of vital importance, to which Architects very justly objected, namely, the method of joining the plates. The usual method is the Lap-joint system. A lapped joint cannot be made perfectly tight, as the settling of a building will spring openings in the lap-joint seams between the nailing points, permitting the escape of heated air, which, in passing along the ceiling to the opening thus made, deposits dust and smoke stains. Our Lock-joint system of ceilings was devised to overcome the defects of the lap-joint system. A Lock-joint cannot be otherwise than dust-proof.

Catalogue sent upon request.

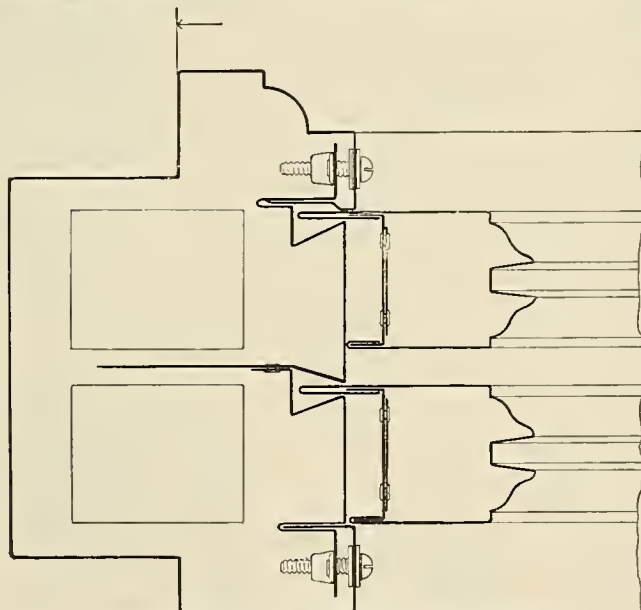


FIG. 1. PHOENIX HOLLOW SHEET-METAL FIREPROOF WINDOW FRAME (Plan of Construction)

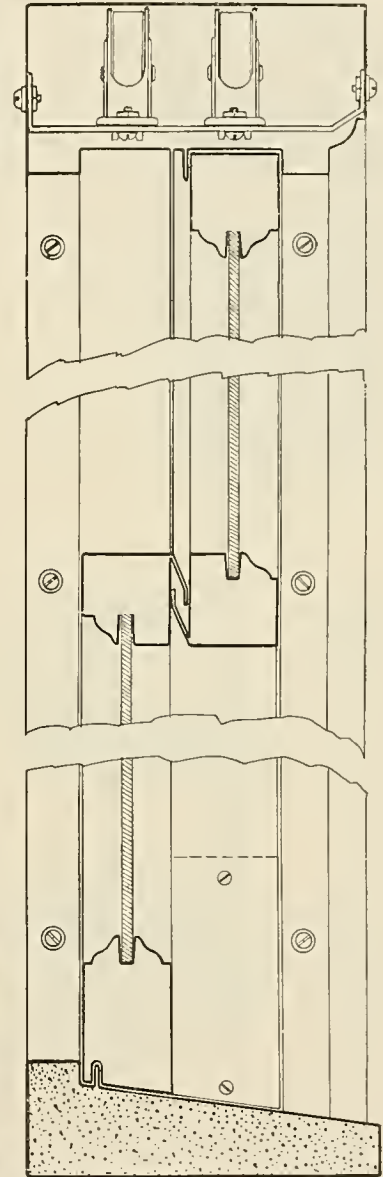


FIG. 2. PHOENIX HOLLOW SHEET-METAL FIREPROOF WINDOW FRAME (Plan of Construction)

ESTIMATES—Estimates will be given upon request.

WHERE INSTALLED—Maryland Bible Society Bldg., Baltimore, Md.; Baltimore & Ohio Office Bldg., Baltimore, Md.; C. D. & P. Telephone Bldg., Pittsburgh, Pa., etc.

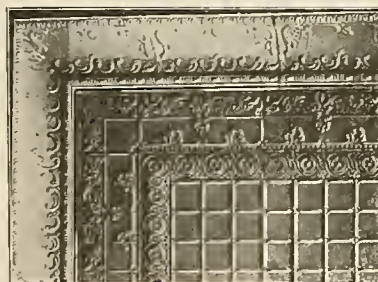


FIG. 3. METAL CEILING

KNISELY BROTHERS

Patent Automatic Fireproof Windows

28th Street and Fifth Avenue

CHICAGO, ILL.

TELEPHONE CONNECTION

PRODUCTS—We are manufacturers of **AUTOMATIC FIREPROOF WINDOWS** with **WIRE GLASS**.

TERRITORY—We are in a position to accept and fill orders of any size in any part of the United States, and any inquiry will receive prompt and accurate attention.

ADAPTABILITY—Our Fireproof Windows meet all the requirements of the Chicago Fire Underwriters Association, also of the National Association of Underwriters, for wire glass and metal window frames and windows to replace "Fire Shutters."

ESTIMATES—In order that estimates may be furnished, kindly specify the windows desired and observe the measurement instructions given below. With this information, we will send an estimate, which will, unless otherwise requested, include a priming coat of paint, all hardware, sash chains and weights where construction requires them.

MEASUREMENT INSTRUCTION—(The letters refer to Figures 1, 2 and 3).

- a. Give width of clear opening in the wall.
- b. Give clear height of square head opening.
- c. Give rise of arch.
- d. Give offset at the top.
- e. Give depth of reveal.
- f. Give inner edge of reveal to face of wall.
- g. Give offset.
- j. Give thickness of wall.



FIG. 1. HORIZONTAL SECTION



FIG. 2. VERTICAL SECTION



FIG. 3. FRONT ELEVATION

INSTALLATION—Our work can be installed by any contractor or by any local workman, or installation will be undertaken by ourselves through local agents.

STYLES—The Knisely Brothers Patent Window is made in all styles, embracing the vertical and horizontal swing on either one or both sashes; also the double hung or sliding sash window with either one or both sashes movable as desired. These windows can be equipped with special automatic closing devices, operating in case of fire.

MANUFACTURE—Every piece of work turned out from the factory of Knisely Brothers is of the highest grade of excellence. No careless workmanship or poor material is tolerated in our works, and nothing but the best is produced. Our experience is wide, and we know how to handle the problem of Fireproof Window manufacture. Our windows are manufactured under several patents. Our ideas have been copied by other manufacturers, and all such copies are infringements.

ILLUSTRATIONS—We illustrate below the principal standard types of windows. These are made in all variations and for all purposes to fit any needs.

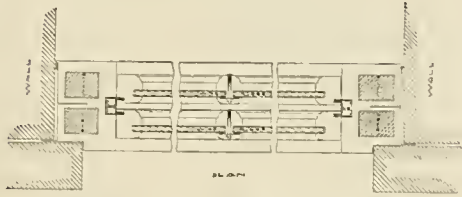


FIG. 4. GROUND PLAN OF FIG. 5

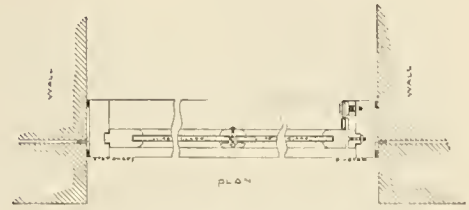


FIG. 8. GROUND PLAN OF FIG. 9.



FIG. 5. STANDARD DOUBLE HUNG WINDOW

This can be made to counterbalance without weights

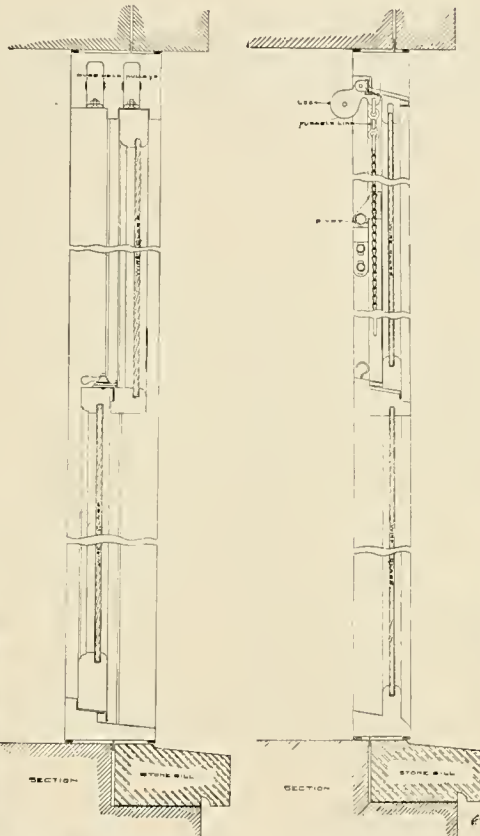


FIG. 6. VERTICAL PLAN OF STANDARD DOUBLE HUNG WINDOW

FIG. 7. VERTICAL PLAN OF STANDARD PIVOTED WINDOW

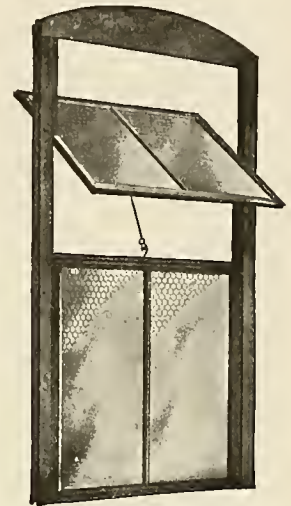


FIG. 9. STANDARD PIVOTED WINDOW

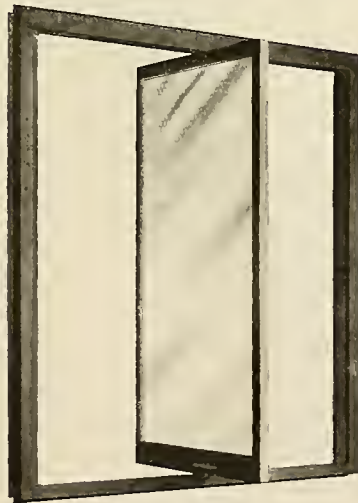


FIG. 10. VERTICAL PIVOTED WINDOW

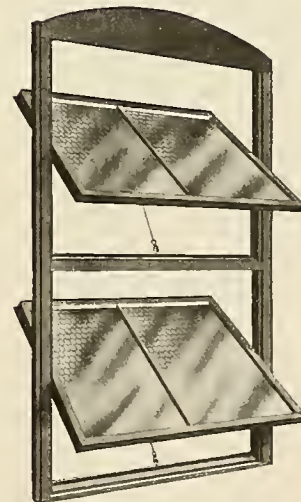


FIG. 11. STANDARD DOUBLE PIVOTED WINDOW

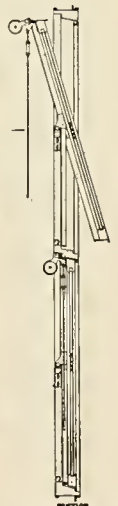


FIG. 12. VERTICAL PLAN OF FIG. 11

SPECIAL CONSTRUCTION—Details for special construction will be furnished upon application.

SPECIFICATION—We make all windows to architects' specifications.

HARRY C. KNISELY COMPANY

MANUFACTURERS OF

Automatic Windows, Cornices, Skylights, etc.

MAIN OFFICE AND FACTORY

273-275 South Canal Street

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, HARRISON 4278

PRODUCTS.

We make the HARRY C. KNISELY DOUBLE HUNG AUTOMATIC WINDOW, the HARRY C. KNISELY SINGLE PIVOTED AUTOMATIC WINDOW and the HARRY C. KNISELY DOUBLE PIVOTED AUTOMATIC WINDOW.

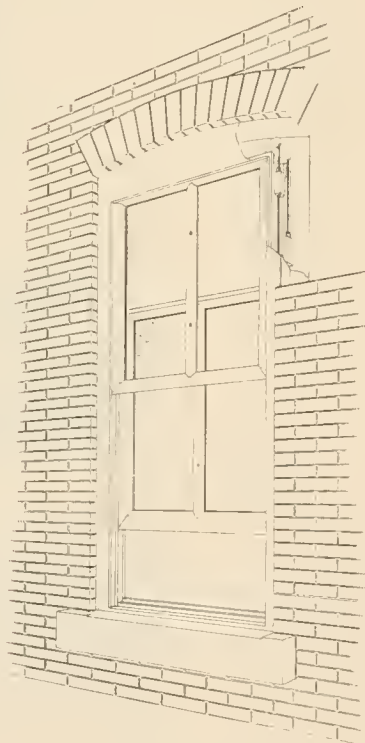
We are also manufacturers of GALVANIZED IRON and COPPER CORNICES, BAYS and SKYLIGHTS.

ADAPTABILITY.

Our products conform to the requirements of the Fire Underwriters Association.

FACILITIES.

We are equipped with every facility to fill orders of any size with promptness.



(Exterior View)

FIG. 1. THE HARRY C. KNISELY DOUBLE HUNG AUTOMATIC WINDOW

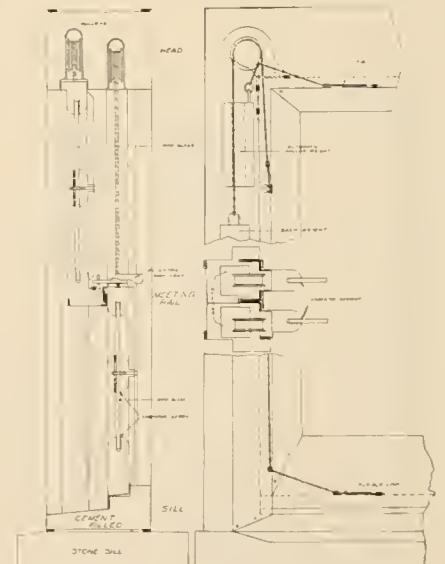


FIG. 2. DETAILS OF THE HARRY C. KNISELY D. H. AUTOMATIC WINDOW

ADAPTATION.

The Knisely Fireproof Window is especially adapted for use in large factory buildings and warehouses where adequate ventilation must be combined with fire protection.

DOUBLE HUNG
AUTOMATIC
WINDOW.

The Harry C. Knisely Double Hung Automatic Window (Fig. 1) is made of No. 24 galvanized sheet iron, set with $\frac{1}{4}$ " wire glass. The upper sash closes upon the fusing of links located in the head of the frame, releasing counterbalance weights; the lower sash closes by its own weight when links located in lower bar of sash fuse. The window is fitted with an eccentric sash lock which binds both sash together, rendering them absolutely weather-proof. The wire glass is bedded in asbestos cement, which makes a perfectly tight and fire resisting joint. The sash slide is in brass T's and angles, so that the friction is reduced to a minimum.

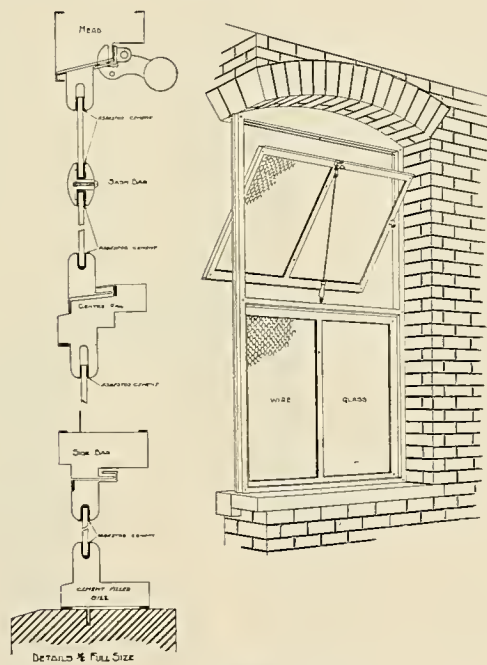
The windows are also made of 20 oz. copper, and all windows are reinforced with rivets. The Iron Windows receive one coat of lead and oil before leaving our shops. We adapt our Window to any sill.

SINGLE
PIVOTED
AUTOMATIC
WINDOW.

The Harry C. Knisely Single Pivoted Automatic Window (Fig. 3) closes upon the fusing of links attached to a gravity lock and is fitted with $\frac{1}{4}$ " wire glass embedded in asbestos cement.

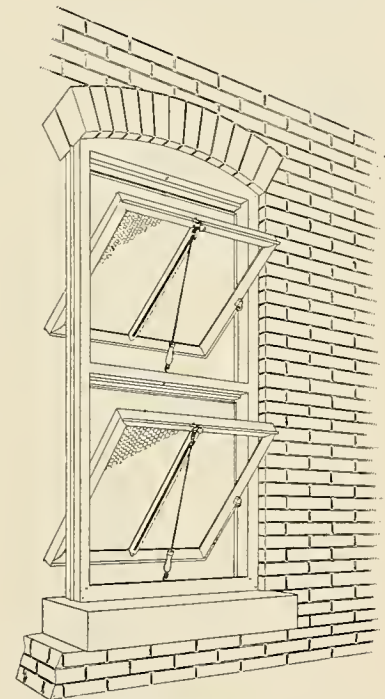
DOUBLE
PIVOTED
AUTOMATIC
WINDOW.

The Harry C. Knisely Double Pivoted Automatic Window (Fig. 4) is made the same as the Single Pivoted Automatic Window, except that both the upper and lower sash open. It is also fitted with $\frac{1}{4}$ " wire glass bedded in asbestos cement and is equipped with fusible links and a gravity lock.



(Interior View)

FIG. 3. THE HARRY C. KNISELY SINGLE PIVOTED AUTOMATIC WINDOW



(Interior View)

FIG. 4. THE HARRY C. KNISELY DOUBLE PIVOTED AUTOMATIC WINDOW

GLAZING.

The Harry C. Knisely Windows are also glazed with Polished, Maze, Ribbed and Rough Finished Wire Glass.

BLUE PRINTS.

We will gladly send architects carefully-made large blue prints upon request.

SPECIFICATIONS.

We will prepare specifications, requesting architects to kindly give the following information: the size of brick openings, whether segment head or square head, and also what style of window is required.

J. C. McFARLAND & CO.

Fire-Proof Windows

Twenty-Seventh Street and Fifth Avenue

CHICAGO, ILL.

Telephone, Calumet 158

235 BROADWAY, NEW YORK CITY, N. Y.

PRODUCTS.

SHEET-METAL WINDOW FRAMES and SASH, of Galvanized Iron or Copper, Glazed with Wire Glass. We are contractors for ALL CLASSES of SHEET-METAL WORK, SKYLIGHTS, GLAZED STRUCTURES of all kinds, SLATE and TILE ROOFING.

FACILITIES.

We are prepared to furnish estimates and undertake work upon architects' specifications and to execute contracts, large or small. We will send estimates on request. Plans sent and returned at our expense.

TERRITORY.

We will accept contracts anywhere in the United States or Canada or will ship goods to any part of the world.

FACTS IN REGARD TO INSTALLATION.

We install our windows in any building, or the windows, built to specifications, can be installed by local workmen.

THE McFARLAND FIREPROOF WINDOWS.

We make these windows in all styles, as illustrated upon this and the following page: Standard frames with sash pivoted either vertically or horizontally; Regular frames, with sash double-hung and counterbalanced; Casement windows with hinged sash for fire-escapes; Interior partitions, metal and wire glass. Windows are made automatic closing when desired.

GENERAL INFORMATION.

The automatic closing fireproof window has been before the public long enough to thoroughly prove its efficiency. The object of the invention is to provide a window, the sash and glass of which will not be destroyed or seriously damaged by fire, and that will close automatically when struck by heat.

It is not necessary to go into a detailed description of its general construction, which is familiar to architects, builders and owners generally. This modern means of providing a safe-guard against fire has been in use for years. Like all new inventions which seem perfect in theory, practical tests revealed imperfections. It is the overcoming of these defects of construction that has made our products so popular and the acknowledged standard of efficiency. They receive the strongest endorsement from fire underwriters, which, in itself, is a sufficient recommendation.

INSTRUCTIONS FOR TAKING MEASUREMENTS.

In ordering windows, be particular to give measurements as indicated by diagrams herewith (Fig. 1):

- A. Outside opening of brick wall.
- B. Inside opening of brick wall.
- C. Height of brick opening on face of wall from sill to spring.
- D. Height of arch.

All our styles of windows can be made with either square, segmental or circular head.

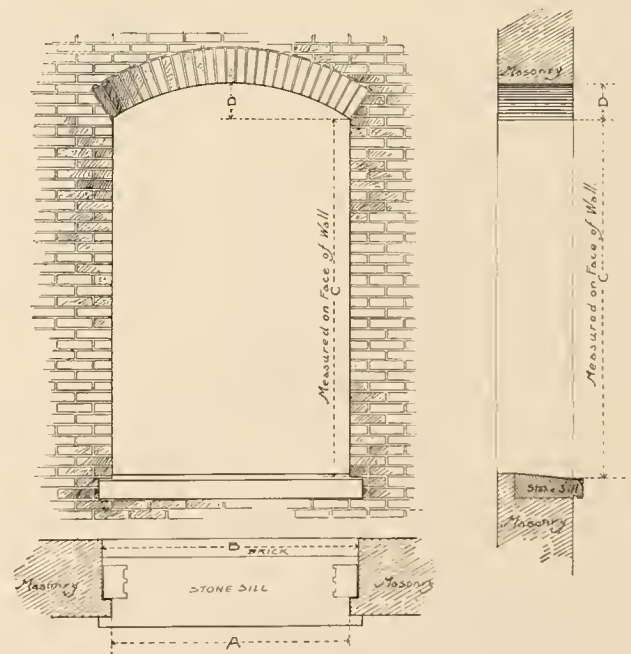


FIG. 1. DIAGRAM SHOWING MEASUREMENTS NECESSARY IN ORDERING FIREPROOF WINDOWS

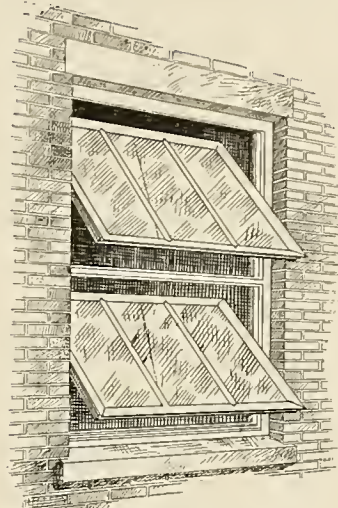
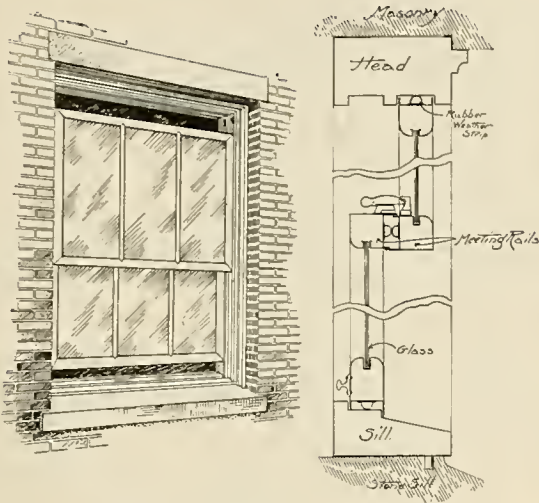


FIG. 4. STANDARD WINDOW, both sashes pivoted.

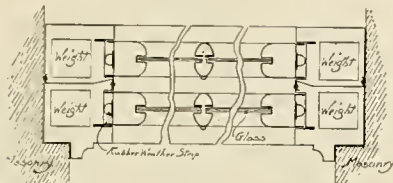
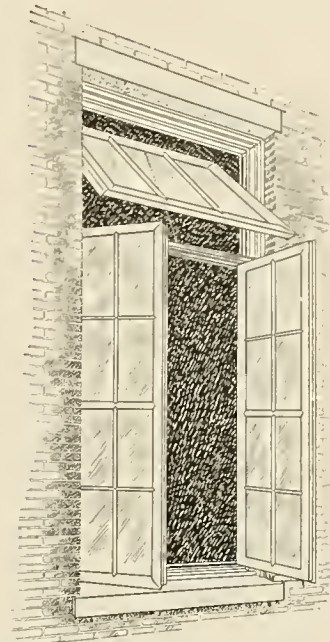


FIG. 2. STANDARD WINDOW, Double-hung or made to counterbalance without weights. Can also be equipped with automatic closing device.

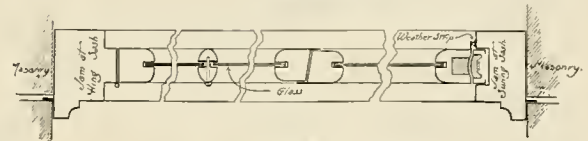


FIG. 3. CASEMENT WINDOW

With hinged sashes for use as fire-escapes or other places where egress is required. Made with or without pivoted transom.

Fire-escape window also made with top sash stationary, and bottom sash sliding; automatic closing.

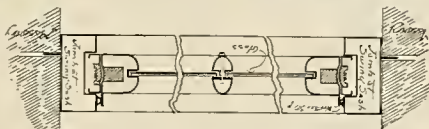
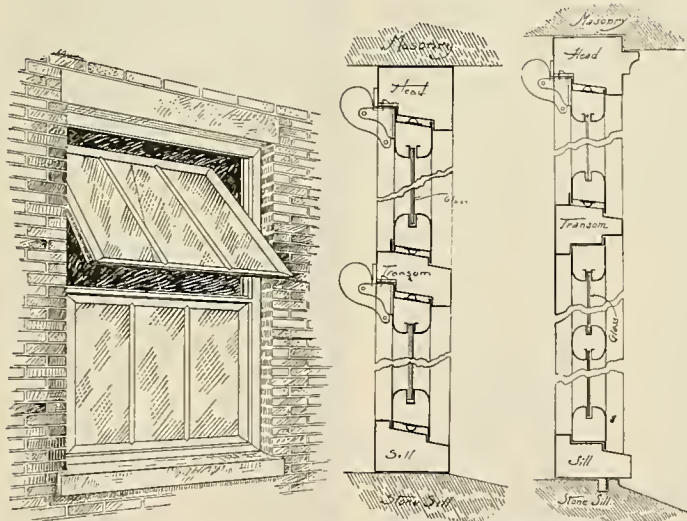


FIG. 5. STANDARD WINDOW

Lower half stationary, upper half pivoted. Also center sash pivoted, upper and lower portions stationary; automatic closing.

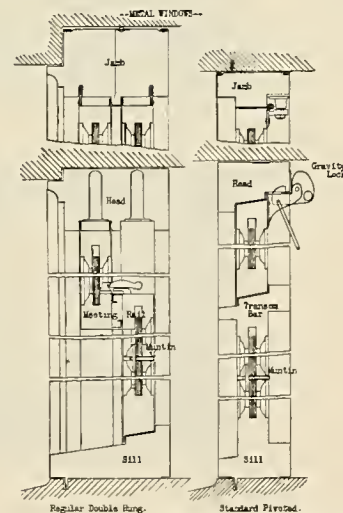


FIG. 6. DOUBLE HUNG AND PIVOTED WINDOW

Our latest production for both double hung and pivoted styles. This is a remarkable design and is the best and most complete success as a fireproof window upon the market. Send for record of tests and for full size detail drawings.

All our windows are subject to a great many changes to suit different conditions. Correspondence solicited.

JAMES A. MILLER & BRO.

Sheet-Metal Window Frames and Sash; Slate, Tile and Metal Roof Work

129 South Clinton Street

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, MAIN 145

PRODUCTS.

Manufacturers of FIRE RESISTING SHEET-METAL WINDOW FRAMES and SASH, filled with Wire-Glass; also SKYLIGHTS, CORNICES and GENERAL SHEET-METAL WORK for BUILDING.

Contractors for SLATE TILE and METAL ROOF WORK.

FACILITIES.

We have not only extensive factory space and the best machinery, but also an experience of thirty years in our line of manufacture. These facilities enable us to produce superior work and to guarantee it.

TERRITORY.

We are prepared to ship our products or put them in place anywhere in the United States or Canada.

ADAPTABILITY.

Our Window products are manufactured under the specifications and to the approval of the Chicago Underwriters' Association.

WIRE-GLASS.

Wire-Glass is either Ribbed or Rough Rolled Glass, having wire netting embedded in its center, during the process of manufacture. Skylight glass wired in this manner possesses the combined strength of the wire netting and the glass plate, and the wire, being thoroughly covered, is protected from dust and corrosion.



FIG. 1. STANDARD WINDOW



FIG. 2. SLIDING DOUBLE-HUNG OR BOX FRAME WINDOW



FIG. 3. CASEMENT WINDOW WITH TRANSOM; USED AT FIRE ESCAPES

WIRE-GLASS WINDOWS.

We manufacture three general styles of Wire-Glass Windows (Figs. 1, 2 and 3). Our Sheet Metal Wire-Glass Windows are made in a variety of forms to suit requirements. There are Stationary Windows; Pivoted in whole or in part; "Sliding," Double Hung, Box Frame or Counterbalanced; and Casement. All styles can be made in any size desired.

The Glass used in our Windows is either $\frac{1}{4}$ " Ribbed or Rough Plate. It is also ground and polished the same as polished plate without wire—thus combining the qualities of plate-glass with the fire retarding properties of wire-glass.

ADVANTAGES.

Following are some of the advantages of Wire-Glass Windows: 1, They offer a positive resistance to spread of fire. 2, Iron or Metal Shutters must be opened for lighting, closed for protection. 3, Windows are shut nine times where shutters are closed once. 4, Closed Shutters hinder the watchman from detecting an interior fire. 5, Wire-Glass Windows aid the watchman; the blaze will reveal the fire. 6, Closed shutters are an obstacle to the fire department. 7, Wire-Glass windows can readily be broken through by the axes in the hands of the firemen. 8, Wire-Glass Windows admit light, giving access to the building at all times without the labor of opening shutters. 9, Wire-Glass in approved metallic frames or sashes will reduce rate of insurance, in many cases 10% or more.

COST.

In a general way it may be said that a window like the one shown in Fig. 2, and made in galvanized iron, would cost about the same as an ordinary wooden window with iron shutters.

A Sliding Window would cost about 50 cents per square foot more. This price is for Windows fitted with Ribbed or Rough Wire-Glass. The additional cost for Polished Wire-Glass would be from 75 cents to \$1.00 per square foot of glass. Where Polished Wire-Glass is desired, it is often sufficient to use it in the lower sash, using the Rough or Ribbed Wire-Glass in the upper sash. Where copper instead of galvanized iron is desired, there is an additional cost of 75 cents per foot of window.

Really, the only way to get accurate prices is to send us a set of plans or diagrams, showing the number, styles and sizes of the windows, with information as to the materials to be used. We can then tell just what the windows for that particular building will be worth.

SUGGESTIONS.

In planning a building where Wire-Glass Windows are to be used, it is well to know that it is economy to have the windows in as little variety of sizes as possible, and also to have windows large. It materially cheapens the cost of making a number of windows if there are many of the same size. The labor of making a window say 2' 6"x 6' is the same as it is for one 4'x 8'.

REFERENCES.

We have a large list of buildings in which our Windows are installed or in the course of installation. The following is a partial list of them in Chicago:

NAME OF BUILDING OR OWNER	ARCHITECT
MAJESTIC THEATRE	E. R. KRAUSE
PAPER MILLS BUILDING	GEO. L. HARVEY
VETTE & ZUNCKER	HUEHL & SCHMID
W. H. CALLOWELL & SONS CO.	W. L. STEBBINGS
WINSLOW BROS. CO.	RAEDER & COFFIN
NATIONAL BISCUIT CO.	A. G. ZIMMERMAN
BUTLER BROS. WAREHOUSE	JARVIS HUNT
RECTOR BUILDING	JARVIS HUNT
UNITED SUPPLY CO.	JARVIS HUNT
UNITED STATES BREWING CO.	LOUIS LEHLE
S. FRANKLIN CO.	R. E. SCHMIOT
C. B KING	HENRY P. HARNEO
WM. GANSHAW	WM. OHLHABER
C. H. BESLEY	A. F. PASHLEY
J. HARLEY BRADLEY	A. F. PASHLEY
HIBBARD, SPENCER, BARTLETT CO.	FROST & GRANGER
H. P. VEHMEYER	A. K. ADLER
CHICAGO DOCK & CANAL CO.	C. A. ECKSTROM
EWART BUILDING	J. H. WAGNER
UNION LEAGUE CLUB	D. H. BURNHAM & Co.
CHICAGO TELEPHONE CO.	POND & POND
J. H. WHITTEMORE	DEAN & DEAN
ALBAUGH BROS., DOVER & Co.	HOWARD SHAW

VOIGTMANN & COMPANY

Metal Windows and Doors

FACTORIES

NEW YORK CITY, N. Y.
437 W. 13th Street
Telephone, Chelsea 771

CHICAGO, ILL.
42-54 E. Erie Street
Telephone, North 1305

AGENCIES

ALABAMA, BIRMINGHAM
CALIFORNIA, SAN FRANCISCO
COLORADO, DENVER
LOUISIANA, NEW ORLEANS
INDIANA, INDIANAPOLIS
MINNESOTA, DULUTH, MINNEAPOLIS
IOWA, SIOUX CITY, DESMOINES,
DAVENPORT

MISSOURI, ST. LOUIS, KANSAS CITY
OREGON, PORTLAND
PENNSYLVANIA, PITTSBURG
NEBRASKA, LINCOLN, OMAHA
NEW YORK, BUFFALO
OHIO, CINCINNATI, COLUMBUS, TOLEDO
TENNESSEE, MEMPHIS

TEXAS, HOUSTON, FT. WORTH
WASHINGTON, SEATTLE, TACOMA,
SPOKANE
CANADA, HALIFAX, N. S. TORONTO, ONT.,
WINNIPEG, MAN.

PRODUCTS—Manufacturers of METAL WINDOW FRAMES, SASHES and DOORS for carrying wire glass and THE VOIGTMANN STANDARD AUTOMATIC CLOSING AND LOCKING WINDOWS.

SERVICES AND ESTIMATES—We offer the services of a competent architect and draughtsman who may be able to aid you with suggestions for incorporating our work in your plans.

For the purpose of securing to the prospective buyer the most useful equipment and economical insurance rating we suggest an examination of our several constructions and a conference with insurance inspectors and rating officers having jurisdiction.

In order to furnish an estimate we must know the kind of window wanted, the size of the openings in the masonry to receive the windows and whether such openings have flat or arched tops.

From this data we will furnish an estimate which will, unless otherwise requested, include a priming coat of paint, all hardware, sash chain and weights, where the construction requires them, if specifically mentioned, and glass cut ready for setting in cases where deliveries are for points outside of Chicago or New York.

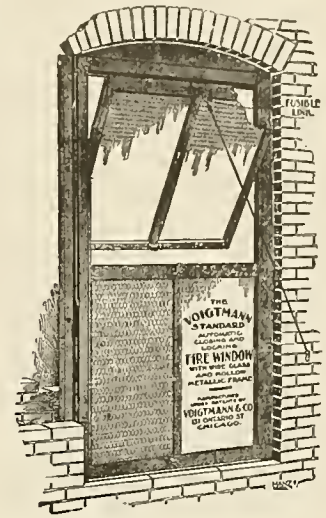
FACILITIES—Our Factories are equipped with tools and machines of the latest design for the rapid production of perfect work.

ADAPTATION—Our products are adapted for use in the better class of office buildings, stores, factories and hotels and are made in accordance with the Rules and Requirements of the National Board of Fire Underwriters governing the construction of frames and sash for wire glass windows.

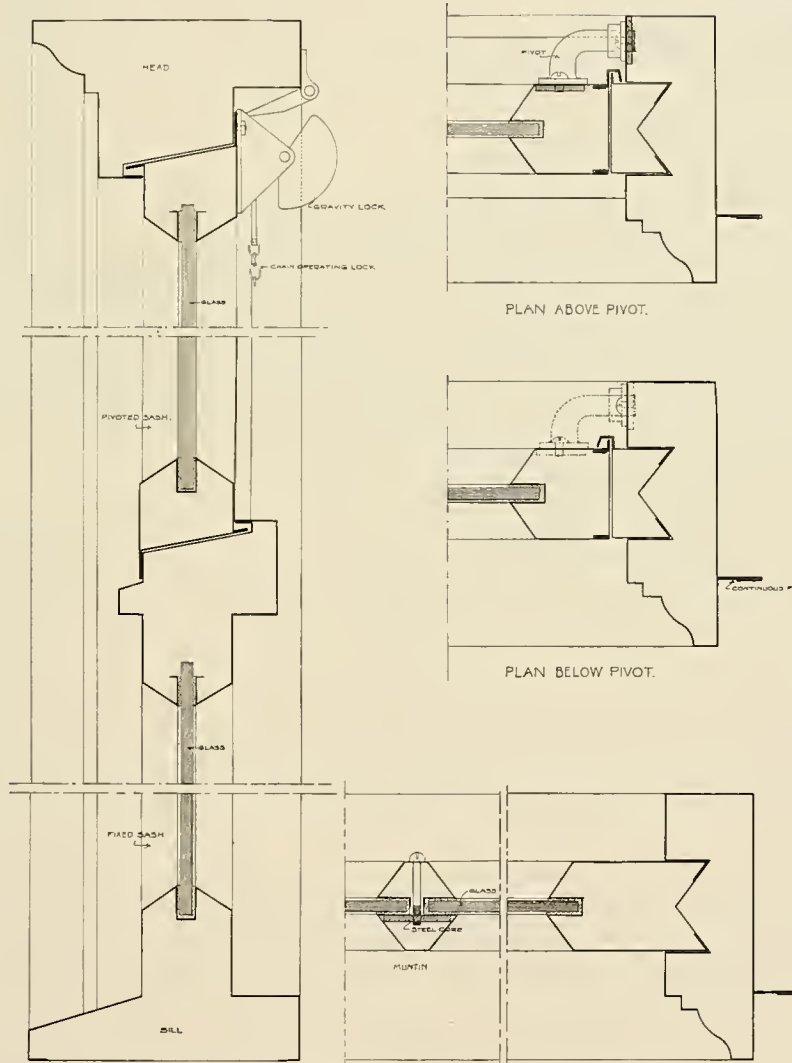
INSTRUCTIONS AS TO ORDERS—Shipment of orders guaranteed within any reasonable time after receipt. In the case of very large orders, particularly when storage space at the job is limited, we give careful attention to partial shipments as required to keep pace with the general construction.

THE VOIGTMANN STANDARD AUTOMATIC CLOSING AND LOCKING FIRE WINDOW

The lower sash of this window is stationary, being built as a part of the frame. The upper part is pivoted on steel pivots, which are attached to a re-inforcement in the sash by button-headed screws having great bearing for rigidity, turning in a brass bushing in a cast side plate that is riveted to a re-inforcement in the frame. These pivots are adjustable, so as to insure an exact nicety of fit of the weather edges of the sash. To prevent the sash revolving too far when opened to permit its ready closing in case of fire, we provide a substantial check that stops the sash at an angle of about forty-five degrees. This check can be thrown out at any time to allow the sash to be completely revolved for cleaning. The pivoted sash is so hung that about sixty per centum of its weight is below the point of revolution; when opened it is held in position by a rod or chain, at the upper end of which is attached a fusible link that will melt at



STANDARD AUTOMATIC FIRE WINDOW



VERTICAL SECTION. PLAN OF STATIONARY LOWER HALF VOIGTMANN STANDARD AUTOMATIC FIRE WINDOW

135 degrees, releasing the sash, which will then swing shut and lock. The lock is of our own design, having but three parts, all heavy castings, in which the use of springs has been entirely eliminated. The action of this lock is absolutely positive.

This window is also made with both sashes pivoted, or with a single sash swinging the entire length of the frame opening for use in windows of limited height.

Hollow air chamber construction throughout, made of 24 gauge galvanized sheet iron; other gauges or copper furnished on special order. Muntins are cored with $1\frac{1}{8}'' \times \frac{3}{16}''$ structural iron.

Unless otherwise specified we furnish $\frac{1}{4}''$ ribbed wire glass, cut to size, ready for setting. The inner edges of the sash rail form three sided rabbets or grooves for retaining the glass in place. These are made with a sufficient flare to admit of puttying for weather tightness. The muntins are made in two pieces; the stationary portion riveted at both ends to the sash rails and cored with $1\frac{1}{8}'' \times \frac{3}{16}''$ band iron; the removable portion interlocks with the stationary portion, and is secured by brass machine screws.

Before shipment we give each window a coat of mineral paint, dark brown in color, fit all necessary hardware in place and adjust the fusible link device.

PRICES—Prices quoted upon application.

BOX FRAME WINDOW—An extremely high-grade window suitable for use in the best class of office buildings, stores and hotels.

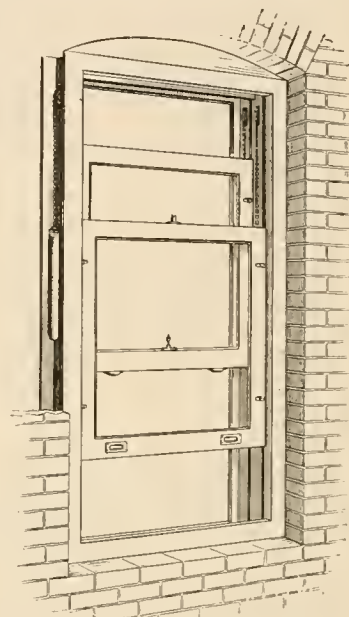
Within the side rails of the sashes we provide movable guides of iron that fit within brass lined throats in the frame. The lining for these throats is made of No. 16 brass and is supplied to take the wear that would otherwise be borne by the frame. This connection between the moving sashes and the frame makes a joint that cannot rattle and that is as positively dust and weather-tight as is the case of a watch.

The inner edges of the meeting rails are formed to provide an interlocking wind-break that is made more effective by the operation of our lock which draws the rails together. This wind-break we repeat at the sill; at the head of the frame we provide a deep recess in which the top of the frame fits.

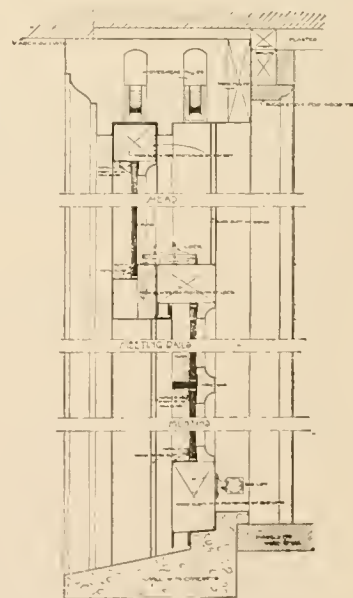
The inner edges of the sash rails and edges of the muntins are coved to lighten their appearance, and that portion of the frame that projects within the reveal is formed to provide a hanging style.

Hollow air chamber construction throughout, made of 24 gauge galvanized sheet iron; other gauges or copper furnished on special order. Muntins are cored with $1\frac{1}{8}'' \times \frac{3}{16}''$ structural iron. Sills are filled with special cement.

Unless otherwise specified we furnish $\frac{1}{4}''$ ribbed wire glass, cut to size, ready for setting. The glass is held in place by a series of cleats that are formed out of the sash; this method has



BOX FRAME WINDOW

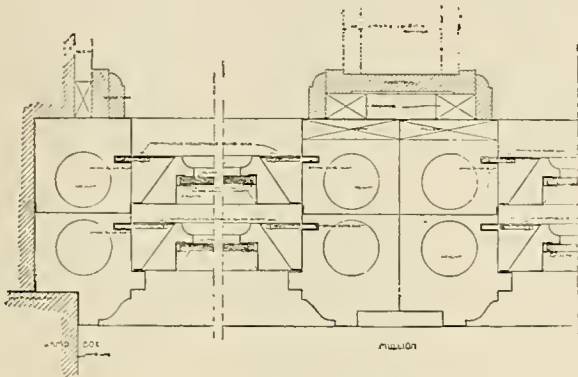


BOX FRAME WINDOW, VERTICAL SECTION

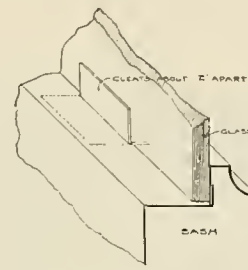
been in use for a number of years, and we have never had a report that indicated that it lacked in any way. Grooved sashes as illustrated and described in connection with our Standard window on a preceding page will be supplied if required.

Before shipment we give each window a coat of special paint, dark brown in color, and fit all necessary hardware in place. We do not furnish weights, unless they are specifically included in our proposal.

PRICES—Prices quoted upon application.



BOX FRAME WINDOW, PLAN



BOX FRAME WINDOW, ISOMETRICAL VIEW OF CLIPS HOLDING GLASS IN SASH

FIREPROOF DOORS—We operate at our Chicago factory a complete plant for the production of metal covered and hollow metal doors of various kinds, in all finishes and for every purpose.

For warehouse or factory use we supply double, or triple thick seasoned and kiln dried wood doors covered with metal, arranged to close automatically in case of fire. They are fitted with hardware, applied in a manner to give the most perfect service in use. Such doors are made and covered in strict accordance with the rules and requirements of the National Board of Fire Underwriters.

Exterior entrance doors for high class buildings can be produced in conformity with architects' designs, or supplied in any of our regular patterns. These doors are preferably finished in electroplate copper, brass or bronze, and when so colored cannot be told from solid castings and will wear an indefinite length of time.

Interior doors, partitions and trim supplied in electro-plated finish, in imitation of natural woods or in solid colors. Our reproductions of fine woods cannot be told from the genuine article. We can match any color scheme for residences, or furnish white enamel for hospitals or other such buildings. Our color finishes are all three-coat work, hand-rubbed hard enamels and will stand severe use, or even abuse; the cost of maintenance is practically nothing.

Each separate member of our doors is formed and fitted as in the case of wooden doors; the joining is effected by a mortise and tenon at each corner that is drawn together by a countersunk machine bolt, screwing into a metal dowel inserted through the tenon at its shoulder. This is a positive joint that cannot work loose and that is extremely neat in appearance. The mould about the edges of the panels is made entirely of metal, fitted when the parts are assembled and cannot work loose; it is held in place without the use of nails or screws.

PRICES—Prices quoted upon application.

AMERICAN LUXFER PRISM COMPANY

HOME OFFICE AND FACTORY

346-348 WABASH AVENUE, CHICAGO, ILL.

BRANCH OFFICES

NEW YORK, 160 FIFTH AVE.
 BOSTON, 15 FEDERAL ST.
 SAN FRANCISCO, 121 NEW MONTGOMERY ST.
 ST. LOUIS, 327 ODD FELLOWS BLDG.
 CLEVELAND, 1022 GARFIELD BLDG.

BALTIMORE, 505 AMERICAN BLDG.
 KANSAS CITY, 948 N. Y. LIFE BLDG.
 ST. PAUL, 627 RYAN BLDG.
 CINCINNATI, 424 MAIN ST.
 NEW ORLEANS, 904 HENNER BLDG.
 LOS ANGELES, 603 SOUTH SPRING ST.

MILWAUKEE, 1112 RAILWAY EXCHANGE BLDG.
 WASHINGTON, D. C., 520 THIRTEENTH ST
 INDIANAPOLIS, 19 PEMBROKE ARCADE.
 PORTLAND, ORE., 218 FRONT ST.
 SEATTLE, WASH., 313 CORDOVA ST.

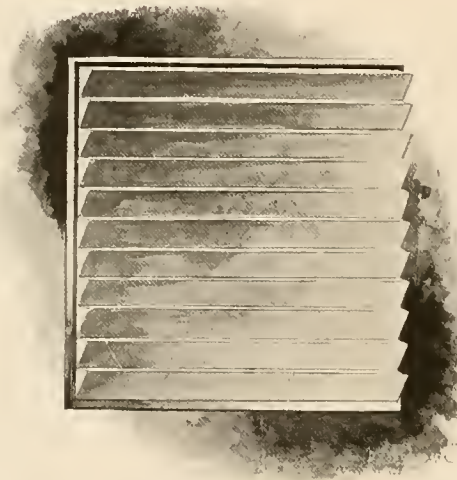


FIG. 1. A SINGLE LUXFER PRISM LIGHT

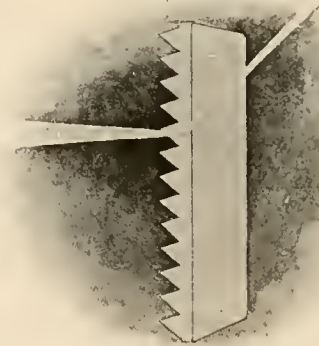


FIG. 2. THE MANNER IN WHICH LUXFER PRISMS REFRACT DAYLIGHT

PRODUCTS.

We are the manufacturers of the original "LUXFER" Prisms, making them for every conceivable position where it may be necessary to flood buildings with daylight. Upwards of 12,000 buildings have been successfully equipped with LUXFER PRISM WINDOWS AND TRANSOMS, LUXFER SKY-LIGHT PRISMS, LUXFER PAVEMENT PRISMS, LUXFER SHEET PRISMS, LUXFER FIREPROOF WINDOWS.

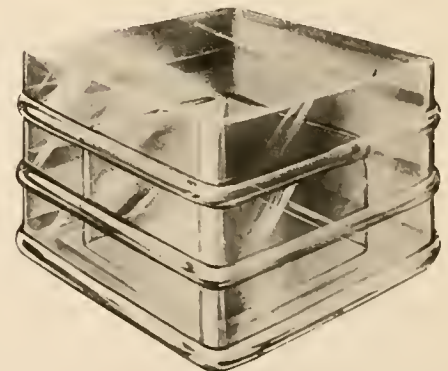


FIG. 3. LUXFER VAULT LIGHT No. 62 For Steel Concrete Setting

We have recently added to our list of products IMPERIAL PLATE PRISM GLASS.

STORE FRONTS.

A modern store front should be equipped with Luxfer Prisms in the form of transom panels above show windows and entrance doors. These panels are composed of prisms four inches square, glazed together by our electro-glazing method in solid copper, producing an absolutely air and water tight panel stronger than plate glass to resist wind pressure, without the use of steel strengthening bars. Our standard copper finished glazing is also a strong and satisfactory method. The prism panels should extend across the full width of storerooms, as shown in cuts herewith (Figs. 4 and 5). Roller awnings set on transom bar should be used where awnings are necessary, and clear glass should be installed in the upper part of rear partition of show windows if they extend beyond the transom bar of front window. Splendid results and great economy in the cost of artificial lighting can be effected by also equipping the windows in the rear of storerooms.

Light wells and ceiling lights occupying valuable floor space, and a source of great danger in case of fire, can be entirely dispensed with when the building is equipped with the Luxfer System.



FIG. 4. A. C. McCLURG & CO.'S BOOK STORE,
CHICAGO
Luxfer Prisms Above the Awning



FIG. 5. STORE OF GILCHRIST & CO., BOSTON
Luxfer Prisms in first Four Floors

INSTALLATION.

The arrangement of sash or frames for Luxfer Prism panels is the same as for plate glass, and the panels are set in same manner as plate glass, and do not require the services of skilled mechanics.

FOR OFFICE AND
APARTMENT
BUILDINGS.

Dark offices and apartments can be made light and cheerful and their earning capacity increased by the Luxfer System.

LUXFER PRISM
CANOPIES.

The Luxfer Prism Canopies (Figs. 6 and 7) constitute an invaluable adjunct to many present day office buildings, stores, apartment buildings and residences. Their value is readily apparent in a narrow street or court where high buildings opposite deny the admission of direct light. In order to relieve this condition and receive the requisite amount of light upon the prism panels, the latter are set at an angle to the vertical wall, or in a position similar to that of an awning. The prism panels are sup-

ported in either plain or ornamental iron frames at the top of the window, and fastened securely to the outside face of the wall. Mechanical brackets are used to secure Canopies to the wall at windows above the ground floor to provide an easy method of cleaning the prisms, and also on all windows equipped with folding shutters.



FIG. 6. PRISM CANOPY IN POSITION



FIG. 7. COURT OF FLAT BUILDING WITH PRISM CANOPIES OVER WINDOWS

FOLDING CANOPIES.

Canopies can be made to fold back as easily as a canvas awning. The advantages of this type are many. Prisms are more easily cleaned and kept free from snow.

LUXFER PRISM SKYLIGHTS.

Luxfer Prism Skylights (Fig. 8) successfully distribute the daylight throughout rooms, courts, buildings, etc., as desired. Highly satisfactory results may be obtained in every case and great saving effected in the cost of artificial lighting; in many cases sufficient to offset the cost of the prisms in one year.

Luxfer Skylight Prisms are 13 inches square and $\frac{5}{8}$ inch thick, and are designed to set in galvanized or copper skylight frames made in the usual manner. This prism is the only skylight prism which will successfully distribute the light throughout a large room, and conforms to the requirements of the Board of Fire Underwriters, and is the only skylight prism that can be made and kept water tight without repairs.



FIG. 8. THE SKYLIGHT PRISM THAT CAN BE MADE AND KEPT TIGHT WITHOUT REPAIRS

INSTALLATION.

Pitch of skylight for best results should be 57 to 60 degrees to the vertical. The top edge of skylight should be as near the ceiling line as possible. Every skylight should be equipped with sash ventilators.

When requested to do so, we will be pleased to have our experts examine the premises or drawings, with a view to determining the proper setting angle. Should it not be convenient for architects to take the matter up in this manner, we suggest 57 degrees as the proper angle for average conditions.

A dark, cheerless room can be made bright and cheerful by changing the glass in the old skylight to Luxfer Prisms.

IMPERIAL PLATE
PRISM GLASS.

Perfection—The manufacture of Imperial Plate Prism Glass has placed the illuminating prism on a pinnacle of highest excellence; it is sold by the American Luxfer Prism Company as exclusive agents, and manufactured under patents by the Pressed Prism Plate Glass Company of Morgantown, W. Va. We can furnish this product with accurately shaped prisms, and the appearance and finish of the best plate glass, but far superior in value because of its light-diffusing qualities.

Character—The maximum dimensions of plates are 54 inches wide by 60 inches deep. If the opening be larger than the maximum plate, neat metal bars can be provided for dividing the space as may be required; or if smaller, the plates can be cut to any size. The body or back of the plate, exclusive of the prisms, is about the same thickness as plate glass. The prism surfaces are carefully figured and perfectly shaped with a smoothness and finish only attained under heavy pressure and by the most careful workmanship. The smooth surface is ground and polished, and when placed with plate glass gives the front a uniform appearance obtainable with no other product.

IMPORTANT.

Results—The same careful attention is employed to maintain the degree of efficiency secured by our standard 4-inch pressed units. Plates of many prism angles are made which insure the successful solution of all problems, however difficult. One advantage over the glazed units is the eliminating of all metal, thus adding greatly to the refracting surface of an equal area. This product must be distinguished from rolled Sheet Prisms, a cheap and less perfect product having neither perfectly formed prisms nor polished outside surface, being designed only for factory purposes. The large unbroken surfaces of the Pressed Prism Plates make them easy to clean, joints where dust and dirt accumulate are done away with and no difficulty will be found in keeping them as clean as plate glass.

USE OF LUXFER
SIDEWALK
PRISMS.

It is a well known fact that the space in the basement of a building is of greater value for salesroom purposes than the second floor, if equipped with Luxfer Sidewalk Prisms. In basement rooms where the ceiling is above or on a level with the sidewalk the Luxfer Sidewalk Prism is used with great results. It is set in cement in the usual cast-iron frames (Fig. 18), in place of the ordinary bull's-eye lights. The prisms receive the direct light from the sky on the upper face and refract it back into the basement where it is needed, and are scientifically correct in form to obtain the greatest possible refracting surface and to utilize every ray of daylight. Therein lies the secret of the superiority of Luxfer Prism Sidewalks.

Unless the basement is very shallow a Lucidux is set below and opposite the prism tiles, as shown in the accompanying cut. The Lucidux is a vertical curtain of window prisms of varying angles.

The sidewalk prism projects the light at an angle below the horizontal, evading the head beam, and throws it into the Lucidux, which in turn refracts and diffuses it throughout the basement. In shallow basements, where the increased light is desired for a short distance only, the Lucidux may be omitted and the desired results secured from the sidewalk prisms alone.

Blue prints of first floor plans and, if possible, a section of elevations showing sidewalk lights should accompany requests for estimate, or estimates can be obtained from local foundries or iron works on Luxfer Prism Sidewalk Lights, set complete at the building. Instructions for setting and drawings showing detail of iron work will be furnished by us.

STEEL-CON- CRETE SIDE- WALKS.

The American Luxfer Prism Company are holders of License to operate under the Ransome Patents of Reinforced Concrete construction. Details of sidewalk construction are here shown. (Figs. 9, 10 and 11.)

PRISM LIGHTS.

The steel-concrete light slab is formed entirely of concrete and glass. The concrete is one and three-quarters to two inches thick, reinforced by longitudinal and transverse tension rods of three-sixteenth-inch square, cold-twisted steel. These rods are embedded in the concrete, filling the spaces between the prisms, binding the mass, and forming an indestructible support. The prisms are two and nine-sixteenths inches square on the surface, and have a scientifically formed pendant projecting two inches below the under surface of the concrete. The advantage of the prism over the ordinary vault light is the distribution of daylight back of the building line into the basement room. (Fig. 9.)

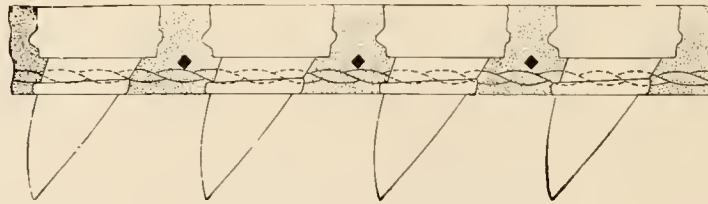


FIG. 9. SIDEWALK PRISMS, SECTIONAL VIEW

VAULT LIGHTS.

The method of construction is the same for these lights as for the prisms. The lights are two and three-quarters inches in diameter, having a concave under-surface, and so designed as to admit the maximum amount of light to the space below. (Fig. 10.)



FIG. 10. SIDEWALK VAULT LIGHTS, SECTIONAL VIEW

SUPPORT.

These slabs of glass and concrete are supported upon retaining wall and beam at building, and have stiffeners of steel I-beams or concrete trusses placed at proper intervals. (Fig. 11.)

EXPANSION JOINTS.

These are arranged at required distances, and provide for such movement as may take place on account of expansion or contraction of the slab.

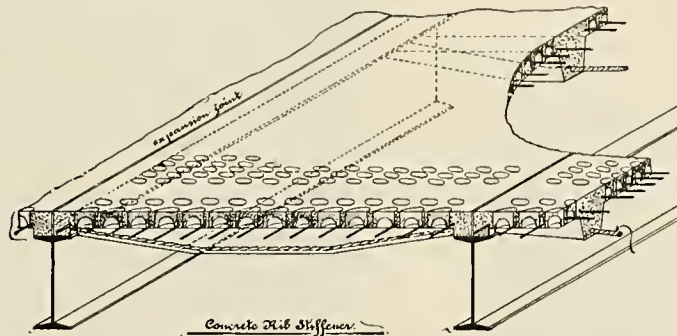


FIG. 11. SIDEWALK VAULT LIGHTS, PERSPECTIVE

FREEDOM FROM CONDENSATION.

Concrete being a poor conductor of heat, the condensation so common with other systems is wholly avoided.

NO EXPOSED IRON.

Iron plates, ordinarily used, are entirely omitted in this system, thus doing away with the joints which cause such endless difficulty, and eliminating the danger from slipping on exposed metal surfaces.

COMPLETED WORK.

The top surface is rubbed down smooth, presents a fine appearance, and makes an excellent wearing pavement. The under-surface may be pointed and painted, or it may be plastered flush with the bottom of the lenses with cement or white mortar. This is the only system to which such a finish can be applied.

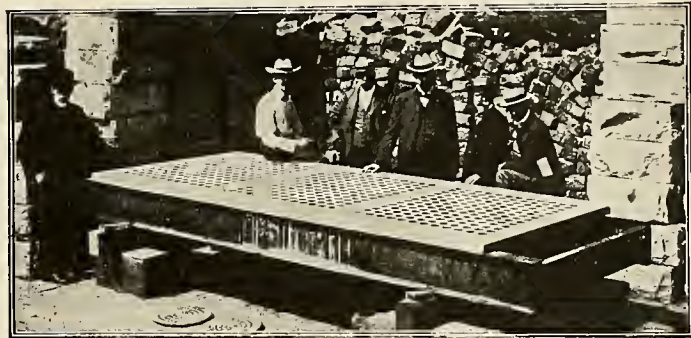


FIG. 12. FINISHED SLAB OF GLASS AND CONCRETE

ADAPTABILITY.

This system is particularly desirable for quick setting—the materials are always ready and can be assembled and set without the usual delay necessitated in making patterns and castings.

TESTS OF STEEL CONCRETE SIDE-WALK SLAB.

Cuts 12, 13 and 14 illustrate the method and results of strength test of steel-concrete sidewalk vault light slab recently made by Tucker & Vinton, and under the direction of Mr. Wm. Barclay Parsons, Chief Engineer of the New York Rapid Transit Railway. For this test two twelve-inch I-beams thirteen and one-half feet long were spaced five feet apart, center to center, and supported by blocking at their extremities. Between these two beams were set three five-inch I-beams, with their tops two inches below the flange of the twelve-inch beams. The vault light slab rested on this framework, but was not in any way connected to it. This slab was two inches thick, except over the five-inch beams, where fillers were provided to give it bearing upon them. The construction of the slab is shown by Fig. 12.



FIG. 13. TEST BY CONCENTRATED LOAD
Of 11,882 lbs. applied on disc
8½ inches in diameter

CONSTRUCTION.

The series of circular lenses two and three-quarters inches in diameter is placed in longitudinal and transverse rows three and five-eighths inches between centers. These lenses are slightly tapering, with circumferential ribs and cup-like depressions on the under side. The spaces between them are filled with Portland cement and sand mortar, embedded around a quarter-inch square twisted steel bar. The top of the mortar filling is struck off level with the top of the lenses, and the under surface is finished with plaster or cement filling.

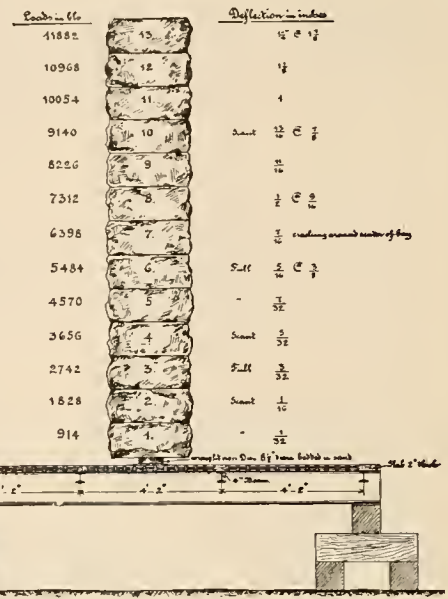


FIG. 14. MATHEMATICAL DETAILS OF FIG. 13

LOAD TEST.

The method of testing the slab illustrated by Figs. 13 and 14 was to place a steel disc eight and one-half inches in diameter in the center of the middle panel, and to load this disc with rectangular building stones 27x27x12 inches, each weighing about 914 pounds. These stones were placed one at a time by means of a derrick, and the appearance of the final load of thirteen stones is clearly shown by Fig. 13. The weight of the final load was about 11,882 pounds, concentrated on the disc eight and one-half inches in diameter, or 0.394 square feet in area.

At 5484 pounds the concrete began to crack, and this cracking continued until the load reached 9140 pounds, when the lenses began to crack. The breaking continued until, at 11,882 pounds, crushing and general clipping of the concrete and glass took place. After the removal of the load the slab returned to a permanent deflection of one and one-quarter inches. While, as a result of the final load, the concrete and lenses were crushed, the twisted rods were not broken, and the slab continued to support its load.

IMPACT TEST.

Following the static load test, one of impact was conducted. In this a stone weighing 914 pounds was dropped seventeen feet, and struck on one corner directly over one of the five-inch beams. The effect of this blow was to deflect the beam permanently about four inches, to pierce a 9x12 inch hub through the slab, and bend but not break the steel rods, and to break about twenty lenses. The same stone was then dropped from a height of nineteen feet and four inches, striking on its end at the middle of one end panel. The effect of the blow was to smash a large hole through the concrete and to bend the steel rods, but not to penetrate through the slab. The purpose of the impact tests was to demonstrate the effect on the vault lights of heavy objects falling from a second-story window of a building.

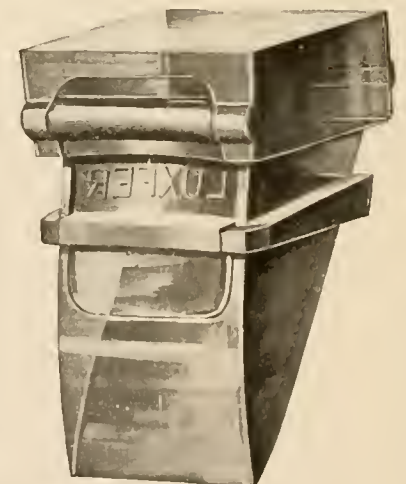


FIG. 15. LUXFER PRISM No. 60 For Steel-Concrete Setting, with which light may be diffused in basements.



FIG. 16. COLUMBUS CIRCLE STATION,
RAPID TRANSIT SUBWAY
59th Street, New York City

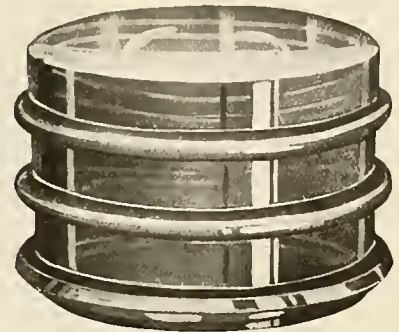


FIG. 17. LUXFER VAULT LIGHT No. 65
For Steel-Concrete Setting

LUXFER PRISM SHEETS.

The proper daylight illumination of mills, factories, warehouses and school buildings is a matter of importance to the architect, owner and tenant of such buildings. This can be readily accomplished by equipping the windows with Luxfer Sheet Prisms (Fig. 19).

Luxfer Sheet Prism glass is made under United States Letters Patent, and comprises various angles of prisms. The lighting results obtained from any prism glass depends on the angle of prism used, and, therefore, should be scientifically prescribed in every case.

INSTALLATION.

This glass is made in sheets and can be cut to any size desired up to 84 inches wide by 60 inches high, and can be installed in ordinary window sash at a price which will justify the use of large quantities in any building. A wonderful increase in the illumination is obtained and a consequent saving of from twenty-five to fifty per cent. in the cost of artificial lighting is effected.

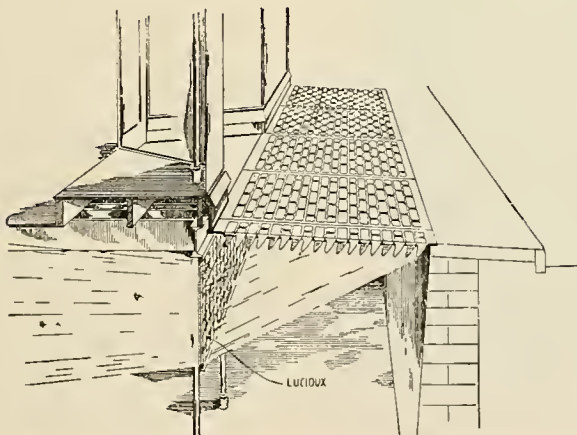


FIG. 18. SECTIONAL VIEW OF LUXFER SIDEWALK



FIG. 19. A REFORM IN MILL AND FACTORY CONDITIONS

In school and office buildings it is only necessary to glaze the upper sash of the window with Luxfer Sheet Prisms to obtain wonderful results.

Samples with estimate of cost furnished on application.

SIZES AND HOW
TO SPECIFY.

FOR STORE FRONTS, OFFICE WINDOWS, CEILING LIGHTS, ETC.

Imperial Polished Prism Plate (*maximum size 54"x60"*).

American Luxfer Prisms, Electro Glazed (*4 inch squares*).

American Luxfer Prisms, Interlocked Glazing (*4 inch squares*).

American Luxfer Prisms, Copper Plated Glazing (*4 inch squares*).

FOR EXTENSION SKYLIGHTS.

American Luxfer Skylight Prism (*13"x13"*).

Imperial Skylight Prism (*18"x60"*).

FOR LIGHTING BASEMENTS.

American Luxfer Sidewalk Prism No. 46.—Cast iron frames, cement setting.

American Luxfer Sidewalk Prism No. 60.—Reinforced concrete setting.

FOR ALLEY FRONTS, COURTS AND ELEVATOR ENCLOSURES OF OFFICE BUILDINGS.

American Luxfer Fireproof Windows.

FOR MILLS, FACTORIES AND WAREHOUSES.

American Luxfer Sheet Prisms (*maximum size 84"x60"*).

HOW TO DIS-
TINGUISH THE
PRODUCTS OF
THE LUXFER
SYSTEM FROM
INFERIOR
IMITATIONS.

All plates made up of four-inch units will have a "Trade Mark" unit glazed in the lower left-hand corner, with the words "Luxfer" and "Patented" in raised letters on the smooth surface. All top lights for store fronts of greater depth than 36 inches will also have an *ornamental border* of four-inch units, the backs of which are ornamented with raised geometrical design.

Sidewalk Prisms and *13x13 inch Skylight Prisms* have similar "Trade Mark" imprints upon them.

TO OBTAIN
ESTIMATES.

The American Luxfer Prism Company is ready and willing to make estimates of cost free of charge, and will deem it a pleasure to give information to anyone considering the use of prisms. We have a trained corps of lucical engineers of many years' experience, and their knowledge can be had upon request.

FINALLY.

To obtain the best results, and to avoid disputes, always specify American Luxfer Prisms, and insist upon their use. The results will justify the expense. The expense is no more than good material and workmanship demand. We guarantee "The Luxfer System" Prisms to be the best and most efficient for the particular places to which they may be applied. We further guarantee all materials used in connection with our products to be strong and durable in every particular, and all workmanship to be of the very highest order.

AMERICAN 3-WAY PRISM COMPANY

1718 Land Title Building



PHILADELPHIA, PA.

MEDALS AWARDED BY THE CITY OF PHILADELPHIA AT THE
RECOMMENDATION OF THE FRANKLIN INSTITUTE

PRODUCTS.

Manufacturers of 3-WAY PRISMS, 3-WAY PRISM GLASS, 3-WAY PRISMATIC WIRE GLASS and VAULT LIGHTS. PRISM GLASS PRESSED in TILES 5 inches square, glazed in hard white metal, copper-plated or solid copper bars, and made to fit any size opening. CANOPY PRISMS in TILES 5½ inches square, for narrow streets, courts and alleys. PRISM GLASS pressed in sheets, which can be cut to any size up to 36" wide by 60" high for glazing in transoms or sash. DEW-DROP DESIGN TILES, a patented designed back 5-inch tile, which conforms to our lens and is used in connection with other tiles for ornamental purposes in lights of any size. PRISMATIC WIRE GLASS in sheets up to 36" wide by 60" high, having wire netting imbedded in its centre. The PASCHALL INTERLOCKING SYSTEM of STEEL BAR CONSTRUCTION VAULT LIGHTS; 3-WAY PLAIN LENS; 3-WAY WIRED PLAIN LENS; 3-WAY PRISMS; 3-WAY WIRED PRISMS for Vault Lights; WROUGHT STEEL BEAM CONSTRUCTION, galvanized or black.

3-WAY PRISMS.

3-Way Prisms are a form of window glass scientifically arranged so as to gather the light from the sky and project it into all parts of dark interiors. Briefly speaking, it consists of carefully arranged lenticular surfaces running in a vertical direction on



3-WAY PRISMS INSTALLED IN LOBBY OF BROAD STREET STATION, (PHILADELPHIA)
PENNSYLVANIA R. R.

This installation of 3-Way Prisms enables the Pennsylvania Railroad to turn out some 300 incandescent lights. The natural light from the sky is carried and diffused to a distance of 300 ft. with most startling effects.

the outside and at right angles to parallel prismatic projections in the inner side. It is manufactured in various forms to suit all existing conditions. They will increase the light 25% to 30%.

PRISMATIC WIRE GLASS.

Prismatic Wire Glass is made in sheets, having wire netting imbedded in its centre during the process of manufacture, in lights up to 36" wide by 60" high.

ADVANTAGES OF PRISMATIC WIRE GLASS.

Prismatic Wire Glass requires no under netting as protection from falling fragments. Plain Glass may break, it falls down and must be replaced. Prismatic Wire Glass never breaks; it may crack, but it cannot fall down and so need not necessarily be replaced. The perils incident to the use of heavy glass in skylights are avoided, and the amount of light obtained is increased many times. Windows and skylights of prismatic wire glass offer a positive resistance to the spread of flames; it is made in accordance with the rules and requirements of the National Board of Underwriters, and in many instances greatly reduced insurance premiums can be obtained by its use.

UNIQUENESS.

3-Way Prismatic Wire Glass is the *only* wire glass made in the United States combining fire protection and prismatic light.

3-WAY PRISMATIC WIRE GLASS

3-Way Prismatic Wire Glass is made in lights of any size up to 36" wide by 60" high, for fire retarding purposes, thus embodying the features of the ordinary wire glass with the advantages of prismatic glass.

PRISMATIC WIRE GLASS SKYLIGHTS.

Our new 3-Way Prismatic Glass for skylights is superior to all other forms of skylight prisms, because we can furnish it in lights of any size up to 36" wide by 60" high, thus doing away with all the small dividing bars; this enables it to be made watertight; something that cannot be done with any other form of Prism skylight.

Prismatic Wire Glass for skylight possesses the combined strength of the wire netting and the glass plate, and the wire being thoroughly covered it is protected from dust or corrosion.

Pitch of skylights should be 60 to 65 degrees to the vertical and below the plane of ceiling. (See diagram No. 1.)

PRISMATIC CEILING LIGHTS.

We can also furnish our prisms of such an angle that they can be used as ceiling lights; thus, instead of having a patch of daylight under a skylight, a uniform white light is thrown in every corner. (See diagram No. 2.)

ESTIMATES.

When writing for estimates as to the cost of supplying prismatic lights, time can be saved by supplying the following information:

1. Distance to opposite building.
2. Height of opposite building.
3. Size of lights—width, then height.
4. Size of room to be lighted.
5. Give floor plan of room and location of windows.
6. Height from ground to bottom of sash on transom to be glazed.

PASCHALL STEEL BAR CONSTRUCTION FOR VAULT LIGHTS.

The Paschall Interlocking System of Steel Bar Construction is manufactured by us. It is of wrought steel beam construction, either galvanized or black.

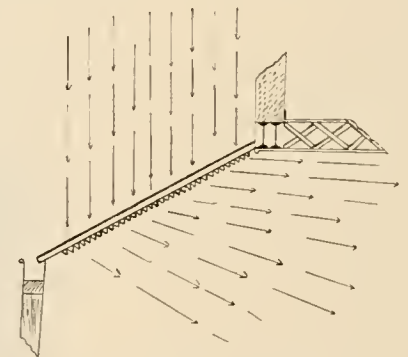


DIAGRAM 1
3-WAY PRISM SKYLIGHT



DIAGRAM 2
3-WAY PRISM CEILING LIGHT UNDER SKYLIGHT

On account of its structural formation (see Diagrams 3 and 4) it has greater strength for its weight than any other vault light construction. The grooved bar and the cement interlock in such a manner that any separation of iron and cement is impossible.



DIAGRAM 3. 3-WAY PLAIN PRISM



DIAGRAM 4. 3-WAY WIRED PRISM

THE PASCHALL INTERLOCKING SYSTEM FOR VAULT LIGHTS

The glasses used in this construction are our 3-Way Tiles, furnished in plain lens or 3-Way Prism, with or without wire.

The wire glass tiles are so constructed that the wire netting imbedded therein projects from the sides, and when placed in the construction, these projecting ends overlap and "interlock," thereby causing the cement to firmly tie the entire construction into one unit. We do not keep this construction in stock, but make it to size as ordered. Orders can be filled within six days of their receipt.

The wired tile cannot fall through when broken, and thus the risk of accidents and damaging of goods underneath is obviated.

A bearing of about two inches on the building side, and about the same on the area wall side, should be provided. Bearing should be two inches below the finish level, as shown in Diagram 5.

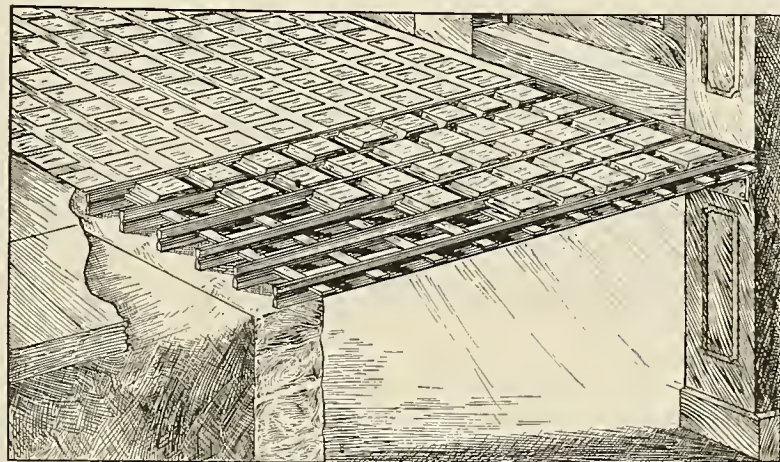


DIAGRAM 5. THE PASCHALL VAULT LIGHT CONSTRUCTION

BUILDING LAWS.

This product conforms to the Building Laws and municipal regulations of all cities, and likewise to the rules of the National Board of Fire Underwriters.

INSTALLATION.

Our system of vault lights can be laid by any ordinary cement man, and is guaranteed water-tight.

FORM OF SPECIFICATION.

Architects should specify as follows: *Paschall Interlocking System of Vault Lights*, as manufactured by the *American 3-Way Prism Co., of Philadelphia, Pa.*

THE CONTINUOUS GLASS PRESS CO.

915 Pennsylvania Building
PHILADELPHIA, PA.

PRODUCTS.

Manufacturers of ROUGH, RIBBED and LENTICULAR SKYLIGHT GLASS from $\frac{1}{8}$ to 1 inch and over in thickness. ROUGH, RIBBED and LENTICULAR WIRE GLASS from $\frac{1}{8}$ to 1 inch and over. THREE-WAY SHEET PRISM GLASS with and without wire. POLISHED PLATE WIRE GLASS, different thicknesses to order, and FIGURED GLASS.

FACILITIES.

The capacity of the plant of this Company is of the largest and the facilities are such that prompt shipment can always be relied upon, keeping on hand, as we usually do, an enormous stock for such purposes.

TERRITORY.

Unlimited.

ADAPTABILITY OF PRODUCTS.

Our products are manufactured to meet the various wants of our customers. Our $\frac{1}{4}$ -inch wire glass is manufactured strictly in accordance with the Rules and Regulations of the National Board of Underwriters, except when otherwise desired.

INSTRUCTIONS AS TO ORDERS.

A large stock of all our products is usually kept on hand by all the leading Glass Jobbers of the United States.

SPECIFICATIONS.

Architects desiring our products should specify "Glass to be of the *Continuous Glass Press Co.'s Manufacture.*"

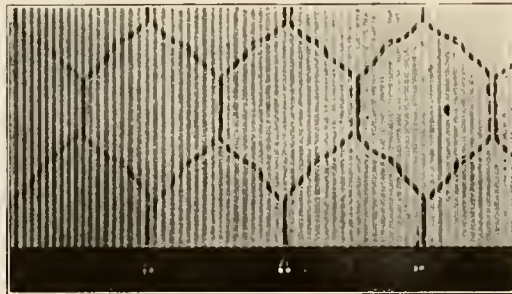


FIG. 1. ONE-FOURTH INCH RIBBED WIRE-GLASS

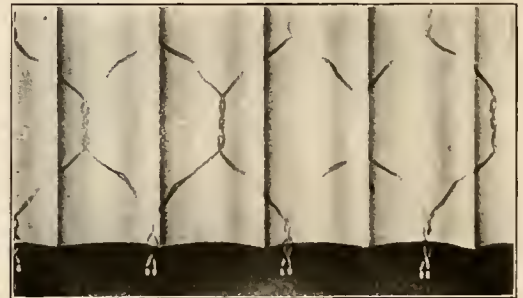


FIG. 2. LENTICULAR WIRE-GLASS

WIRE-GLASS.

By our improved and unique process of manufacture our products will stand the test of time, and retain their perfect form as perfect sheets of glass longer than any other wire-glass, and we invite thorough investigation by architects, engineers, builders, contractors and others.

Full information cordially given; samples upon request.

ONE-EIGHTH INCH WIRE-GLASS.

Our improved process of manufacture enables us to be the first and only producers of $\frac{1}{8}$ -inch Wire-Glass, an entirely new product most desirable for, and largely used in the ribbed form (Fig. 5) and lenticular form (Fig. 2) for office partitions, transoms (especially railway cars), cellar windows, sidewalk canopies, etc.

In the $\frac{1}{8}$ -inch rough, this product is of inestimable value for greenhouses and other places where exposed to hailstones and other like conditions.

POLISHED
WIRE-GLASS.

Polished Wire-Glass (Fig. 3) has no equal in its class, as can be readily determined by an inspection of it.

PRISMATIC
WIRE-GLASS.

Prismatic Wire-Glass (Fig 4) is a product combining the advantages of Wire-Glass and the high light projecting qualities of Prism Glass—a new product which should appeal to up-to-date and advanced architects, engineers and others.

“SINUSOIDAL”
WIRE-GLASS.

The good qualities of Wire-Glass as a fire retardant and for skylight purposes under certain conditions are well known.



FIG. 3. POLISHED WIRE-GLASS

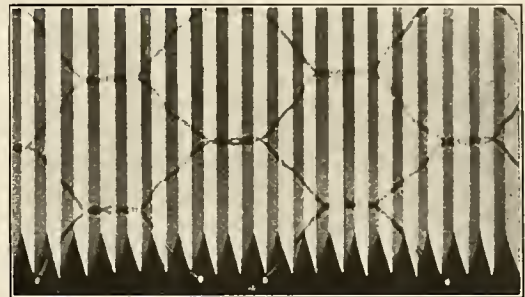


FIG. 4. PRISMATIC WIRE-GLASS

Our Sinusoidal Wire-Glass (see Figs. 5, 6, 7 and 8) possess every good quality of the ordinary wire-glass, and in addition there is less liability of breakage, due to the fact that the wire is embedded in the glass in a “sinusoidal” or wavy manner peculiar to our mode of manufacture.

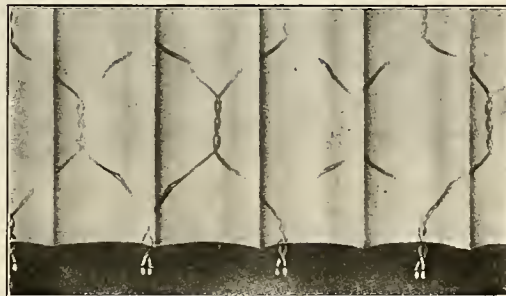


FIG. 5. LENTICULAR WIRE-GLASS

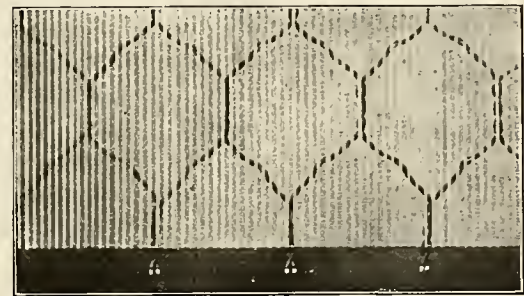


FIG. 6. ONE-FOURTH INCH RIBBED WIRE-GLASS

The color of our wire-glass is the same as the finest polished plate, which practice and experience have proven to be the best.

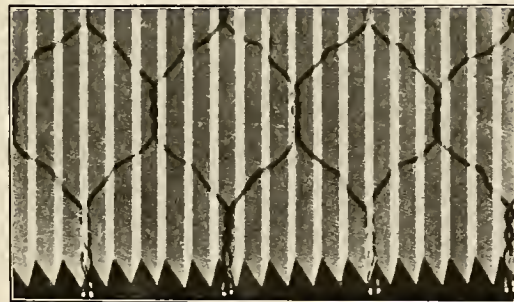


FIG. 7. PRISMATIC WIRE-GLASS



FIG. 8. POLISHED WIRE-GLASS

In addition to the “Sinusoidal” rough and ribbed wire-glass, we make the same with a lenticular back. This is very ornamental when set, and has excellent light diffusing qualities.

MISSISSIPPI WIRE GLASS COMPANY MISSISSIPPI GLASS COMPANY

277 Broadway
NEW YORK, N. Y.

MAIN AND ANGELICA STREETS
ST. LOUIS, MO.

TRIBUNE BUILDING
CHICAGO, ILL.

PRODUCTS.

MISSISSIPPI WIRE GLASS, MISSISSIPPI FIGURED GLASS and STANDARD ROUGH and RIBBED GLASS for SKYLIGHTS.

WIRE GLASS.

Mississippi Wire Glass is a fire retardant of wonderful efficiency and renders window, door and skylight openings practically immune from the invasion of fire or its egress to the peril of adjoining buildings.

It is particularly adaptable for skylights, as when the sheet is cracked by either heat or impact, the wire holds the glass fragments tightly together, preventing the falling of glass, endangering the lives of those beneath, and makes the matter of repairs one of convenience rather than of immediate necessity.

Polished, Maze, Rough and Ribbed are the four surfaces in which it is produced. These are shown in the bottom row of the illustrated group. The Maze and Ribbed patterns diffuse daylight to the maximum degree, while the Polished possesses complete transparency and is especially suitable for outside windows and all purposes of ordinary wire glass where unobstructed vision is demanded.

Mississippi Wire Glass has attained a phenomenal record of efficient performance in great conflagrations, having never failed.

FIGURED GLASS.

Mississippi Figured Glass is an aesthetic, ornamental and harmoniously effective building glass produced in eight different patterns, as shown in the two upper rows of the illustrated group, possessing much brilliance and expression, and is especially suitable for interior and exterior glazing of all classes of buildings, steam and electric passenger cars, ferry-boats, yachts and a variety of special uses where a maximum diffusion of light, together with an exclusion of vision to insure privacy, is demanded.

Standard rough and ribbed glass for skylights are illustrated in the center row.

CHOICE OF MATERIAL.

We cannot cover here the possible applications of Mississippi Wire Glass and Figured Glass. An engineering department is maintained at our home office in New York, whose function is to pass upon all plans and problems submitted by architects, builders and owners looking for the most efficient and economical employment of our products, as well as methods of installation. All such information, illustrative and descriptive printed matter and samples will be forwarded upon request.



Ondoyant	Oceanic	Maze	Syenite	Florentine
Figured No. 1	Figured No. 3	Rough	Ribbed	Figured No. 2
Polished Wire	Maze Wire		Ribbed Wire	Rough Wire

In this reproduction the details are reduced one-sixth.

NEW YORK PRISM COMPANY

473 West Broadway
NEW YORK CITY, N. Y.

TELEPHONE 2126 SPRING

PRODUCTS—Manufacturers of ACME 4" by 4" PRESSED PRISMS, ACME SKYLIGHT PRISMS, ACME VAULT LIGHT PRISMS, ACME SHEET PRISM GLASS, ACME VAULT LIGHTS, ACME IRON CANOPY FRAMES.

VALUE OF NATURAL LIGHT—Prism lights have come into such universal use, that their value and light diffusing qualities need not be dwelt upon. Modern buildings, owing to the enormous value that real estate has attained, have a dearth of light that has to be overcome, either by the use of artificial light, or the use of Prisms. The latter is of course the cheaper, as after the initial expense of setting the Prisms, no further disbursement is needed, whereas artificial light is a continual source of expense from month to month. Prisms, supplying as they do natural light, do not tire the eyes as all artificial light does. As long as there is a window from which natural light can be obtained, Glass Prisms of various angles will change the direction of the light, so that it enters freely into dark places.

METHOD OF USE—When the glass is to be used in an ordinary window, it must be borne in mind that if the glass is shadowed by a reveal or projection greater than 12 inches, the Prisms *must* be set in a separate frame, flush with the walls. 4 by 4 inch Prisms, or Sheet Prisms should be used. (See Fig. 1.)

When Prisms are thus set vertically, they will only operate when the sky between them and the building opposite exceeds 40 degrees; any less degree of sky compels the use of iron canopy frames (See Fig. 2), which in size should be the width between the brick window jambs by two-thirds of the height of the window. Canopies are made stationary or revolving, as desired.

Prism Extension Skylights (See Fig. 3) are the most effective form of Prism lighting. A skylight must have a pitch of approximately 30 degrees from horizontal; ribs $3\frac{1}{2}$ inches deep; copper or galvanized iron with steel cores; ribs set 12 inches to centers; caps and flashing; gutters must be made of cast-iron, or riveted steel plates; the glazing should be ACME SKYLIGHT PRISM $\frac{3}{4}$ inch thick.

Sidewalk Prisms or Vault Lights (See Fig. 4) are composed of cast-iron margin frames, filled with cast-iron tile webbing and glazed with ACME VAULT LIGHT PRISMS set in Portland Cement; or concrete reinforced construction, glazed with PLAIN LENSES for a cheaper grade.

TRADE MARK—The word "ACME" is our trade mark and it is on all our products as a guarantee of excellence.

PLANS SUBMITTED—We will be pleased at any time to aid architects and engineers to overcome any difficulty of Prism Lighting they may come in contact with. We will submit plans and estimates promptly at any time and without charge.

INSTALLATION—Our goods are shipped carefully packed and can be set by any mechanic of ordinary intelligence. Particular attention is given to export orders and full instructions are sent as a guide to their installation by foreign workmen.

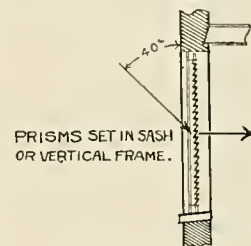


FIG. 1

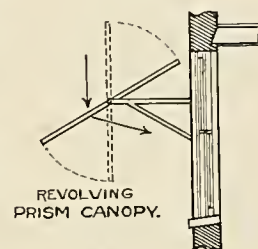


FIG. 2

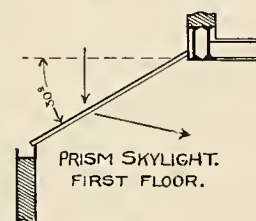


FIG. 3

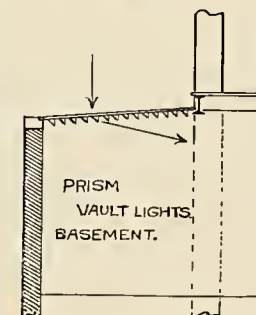


FIG. 4

Diagrams showing method of application of Prism lighting

ROSS F. TUCKER, *M. Am. Soc. C. E.*

THOS. M. VINTON, *Assoc. M. Am. Soc. C. E.*

TUCKER & VINTON CORPORATION

156 Fifth Avenue
 NEW YORK CITY, N. Y.
 Steel-Concrete Vault Lights

DAVIS CARPENTER, *Manager*
 Vault Light Dep't

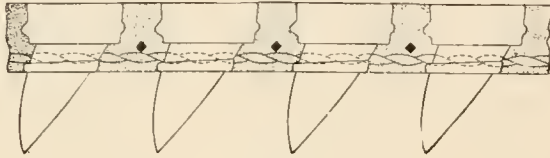
PRODUCTS.

Engineers and Contractors for STEEL CONCRETE STRUCTURES.

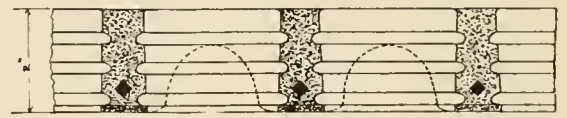
Manufacturers of STEEL CONCRETE VAULT LIGHTS (Ransome System) using BULLS-EYE or LUXFER PRISMS.

TERRITORY AND INSTALLATION.

Installation by us east of Pittsburgh, excepting New England. By our licensees, The American Luxfer Prism Co., west of Pittsburgh.



PRISM



BULLS-EYE

CONSTRUCTION.

A plate or slab of concrete 2" in thickness, supported by steel or steel-concrete beams, the plate being reinforced with $\frac{1}{4}$ " rods running both ways, and with Bulls-eye or Prism lens imbedded therein, as shown. No iron plates are used.

STRENGTH.

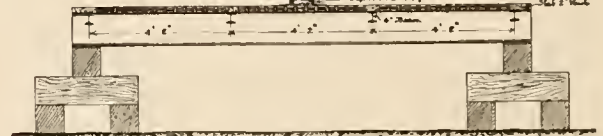
This system has more than three times the strength of any other type of vault light in use.

TOP SURFACE.

Surface may be rubbed smooth, or left rough, with safety buttons imbedded if desired.



Loads in lbs		Deflection in inches
11882	13	$1\frac{1}{2}$ " @ $1\frac{1}{2}$ "
10968	12	$\frac{1}{2}$ "
10054	11	"
9140	10	Slight $\frac{1}{2}$ " @ $\frac{1}{2}$ "
8226	9	$\frac{1}{2}$ "
7312	8	$\frac{1}{2}$ " @ $\frac{1}{2}$ "
6398	7	$\frac{1}{2}$ " reading around center of lens
5484	6	Slight $\frac{1}{2}$ " @ $\frac{1}{2}$ "
4570	5	" $\frac{1}{2}$ "
3656	4	Slight $\frac{1}{2}$ "
2742	3	Slight $\frac{1}{2}$ "
1828	2	Slight $\frac{1}{2}$ "
914	1	" $\frac{1}{2}$ "



Official tests made by Engineers of N. Y. Rapid Transit Commission. Load of 11882 pounds concentrated in centre of slab 4' 2" x 5' 0".

REPRESENTATIVE WORK

Entire Rapid Transit Tunnel, New York City, over 100,000 sq. ft.

In general use throughout New York City. Installed in Philadelphia Rapid Transit Tunnel, etc. Accepted also for New York Central R. R. Improvement, about 60,000 sq. ft.

E. B. BADGER & SONS COMPANY

MANUFACTURERS OF

Copper Bath Boilers, Copper Wash Boilers, Metallic Fireproof Windows, etc.

Nos. 63, 65, 67, 69 Pitts Street
BOSTON, MASS.

TELEPHONE, HAYMARKET 2028

PRODUCTS.

We manufacture COPPER BATH BOILERS, COPPER WASH BOILERS, METALLIC FIRE-PROOF WINDOW FRAMES AND SASH. We are primarily coppersmiths and sheet metal workers, which includes the manufacture of METAL CORNICES, SKYLIGHTS, etc.; COPPER and TIN ROOFING. We are also manufacturers of BADGER'S FIRE EXTINGUISHERS.

FACILITIES.

We have every facility for promptly executing all orders. Our factories are among the largest of their kind and we employ about 200 men.

TERRITORY.

The E. B. Badger & Sons Company contract for work in any part of the United States and Canada.

ADAPTABILITY OR PRODUCTS.

The E. B. Badger & Sons Company was established in 1841. We have been manufacturing Copper Bath Boilers for over 60 years, which have given universal satisfaction and are usually specified by the leading architects.

Copper Bath Boilers last longer than Iron; they give pure, clear water; are ornamental and put a finishing touch to a well-arranged kitchen.

The name is "Badger Boiler."

Our boilers are made with a brown or polished finish. The brown finish is put on the boiler by machinery; it requires no care and is very satisfactory. Polished boilers need daily care.

COPPER WASH BOILERS.

These are usually located next to the washtrays and are set in brick with soapstone or slate top. They are made of heavy copper with hinged cover, tinned on the inside with pure block tin, are convenient and a sanitary way for boiling clothes, and dispense with the placing of the boiler on top of the range or laundry stove. They should be specified as the "Badger Wash Boiler"—either brown finished or polished. Prices given below.

METALLIC FIREPROOF WINDOW FRAMES AND SASH.

These are really fireproof, take the place of shutters, reduce insurance, give light where the shutters keep it out, and allow firemen to break through where shutters would prevent. Our windows are superior to all others on account of the simplicity of construction, strength and weight of material. All parts are thoroughly riveted together, and the ease with which the weights can be reached and the sash removed, is a special feature. The pulleys can be removed and repaired if out of order. They are approved by the Boston Board of Fire Underwriters and are usually made to order to suit size of openings in buildings. Designated as "Badger Fireproof Window." Prices given below.

FIRE EXTINGUISHERS.

They are superior to all others in the arrangement of the most essential feature, the acid bottle and stopple. Removing the cover removes the stopple, leaving the bottle free to be taken out or put in. They are always kept in stock. Our Fire Extinguishers are manufactured under the approval of the National Board of Fire Underwriters. Prices given below.

INSTRUCTIONS AS TO ORDERS.

Bath Boilers of smaller sizes as given below are kept in stock and can be shipped upon receipt of order. Boilers with specially located couplings, made to order.

In ordering (a) make a sketch showing the position of couplings, with their numbers and sizes, whether cistern or pressure. Our trade-mark (given below) will be found over the side coupling.

In ordering (b) state capacity in gallons and the finish desired.

In ordering windows (c) give size of the opening in the brick work and state whether double hung, pivoted or stationary, also the kind of glass used, whether rough ribbed, maze or plate; also whether copper or iron.

FACTS IN REGARD TO INSTALLATION.

Our Windows and Wash Boilers are usually set by the mason.

Our Boilers are installed by plumbers.

ILLUSTRATIONS, SIZES AND PRICES.

BADGER BATH BOILERS



BADGER CISTERN BOILER

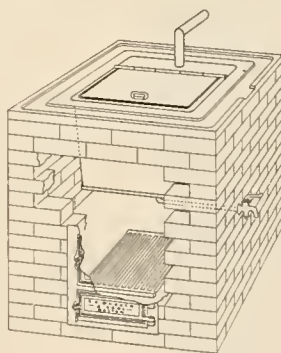
CAPACITY	DIMENSIONS	PRICE	
		(CISTERN)	(PRESSURE)
30 Gallons.....	12" x 60"	\$ 15.00	\$ 26.00
40 Gallons.....	14" x 60"	17.00	33.00
50 Gallons.....	16" x 60"	29.00	52.00
60 Gallons.....	17" x 60"	31.00	63.00
70 Gallons.....	18" x 60"	36.00	77.00
80 Gallons.....	20" x 60"	48.00	89.00
100 Gallons.....	20" x 72"	60.00	102.00
125 Gallons.....	22" x 72"	78.00	122.00
150 Gallons.....	24" x 77"	101.00	173.00
200 Gallons.....	30" x 72" (Hor.)	156.00	240.00
250 Gallons.....	30" x 84" (Hor.)	180.00	310.00
300 Gallons.....	30" x 96" (Hor.)	216.00	350.00
400 Gallons.....	36" x 96" (Hor.)	355.00	425.00



BADGER HEAVY PRESSURE BOILER

Smaller sizes are kept in stock and can be shipped upon receipt of order. Large sizes are made to order to suit the arrangement of the plumbing.

BADGER COPPER WASH BOILERS



BADGER COPPER WASH BOILER

CAPACITY	SIZES SQUARE	DEPTH	COST
10 Gallons.....	14" x 16"	13"	\$ 10.00
13 Gallons.....	15" x 17"	13"	11.00
15 Gallons.....	16" x 18"	13"	12.00
17 Gallons.....	17" x 19"	13"	13.00
20 Gallons.....	18" x 20"	14"	15.00
23 Gallons.....	19" x 21"	14"	16.00
25 Gallons.....	20" x 22"	15"	17.00
30 Gallons.....	22" x 24"	15"	21.00
35 Gallons.....	23" x 25"	16"	22.00
40 Gallons.....	24" x 26"	16"	25.00
45 Gallons.....	25" x 27"	16"	28.00
50 Gallons.....	26" x 28"	17"	30.00

Also soapstone tops.....\$1.00 per sq. ft.
 Large door and grate..... 3.75 each
 Small door and grate..... 2.00 "

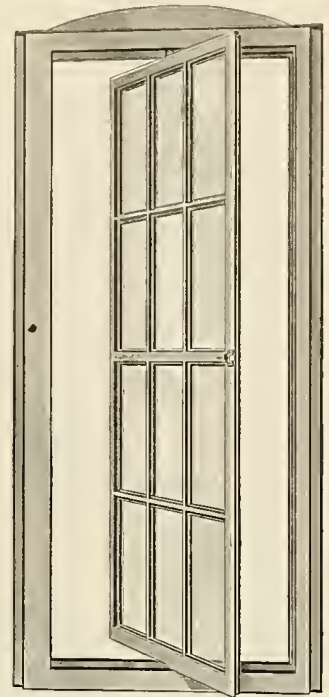
Prices on all copper work are liable to variation according to price of ingot copper.

METALLIC FIREPROOF WINDOW FRAMES

ILLUSTRATIONS
AND PRICES,
CONTINUED.



Approved by Boston Board
of Fire Underwriters



METALLIC FIREPROOF WINDOW FRAMES
AND DOUBLE HUNG SASH
PER SQ. FT.

Double hung windows (iron) . . .	\$1.25
Double hung windows (copper) . .	1.75
Stationary windows (iron) . . . . .	.80
Pivoted windows (iron)	1.25
Stationary with transom (iron) . .	1.25

METALLIC FIREPROOF WINDOW
FRAMES AND PIVOTED SASH

FIRE EXTINGUISHERS

On the approved list of the National Board of Fire Underwriters



BADGER FIRE
EXTINGUISHER

EACH

Regular 3 gallon sizes finished in copper, nickel or gun metal. . .	\$12.00
40 gallon tank for large estates or factories with fifty feet of hose, lead lining $\frac{1}{8}$ " thick.	250.00

GENERAL
INFORMATION.

The E. B. Badger & Sons Company has been doing business for more than half a century manufacturing certain products along special lines of development and improvement.

Our goods are made in standard sizes and none are genuine which do not bear the following trade-mark:



SPECIFICATION.

We do not recommend any special form of specification. By simply mentioning the "Badger" products with the "grasshopper" trade-mark architects and their clients will be insured against substitutes.

CENTRAL IRON WORKS

MANUFACTURERS OF

Fire Escapes, Fireproof Shutters, Fireproof Doors, Railings, Guards, Gratings, etc.

420-422 East 48th Street
NEW YORK CITY, N. Y.

TELEPHONE, 3658 38th STREET

ESTABLISHED 1880

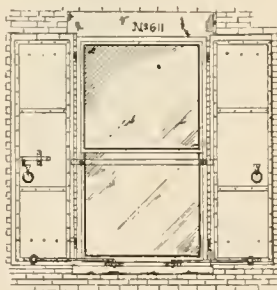
PRODUCTS. FIRE ESCAPES, FIREPROOF SHUTTERS, FIREPROOF DOORS, RAILINGS, GUARDS, FOLDING GATES, SPIRAL STAIRWAYS, GRATINGS, etc.

FACILITIES. We are prepared to receive and execute with a reasonable promptness orders of any size.

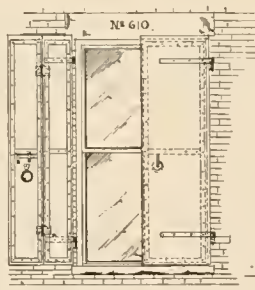
TERRITORY. We ship to any part of the world and erect within 500 miles of New York City.

GENERAL INFORMATION. Our products can be used wherever this form of iron work is handled by good craftsmen. They can be made in any design and any finish.

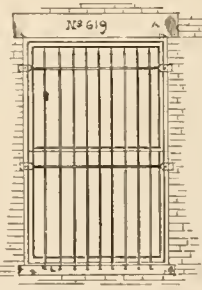
ILLUSTRATIONS. Sketches of some of the more prominent of our manufactures are here shown. Correspondence concerning details and prices is solicited.



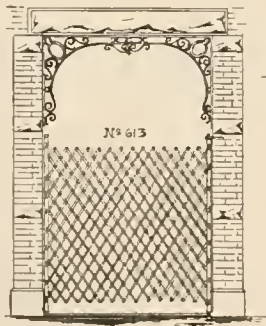
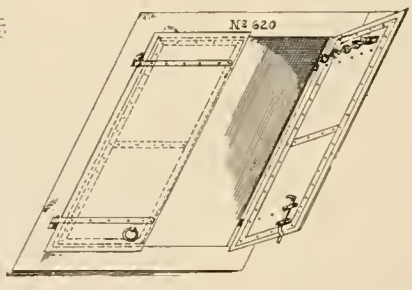
Iron Shutters



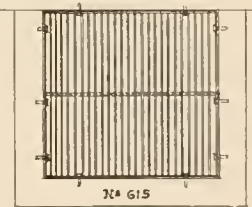
Iron Window Guards



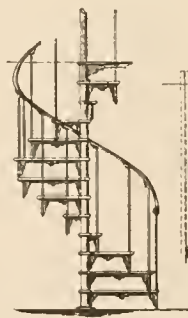
Iron Sidewalk Doors



Iron Folding Gates

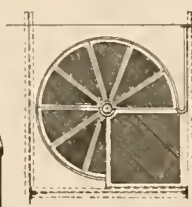


Iron Gratings

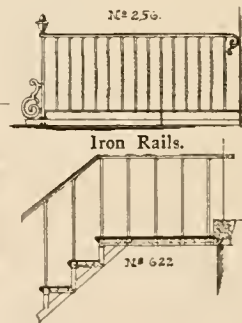


No 621.

Iron Spiral Stair

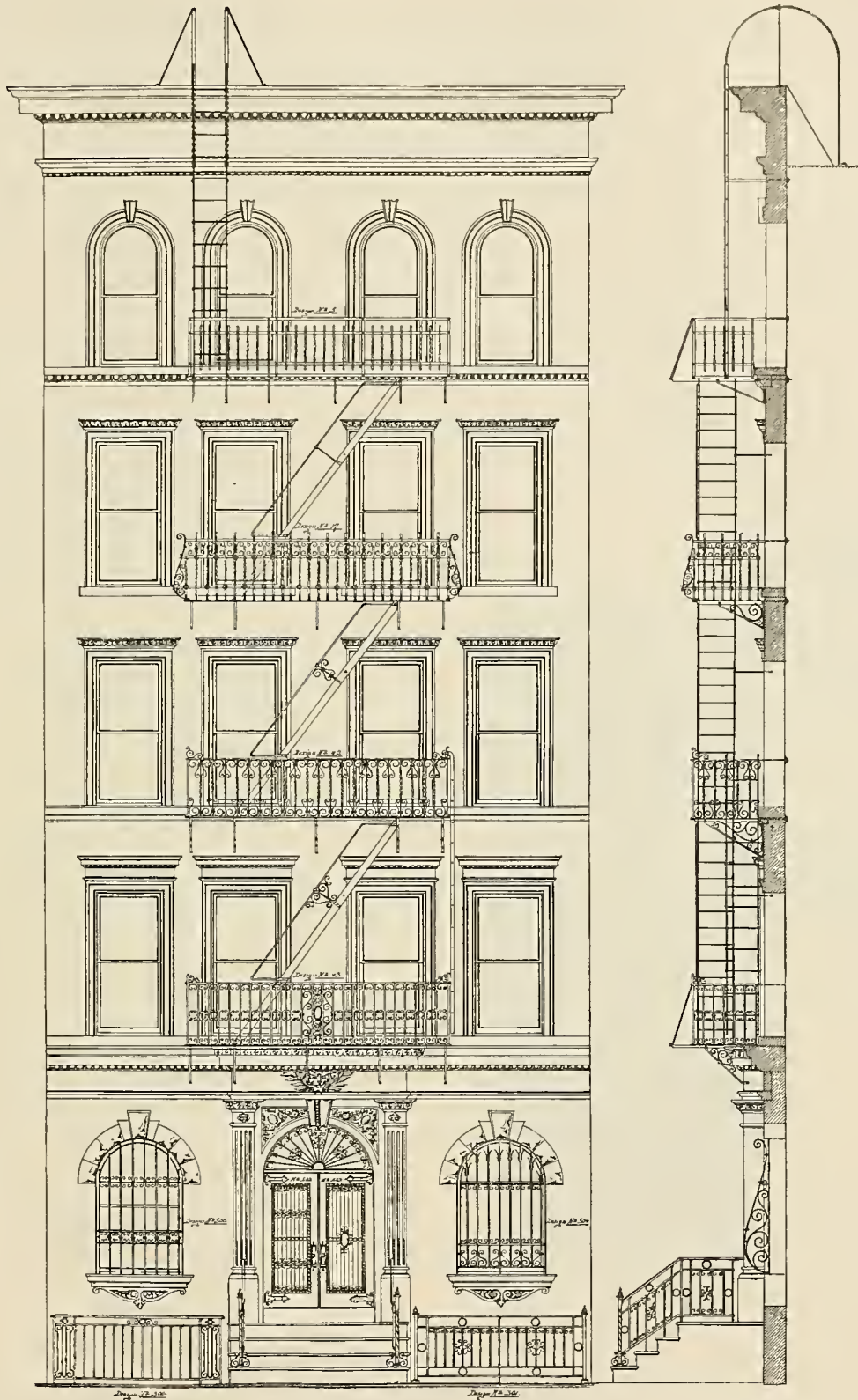


Top PLAN



Iron Rails.

Iron Stoops



Iron Fire Escapes Iron Balconies Iron Ladders Iron Railings
Iron Window Guards

SHOWING FIREPROOF EQUIPMENT INSTALLED BY CENTRAL IRON WORKS

THE HARRIS SAFETY COMPANY

Modern Fire Protection Devices

GENERAL OFFICES

St. James Building, Broadway and 26th Street
NEW YORK CITY, N. Y.

BRANCH OFFICES AND AGENCIES

PADDOCK BUILDING, BOSTON, MASS.
PHILADELPHIA, PA.

COLUMBUS, OHIO
ALBANY, N. Y.
INDIANAPOLIS, IND.

MASONIC TEMPLE, CHICAGO, ILL.
BUFFALO, N. Y.

PRODUCTS
AND SERVICES.

We are Engineers, Contractors and Manufacturers of MODERN FIRE PROTECTION DEVICES, making all styles of FIRE ESCAPES, FIRE EXTINGUISHERS and FIRE ALARMS. We are the sole manufacturers of THE NATIONAL SYSTEM OF STAIRWAY FIRE ESCAPES, the HARRIS STEEL CABLE FIRE ESCAPES and the HARRIS SYSTEM OF FIRE ALARMS.

We will furnish free of cost or obligation our special catalogues, specifications, and estimates for the equipment of any building with MODERN FIRE PROTECTION APPLIANCES, or submit estimates from plans prepared by architects or builders.

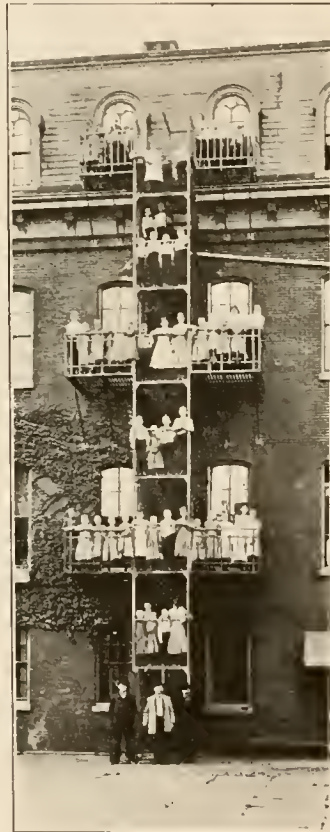


FIG. 1. NATIONAL FIRE ESCAPE
In use at Foster Home, Philadelphia, Pa.

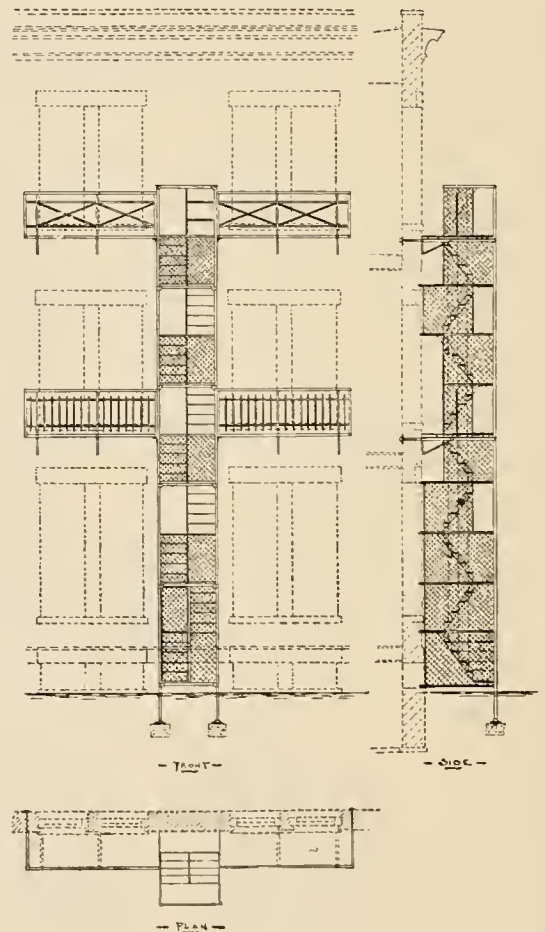


FIG. 2. DETAILS OF FIG. 1.

FACILITIES
AND
TERRITORY.

Our factory, located at Youngstown, Ohio, has an unlimited capacity. It is adjacent to the raw material mills, which affords us the very best facilities to execute all contracts entrusted to our care, promptly and economically for any part of the United States.

ADAPTABILITY.

Our structures and appliances are officially approved throughout the country. All work executed by us is constructed and entirely completed to conform to all state and municipal laws for the location in which the work is intended.

THE NATIONAL SYSTEM OF STAIRWAY FIRE ESCAPES.

The National (Figs. 1 and 2) is the best and safest form of fire escape. It is constructed with a series of short flights (no winders or spiral) protected on all sides with wire or neat iron ornamental railings. It would be impossible to fall, jump or be pushed off a National. The stairways are placed on blank walls between the windows, thus affording protection from fire without the obstruction of light. This particular feature in itself makes the National superior to any other construction. They add to rather than detract from the architectural symmetry of a building, and have a capacity equal to four ordinary fire escapes. The National Escapes cover all that is required of a moral as well as of a legal equipment.

INSTRUCTIONS FOR ORDERING OR REQUESTS FOR ESTIMATES.

General plans and elevations are preferable. A rough sketch or photograph of the building giving the heights of stories, the width and distances between windows, location sections and dimensions of all cornices, belt courses, water tables, and other projections and thickness of walls will answer the purpose.

Mention if exits are to be at floor window sill levels. When the location for the fire escapes is to be decided by us, the general floor plans showing arrangement of rooms, halls, doors and windows drawn to scale or figured dimensions are necessary.

WORK ACCOMPLISHED.

The Broad-Exchange Office Building, New York City is equipped with three Nationals—the highest fire escapes in the world; descents are made quicker by the fire escapes than by the interior stairs.

School buildings of New York City, Boston, Chicago, Philadelphia, Albany, Buffalo, Rochester, Indianapolis, Detroit, St. Louis, and Hartford, Conn.; Hospitals, Asylums, Homes, Factories, Dormitories, Private Residences, Jails, High Office and Mercantile Buildings in various parts of the United States have been equipped with the National; special list of references will be cheerfully furnished.

THE HARRIS STEEL CABLE FIRE ESCAPES.

The Harris Steel Cable Fire Escapes (Fig. 3) are the best portable fire escapes made; they are entirely constructed of steel and cannot burn; the cables are made of flexible galvanized wire and will roll up so as to make a reel from 6 to 12 inches in diameter, according to their lengths; the rungs are placed 12 inches apart and are electroplated.

Each ladder is made to safely sustain 2,000 lbs.

Standard lengths are carried in stock from ten feet to one hundred feet, advancing by five feet; longer lengths can be made at short notice.

STYLES OF COVERS.

Several styles of Cases or covers are made for the Harris Fire Escapes; one in oxidized metallic cases, installed at the baseboard directly under the window. We also make the Harris Built-in Push-Button Cast-Iron Case with the face made to correspond with the trim, built in the flush under the window. This places the fire escape entirely out of sight when not in use. It is quickly opened by pressing a button whereby the ladder is released. Another style is our Harris Automatic Mechanical Exterior Built-in cases placed in the cornice or upper portion of the building and connected with an automatic fusible link fire alarm placed to extend through the various floors. This fusible link device is released by 160° Fahrenheit, or by hand, instantly sounding the fire alarm and automatically placing the fire escape in position to be used from each floor. Special cases to suit any and all conditions can be made at short notice.

The Harris Steel Cable Fire Escapes provide the only safe means of escape from fire where outside-stairway fire escapes could not be considered. For residences, dormitories and auxiliary equipment for Hotels, Hospitals, Institutions and other buildings, they have no equal.

THE HARRIS SYSTEM OF FIRE EXTINGUISHERS.

The Harris System of Fire Extinguishers consists of Harris Safety Extinguishers (hermetically sealed acid bottle extinguishers) of one, three and five gallon sizes; the Harris "Tip Over" and "Acme" extinguishers (made in all finishes), and the Pan-American Chemical Dry Powder extinguishers. All of these enjoy the reputation of being the best of their respective styles.

REFERENCES.

Our list of references for Harris Steel Cable Fire Escapes and Extinguishers contains the names of those most prominent, professionally, politically and socially.

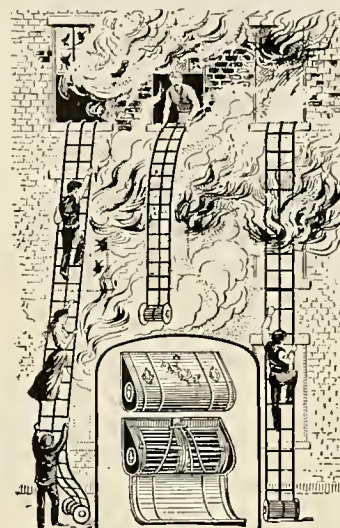


FIG. 3. HARRIS STEEL CABLE FIRE ESCAPE IN USE.

AMERICAN MASON SAFETY TREAD COMPANY

702 Old South Building
BOSTON, MASS.

PHILADELPHIA, PA.
1011 Chestnut Street

NEW YORK CITY, N. Y.
1020 Park Row Building

CHICAGO, ILL.
40 Dearborn Street

PRODUCTS.

MASON SAFETY TREAD.

ADAPTABILITY OF MASON SAFETY TREAD.

MASON SAFETY SIDEWALK VAULT LIGHTS.

MASON SAFETY COAL HOLE COVERS.

MASON SAFETY TREAD, MASON SAFETY SIDEWALK LIGHTS, MASON SAFETY COAL HOLE COVERS.

Mason Safety Tread is the best device known for insuring durability for stairs and immunity from slipping upon them. It is so recognized by the best architects and engineers throughout this country and Europe, where it has been in extensive use for twelve years, subjected to the severest possible tests.

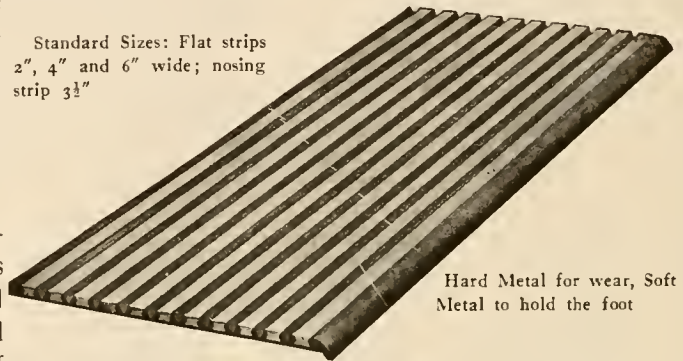
It is so constructed that the wear is taken by heavy continuous steel (or hard non-corrosive brass) ribs, so arranged as to form a dovetail, which hold in place strands of lead. The base plate is not perforated.

It is adapted to any situation where a Safety Tread is needed, and is the best material known for repairs. It is used upon outer and inner stairs of granite, marble, cement, slate, iron and wood; upon the thresholds of doors and elevators, fire doors, inclined passages, vaultlight borders, granolithic walks, ship ladders, the steps of steam and street railroad cars, etc.

It is fireproof, cleanly, neat in appearance, noiseless in use, and protects a step to the extreme front edge.



FIG. 1. MASON SAFETY TREAD
Section 4" wide with plain edges



Standard Sizes: Flat strips
2", 4" and 6" wide; nosing
strip 3 1/2"

Hard Metal for wear, Soft Metal to hold the foot

FIG. 2. MASON SAFETY TREAD SHOWING NOSING EDGE

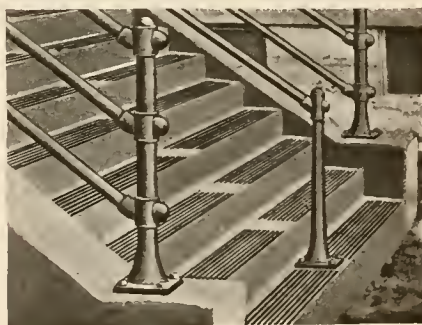


FIG. 3. MASON SAFETY TREADS ON CEMENT STEPS
ON CEMENT STEPS
Anchors Furnished for Installing



FIG. 4. MASON SAFETY TREADS ON IRON STAIRS
Screw Holes Drilled and Countersunk at the Factory

These are made upon the same protective principle, having lead strips imbedded between rows of lenses, and all borders fully protected with Mason Safety Tread. They have given the greatest satisfaction wherever installed. Blue prints and full description sent on request.

Made in all sizes, 12 to 26 inches in diameter. Solid or illuminated. Special Safety Covers of any size or shape not carried in stock will be made to order.

EMPIRE SAFETY TREAD COMPANY

OFFICE AND FACTORY

299 Pacific Street, Borough of Brooklyn

NEW YORK CITY, N. Y.

TELEPHONE, 163 MAIN

PRODUCTS.

EMPIRE CARBORUNDUM SAFETY TREAD, for all kinds of Steps, Sidewalks, COAL HOLE COVERS, FLOORS in Office Buildings, Fire Engine Houses, and many other purposes. In fact, it can and should be used wherever there is a possibility of persons slipping.

CARBORUNDUM BUTTONS for KOSMOCRETE, CEMENT, GRANOLITE SIDEWALKS and VAULT LIGHTS, and a PATENT COAL HOLE COVER filled with CARBORUNDUM.



EMPIRE CARBORUNDUM SAFETY TREAD ON STREET CAR STEP



EMPIRE CARBORUNDUM BUTTON



EMPIRE CARBORUNDUM SAFETY TREAD OF A STAIRWAY



SECTIONAL VIEW OF SAFETY TREAD WITH ANCHOR ATTACHED AS USED IN CEMENT WORK

QUOTATIONS.

As the cost of material is dependent upon the market value, we would request architects to kindly write for quotations, bearing in mind that large quantities considerably diminish the cost.

ADVANTAGES OF CARBORUNDUM SAFETY TREAD.

We are stating positive facts when we say that our tread will give from two to three times the wear of any other tread now on the market. It has the advantage over lead as it is impossible to remove it from the channels. Its use is a protection for the traveling public, and at the same time will avoid law suits for accidents, which sometimes lead to heavy damages. The best tread, therefore, and the one which positively does the work required and lasts the longest is by far the most desirable and economic. We claim these advantages for our *Empire* Carborundum Safety Tread.

Beware of imitations.

No tread has ever met with such success and already parties have attempted to imitate it. All persons are warned that any infringement or use of same will be prosecuted to the full extent of the law.

THE UNIVERSAL SAFETY TREAD CO.

113 Devonshire Street
BOSTON, MASS.

BRANCH OFFICE

45 BROADWAY, NEW YORK CITY, N. Y.

AGENCIES

THE AMERICAN MILL SUPPLY CO.
62 Rochester Row, Westminster
London, S. W., England

J. GAST
Greifswalder Strasse 33
Berlin, Germany

FACTORIES

GROTON, NEW YORK; WORCESTER, MASS.

PRODUCTS. Manufacturers of the UNIVERSAL SAFETY TREAD.

ADAPTABILITY. The "Universal" Safety Tread is adapted and is being specified by leading architects throughout the country for use in all classes of buildings, hotels, restaurants, cafés, apartment houses, private dwellings, department stores, office and bank buildings, factories, schools, churches, railroad stations, stables, on stairways, elevator landings, wherever any person steps. For repairing worn stairways of wood, stone or iron it furnishes a safe and economical method of making them as good as new.

INSTALLATION. Each shipment from our factory carries with it written instructions as to installation and any intelligent workman can install the tread.

THE UNIVERSAL SAFETY TREAD. The Universal Safety Tread is composed of lead and steel so constructed as, when properly installed, to remain a perfect Safety Tread until it is entirely worn out.

The Company owns all the machinery for manufacturing its products, and furnishes its Standard Safety Tread, in a single piece, with or without nosing, in any width up to 12 inches and in any length up to 30 feet.

UNIVERSAL SAFETY TREAD WITH RUBBER FILLING. We are prepared to furnish our Safety Tread with rubber strips inserted in place of lead for Hotels, Private Residences, and localities where a lead filling is objectionable. This style is not adapted to outside work or heavy traffic, but being light and attractive gives great satisfaction in cases where it is used. Furnished on a base of steel, nickel, or brass as desired.

PROMINENT BUILDINGS FITTED. We submit a list of a few prominent places in which our Tread has been installed recently:

BRIDGEPORT STATION, CONN.....	.....	.....	N. Y., N. H. & H. R. R. Co.
CHESTER STATION, PENN.....	.....	.....	.....Pennsylvania R. R. Co.
ST. JOSEPH'S CHURCH.....	.....	.....	.....Troy, N. Y.
HOTEL BELMONT.....	.....	.....	.....New York City, N. Y.
PUBLIC SCHOOLS.....	.....	.....	.....Cleveland, O.
LONDON UNDERGROUND TUBE.....	.....	.....	.....London, England
BERLIN ELEVATED R. R. CO.....	.....	.....	.....Berlin, Germany
N. Y. C. & HUDSON RIVER R. R. STATION.....	.....	.....	.....Troy, N. Y.
FATHER MEEHAN'S CHURCH.....	.....	.....	.....Newport, R. I.
POLICE STATION.....	.....	.....	.....Albany, N. Y.
DEARBORN ST. STATION, ILL. CENTRAL R. R. CO.....	.....	.....	.....Chicago, Ill.
CONNECTICUT FIRE INS. BLDG.....	.....	.....	.....Hartford, Conn.

PRICES. Estimates and prices will be promptly furnished upon application.

FOLSOM SNOW GUARD CO.

BOSTON, MASS.

PRODUCT. SNOW GUARDS for Pitch Roofs.

DESCRIPTION AND USE. Our Snow Guards are manufactured in various patterns, of galvanized, copper wire or sheet zinc. They are made to obstruct the sliding of snow from slanting roofs and similar places, and are attached to the roof in rows at suitable intervals according to the pitch.

ADVANTAGES. The Folsom Snow Guards hold the snow when it falls, in small sections, thus preventing the aggregation of weight and impetus of great masses. The snow will be blown away or remain until it melts, but it cannot slide. Not only is risk of damage to objects and persons below avoided, but banking at the eaves is prevented, thus eliminating the chances of backwater and consequent leaks, as well as straining of the gutter structures. Further, the Folsom Snow Guard is strong enough to hold any load of snow the roof will carry, and under excessive pressure it will bend without in any way damaging the roof. Its cost is smaller than methods less effective. Only the best materials are used in manufacture.

ILLUSTRATIONS. The Folsom Snow Guards are made in three styles, as follows: "New Model," shown in Fig. 1; "Climax," Fig. 2; and "Standard," Fig. 3. The "New Model" is for use on new construction; the other two for old roofs. The method of application of the former, on slate or shingle roofs, is shown in Fig. 4.

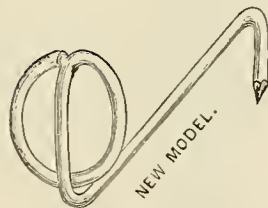


Fig. 1. "New Model"

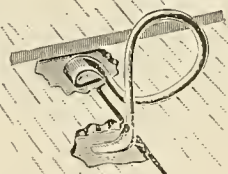


Fig. 2. "Climax"

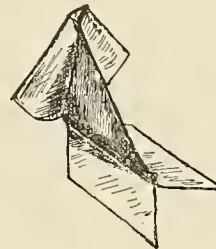


Fig. 3. "Standard"

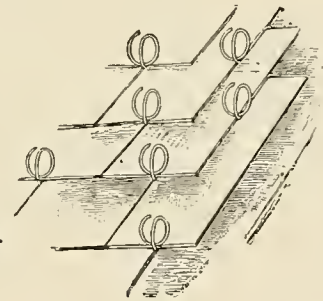


Fig. 4. Application of "New Model" to shingle or slate roof

QUANTITY REQUIRED.

PITCH OF ROOF	GUARDS REQUIRED	
	"New Model"	Climax and "Standard"
¼ or less	50 per Square	75 per Square.
½ or less	75 per Square	125 per Square.
¾ or less	150 per Square	150 per Square.
Gothic	One in every joint	One in every joint.

PRICES. Correspondence is solicited, and we are glad to send samples and prices to any architect or builder upon request.

FORM OF SPECIFICATION. To be placed under heading of "Roof" or separate heading "SNOW GUARDS." (Data, ¼ pitch roof, copper Guards.)

"Use Folsom's Copper Roof Snow Guards, and apply 50 per square."

NEW YORK FIREPROOF COLUMN COMPANY

MANUFACTURERS OF

Lally Patent Columns

253 Broadway

NEW YORK CITY, N. Y.

TELEPHONE, 1363 CORTLANDT

PRODUCT.

"LALLY PATENT COLUMNS" made in all diameters; the strongest, most compact and economical. FIRE and DAMP-PROOF NON-CORRODING BUILDING SUPPORTS.

CHARACTER OF COLUMNS.

Fireproof. Practically indestructible. Entire area bearing, solid column. Made of rolled steel shell.

Specially selected materials enter into the composition with which cylinder is filled. We guarantee each column to carry the safe load specified on our list.

TESTS.

The U. S. Government at Watertown, Mass., have furnished us all tests covering a period of six years. Under their tests our composition has shown actual test of 4,000 lbs. per square inch. All safe loads are figured on the basis of actual Government tests.

GENERAL INFORMATION.

The "LALLY PATENT COLUMN" has been placed in every form of building during the past six years and has given universal satisfaction. We have experienced men who will figure your plans and give you all the terms necessary for you to use the column. We are in a position to successfully compete against cast-iron columns, and furnish in their place a column of absolute safety and without any delay in the delivery. We take pride in making deliveries on all contracts at the time specified on our acceptance.

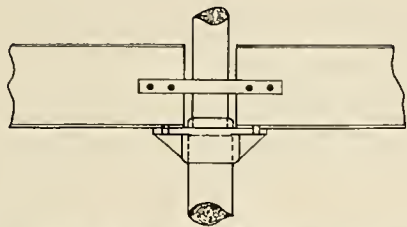
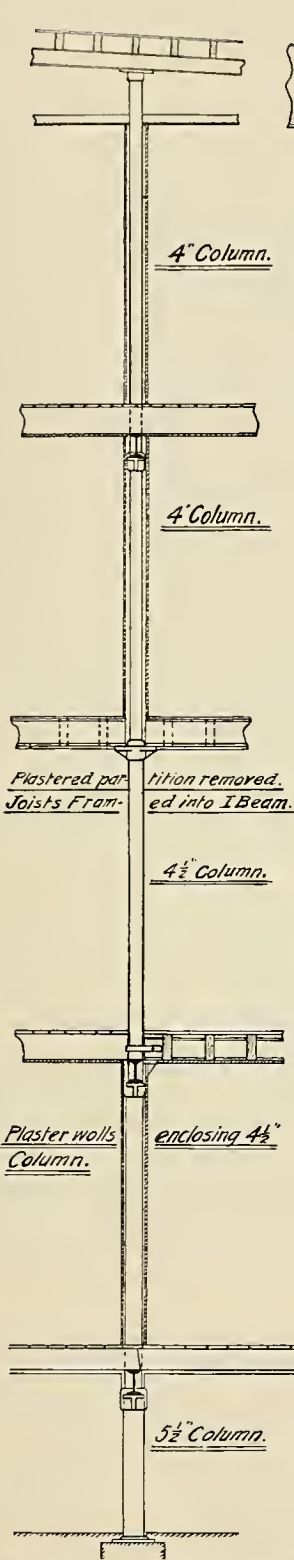
The value of the "LALLY PATENT COLUMN" in partitions will appeal to you when we call your attention to the fact that the ratio of length to diameter is greater with our column than with any other on the market. We have a method by which we can test our column to ascertain that it is absolutely solid and perfectly filled and of first-class workmanship.

We submit on the next page detail of constructions, and would state that we can handle any form of construction with our column if you will submit your plans to us.

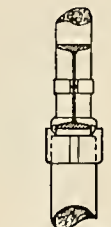
If you desire to use a small diameter column to carry a larger load than specified on our safe load sheet, we would be pleased to submit our reinforced column to carry the load required.

ESTIMATES.

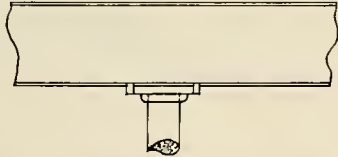
We make a specialty of out-of-town work. If you send us the plans and we are awarded the contract we will submit a detail sketch showing lengths and form of construction, etc. When such work as this is shipped, the columns, caps and bases are numbered and a sketch sent showing where each part is to be placed, and the details are such that any good contractor can readily understand them and set up the columns.



Side Elevation Standard Cap.



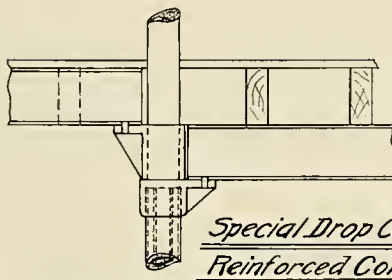
End View.



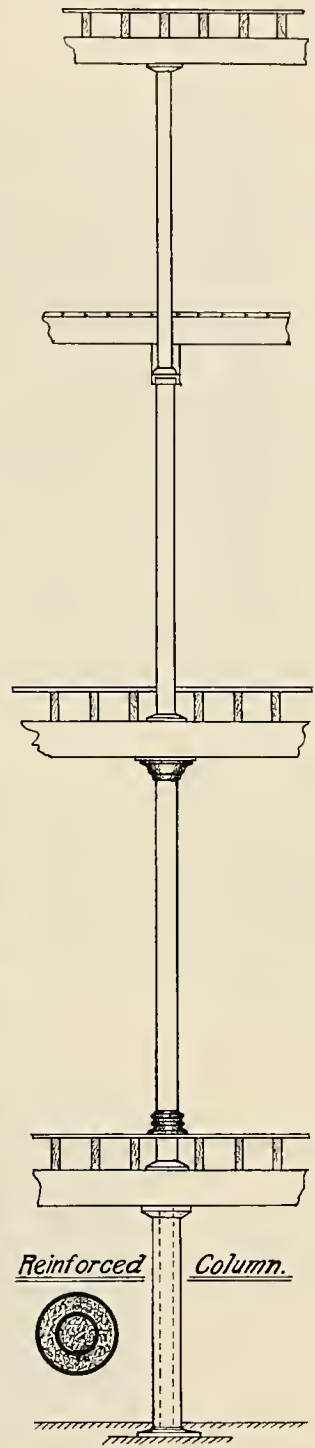
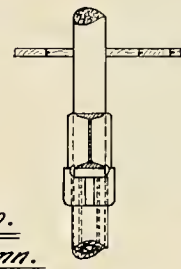
Standard I Beam Cap



End View.



Special Drop Cap.
Reinforced Column.



Telephone 1363 Cortlandt.
New York Fireproof Column Co.
 253 Broadway New York City.

LALLY PATENT COLUMN.
 Steel Shell Filled With Fireproof Composition.
 Specify "X Heavy."

Guaranteed Safe Load In Tons.

Length in Feet.	Outside Diameter Of Column.						
	4"	4 1/2"	5	5 1/2"	6 1/2"	7 1/2"	8 1/2"
7'	17	26	30	34	44	56	67
8'	16	25	29	33	43	55	66
9'	14	23	27	31	41	53	64
10'	12	21	25	29	39	51	62
11'	10	19	23	27	37	49	60
12'		17	21	25	35	47	58
13'		16	20	24	34	46	57
14'		14	18	22	32	44	55
15'			16	20	30	42	53
16'				18	28	40	51

Safe Loads based on Government Tests
 made at the Watertown Arsenal.

Tenement House Construction.
 Method of enclosing Columns in
 Partitions & arrangement of
 Girder Beams.

Store & Factory Construction.

DIAGRAMS SHOWING CONSTRUCTION OF THE LALLY PATENT COLUMN

J. B. & J. M. CORNELL CO.

MANUFACTURERS OF

Structural Steel, Iron and Bronze Specialties

26th Street and 11th Avenue
NEW YORK CITY, N. Y.

TELEPHONES

547, 548, 549, 550 CHELSEA

WORKS

COLD SPRING-ON-HUDSON, N. Y.
AND NEW YORK CITY, N. Y.

PRODUCTS.

We are Contractors for and Manufacturers of STEEL and IRON STRUCTURAL WORK for BUILDINGS; STEEL, IRON and BRONZE ORNAMENTAL WORK for BUILDINGS, HEAVY and LIGHT CASTINGS; all kinds of HEAVY SPECIAL MACHINERY, SUGAR HOUSES and SUGAR MACHINERY, BURGLAR-PROOF VAULTS and DOORS; BEAMS, CHANNELS, ANGLES and BARS; CHEMICAL WORKS and MACHINERY; WIRE ANNEALERS and POTS.

We make the "WALDO" SECTIONAL and other SASH WEIGHTS; the "COMPO" BRAKE SHOE with CORK INSERTS; PATENT PRESSURE BLOWERS and EXHAUSTERS; STEEL and CAST YOKES for TROLLEY ROADS, GRILLES, GATES and FIRE-ESCAPES, SHUTTERS; all kinds of KALOMINED IRON WORK.

We will contract for any kind of work in Iron or Steel.

FACILITIES.

We have a capacity for producing 30,000 tons of castings, and 50,000 tons of Steel Work per annum. We have our own lighters and switch engines; our larger works are 52 miles from New York City, and the N. Y. Central & Hudson River R. R. switches into all our shops. We can thus assure prompt delivery.

TERRITORY.

We are especially well located for work all through New York State, Massachusetts, Connecticut, New Jersey and Pennsylvania, and all points on the coast south and east.

ADAPTABILITY.

Our products are accepted as among the best, by the New York City and other Building Departments, as well as by all local and The National Board of Fire Underwriters.

FACTS TO ASSIST ORDERING. 2000 TONS IN STOCK.

A large quantity of material, amounting to 2000 tons, is always kept in stock ready to be made up. As a rule we request architects to furnish scale drawings, but we will make the drawings when desired. All the necessary work in estimating (plans and specifications) will be done by us. As to the shipping, we can send our goods by any line desired, and from Cold Spring by our own lighters on the Hudson River; by the N. Y. Central R. R.; by the Ramsdell Line daily steamboat, or by the Duchess and Columbia R. R. to the East. Goods leaving Cold Spring at 6 P. M., arrive in New York City at noon the next day. Always give the usual shipping instructions, stating whether goods are to be boxed.

INSTALLATION.

We will install our products wherever desired.

CAST-IRON COLUMNS.

The responsibility that goes with the selection of columns is very often overlooked by architects and builders. Every column should be given individual scientific care by the manufacturer; and architects, builders and owners should be assured on this important point. We keep a complete record of every column, giving the date when cast, cleaned, drilled, turned, weighed, inspected and shipped; as well as the actual weight and records of the iron from which it was made and as to its strength and quality. These reports are always open to the inspection of the purchaser.

No column is ever shipped from our foundries without passing through the hands of inspectors, who are experts, and who are responsible for the careful inspection of every column cast.

Our motto is, "*Quality, Economy and Dispatch.*"

THE CINCINNATI MANUFACTURING CO.

1243 to 1249 West Sixth Street
CINCINNATI, OHIO

TELEPHONES: { OFFICE, WEST 570
WEST 1821

PRODUCTS.

Manufacturers of BANK and OFFICE RAILINGS, ELEVATOR ENCLOSURES, ELEVATOR CARS, WINDOW GRILLES and ORNAMENTAL BRASS, BRONZE and IRON WORK. Also ELECTRO-PLATERS.

Sole Manufacturers of the AUTOGATE CELLAR DOOR GUARDS.

FACILITIES.

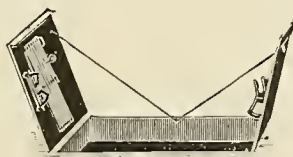
A factory of Sixty Thousand square feet floor-span, specially equipped.

AUTOGATE CELLAR DOOR GUARDS.

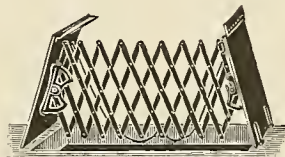
The only improved device for the purpose of protecting cellar, elevator or coal chute openings on sidewalks. When out of use, out of the way. Covered by patents.



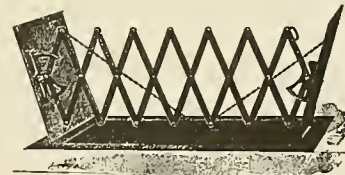
POLISHED WIRE GLASS ENCLOSURE, No. 775



Gate Collapsed



Multiple Bar Gate, Contracted Position



Single Bar Gate Extended

AUTOGATE CELLAR DOOR GUARDS

RAILINGS.



SAFETY DEPOSIT RAILING, FIFTH NATIONAL BANK, CINCINNATI, OHIO

PRICES.

Estimates cheerfully furnished.

DOW WIRE AND IRON WORKS

LOUISVILLE, KY.

OFFICE AND FACTORY
FRANKLIN AND BUCHANAN STREETS

SALESROOMS
NO. 730 WEST MARKET STREET

PRODUCTS.

The Dow Wire and Iron Works Company are Artisans in BRONZE, BRASS and IRON, but more particularly as applied to ELEVATOR CABS and ENCLOSURES, BANK and OFFICE RAILINGS, IRON and WIRE FENCING, STAIR and BALCONY RAILINGS, IRON BEDS for the home and for public institutions, WIRE and IRON WINDOW GUARDS, FIRE ESCAPES, etc. We are the manufacturers of the famous "KIRKER-BENDER" FIRE ESCAPES.

FACILITIES.

Modern equipment, expert mechanics and thirty years' experience, together with the most desirable location for manufacturing, and shipment both by rail and water, place us in the front rank with legitimate competitors.

TERRITORY.

Work manufactured by us may be found in the most prominent public and private buildings throughout the United States.

ORDERING.

We will furnish careful estimates from architects' plans and specifications; or if desired, we can submit special designs on application. You are invited to write to us for any detailed information concerning any of our products.

INSTALLATION.

We supervise the installation of all our manufactures. We carry in stock ample quantities of raw material which enables us at all times to manufacture without delay.

Our "Triple Checking System" has reduced the possibility of errors to the lowest minimum, so that on erection no alterations are necessary.

GENERAL INFORMATION.

Architects and contractors know from past experience that all orders placed with "DOW" are a positive guarantee of strict adherence to detail, specification and excellency in workmanship.

THE "KIRKER-BENDER" FIRE ESCAPES.

The famous "KIRKER-BENDER" FIRE ESCAPE is a spiral inclosed in a sheet steel cylinder six feet in diameter, provided with automatic entrance and exit doors. At public tests over a million people have slid through this escape without injury to person or clothing. It is enthusiastically endorsed by the UNITED STATES GOVERNMENT, together with Fire Chiefs, State Governors, Architects and Superintendents of Public Institutions as the ONLY IDEAL FIRE ESCAPE in the world.

Foreign countries have recognized the value of this escape, the Japanese being one of the first to adopt it.

Eight patents have been granted on this escape, and others are pending.

We will erect the "KIRKER-BENDER" FIRE ESCAPE on any building in the United States, with the written agreement that if at a public test where hundreds go through, it does not prove what we claim for it, we will take it away without any expense whatever to the owner of the building.



"KIRKER-BENDER"
FIRE ESCAPE

FLOUR CITY ORNAMENTAL IRON WORKS

MANUFACTURERS OF

Ornamental Iron and Bronze Work

MINNEAPOLIS, MINN.

BRANCH OFFICES

804-805-807 HOME TRUST BUILDING
PITTSBURG, PA.

2113 5th AVENUE, EAST,
SPOKANE, WASH.

PRODUCTS.

Manufacturers of ORNAMENTAL IRON and BRONZE WORK, including the following which are our specialties: STAIRS, ELEVATOR CARS and ENCLOSURES, MARQUEES, STORE FRONTS, TABLETS, GRILLES, LAMPS, GATES, FENCES and RAILINGS.

FACILITIES.

We have one of the best equipped plants in the West and employ a large corps of skilled mechanics, modelers, designers and engineers. We have excellent facilities, not only for manufacturing, but for devising and originating designs and methods of construction.

TERRITORY.

We are prepared to execute large contracts in any part of the United States, Canada and Mexico.

PRICES AND ESTIMATES.

We will be pleased to furnish prices on single pieces, or estimates on large jobs to those interested.

RECENT WORK.

The following is a partial list of our recent work:

NAME OF BUILDING.	LOCATION.	ARCHITECT.
MINNESOTA STATE CAPITOL	St. Paul, Minn.	CASS GILBERT.
KANSAS STATE CAPITOL	Topeka, Kan.	JOHN F. STANTON.
"STONELEIGH COURT" APARTMENT HOUSE	Washington, D. C.	J. G. HILL.
COLUMBUS PUBLIC LIBRARY	Columbus, O.	ALBERT RANDOLPH ROSS.
UNITED STATES MINT	Denver, Colo.	JAMES KNOX TAYLOR.
UNION BANK BUILDING	Winnipeg, Can.	DARLING & PEARSON.
MAJESTIC APARTMENT HOUSE	Philadelphia, Pa.	J. M. HUSTON.
NORTHWESTERN NATIONAL BANK	Minneapolis, Minn.	KEES & COLBURN.
NATIONAL BANK OF COMMERCE	Minneapolis, Minn.	F. B. & L. L. LONG.
SECURITY BANK BUILDING	Minneapolis, Minn.	F. B. & L. L. LONG.
CREAM OF WHEAT BUILDING	Minneapolis, Minn.	HARRY JONES.
MUNICIPAL BUILDING	Washington, D. C.	COPE & STEWARDSON.
(in course of construction)		
HOTEL BUILDING FOR CINCINNATI REALTY Co.	Cincinnati, O.	FRANK M. ANDREWS.
(in course of construction)		

ILLUSTRATIONS.

The illustrations given on the pages following are intended to convey an idea of the character of ornamental iron and bronze executed by us.



DETAIL OF EAGLE SHOWN BELOW



CAST-IRON RAILING AND FACIA THIRD FLOOR CORRIDOR
Minnesota State Capitol Building, St. Paul, Minn. Cass Gilbert, Architect



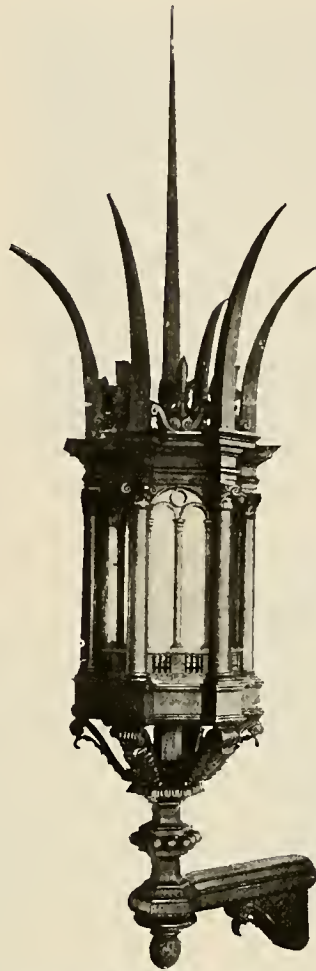
ONE OF THE ORNAMENTAL CAST AND WROUGHT IRON RAILS BETWEEN
STAIRWAY ARCHES ON FIRST FLOOR.
Minnesota State Capitol, St. Paul, Minn. Cass Gilbert, Architect



WROUGHT IRON BRACKET



BRONZE FOUNTAIN
Orpheum Theatre, Minneapolis, Minn.
Kees & Colburn, Architects



BRACKET LAMP
United States Mint, Denver, Colo.
James Knox Taylor, Architect



WROUGHT-IRON GATE
United States Mint, Philadelphia, Pa. James
Knox Taylor, Supervising Architect



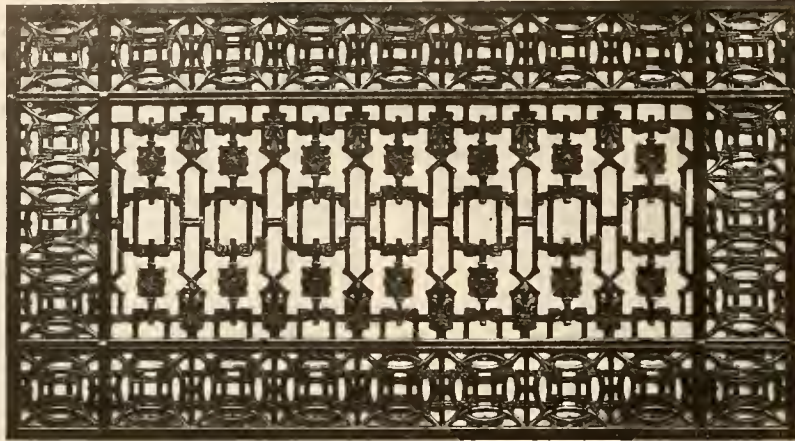
STANDARD LAMP
Clearfield National Bank, Clear-
field, Pa. Beezer Bros., Archi-
tects



PORTION OF DOOR GRILLE
Columbus, O., Public Library. Albert Ran-
dolph Ross, Architect



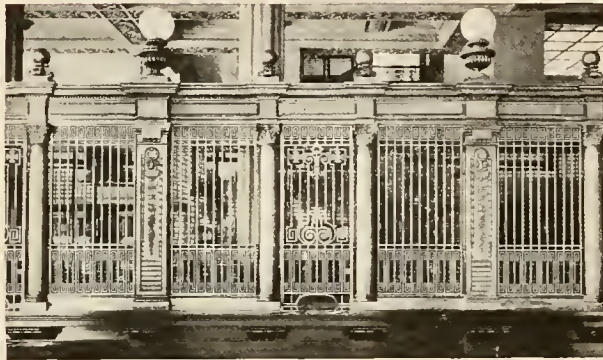
BRONZE LAMP STANDARD
United States Mint, Philadelphia, Pa. James
Knox Taylor, Supervising Architect



CAST-IRON RADIATOR SCREEN
Second National Bank, Winona, Minn. Nimmons & Fellows, Architects



BRONZE DOORS, TRANSOM AND CASING
Northwestern National Bank, Minneapolis,
Minn. Kees & Colburn, Architects



BRONZE COUNTER SCREEN
National Bank of Commerce, Minneapolis, Minn. F. B. & L. L.
Long, Architects



BRONZE FLAG CABINET
Minnesota State Capitol, St. Paul, Minn. Cass Gilbert,
Architect



WROUGHT AND CAST-IRON MARQUISE
Chas. L. Fitzhugh's Residence, Washington, D. C. Wood, Donn
& Deming, Architects

GLEN MANUFACTURING COMPANY

Ironwork, Wirework and Specialties in Fences
ELLWOOD CITY, PA.

PRODUCTS.

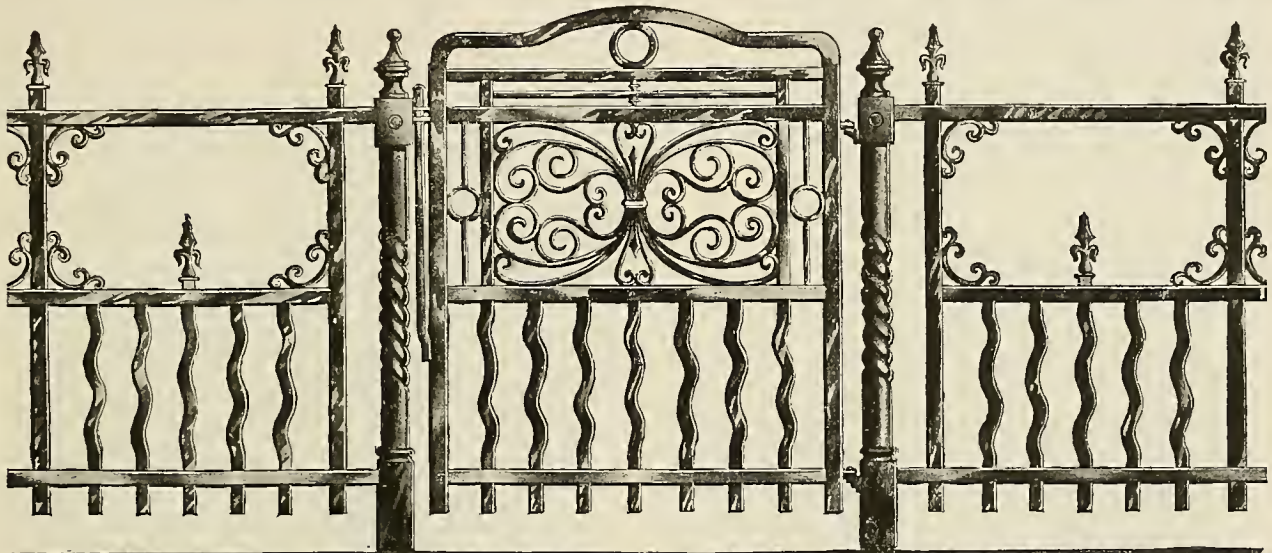
ARCHITECTURAL and ORNAMENTAL IRON and WIREWORK; HARTMAN WIRE FENCES and SPECIALTIES; GLEN STEEL FOLDING MATS.

FACILITIES.

We have every facility possessed by the up-to-date manufacturer, both in the way of equipment and workmen. We receive raw material and make shipments over four great trunk-lines, viz: The Baltimore & Ohio; Pennsylvania; Buffalo, Rochester & Pittsburg; and the Pittsburg & Lake Erie. We insure prompt delivery.

GLEN STEEL FOLDING MATS.

The "Glen" Steel Folding Mat is indispensable for entrances of public buildings, banks, churches, schools, etc. Does not mar tile, marble, wood or linoleum; is a perfect scraper, and does not curl up at the corners. It conforms to uneven surfaces and is easily cleaned. It is reversible, sanitary and the most durable mat on the market.



SPECIMEN OF ORNAMENTAL IRON FENCE AND GATE

HARTMAN STEEL PICKET FENCES.

Our Steel Picket Fences have been made for sixteen years, and are extensively used throughout the world for the protection and adornment of lawns, schools, parks, cemeteries and public and private enclosures generally.

These are made in seven heights and three sizes of rod. They are capable of several different constructions, and of being erected on uneven as well as level surfaces; on stone walls or wood bases as well as in the ground; on wood posts and rail, or complete with our steel posts and rail. Any good mechanic can erect them.

ILLUSTRATIONS.

We are always glad of an opportunity to submit illustrations showing designs of our "Hartman" Steel Picket Fence, and also notable examples of our architectural and ornamental iron and wirework.

HECLA IRON WORKS

118 North 11th Street
BROOKLYN, N. Y.

BOSTON OFFICE
166 DEVONSHIRE STREET

BALTIMORE OFFICE
LAW BUILDING, COURTLAND STREET

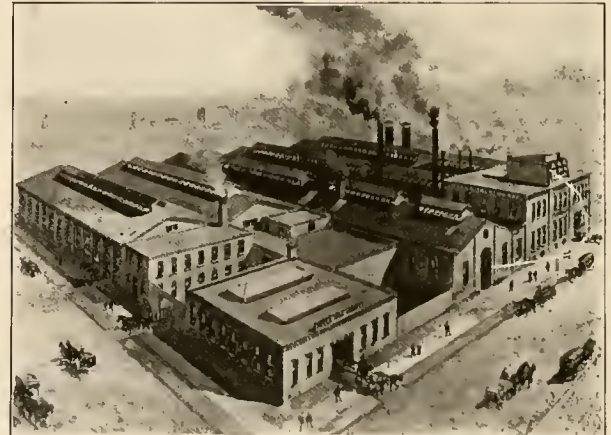
SAN FRANCISCO OFFICE
230 FIRST STREET

PRODUCTS.

Manufacturers of every kind of ARCHITECTURAL METAL WORK and of HECLA FIREPROOFING from architects' and engineers' designs.

The Hecla Iron Works has introduced many processes for the finish of metal work for buildings, such as ELECTRO-PLATING, DUPLEX-PLATING, BOWER-BARFFING, etc.

We have many specialties and improved modes of construction for STAIRS, ELEVATOR ENCLOSURES, CARS, DOORS, WINDOWS, GRILLES, etc. The HECLA FIREPROOF MATERIAL in connection with metal is for FIREPROOF WINDOWS, DOORS, STAIR TREADS, PLATFORMS, COLUMN COVERS, etc.. The fireproof doors are an absolute FIRE-STOP and are made in all grades from plain fireproof doors or shutters to the highest finished doors for use in office buildings, apartments and hotels; the windows are also made in all grades from the very plainest to the highest finished to be used in first-class buildings.



PLANT OF THE HECLA IRON WORKS, BROOKLYN, N. Y.

FACILITIES.

The plant of the Company is the largest of its kind in the United States. It was established some thirty years ago by Messrs. Poulson & Eger, who had had a training as architects and engineers, besides practical experience and who, immediately upon entering their business career, started to educate their workmen by having a training school for them in which to learn drafting, thus enabling them to better execute architects' and engineers' designs. This resulted in founding a higher grade of work, so that for a number of years the firm of Poulson & Eger practically had no competitor. Since then, however, many of those who had such training branched out for themselves or were employed by other concerns, so that now there are many competitors and some of them do excellent work; but it is generally acknowledged among architects, engineers and competitors that the old firm of Poulson & Eger is the pioneer in introducing the high grade of work which is now furnished in our prominent buildings.

TERRITORY.

We contract for metal work in all parts of the United States and often do work in foreign countries.

ADAPTABILITY
OF PRODUCTS.

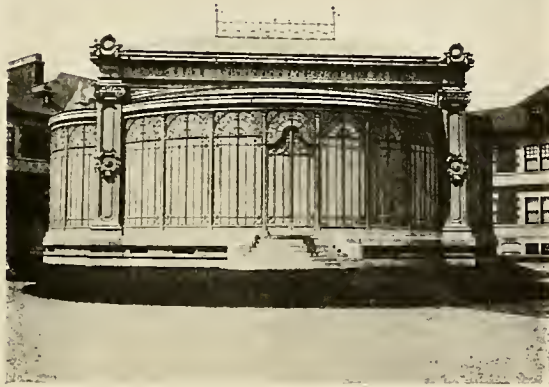
In addition to executing work from the designs of architects and engineers, we are always ready to use our best experience in making suggestions tending towards an improvement of the work or towards economy.

ESTIMATES.

The Hecla Iron Works is always ready to furnish estimates from architects' and engineers' specifications. Whenever possible, address the communications to our Brooklyn office.

WORK
ACCOMPLISHED.

The work of the Hecla Iron Works is to be seen in a majority of the great buildings erected in this country during what may be called the Modern Architectural Epoch.



CONSERVATORY OF WM. K. VANDERBILT AT
OAKDALE, L. I. ("IDLEHOUR")
HUNT & HUNT, *Architects*



BRONZE MARQUISE, HOTEL ST. REGIS, NEW YORK
TROWBRIDGE & LIVINGSTON, *Architects*

Our work has been installed by almost every architect of note, and has received from the profession the highest recognition for artistic and technical excellence. It embodies the highest ideals of craftsmanship. The accompanying illustrations show a few examples of our recent work.

THE STANDARD COMPANY

Ornamental Iron and Bronze

810 Railway Exchange Building

CHICAGO, ILL.

TELEPHONE, 2514 HARRISON

FACTORY, 15TH AND LAFLIN STS.

PRODUCTS. ELEVATOR CARS, ENCLOSURES, ENTRANCES, STAIRWAYS, RAILINGS, LAMPS, BANK INTERIORS, GRILLE WORK, STORE FRONTS, MEMORIAL TABLETS and NAME PLATES.

FACILITIES. Our capacity for handling large orders is not limited. We will undertake contracts of any size.

MATERIAL. We are prepared to execute work in cast or wrought iron, bronze or brass, also wirework.

FINISH. *Electro-Plated.* Cyanide Copper.
Duplex Copper.
Brass finish } Sanded, brushed, polished or Verdi-antique,
Bronze finish } and all "Oxidized" effects.

Painted Finishes. Any color.
Our especial preparation known as Berlin Black has been found durable and most satisfactory where a rich, dull black is desired.
Painted Verdi-finishes.

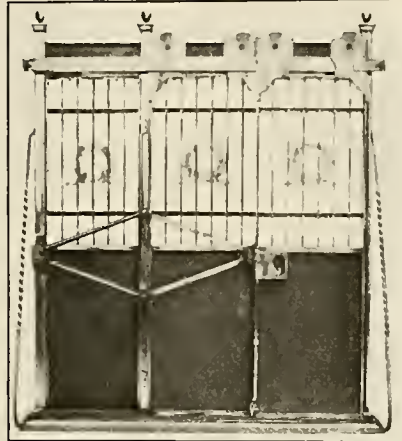
SPECIAL DESIGNS. We are prepared to execute work from architects' designs and details, and submit working drawings. Special designs for all purposes, upon request.

GENERAL INFORMATION. The quality of our output we not only claim, but aim to make of the highest standard of excellence. We allow no work to go out from our shops to which we are not ready afterwards to point as a sample upon which to solicit future orders. We can assure you of strictly first-class work in cast and wrought metals, good, sharp, clean-cut ornament on all cast work, perfect surfaces and members, unsurpassed workmanship in fittings, substantial construction, correct finish and prompt execution. It is always our effort to make the cost as reasonable as the work will permit.

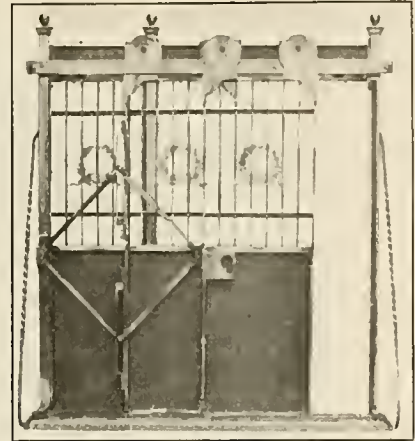
RECENT WORK. Among the recent orders executed by us, were contracts for all iron and bronze ornamental work in the following notable buildings: Powers Building, Chicago, Ill.; Frisco Building, St. Louis, Mo. (Front illustration on next page); Wilson Building, Dallas, Tex.; Candler Building, Atlanta, Ga.; Ohio State Capitol, Columbus, Ohio. We will be glad to send a list and photographs of many others, upon request.



Front View. Doors Open. No. 3077D
ELEVATOR DOOR



Rear View. Doors Closed. No. 3077B
ELEVATOR DOOR



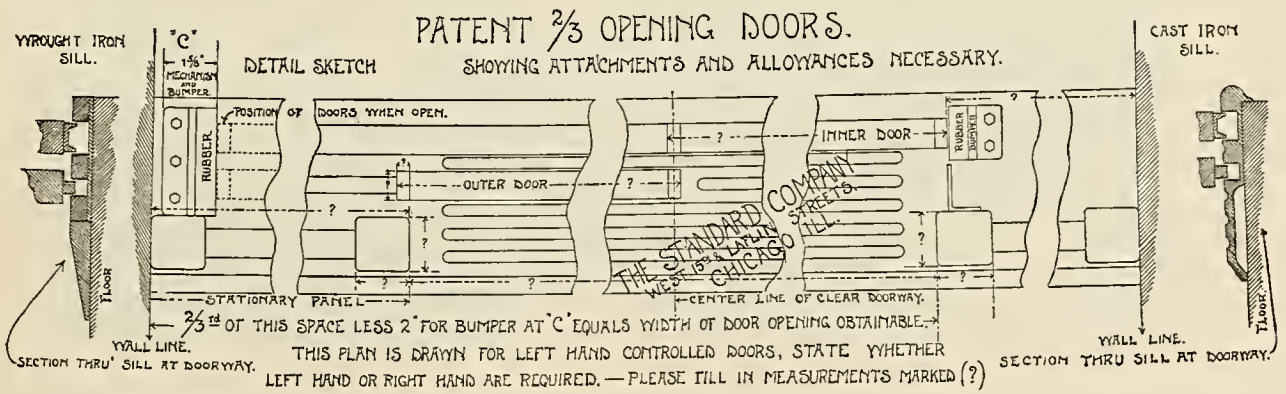
Rear View. Doors Partly Open. No. 3077C
ELEVATOR DOOR

**PATENTED
TWO-THIRDS
OPENING
ELEVATOR
DOORS.**

Patented Two-thirds Opening Elevator Door Mechanisms are manufactured exclusively by the Standard Company. The advantages of this style of doors will be readily appreciated. With this arrangement the wide doorway is obtained which cannot be secured with the ordinary single sliding doors or with the center opening doors. In the case of the latter, older forms, the door itself requires a space equal to its width, into which to slide, while with this two-thirds door arrangement the space so required is only half the width of the doorway.

This is a thoroughly mechanical device, constructed so as to withstand wear and to provide the means of easiest operation for double elevator doors. The lazy tongs are made of steel tees of suitable section, which are fitted with machine-turned steel spools and pins operating in guides secured to the frames of doors. These doors are equipped with gravity locks; the catch being provided in the groove of the floor-sill plate. Doors are hung on double overhead tracks with special anti-friction sheaves, completely equipped with all necessary guides, stops and rubber bumpers.

It has been the aim to make this a thoroughly satisfactory elevator door, without special regard to cost. Its wide use has sufficiently demonstrated its value and economy. These doors have been used extensively in office buildings, department stores, hotels and wherever it is desired to provide for the rapid handling of passengers. We furnish, upon application, full sized detail drawings of device complete, showing all its parts.





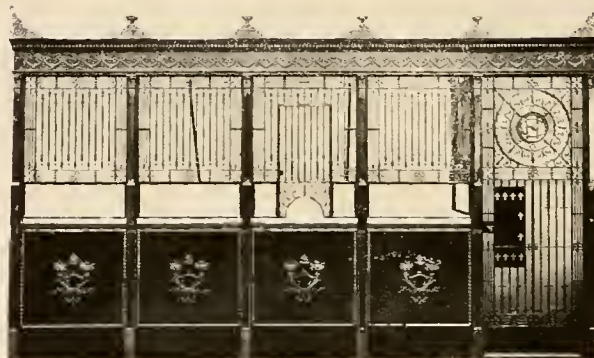
ELEVATOR CAR



STAIRWAY



ELEVATOR ENCLOSURE



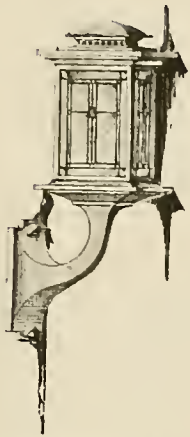
BRONZE RAILING



MARQUISE



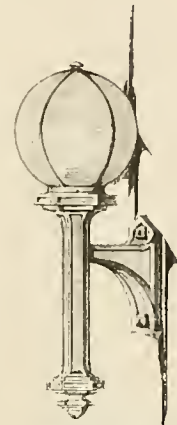
ELEVATOR ENCLOSURE



BRACKET LAMP,
No. 3516



BRONZE ENTRANCE



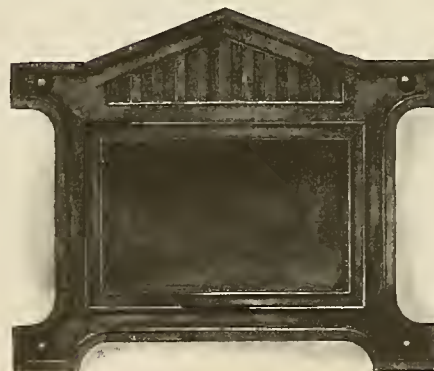
BRACKET LAMP,
No. 3515



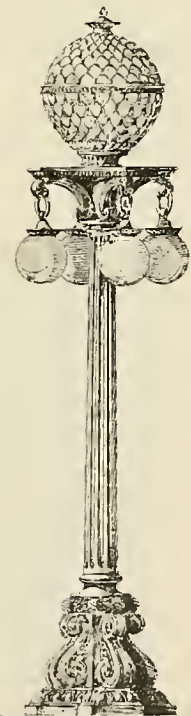
IRON STORE FRONT



LAMP STANDARD
No. 3536



MEMORIAL TABLET



LAMP STANDARD
No. 3502

THE W. S. TYLER COMPANY

Ornamental Iron and Bronze

CLEVELAND, OHIO

PRODUCTS.

Manufacturers of ORNAMENTAL IRON and BRONZE WORK, which consists of ENTRANCES, CORRIDORS, STORE FRONTS, MARQUISES, PORTE COCHERES, ELEVATOR ENCLOSURES, ELEVATOR CARS, TABLETS, STAIRWAYS, LAMPS, BANK and OFFICE RAILINGS, GATES, GRILLES, RAILINGS and FENCES.



STAIRWAY, FAYETTE COUNTY COURT HOUSE, LEXINGTON, KY.
Lehman and Schmitt, Architects

The W. S. Tyler Company.

SPECIMEN NAME PLATE

THE WINSLOW BROS. COMPANY

Ornamental Iron and Bronze

CHICAGO

NEW YORK

MAIN OFFICE AND WORKS

West Harrison Street, 46th and 47th Avenues

CHICAGO, ILL.

BRANCH OFFICES

NEW YORK
160 Fifth Ave.
PITTSBURG
Peoples National Bank Bldg.

BALTIMORE
Equitable Bldg.
ST. LOUIS
Colonial Trust Bldg.
MINNEAPOLIS
Andrus Bldg.

LOS ANGELES
108 Ord St.
SAN FRANCISCO
121 New Montgomery St.

PRODUCTS.

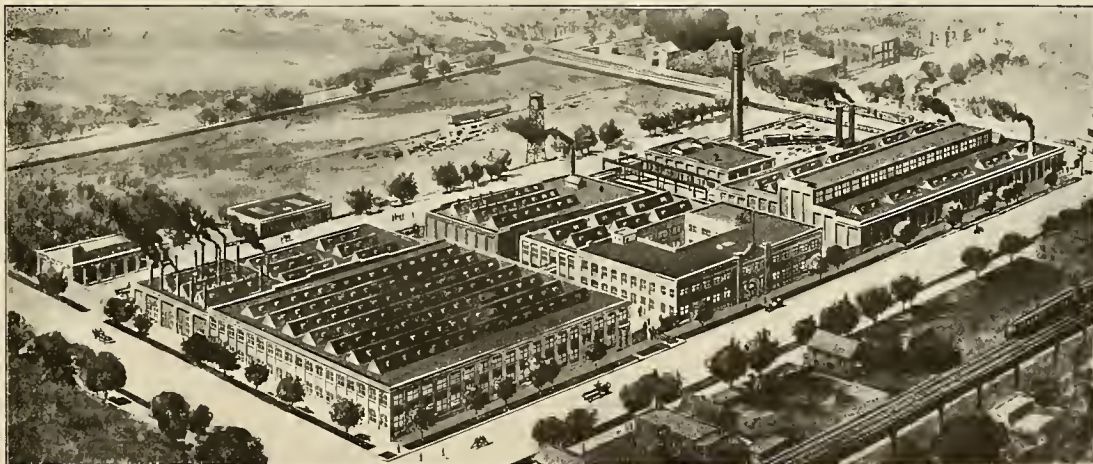
We are manufacturers of ORNAMENTAL IRON and BRONZE of the highest standard, also THE WINSLOW BROS. COMPANY PATENT FIREPROOF STAIRWAYS.

FACILITIES.

Our business is of a National character, and examples of our Iron and Bronze work may be seen in some of the most important buildings in all the large cities.

OUR FACTORY.

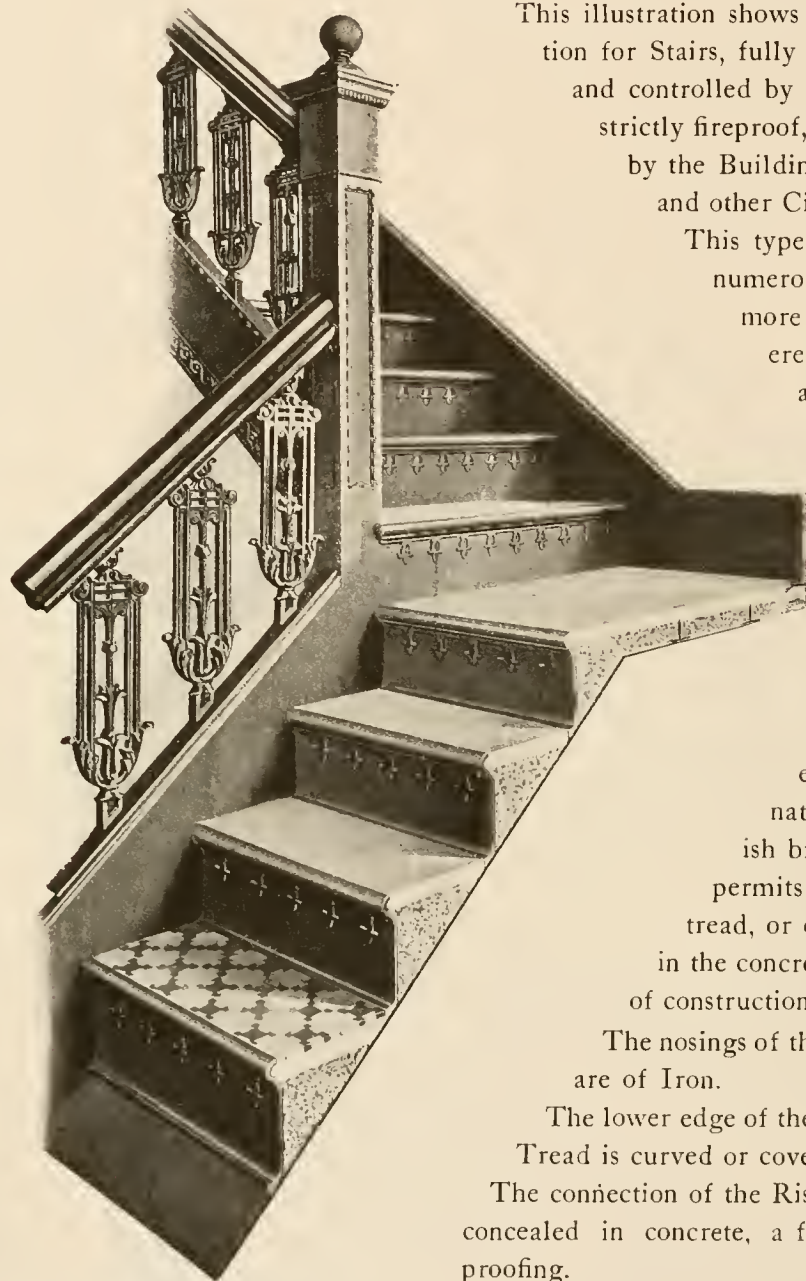
We now occupy our new Plant at West Harrison St., 46th and 47th Avenues, Chicago, the old Plant at Carroll Ave. proving inadequate for our purposes and our constantly growing business. Our new Plant is modern and up-to-date in every detail, affording us greatly increased facilities for the prompt and efficient execution of our contracts. (See illustration.)



PLANT OF THE WINSLOW BROS. COMPANY, CHICAGO, ILL.

ESTIMATES.

Estimates will be gladly furnished and correspondence is invited.



CEMENT AND IRON STAIRWAY
CONSTRUCTION

This illustration shows our Patent Cement and Iron construction for Stairs, fully covered by United States patent owned and controlled by us. Stairways of this Construction are strictly fireproof, and for this reason have been approved by the Building Departments of New York, Chicago and other Cities.

This type of Stair has recently been installed in numerous buildings in New York City, Baltimore and Chicago. The entire soffit is covered with a heavy Sheet Steel panel, giving a neat, finished appearance. The Soffit can be ornamented in any manner desired. The filling of treads and platforms consists of a mixture of Cinder Concrete and Sand up to within three-fourths of an inch of Step or Platform finish. The finished tread consists of equal parts of Portland Cement and Sharp Sand, giving a fine surface finish of even color, and which may either be in natural cement color, Venetian red, Spanish brown, or black. This Construction also permits of the use of rubber tile, Mason safety tread, or other composition which can be bedded in the concrete, and in general, the design and detail of construction is subject to great variation.

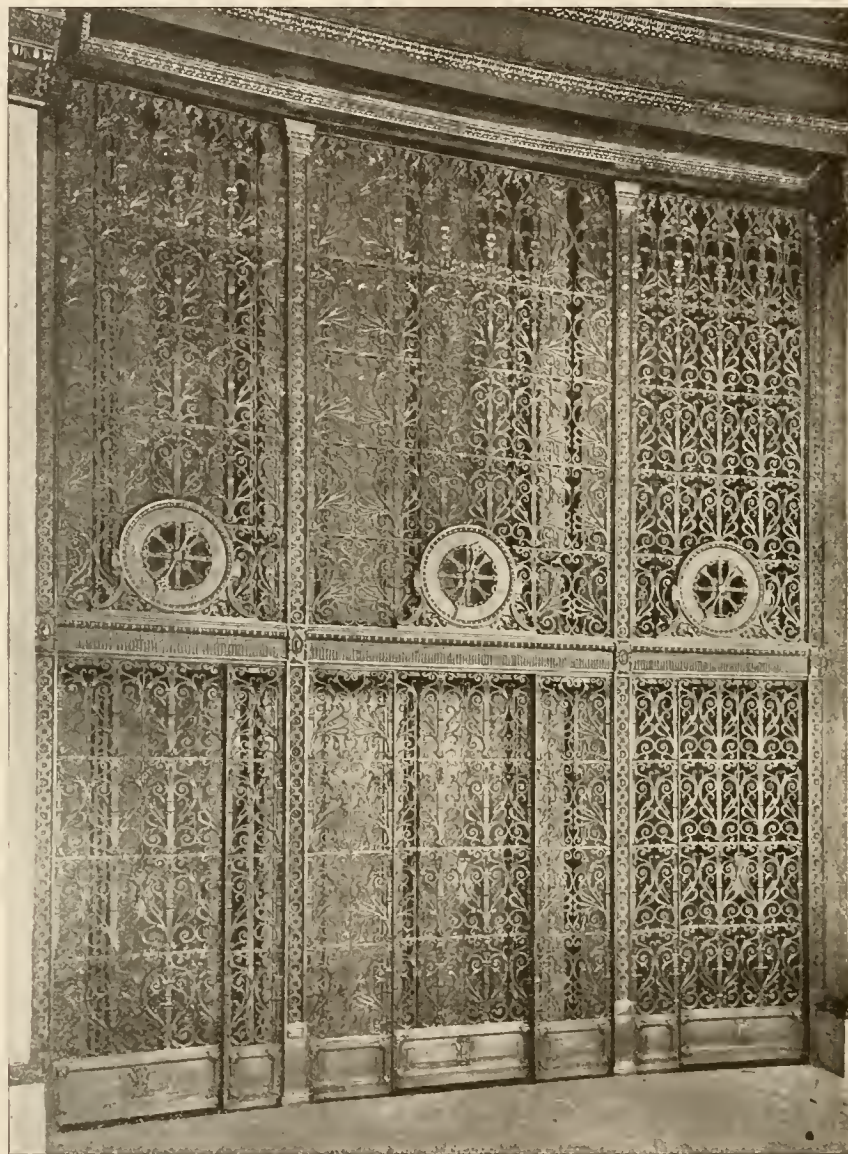
The nosings of the treads where the greatest wear occurs, are of Iron.

The lower edge of the riser where it connects with the Cement Tread is curved or coved forming a neat Sanitary joint.

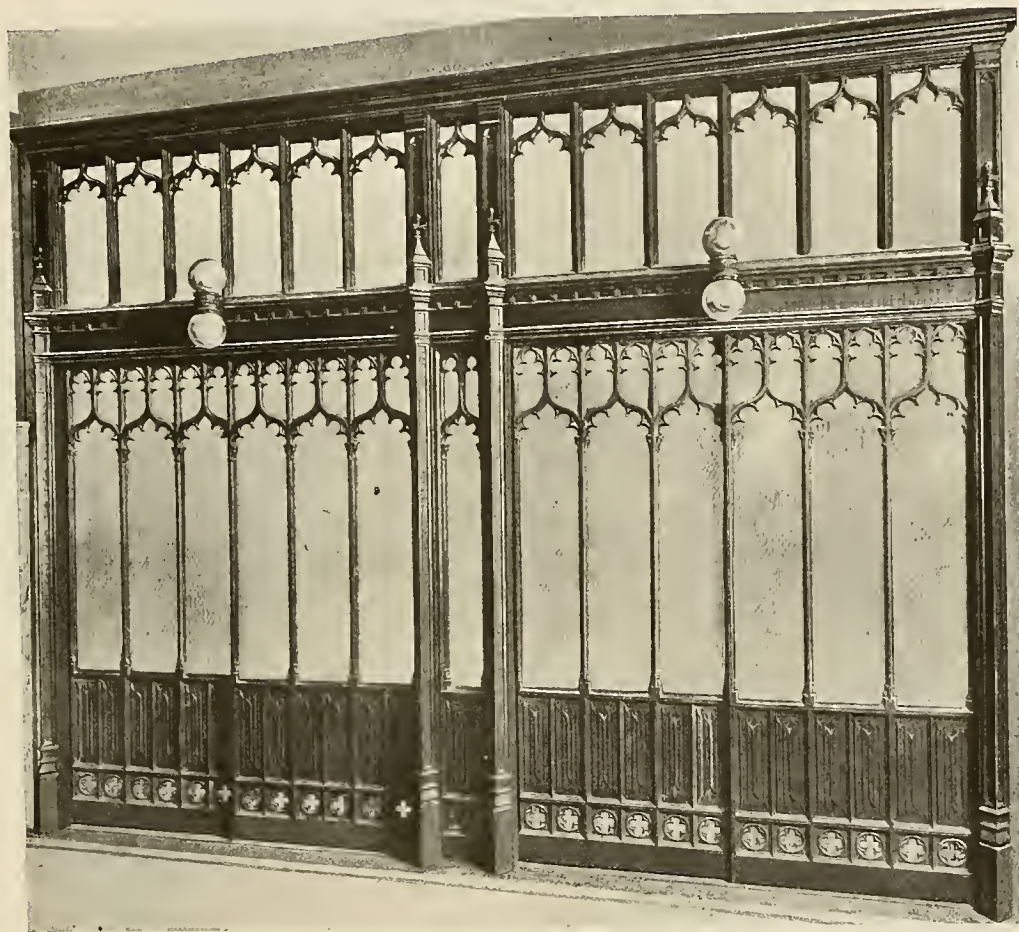
The connection of the Risers to the Strings is entirely buried and concealed in concrete, a feature of the utmost importance in fire-proofing.



GRAND STAIRWAY, WOMAN'S MAGAZINE BUILDING, ST. LOUIS
H. C. Chivers, Architect



DETAIL OF ELEVATOR ENCLOSURE, BELLEVUE-STRATFORD HOTEL, PHILADELPHIA
G. W. and W. D. Hewitt, Architects



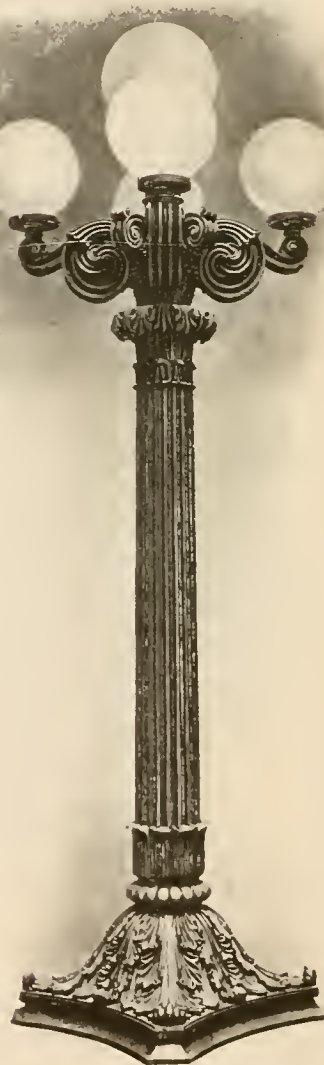
DETAIL OF FIREPROOF ELEVATOR ENCLOSURE OF CAST-IRON AND WIRE GLASS,
TRINITY BUILDING, NEW YORK CITY
Francis H. Kimball, Architect.



BRONZE MEMORIAL TABLET



STATUE OF KOSCIUSZKO, HUMBOLDT PARK, CHICAGO
K. Chodzinski, Sculptor



BRONZE LAMP POST

JNO. WILLIAMS, INC.

MANUFACTURER OF

Ornamental Bronze and Iron Work for Buildings

556 West 27th Street

NEW YORK CITY, N. Y.

TELEPHONE, 88 CHELSEA

PRODUCTS.

We manufacture the following: BRONZE and IRON ENTRANCE DOORS, DOOR GRILLES, WINDOW GRILLES, STAIR RAILINGS, TUBE RAILINGS, LAMP STANDARDS, BANK FITTINGS, COUNTER SCREENS, MESH WIREWORK, TELLERS' ENCLOSURES, ELEVATOR ENCLOSURES, MAUSOLEUM DOORS and FITTINGS, MEMORIAL TABLETS, SIGNS, and SEPARATE BRONZE LETTERS, FINE BRONZE CASTINGS, STATUES, FIGURES, PORTRAITS, BUSTS and MEDALLIONS, MONUMENTAL BRONZE WORK, FOUNTAINS, SUN DIALS, IRON DRIVEWAY GATES, FENCING, GRILLE WORK.



COVER DESIGN OF JNO. WILLIAMS INC. MAGAZINE

BRONZE
WORK AND
IRON WORK FOR
BUILDINGS,
EXTERIOR AND
INTERIOR,
TO SPECIAL
DESIGN AND
ESTIMATES.

We manufacture metal work in ornamental designs, to drawings furnished us, or we will furnish full size drawings and designs if required.

Our magazine describing and illustrating fine metal work is a valuable reference work for an architect's library. A copy should be in every architect's office.

- No. 1. Illustrates and Describes Bronze Memorial Tablets.
- No. 2. Illustrates and Describes Bank Counter Screens.
- No. 3. Illustrates and Describes Sculpture in Bronze.

Future numbers will illustrate and describe the product of the Jno. Williams Inc. Bronze Foundry. Special numbers devoted to such subjects as Sculptured Bronze Doors for Churches and Public Buildings, Stair Railings in Bronze and Iron, Lamps and Lanterns and Electric Standards, Hand forged Iron in America, etc.

Books sent free to principals in architects', sculptors' and decorators' ateliers.

ESTATE OF F. G. JANUSCH

Brass Founders and Finishers

MAIN OFFICE AND FACTORY
750 and 752 East 134th Street
NEW YORK CITY, N. Y.

BRANCH OFFICES

578 MISSION ST., SAN FRANCISCO, CAL.

733 MARSHALL FIELD BLDG., CHICAGO, ILL.

PRODUCTS.

Manufacturers of BRASS and IRON OPEN FIRE-PLACE GOODS, LAMPS, ELECTROLIERS, CANDLESTICKS, SUN DIALS, JARDINIERES, TRIPODS, DOOR SADDLES, DOOR KNOCKERS, MAT FRAMES, BATHROOM CABINETS, etc.

DESIGNS.

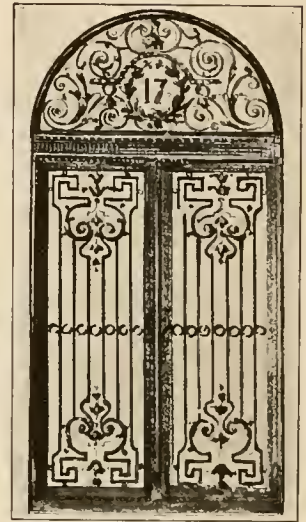
We are prepared to execute designs according to architects' specifications as follows: Bank Rails, Railings, Entrance Doors, Gates, Grilles, Tablets, Signs, etc.

FACILITIES.

Our factory contains 30,000 square feet of floor space, and is fully equipped with every modern feature necessary to produce the high grade of work for which we are known.

STOCK.

We carry a large stock of many of our lines, and on these can make immediate delivery.



CAST BRONZE ENTRANCE DOORS
Residence L. A. Heinsheimer,
17 West 70th Street
New York City, N. Y.



SUN DIAL
D. A. R., Pittsfield, Mass.



MEMORIAL TABLET
St. James P. E. Church, Newark, N. J.
Leland & Hall Co.



BATHROOM CABINETS
Residence, 300 Madison Ave., New York
City, N. Y. Hamilton Bell & Co.

ESTIMATES.

All inquiries for prices and estimates will receive prompt and courteous attention.

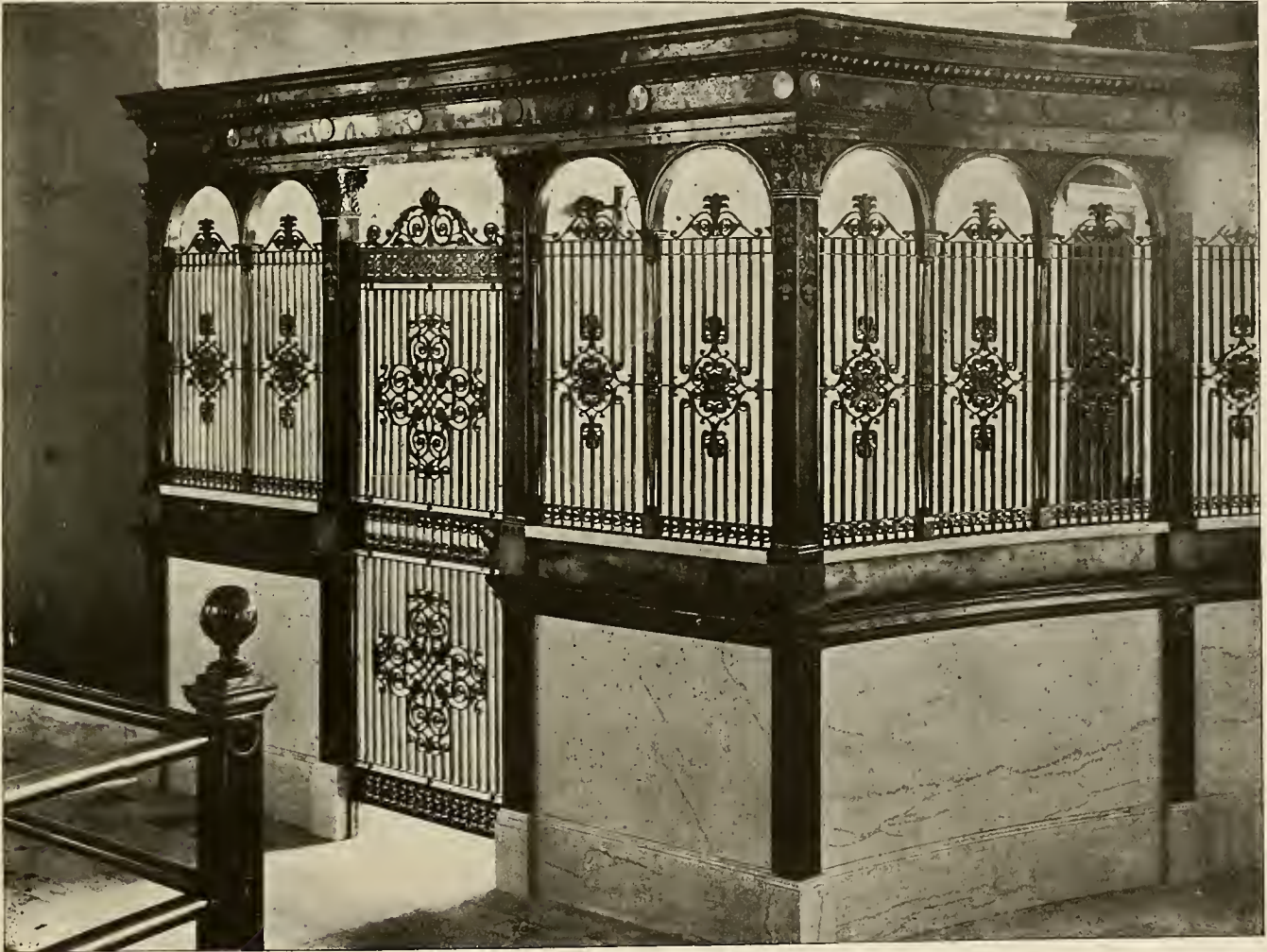
LASAR-LETZIG MFG. CO.

Ornamental Metal Work

16th and O'Fallon Streets

ST. LOUIS, MO.

PRODUCTS—Manufacturers of PLAIN and ORNAMENTAL WORK in IRON, WIRE, BRASS and BRONZE, including: BANK and COUNTER RAILINGS, ARCHITECTURAL IRON WORK, FOLDING GATES, IRON and WIRE FENCES, GUARDS and RAILINGS, ART METAL WORK, STABLE FIXTURES, ELEVATOR ENCLOSURES and CARS, METAL FIREPROOF PARTITIONS, IRON DOORS and GUARDS, DECORATIVE WORK for Buildings in Bronze and other metals.



CASHIER'S SCREEN OF BRONZE METAL. CONTINENTAL TOBACCO CO.'S OFFICE, ST. LOUIS, MO.

Isaac S. Taylor, Architect

FACILITIES—We have one of the largest, best equipped, best lighted, best ventilated works in the world, for the manufacture of exclusive work to order in ornamental and plain iron, brass, bronze and wire work.

ILLUSTRATIONS AND DESIGNS—We invite an opportunity to submit illustrations of many notable examples of our work, including some very fine Bronze Bank and Counter Railings, Wrought Iron Grilles and Gates, Wrought Iron Brackets and Lamps, Door and Window Grilles, Balcony Railings, Elevator Cars and Enclosures.

ESTIMATES—We are prepared to submit special designs or to estimate on architect's own designs.

ANCHOR POST IRON WORKS

OFFICE AND SHOW ROOMS

15 Cortlandt Street

NEW YORK CITY, N. Y.

TELEPHONE
8733 AND 8734 CORTLANDT

SHOPS
GARWOOD, N. J.

PRODUCTS.

Manufacturers of IRON RAILING, WROUGHT-IRON ENTRANCE GATES, IRON PIERS, LAMPS, GRILLES, ETC.; also GALVANIZED ANCHOR POSTS. Builders of WIRE FENCES of all descriptions for Lawns, Gardens, Stock Enclosures, Poultry Runs, Dog Kennels, Game Preserves, etc.; WIRE NETTING FENCES, 8' and 10' in height, for Tennis Court Enclosures and Back Stops; UNCLIMBABLE NETTING FENCES for Country Places, Parks, Race Tracks and Public Institutions. Also Arbors, Trellises, Garden Appliances, Tree Guards and Wire Espaliers.

FACILITIES.

Our shops are situated at Garwood, New Jersey, on the Central Railroad of New Jersey. They are equipped with modern machinery and have every facility for turning out work at the lowest possible cost.

INSTALLATION AND ERECTION.

We will give estimates for our work delivered and set complete in any part of the country. We employ a large force of skilled fence builders and mechanics exclusively in the setting-up of our work. If we supply the material only, but do not erect the work, full instructions are furnished, so that our fences or gates can be placed in position by any intelligent mechanic.

DESIGNS AND PLANS.

We give particular attention to the faithful execution of architects' drawings, endeavoring to carry out the work to the spirit as well as to the letter of the design.

IRON RAILING AND ENTRANCE GATES.

The manufacturing and setting of Iron Railing and Wrought-Iron Entrance Gates is one of the main branches of our business. We have put up many miles of Railing on private places, as well as for some of the best known corporations, cemeteries, public institutions, parks and race courses of the country.

ANCHOR POSTS AND WIRE FENCES.

These Posts are the product of over ten years' practical experience in building of Iron and Wire Fences.

The Post proper is a bar of high carbon steel of a shape designed to give the greatest possible strength, and is galvanized. The anchorage of the Post consists of two steel stakes which are driven through sockets securely bracing it from opposite sides of the fence.



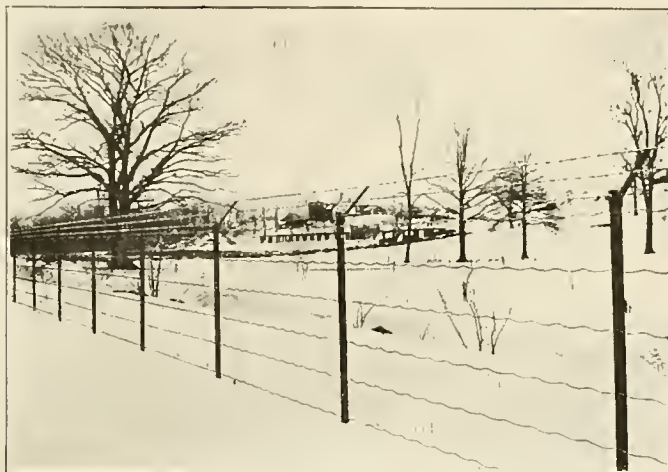
IRON ENTRANCE GATE

ADVANTAGES.

This anchorage holds the fence in its true alignment. No digging is required in the setting of the posts, and they are not thrown out of line by force. Being galvanized, they will outlast wood or painted iron, many times over.



ANCHOR POST



UNCLIMBABLE NETTING FENCE

WIRE.

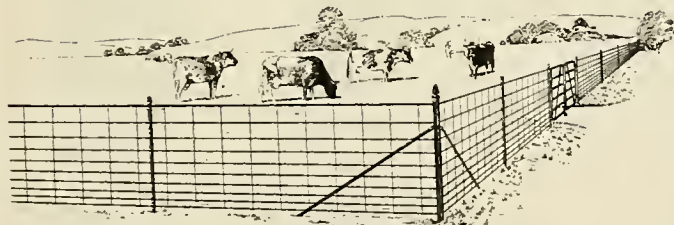
Any form of WIRE or WIRE NETTING can be used with our ANCHOR POSTS, and a great variety of them is shown in our catalogue.

PRICES AND ESTIMATES.

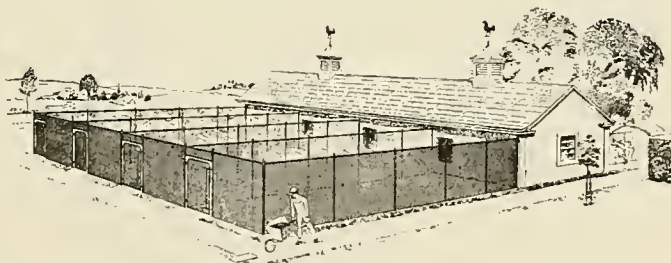
Our catalogue illustrating Wire Fences as well as Iron Railings and Gates together with price lists, may be obtained on application.

Sample sections of Fences with Posts, Gates, etc., may be seen at our office and salesrooms.

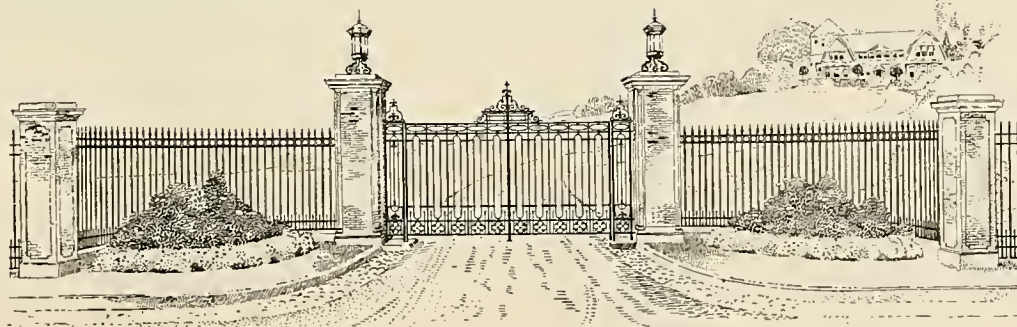
In writing for estimates send, if possible, a diagram showing the position of ends, corners, and gates, with dimensions.



FARM AND PASTURE FENCE



POULTRY FENCE



IRON ENTRANCE GATE

F. E. CARPENTER CO.

MANUFACTURERS OF

Iron Fencing and Entrance Gates

7 and 9 Warren Street
NEW YORK CITY, N. Y.

TELEPHONE CONNECTION.

PRODUCTS.

We are manufacturers of IRON FENCING and ENTRANCE GATES of all descriptions. We also make WIRE and NETTING FENCING and PIPE RAILING, PADDOCK and TENNIS COURT ENCLOSURES, etc.

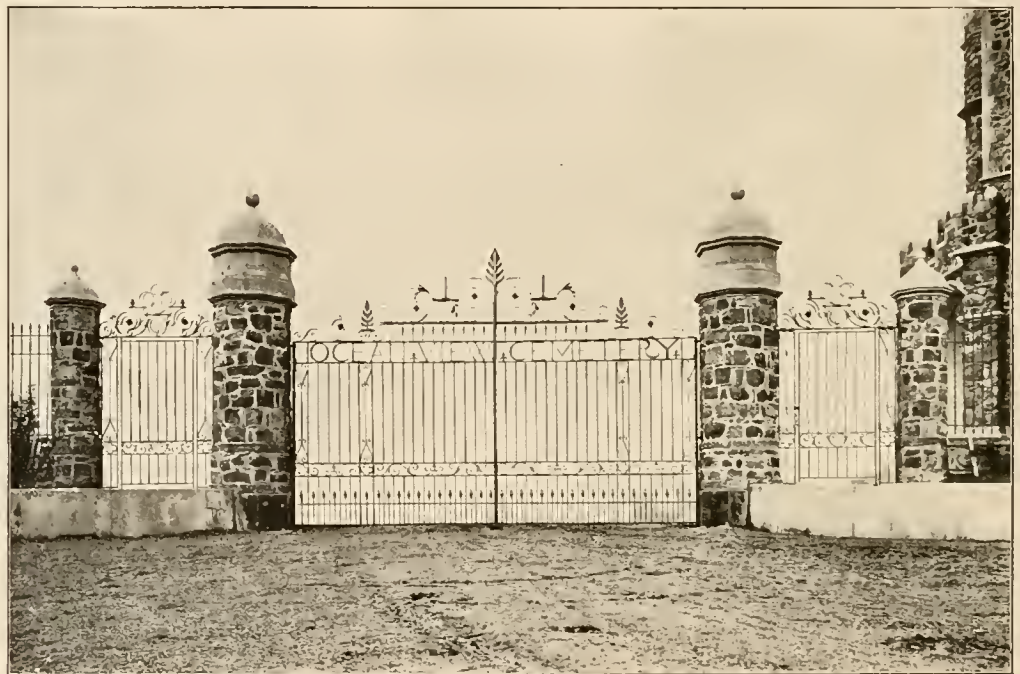
FACILITIES AND TERRITORY.

We are in a position to execute the largest orders, and will place our fencing, etc., in any part of the country east of Pittsburg.

For work and estimates west of Pittsburg, we will refer our clients to our western correspondents.

GENERAL INFORMATION.

We execute from the designs of architects, or we will furnish designs in general or in detail.



ENTRANCE GATES OF OCEAN VIEW CEMETERY, WHITLOCK, STATEN ISLAND
From Design by Daniel W. Langton, Ph.D.

COST.

Owing to the fact that it is impossible to quote definite prices on orders for fencing that may vary from fifty feet to one or more miles in length, and to be erected from five to one hundred miles distant from New York City, all prices are omitted from our catalogues and we beg to ask architects and others to send us a postal card or to use the telephone, which will bring a representative at once.

ILLUSTRATIONS.

Above we print an example of our recent work.

ESTABLISHED 1886

INCORPORATED 1903

THE STEWART IRON WORKS COMPANY

CINCINNATI, OHIO

PRODUCTS.

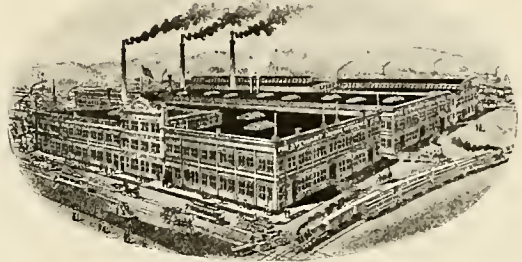
Manufacturers of IRON and STEEL FENCE, ENTRANCE GATES, CEMETERY ARCHES, IRON RESERVOIR VASES, LAWN and PARK SETTEES, LAWN and DRINKING FOUNTAINS, TREE GUARDS, HITCHING POSTS, WIRE AND IRON OFFICE and BALCONY RAILINGS, WINDOW GUARDS, CAST-IRON CRESTING, STABLE FITTINGS, CEMETERY VAULT GATES, WROUGHT IRON GRILLES, and a general line of PLAIN and ORNAMENTAL WORK of this class. Catalogues can be had upon application.

FACILITIES.

Years of experience, special machinery, patents and skilled workmen, have placed us in the lead in the Iron Fence business in the United States, and this is where we propose to remain if fair dealings, promptness, improvements, excellence and low prices will keep us in the lead.

We have the largest Iron Fence factory in the world, and every facility and skilled workmen for manufacturing the best Iron Fence made, and for competing with the world in prices. Capacity over 1,000,000 lineal feet of Iron Fence per annum.

The marvelous growth of our Iron Fence business is an acknowledgment that our work has been satisfactory, prices right and our dealings fair.



PLANT OF THE STEWART IRON WORKS COMPANY, CINCINNATI, O.

PRICES.

Prices, catalogues and instructions for measuring will be furnished on request.

Our price on Fence includes line posts, foundation bases and brace at end of each panel of fence, adjustable center support under each long panel of fence, all rail connections, bolts and one coat of black paint.



ENTRANCE GATES A SPECIALTY

REFERENCE.

We have made and erected work under the supervision of the most prominent architects throughout the United States.

WORLD'S FAIR AWARDS.

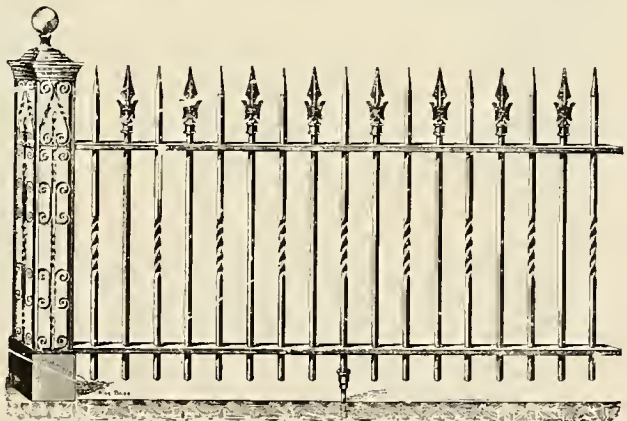
At the Louisiana Purchase Exposition in St. Louis we received the Highest Awards, Grand Prize and Gold Medal for the superior excellence of our Products.



GRAND PRIZE

GOLD MEDAL

Send us your plans and specifications.



PLAIN AND ORNAMENTAL IRON FENCE OF EVERY DESCRIPTION

WM. H. JACKSON COMPANY

Artisans in All Metals

OFFICE

Union Square North, 29 East 17th Street

FACTORIES AND SHOPS

229-239 West 23th Street

NEW YORK CITY, N. Y.

TELEPHONE CONNECTION

163 MICHIGAN AVENUE, CHICAGO, ILL.

PRODUCTS.

Manufacturers of ENTRANCE GATES, ENTRANCE DOORS, STAIR RAILINGS, MARQUISES, GRILLES, FENCES. BANK COUNTERS and MEMORIAL TABLETS; also MANTELS, FIREPLACES, FIRE SETS, ANDIRONS, FENDERS, FIRE SCREENS, WOOD HOLDERS, HOB GRATES. TILES for FIREPLACES, WAINSCOTING, FLOORS. ART CERAMIC MOSAICS.

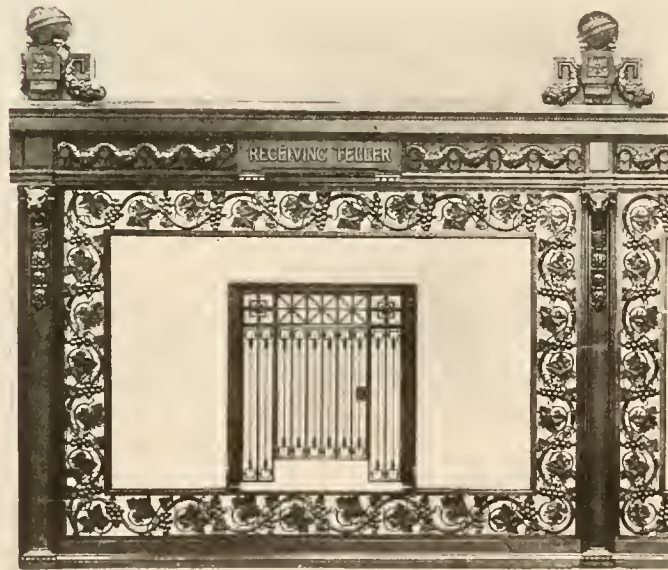
We are now manufacturing *air-tight* and *dust proof* bronze windows. Our patented *air-tight sash* and *jamb*s can be applied to almost any style or size of window. Architects' designs are carefully executed.

FACILITIES.

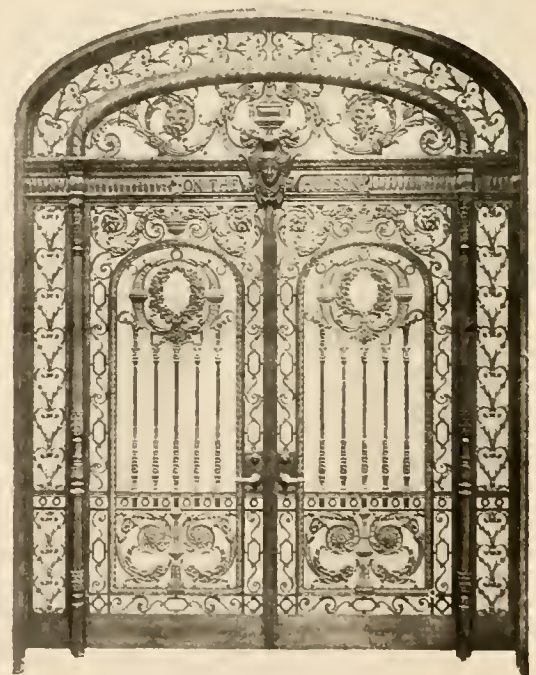
Our foundry and shops are well equipped with the latest and most improved machinery, and we employ the most skillful workmen, all being under our personal supervision, insuring promptness and finest workmanship.

TERRITORY.

The operations of this Company cover the entire United States.



BRONZE COUNTER SCREEN
Central National Bank, Cleveland, O.



BRONZE ENTRANCE DOORS
Residence of Charles M. Schwab, Esq., New York City

CHARLES G. BLATCHLEY

Wooden Columns, Pumps, etc.

Station "P"

PHILADELPHIA, PA.

TELEPHONES { BELL, MARKET 32-78A
KEYSTONE, MAIN 48-77A

FACTORY
SWANSON, MCKEAN & MEADOW STREETS

PRODUCTS.

Manufacturers of THE BLATCHLEY COLONIAL PORCH COLUMN; a general line of TURNED WORK, VERANDA POSTS, NEWELS, etc., WOOD PUMPS, for country wells, WOOD FORCE PUMPS, the "PEERLESS" IMPROVED IRON HYDRANT, STREET WASHER, and TWENTIETH CENTURY WALL WASH.

FACILITIES.

We carry at all times a stock of from 6,000 to 10,000 Column Squares, 12 inches in diameter and less; columns turned to conform accurately to architects' drawing when desired. Time required on orders, three to twelve days.

TERRITORY.

New England, Middle and Southern States, limited only by cost of freight.

ORDERS.

Special orders should preferably be transmitted direct to the firm. Architects' drawing for Columns should include full size detail for Caps and Bases, and scale drawing for shaft. Orders for stock designs may be filled from local dealers, whose names will be furnished upon application.

**THE
BLATCHLEY
COLONIAL
PORCH
COLUMN.**

The Blatchley Colonial Porch Column (Fig. 1) is manufactured from solid squares, seasoned by centre boring. The squares are bored when green, then air seasoned from six months to two years. Being taken from the centre of the tree, all the sap wood is turned off in finishing, securing heart stock exclusively in the Column, not a mere shell with small strips to part, or lock joints to break, but a solid, substantial and permanently durable column.

REFERENCES.

A few representative buildings, etc., where the Blatchley Colonial Columns have been erected:

- SAMARITAN HOSPITAL Philadelphia, Pa.
- JEWISH HOSPITAL Philadelphia, Pa.
- RESIDENCE OF RABBI KRAUSKOPF Germantown, Phila.
- PERGOLA OF W. M. OSTRANDER Ogontz, Pa.
- N. J. STATE SOLDIERS' HOME Vineland, N. J.
- RESIDENCE OF J. E. CHILOS West Collingswood, N. J.
- STEEL PIER Atlantic City, N. J.
- NEW PIER Wildwood, N. J.

**PRICES OF
PORCH
COLUMNS.**

Diameter	Length over all, Including Caps and Bases					
	5-ft.	6-ft.	7-ft.	8-ft.	9-ft.	10-ft.
6-inch	\$1.60	\$1.83	\$2.05	\$2.28	\$2.50	\$2.75
7-inch	1.88	2.15	2.42	2.68	2.95	3.22
8-inch	2.45	2.80	3.15	3.50	3.87	4.25
9-inch	2.83	3.25	3.67	4.10	4.52	4.95
10-inch	3.20	3.65	4.10	4.55	5.00	5.50
11-inch	3.80	4.35	4.90	5.45	6.00	6.60
12-inch	4.45	5.10	5.75	6.40	7.10	7.80

Estimates for special sizes or designs promptly furnished upon request. Prices subject to change.

Duplex Doweled Red Cedar Built-Up Columns in 8 and 10-inch diameters 8 to 10 feet long carried in stock. Prices range from 15% to 20% lower than the Blatchley solid square centre bored Column. Fig. 2 shows construction. Further information will be furnished on request.

**DUPLEX
DOWELED
COLUMN.**

**FORM OF
SPECIFICATIONS.**

Architects who wish to insure their clients against inferior substitution, should incorporate the following words in their Specification: "The Blatchley Colonial Porch Column from solid, centre bored squares." "The Blatchley Porch Posts."

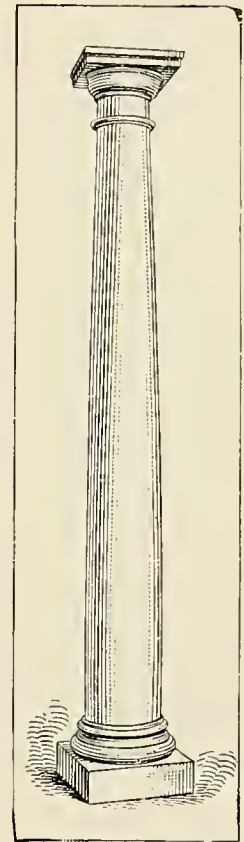


FIG. 1. THE BLATCHLEY COLONIAL PORCH COLUMN



FIG. 2. DUPLEX DOWELED COLUMN Showing Construction

THE DECORATORS SUPPLY COMPANY

209-219 South Clinton Street
CHICAGO, ILL.

BRANCH OFFICES

NEW YORK CITY, N. Y.
146 Fifth Avenue
HOUSTON, TEXAS
63 Theatre Building
SEATTLE, WASH.
222 Globe Building
TACOMA, WASH.
740 Pacific Avenue
CLEVELAND, OHIO
104 St. Clair Street
SALT LAKE CITY, UTAH
323 Atlas Block

GALVESTON, TEXAS
2107 Mechanic Street
MILWAUKEE, WIS.
Herman Building
NEW ORLEANS, LA.
512 Hibernia Bank Building
MINNEAPOLIS, MINN.
Lumber Exchange
SAN FRANCISCO, CAL.
152 New Montgomery Street
TOLEDO, OHIO
2116 Cherry Street

PITTSBURG, PA.
Ferguson Block
ST. LOUIS, MO.
923 Wainwright Building
PORTLAND, OREGON
252 Oak Street
LOUISVILLE, KY.
16 Courier-Journal Office Building
DENVER, COL.
Colorado Building

SPOKANE, WASH.
121 S. Monroe Street
CHARLESTON, W. VA.
Bradford Building
PHILADELPHIA, PA.
1200 Chestnut Street
KANSAS CITY, MO.
3605 Tracy Avenue
ERIE, PA.
Liebel Building
TORONTO, CANADA,
19 Yonge Street Arcade

PRODUCTS.

Manufacturers of INTERIOR and EXTERIOR ORNAMENTS of every description in Cement, Composition, Plaster and Wood; COLUMNS, CAPITALS, BRACKETS, CORNICES, FRIEZES, MOULDINGS, PANELS, WOOD GRILLES, FINE WOODWORK, PLASTIC CEILINGS and WALL DECORATIONS, and COMPOSITION ORNAMENTS for WOODWORK.

FACILITIES.

Both in special and regular work we are equipped and have experience in handling contracts of the largest size in any portion of the country. Through our Branch Offices we are able to confer personally with architects anywhere.

Our designing room with its facilities is always at the disposal of the architect.

CATALOGUES.

As we issue four large catalogues, one of Wood Grilles, one of Capitals, one of Composition Ornaments, and one of Plastic Ornaments, it will readily be seen that in this small space it is impossible for us to give a full description of our line. In Figs. 1 to 4, we reproduce in miniature sample pages from our catalogues, any of which will be sent to architects upon request.

ADAPTABILITY.

We furnish all articles shown in our catalogues in the material best suited for the purpose for which the ornament is to be used, either for exterior or interior decoration.



FIG. 1. Page 5 of our 68 page Grille catalogue



FIG. 2. Page 13 of our 80 page Capital catalogue

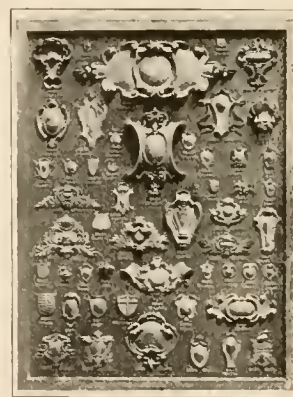


FIG. 3. Page 116 of our 120 page Composition Ornaments catalogue

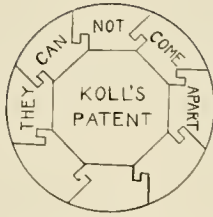


FIG. 4. Page 163 of our 190 page Plastic Ornaments catalogue

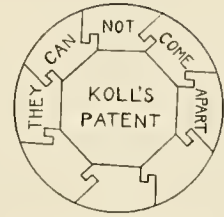
ORDERING.

Fifty per cent. of the caps, brackets and plastic ornaments shown in each of our four catalogues are kept in stock ready for immediate shipment. When goods are made to order, ten days should be allowed for deliveries. In specifying, plate numbers in our catalogues should be used. For execution, we require only scale drawings, as we furnish full size details. All prices for goods are f.o.b., Chicago, properly packed to insure against breakage.

HARTMANN BROS. MFG. CO.



MANUFACTURERS OF
Koll's Patent Lock Joint, Staved
and Turned Columns



OFFICE AND WORKS

428-438 W. LINCOLN AVENUE
Mount Vernon, N. Y., U. S. A.

TELEPHONE, 600 MT. VERNON

SALES OFFICE

1123 BROADWAY
New York City, N. Y.

TELEPHONE, 1682 MADISON SQ.

BRANCHES

WESTERN FACTORY

HENRY SANDERS CO.
77-85 WEED ST., CHICAGO, ILL.

PACIFIC COAST

A. J. KOLL PLANING MILL CO.
335 E. SECOND ST., LOS ANGELES, CAL.

WE ARE THE ORIGINATORS OF THE LOCK JOINT STAVE. "KOLL'S PATENT COLUMNS CANNOT COME APART." WE GUARANTEE ALL OUR WORK.

PRODUCTS.

We are the exclusive manufacturers of KOLL'S PATENT LOCK JOINT PORCH COLUMNS (wood). We also manufacture a complete line of COMPOSITION ORNAMENTAL (Staff) CAPITALS at our Mt. Vernon factory. We make all styles of PILASTERS and SQUARE COLUMNS to match.

FACILITIES.

We are in position to handle orders calling for any size column up to 42" diameter and proportionate length. We have furnished 7 carloads of columns for a single residence.

TERRITORY.

In addition to the three factories which we now have in operation, we contemplate opening other factories at other places, so that we can make prompt deliveries to any point in the United States. We are also exporting from our Mt. Vernon factory to European points.

ADAPTABILITY OF PRODUCTS.

Our columns are made from stock which can be fireproofed to suit the rules of the National Board of Fire Underwriters and similar bodies, and they can be used for interior or exterior work.

INSTRUCTIONS AS TO ORDERS.

Order by number if possible. As most of our columns are made to detail, we do not carry the larger sized shafts in stock. We carry instead a large supply of raw material which enables us to make up these special orders in a reasonably short time. We keep on hand the smaller sizes of shafts in the rough, ready to turn to detail, so that we can make prompt shipments.

We have many models of ornamental capitals of both classic and conventional design and can ship from stock.

It is very important to *specify thickness* of stock of which these columns are to be made. Unless otherwise ordered, stock will be 2, 2½ and 3 inches thick as follows:

Columns from 6 to 16 inch diameter, stock 2 inch thick.

" " 17 " 23 " " " 2½ " "

" " 24 and upwards " 3 " "

" 20 inch diameter and upwards, if fluted, will be made of 3 inch stock.

Always state if for porch, pergola or interior use.

In the absence of detail drawing we make the *entasis* to conform to the classic orders of architecture, also the dimensions of the caps and bases.

We make all flutes of the depth the diameter of the column would call for, following the architectural orders accurately.

We are prepared to make prompt estimates on receipt of detail or list of columns and pilasters required, giving number, diameter and length, together with style of caps and bases, or give our Catalogue Number.

Shafts of small columns are packed two or four in a crate. Caps and bases are crated separately. The small ornamental capitals are packed in closed cases; the large size capitals are packed in crates. The large column shafts are surrounded with strips of wood securely kept in place by iron bands. We always make shipments in closed cars.

We make no extra charge for packing or cartage.

The usual shipping instructions should be furnished.

PRICES.

Price-list will be sent on application.

FACTS IN REGARD TO INSTALLATION.

Columns are primed one coat lead and oil before shipment, but should be thoroughly painted as soon as possible after being placed in position. The ends of the columns should be temporarily covered with weather-proofed paper, if for any reason they cannot be used immediately or if roof is not in position.

Ornamental Capitals should be flashed with sheet lead and protected by painting. Should they become wet through exposure it will be necessary to wait until they are thoroughly dry before applying paint.

GENERAL INFORMATION.

As the appearance of the building is either made or marred, depending on the design and workmanship of this very conspicuous architectural feature, the architect is justly concerned in securing the accurate care and ability required to successfully carry out this part of the work to conform to his plans and details.

Although our method of construction has long since passed the experimental stage we have made another marked advance during the past year and have secured additional patents covering an improved method of making our stave joints. (See section).

This construction permits us to secure a still greater locking effect and also reduces the cost of manufacture to some extent.

We would call your attention to the importance of mentioning the *thickness of stock* in specifying or ordering columns.

While the position of our locking tongues permits us to use as thin stock with as great a margin of safety as with any form of joint now in use, we think you will agree that the very nature of the work that the column is called upon to do and the amount frequently invested in this direction calls for the best construction possible.

To avoid substitution specify "*Koll Column.*"

HOLLOW SHAFT.

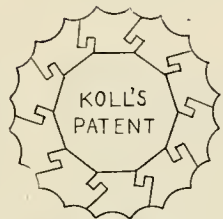
No blocking or inside form is required in any of our shafts, as stock used is of sufficient thickness and our joint permanent and secure enough to support the shaft and the superimposed load, furnishing a column as well as cap and base that is hollow throughout and ready for the introduction of either timber or iron column that may be necessary to carry any unusual load.

FORMING SHAFT.

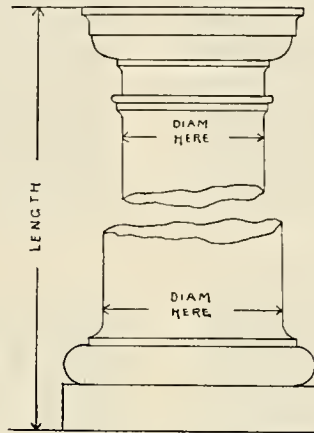
The staves, after being thoroughly heated in the steam box, are rapidly glued with brush and placed in forms and immediately clamped with specially devised clamps placed on shaft at intervals of 18 inches, thereby insuring as perfect a union as hot glue and powerful pressure can secure—the clamping up process being complete *before stock is cold*—a very important consideration.

OUR
PATENT.
1904.

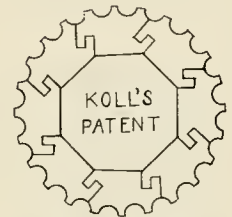
CORRECT ENTASIS SECURED IN FORMING STAVE ITSELF: All columns manufactured under Koll patents are made in our own factories, every shaft being turned in the lathe, thereby permitting the proper entasis to be secured. The staves are straight one-third and swell tapered upper two-thirds, so that when shaft is formed the correct entasis is obtained in the rough, securing enough stock top and bottom of shaft to permit our turning to proper detail and for fluting and to form top and bottom "turn-out" and neck moulding, if any is called for, on the shaft itself without cutting too close to joint. These points of construction will be appreciated by the architect, but are found lacking in many so-called "lock joint" staved columns now on the market.



SECTION SHOWING
DORIC FLUTING
Columns 195 and 215 and
215 $\frac{1}{2}$.



SHOWING WHERE MEASURE-
MENTS OF COLUMNS SHOULD
BE TAKEN



SECTION SHOWING
IONIC FLUTING
Used on all other Fluted
Columns shown in Cata-
logue.



SECTION OF COLUMNS AND PILASTERS

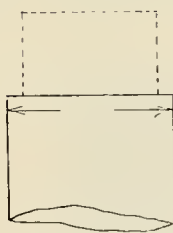


FIG. 2.

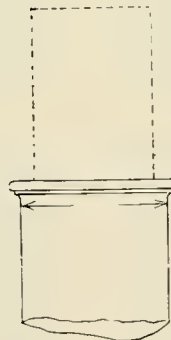


FIG. 1.

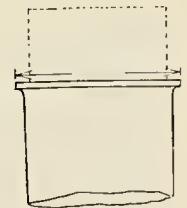


FIG. 3.

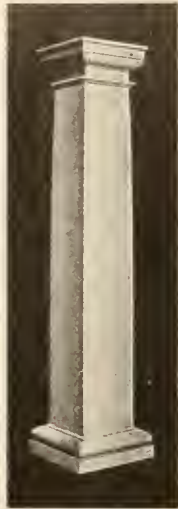
VARIOUS STYLES OF FINISHING NECK OF COLUMNS AND PILASTERS FOR COMPOSITION CAPS
In ordering capitals give diameter where shown and state style of neck (give figure).

STOPPING
FLUTES.

We stop all flutes properly by means of an attachment to our machines at a comparatively low cost; the expense of doing this part of the work by hand accounts for its absence on many columns being offered to the trade and on others now in use, an omission that is fatal to the proper architectural effect. We are prepared to furnish columns with any style of fluting or reeding desired.

DOWELING
FOR CAPS.

Where Composition Caps are used we furnish suitable wood dowel, shouldered on top of shaft to carry the weight.



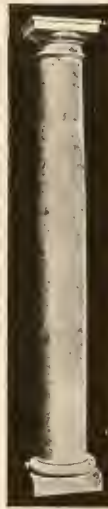
No. 180
Square
Column

No. 180



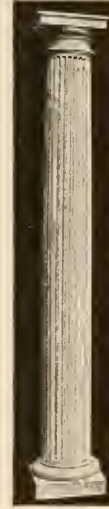
No. 195
Greek
Doric
Fluted

No. 195



No. 200
Plain
Tuscan

No. 200



No. 205
Fluted
Tuscan

No. 205



No. 210
Plain
Doric

No. 210



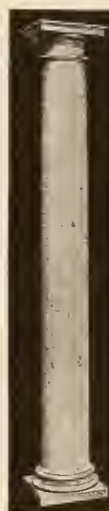
No. 215
Fluted
Doric

No. 215



No. 215 1/2
Fluted
Upper 3/4
Doric

No. 215 1/2



No. 220
Plain
Doric
Cap.
Attic
Base

No. 220



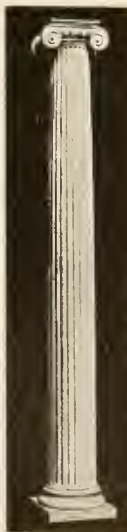
No. 225
Fluted
Doric
Cap.
Attic
Base

No. 225



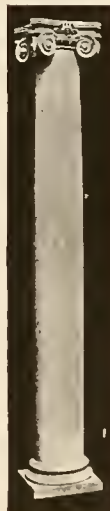
No. 230
Plain
with
Roman
Ionic
Cap.

No. 230



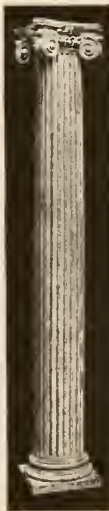
No. 235
Fluted
with
Roman
Ionic
Cap.

No. 235



No. 240
Plain
with
Angular
Ionic
Cap.
(Scamozzi)

No. 240



No. 245
Fluted
with
Angular
Ionic
Cap.
(Scamozzi)

No. 245



No. 250
Plain
with
Corin-
thian
Cap.

No. 250



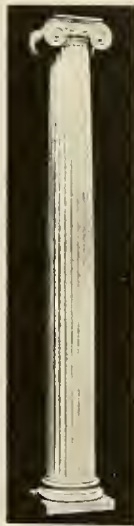
No. 255
Fluted
with
Corin-
thian
Cap.

No. 255



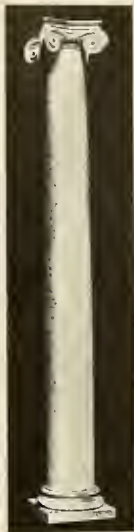
No. 260
Plain
with
Greek
Ionic
Cap

No. 260



No. 265
Fluted
with
Greek
Ionic
Cap

No. 265



No. 270
Plain
with
Angular
Greek
Ionic
Cap

No. 270



No. 275
Fluted
with
Angular
Greek
Ionic
Cap

No. 275



No. 280
Plain
with
Angular
Greek
Ionic
Cap.
with
necking

No. 280



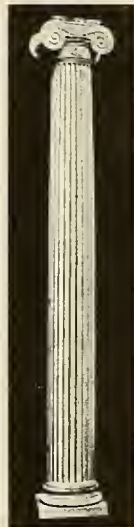
No. 285
Fluted
with
Angular
Greek
Ionic
Cap
with
Necking

No. 285



No. 290
Plain
with
Erech-
theum
Cap

No. 290



No. 295
Fluted
with
Erech-
theum
Cap

No. 295



No. 300
Plain
with
Renaiss-
ance
Cap

No. 300



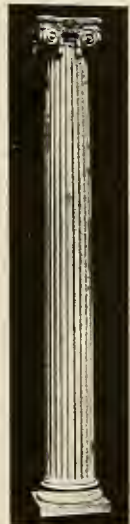
No. 305
Fluted
with
Renaiss-
ance
Cap

No. 305



No. 310
Plain
with
Angular
Ionic
Cap
with
Pendants

No. 310



No. 315
Fluted
with
Angular
Ionic
Cap
with
Pendants

No. 315



No. 320
Plain
with
Composite
Cap

No. 320



No. 325
Fluted
with
Composite
Cap

No. 325



No. 255F
Pilaster
Fluted
with
Corin-
thian
Cap

No. 255F

WE MAKE OUR OWN ORNAMENTAL CAPITALS



ANGULAR IONIC
(Scamozzi)



SCAMOZZI
With Pendants



ROMAN IONIC



DORIC



GREEK IONIC



MODERN IONIC



ERECHTHEUM



ERECHTHEUM
ANTAE



ANGULAR GREEK
IONIC



SCAMOZZI
With Necking



ANGULAR GREEK
With Necking



ERECHTHEUM
No Necking



CORINTHIAN



COMPOSITE



RENAISSANCE

REFERENCES.

A partial list of users of "KOLL'S PATENT LOCK JOINT COLUMNS."

PUBLIC BUILDINGS.	NUMBER AND SIZE OF COLUMNS.	RESIDENCES.	NUMBER AND SIZE OF COLUMNS.
New War College, Washington, D. C.	7 carloads.	W. P. Eno, Saugatuck, Conn.	4-15" Cols.
Insane Asylum, Washington, D. C.	138-18" and 20" Cols.	Anson Phelps Stocks, Collender Point, Conn.	20-19" Cols.
Savannah, Thunderbolt & Isle of Hope R. R., Savannah, Ga.	4-30" and 58-13" Cols.	C. E. Harner, Jacksonville, Fla.	31-14" Cols.
Lake Shore Passenger Depot, Chicago, Ill.	4-36" Cols.	J. E. Cohen, Jacksonville, Fla.	6-29 and 10-12" Cols.
Hospital, Cherokee, Ia.	48-13" Cols.	S. P. Shotter, Savannah, Ga.	20-28" Cols.
Country Club, Davenport, Ia.	8-24" Cols.	Geo. B. Hippe, Des Moines, Ia.	6-25 1/2" and 6-15" Cols.
Soldiers' Home, Marion, Ind.	4-32" Cols.	P. O. Stensland, Irving Park, Ill.	8-28" and 7-10" Cols.
Forest Glen Seminary, Forest Glen, Md.	4-33" Cols.	F. M. Blount, Wheaton, Ill.	4-24" and 3-13" Cols.
Colonial Hotel, South Haven, Mich.	12-14" Cols.	Horace L. Hall, Topeka, Kan.	4-21" Cols.
Allenhurst Club, Allenhurst, N. J.	4-40 1/2", 60-14" Cols.	Hamilton Terrace Land Co., Shreveport, L. I.	35-10" Cols.
Bryant Studio Building, New York City, N. Y.	8-18" Cols.	Brandon Hall, Boston, Mass.	8-32" Cols.
State Library, Albany, N. Y.	8-14" Cols.	H. B. Slavin, Blue Hill, Me.	14-18" Cols.
Meadow Brook Hunt Club, Hempstead, L. I.	4-18" Cols.	Huntley Russell, Grand Rapids, Mich.	8-26" and 8-11" Cols.
School Building, Piermont, N. Y.	2-36" Cols.	Congressman Fowler, Elizabeth, N. J.	16-31" and 22-12" Cols.
Stoney Wold Sanitarium, Lake Kusahaqua, N. Y.	22 Columns.	John A. McCall, (Pres. N. Y. Life Ins. Co.), Long Branch, N. J.	20-36", 40-20", 2-28", 4-24", 32-16", 4-16 1/2" Cols.
Johnstown Public Library, Johnstown, N. Y.	8-14" Cols.	Mr. Loeh, of Kuhn, Loeb & Co., Long Branch, N. J.	6-24" and 28-12" Cols.
Mt. Washington Hotel, White Mountains, N. H.	190 Columns.	Simon Guggenheim, South Elberon, N. J.	10-28" and 10-30" Cols.
Dartmouth College, Hanover, N. H.	4-30" Cols.	Martin Hall, Great Neck, L. I.	16-28" Cols.
St. Joseph's Hospital, Albuquerque, N. M.	5-22", 6-12" Cols.	L. C. Hanna, Cleveland, O.	6-32" Cols.
School House, Massilon, O.	8-35" Cols.	Frederick Eaton, (Pres. American Car & Foun- dry Co.), Berwick, Pa.	6-24", 22-12", 10-9 1/2" Cols.
Y. M. C. A. Building, Sewickley, Pa.	4-22", 20-10" Cols.	P. Ballantyne, South Montrose, Pa.	8-28" and 28-14" Cols.
Waukesha Sanitarium, Waukesha, Wis.	4-29", 12-24" Cols.		

THE EMMEL COMPANY

Architectural Ornamentation in Plastic Material

81 Bristol Street
BOSTON, MASS.

TELEPHONE, TREMONT 203

FACTORY, BOSTON

SPRINGFIELD, MASS.

OFFICES
NEW YORK CITY, N. Y.
108 Fulton Street

PITTSBURG, PA.

PRODUCTS.

The Emmel Company are manufacturers and designers of ARCHITECTURAL ORNAMENTATION in PAPIER MACHE, COMPO, STAFF, PLASTER and CEMENT; also MODELING and WOOD CARVING.

FACILITIES.

We can accept contracts for our products to be delivered at short notice, because we have every manufacturing and shipping facility.

TERRITORY.

Our territory is the entire continent, to any part of which we will make shipments by freight or express, according to urgency.

ORNAMEN- TATION.

Every known order of Ornamentation can be made by us from thousands of stock models of great variety and style, in Papier Mache, Compo, Staff, Plaster and Cement.

Many of these ornaments are kept in stock and may be seen at our Boston Office. All others must naturally be made to order. Executing work from architects' drawings is our specialty.

MODELING AND WOOD CARVING.

In this department of our work, we have brought to bear the experience of years. The most minute details receive every possible attention. A mere suggestion is very often all that is necessary, and upon this we work up full size details or execute the work, which invariably meets the architect's most exacting approval.

In this work, as in every branch of our craft, there is always to be found that correctness of style and detail, those splendid artistic effects, which none but pure craftsmanship can produce.

INSTALLATION.

As a rule, we generally have our own men set our work, but the same can be done by any careful carpenter, plasterer, painter or paperhanger.

COST.

It is impossible to state here the cost of our services. All information relating to price will be cheerfully given upon request.

REFERENCES.

Our Ornamentation has been used and specified by the best architects in the Eastern States for many years.

We will most willingly refer to any number of our clients if desired.

SPECIFICATIONS.

If architects wish to get the right material, the proper style, artistic effects and workmanship, and wish to guard against substitution, they should always specify "The Emmel Company's Papier Mache, Compo," etc.

THE E. T. BURROWES CO.

MANUFACTURERS OF

Wire Insect Screens and Screen Doors

FACTORIES
AND HOME OFFICE
PORTLAND, MAINE



CITY OFFICES AND SALESROOMS:

NEW YORK	PITTSBURG
PHILADELPHIA	CINCINNATI
BOSTON	CLEVELAND
CHICAGO	DETROIT
ST. LOUIS	WASHINGTON
ATLANTA	KANSAS CITY

MADE ONLY
TO ORDER.

All our Screens are made to order from accurate measurements, for windows, transoms, etc., of any size or shape.

FACTORY
EQUIPMENT.

Doors to order only, in any style of architecture, and finished as desired. Established 1873. Largest in the world. Modern labor-saving equipment, reducing cost of production. Highest grade screens at minimum price, considering quality. Prompt shipments.

KINDS OF
SCREENS.

Our Window Screens may be used outside or inside. We make Sliding Screens, Full Length, Top Hanger, Swinging, Cage, Piazza, Cellar and Hail-Storm Screens—Screens of any shape—circles, bows, ovals, segments; also for transoms, sky-lights, ventilators.

Drop Sliding Screen has side grooves (without spring) for slide mouldings that are attached to house.
Standard Spring Sliding Screen has durable springs in one side-groove. The Screen slides like a window sash, remaining at any height.
New Century Sliding Screen has groove springs on one side, and two metal shoes on the other attached by extension screws; Screen is adjustable to shrinking and swelling of window casing.

WOOD FRAME
SCREENS.

All the above Screens have wood frames of selected seasoned and kiln dried lumber, with tenoned and grooved corners—strongest corner construction known. Netting fastened by patent groove and spline method, without tacks;—always taut,—cannot pull away.

METAL FRAME
SCREENS.

The frames of our All-Metal Screens are narrow, thin, light weight, but rigid and strong. Against the groove springs long metal bearings are held by extension screws, that make easy adjustment to shrinking and swelling of window casing. Bearings play in hardwood guides attached to house. These guides are narrow, neat and very durable.

KINDS OF
NETTING.

We use only superior quality Nettings, evenly woven from specially prepared wire. Should not be classed with nettings of the hardware dealer.
Our Black Enameled Netting is heavily coated by a new process with very durable jet black enamel.
Enameled Galvanite Netting is rolled with a non-rusting alloy of zinc and tin, then coated with jet black enamel.
Aluminate Netting is made of steel, tin, and aluminum; is a soft silver gray color and requires no painting.
Rustless Copbronze Netting is solid bronze metal wire, hard and springy; never requires care; is rust-proof in any climate. Very handsome in effect, and desirable for finest residences.
All the above Nettings are made in 14 and 18 mesh. Also made heavy for doors and cellar windows.

WIRING
WITHOUT
TACKS.

Our patent Groove and Spline Method secures the Netting without tacks; every strand held taut and firm; never pulls away; very easy to re-wire. By the usual *Tack* method only two strands are held; other strands become loose and baggy; tacks rust and Netting breaks away.

FINISHES.

We have seventy-two different kinds of finish for our Screens and furnish a book containing the more usual kinds. Sent on request.

SCREEN DOORS.

We make Doors as simple or elaborate as desired, matching the style of architecture in any wood, guaranteeing finest cabinet workmanship. Also stained or painted finish to match the house. Special Grilles for Doors, in bronze metal or wrought iron, furnished in any design. Door Catalogue on request.

FREIGHT PAID.
SENT ON TRIAL.
HARDWARE.
MEASURING AND
ESTIMATES.

We allow freight charges in the United States and Canada; no charge for packing or carting.
We send the Screens on thirty days' trial, although made to order, and if not satisfactory they may be returned.
Door Catches and Hinges, handsome designs, in prevailing metals and finishes. Special designs to order. Best Door Checks made.
Full instructions for measuring Windows and Doors accurately, sent on request. Estimates furnished without charge.



SWINGING, OR HINGED SCREEN



STANDARD SPRING SLIDING SCREEN With Slide Moldings in Grooves of Frame



SCREEN LIFT AND NUMBER Attached to Frame



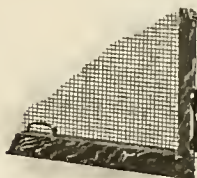
SINGLE SCREEN DOOR One of more than one hundred styles, all made to order



TOP HANGER SCREEN



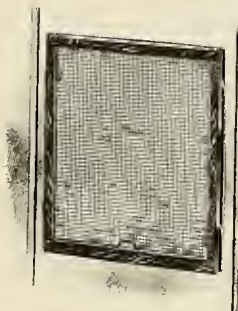
SECTIONAL VIEW OF SPRING SLIDING SCREEN Showing Manner of Removing



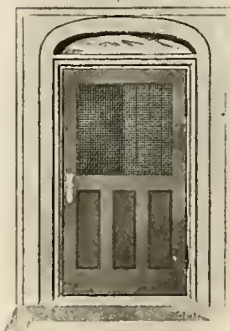
FRAME BROKEN AWAY AT RIGHT, Showing Spring Attached



NUMBER TACK Bronze Metal



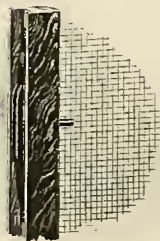
NEW CENTURY SCREEN and Slide Moldings



SINGLE SCREEN DOOR With Wood Panels

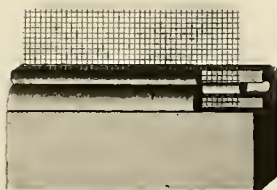


METAL SHOE USED ON New Century Screen

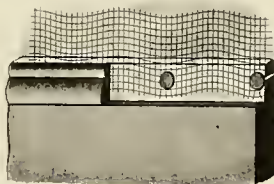


SECTIONAL VIEW OF NEW CENTURY, Showing Manner of Removing from Window

SLIDING SCREEN AT LOWER SASH. May also be used at upper sash



BURROWES PATENT LOCK-STRIP METHOD Of Wiring Without Tacks.



COMMON METHOD OF WIRING With Tacks



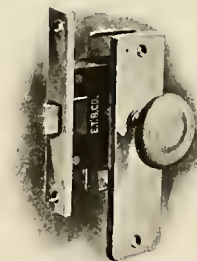
DOUBLE SCREEN DOORS Any style desired made to order



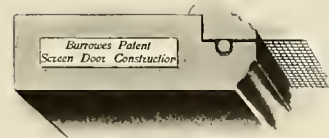
METHOD OF REMOVING SLIDING SCREEN



BURROWES CORNER CONSTRUCTION



ONE OF A GREAT VARIETY Of Burrowes Screen Door CATCHES



BURROWES SCREEN DOORS Are Wired Without Tacks

*Copyright, 1905, by the
Higgin Manufacturing Co.*

THE HIGGIN MANUFACTURING CO.

NEWPORT, KENTUCKY.

AGENCIES IN ALL PRINCIPAL CITIES

TELEPHONE CONNECTION

PRODUCTS.

Manufacturers of the HIGGIN METAL WINDOW SCREENS, which are made to order, and WOOD FRAME DOOR SCREENS with or without metal panels.

FACILITIES.

Our extensive plant is centrally located and prompt deliveries can therefore be made to all parts of the United States. Our facilities are constantly being increased to meet the growing demand for our product.

HOW ORDERED.

Propositions are submitted, without charge, by salesmen; or from the home office on approximate measurements of the openings to be screened; or from plans drawn to scale. Instructions as to measurements and full information will be mailed on application.

INSTALLATION.

Any competent carpenter can satisfactorily install the Higgin Screen.

CONSTRUCTION.

The Higgin Metal Frame Window Screen is made entirely of metal and is adapted for use on either wood or metal window casings. It is especially adapted for fireproof buildings. It is set just outside the upper sash and requires only $\frac{9}{16}$ inch space, which includes the guide strips or channels in which the screen slides.

The Screen (Fig. 1) is made with an inside frame of $\frac{1}{4}$ -inch rod (made of galvanized steel or of copper). Around this the wire netting is drawn, stretched perfectly tight and is held securely by the outside mouldings. The netting cannot pull out or get loose, and there are no sharp edges bearing against it with a tendency to cut it, as it expands or contracts with changes in the atmosphere. In the Higgin Screen round surfaces only bear against the netting. The mouldings are made from open hearth basic-steel thoroughly galvanized and finished in baked enamel, which may be black or in color; or from copper in various finishes.

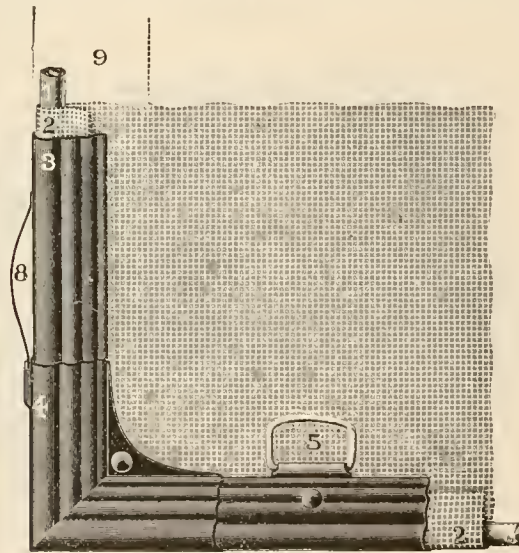


FIG. 1. SECTION OF SCREEN, SHOWING CONSTRUCTION. $\frac{1}{2}$ ACTUAL SIZE

It is designed for use on Sliding, Bow, Casement, Oval, Round and Pivoted Windows. Each style has its own special fittings looking to security and convenience in use. The Sliding Screens have side springs so as to be easily removed from the window and replaced. The guide strips are made of copper. The bottom mouldings are perforated so as to allow for perfect drainage. Each Screen is numbered so as to identify it with the opening for which it has been made. The netting is made from solid bronze wire and is usually 14, 16 or 18 mesh.

THE HIGGIN METAL FRAME WINDOW SCREEN.

The Higgin Metal Frame Window Screen possesses many points of superiority over any other screen. It is strong, durable and efficient, is unaffected by changes in the weather, therefore will never shrink, swell or warp. It occupies but little space in the window, is always in working order, and can be easily removed and replaced. It effectually keeps out mosquitoes as well as flies, is an ornament to any house, and is adapted for use on either wood or metal casings.

The accompanying illustration (Fig. 2) gives a very fair idea of its appearance when in place. This is the sliding screen which can be thrown to the top of the window, thus providing for top ventilation if desired.

WOOD FRAME
SCREEN DOORS.

Our line of high grade screen doors includes frames made of the best grades of white pine, quartered oak, cherry and mahogany.

METAL FRAME
SCREEN DOOR
PANELS.

A pair of doors is shown in the illustration herewith (Fig. 3), with panels constructed in the same manner as the metal frame screens. We also make doors with the wire netting only stretched across the openings.

COPPER GRILLE.

We constantly have in stock a large assortment of Copper Grille work in various designs used to protect the netting.

HARDWARE.

The hardware used on our doors has been especially designed for that purpose, and is of high grade and exceptionally fine finish.

PRICES.

Propositions for screening residences will be promptly furnished on application.

REFERENCES.

Among the numerous residences fitted with our products are the following:

NAME OF OWNER	LOCATION
Mrs. J. J. Storrow	Lincoln, Mass.
Clarence M. Hyde	Greenwich, Conn.
Clarence Mackay	Roslyn, L. I.
Geo. L. Williams	Buffalo, N. Y.
R. A. Canfield	Saratoga Springs, N. Y.
John B. Stetson	Ashbourne, Pa.
John I. Rogers	Philadelphia, Pa.
Hon. Jos. B. Foraker	Washington, D. C.
Hon. A. J. Montague	Richmond, Va.
J. W. English, Jr.	Atlanta, Ga.
Thomas Sully	New Orleans, La.
Mrs. Paul J. Sorg	Middletown, O.
L. A. Ault	Cincinnati, O.
Norman G. Keenan	Cincinnati, O.
John F. Whallen	Louisville, Ky.
Geo. W. Maher	Chicago, Ill.
Chas. H. Huttig	St. Louis, Mo.
Wm. F. Neidringhaus	St. Louis, Mo.
W. M. Davis	Kansas City, Mo.
B. P. Waggoner	Atchison, Kans.
Mrs. H. M. King	Corpus Christi, Tex.

AGENCIES.

Agencies in all principal cities.



FIG. 2. HIGGIN SLIDING WINDOW SCREEN

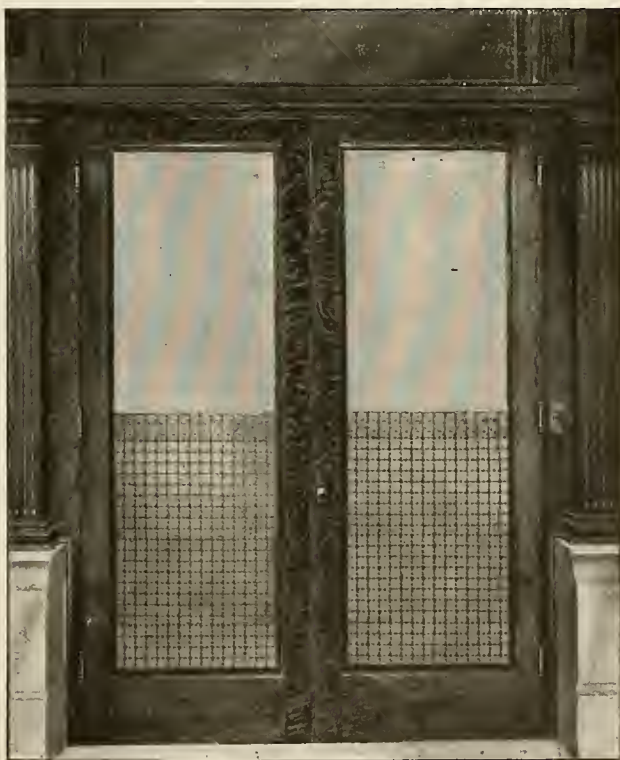


FIG. 3. HIGGIN SCREEN DOORS

BURLINGTON VENETIAN BLIND CO.

Main Office and Factory,
BURLINGTON, VT.

BRANCHES IN ALL PRINCIPAL CITIES

PRODUCTS.

Manufacturers of VENETIAN BLINDS, SLIDING BLINDS, WINDOW SCREENS, SCREEN DOORS.

VENETIAN BLINDS.

Our Venetian Blinds (Fig. 1) are attached to windows by brackets similar to a curtain shade. Our method is patented and superior to all others. The slats are hung on interwoven ladder tape in various colors, and operated by braided cords by which light and ventilation can be instantly controlled. They are made of any desired wood and finish. We recommend that these blinds be attached to sash stops, in which instance, in ordering, state the size of the openings. If it is preferred to hang them on the face casings, state the size of blind desired.

PRICES OF VENETIAN BLINDS.

These prices are per square foot and are subject to a discount, which will be quoted on request.

Spruce, Whitewood, Linden or Yellow Pine Slats.....	23" wide 2" wide
Natural or Stained and Varnished, or painted dark colors.....	19c. 21c.
Painted in light colors or tints, or White Pine, Cypress or plain Oak, varnished.....	21c. 23c.
Painted in Enamels, or Sycamore or Quartered Oak, varnished.....	24c. 26c.
Enameled, rubbed between coats	38c. 40c.

Add for rubbed finish on varnish 3c. per square foot.

For very large blinds we have a roller device, employing aluminum bronze bands in place of cords, at an extra charge.

SLIDING BLINDS.

Sliding Blinds are usually made in three sections in height, the two upper ones having stationary slats and the lower one rolling slats. They are made in two or more divisions of slats or panels, according to the width of openings; they are made of any wood and with any finish desired. The grooved guideways in which the sections run take the place of the sash stops, and are usually 2 3/4" wide. In ordering, state the size of openings between jambs, and from stool to top jamb. We can make these blinds for segment top or swell windows, as well as for straight ones.

PRICES OF SLIDING BLINDS.

The prices quoted are per lineal foot in height of woods mostly used. Discounts will be quoted on request.

White Pine, Spruce, Whitewood, N. C. Pine or Linden.....	3 Div. .95	4 Div. \$ 1.15	5 Div. \$ 1.35
Varnish finish or painted dark colors	1.05	1.25	1.45
Cabinet finish or painted light colors	1.15	1.35	1.55
Painted Enamel finish.....	1.05	1.25	1.50
Cypress or Plain Oak, Varnish Finish	1.20	1.40	1.65
Cypress or Plain Oak, Cabinet Finish	1.15	1.35	1.60
Sycamore, Quartered Oak, Ash, Varnish Finish	1.30	1.50	1.75
Sycamore, Quartered Oak, Ash, Cabinet Finish			

Extra for swells \$2.00; for Segment top \$1.00 per window.

WINDOW SCREENS.

We make Window Screens in two styles: one style being for inside the window and operating in grooves similar to our Sliding Blinds, the frames being one-half inch thick, of softwood or ordinary hardwoods, and usually in a natural, varnish finish. The other style is used outside the window, operating on splines attached to the edges of blind stops, the frames being 7/8" thick, of softwood and usually painted to match the sash color. In ordering, give the width between points where the slides for inside screens are to be attached, or splines for outside screens; and height from stool to point you wish the top of the screens to reach.

PRICES OF WINDOW SCREENS.

Screens containing 6 square feet, or less, each.....	\$1.00
For each additional square foot, or fractional part thereof, add.....	.10
Swell or irregular shaped screens, subject to an extra charge, covering extra expense of manufacture. The above price is with 14 Mesh Wire Cloth; we can furnish any kind desired at additional cost. The prices are subject to discount.	

SCREEN DOORS.

Our Screen Doors are mortised 1 1/2" frames, thoroughly made and intended to last a lifetime; they are made of various woods and with arrangement of panels as desired. Unless otherwise ordered, frames are finished in varnish, natural color, and 14 Mesh Black Wire Cloth is used. Price depends on wood used and number of panels. All our goods are made to order only.

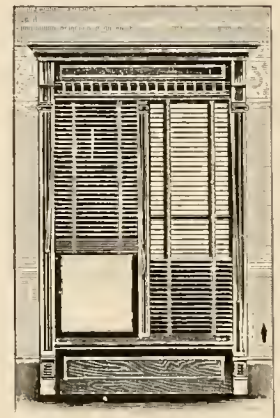


FIG. 1. VENETIAN BLIND

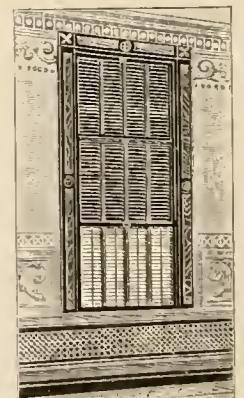


FIG. 2. SLIDING BLIND

THE A. J. PHILLIPS COMPANY

INCORPORATED

Manufacturers of Wire Screens

SURPLUS, \$100,770.22

CAPITAL PAID IN \$100,000.00

MAIN OFFICE, FACTORIES AND WAREHOUSES

FENTON, MICHIGAN

PRODUCTS—Manufacturers of WIRE SCREENS for excluding insects from Residences, Hotels, Hospitals, Apartment Houses, Schools and all places requiring Summer ventilation.

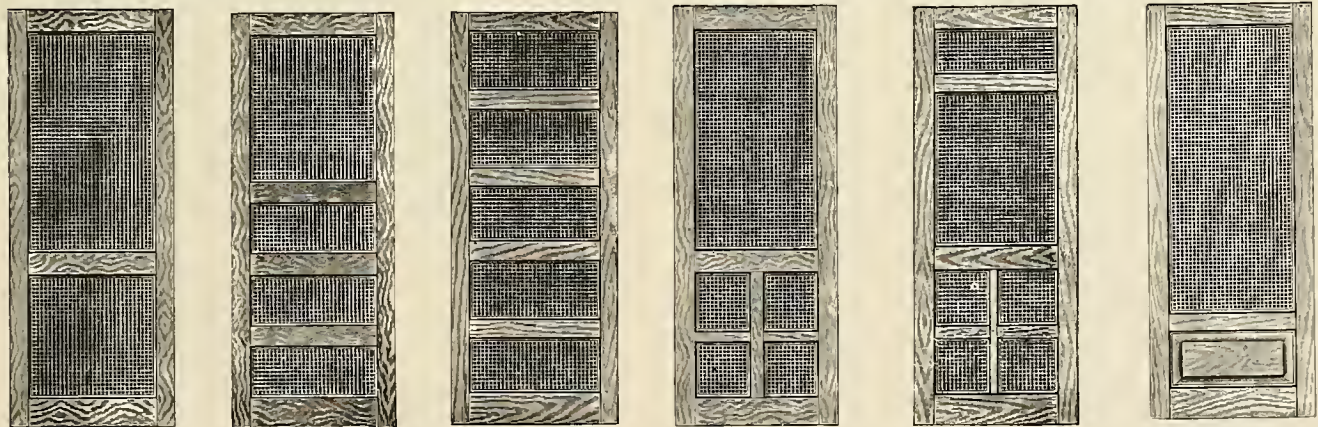
FACILITIES—Our screens are made to order. We supply high grade material and work for use in Residences, and moderate grades for use in Apartment Houses, Schools, Hospitals, etc.

Our factory is open all the year round, and we ship all orders in from one to two weeks from the receipt of the order except in the late spring and the early summer, at which time from three to four weeks are necessary.



GROUNDS AND FACTORY OF THE A. J. PHILLIPS CO., FENTON, MICH.

SUPERIORITY OF PRODUCTS—We have had twenty-three years' experience as manufacturers of Wire Screens, and with our ample facilities (nine acres of land and three and a half acres of floor space) our work is far superior to that of the average planing mill, and is not excelled by any other factory. In making our Screens we strain the wire cloth (12 mesh black wire, unless otherwise specified), and fasten it with closely driven tacks or staples. It is then covered by moulding and refastened with brads used for attaching the moulding, making the strongest possible method of fastening, and at



STYLE "J"

STYLE "C"

STYLE "L"

STYLE "A"

STYLE "D"

STYLE "W"

These Patterns show a few designs of the "Suburban" Grade of Screen Doors. Any Arrangement may be had. Also Embossed Mouldings, Carvings, Scroll Work, Grille Work, Wicker Work, etc.

the same time permitting the rewiring of frames in case of torn or damaged wire cloth. If so specified, we will put on the wire cloth by the "Welt" or "Lock-strip" process, but we do not advise its use, as it often causes the inner edges of the frame to split off where they have been weakened by the cutting of the groove to receive the welt.

DOOR SCREENS—We recommend the use of white pine frames with our "Pullman Car" finish, in dark or medium green and black. This finish is not excelled for beauty or durability. For front doors fine woods are appropriate, if well protected from the weather. Copper tacks and brass nails will be used in finishing, if so ordered.

PRICES OF DOOR SCREENS—These prices are for the patterns "A," "C" and "J" or their equivalent in materials and labor. 1½x3¾" stock is used, finished with three coats and covered with 12 mesh black wire cloth. (See following pages for other kinds of cloths).

SUBURBAN GRADE FOR DOORS, TRANSOMS AND PORCH SCREENS.

WOODS	White pine or Yellow pine		Cypress Poplar	Cherry, Birch, Beech, Maple	Ash	Oak Plain Sawed Gloss Finish	Oak Quarter Sawed Polished	Solid Mahogany			
	Paint or Natural	Enamels	Natural	Natural	Imitation Mahogany	Natural No. 21	Special Finishes Nos. 22 to 11	Natural No. 1	Special Finishes Nos. 2 to 11	Polished	
FINISHES											
3 coats											
Base Prices in cents per sq. ft.	14	16	16	17	20	17	18	21	24	27	45

DEDUCTIONS—Suburban Pattern in the white (no finish) deduct 3 cents per square foot. For six doors in one order of the same kind, size and finish, 1 cent per square foot. Common stock doors in stock sizes, at specially low prices. Send for illustrations and prices.

Our agents will add to the above prices to cover cost of measuring, cartage and installation.

EXTRAS FOR PATTERNS AND THICKNESS

Single panel doors, extra wide stock, wide bottom panel, 25% extra. Style "W" wide bottom rail same advance. Extra panels above 5 (style "D" has 6) for each extra panel, 1 cent per square foot. Doors 1½ inches thick add 20%. Circle tops and special patterns 50 to 100% extra. Stops, Hanging Stiles, Astragals, Headpieces, and parts necessary to build up casings to receive screens, are charged for at cost.

EXTRAS FOR FINISHES

Polished or rubbed finish (except quarter sawed oak or mahogany) 2 cents per square foot.

WINDOW SCREENS

The "Suburban" Window Screen—Our best grade of window screen is known as the "Suburban." The hardwood dowel joints are protected from the weather. This joint has stood the test of years. Our screens slide on hardwood runners which we provide. Brass plated steel springs are concealed in the side groove. We also supply a special bronze spring, having a brass shoe, at an advance in cost of 15 cents per screen. The lifts are hand holds cut in bottom rail. They cannot, therefore, be pulled or knocked off. If desired, Bronze Flush lifts will be inserted at an additional cost of 15 cents per lift. No other hardware is necessary. The stock used is 1¾x 13/16 inches. The bottom rail 2¾x 13/16.

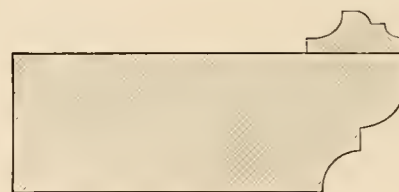
Outside Screens are the most desirable, but we furnish inside ones if so ordered.

We include duplicate brass numbers free with Suburban Screens; also small bronze plate with maker's name.

Porch and Summer House Screens are made to pattern and are charged at the same price as Screen Doors.

Screens for the Full Window or for Cellars are often found desirable. We make them of the same stock used for ordinary screens and omit grooves and runners. They may be hinged at the top or side, or they may be fastened in with spring bolts or buttons, or they may be simply screwed in place.

White Pine Painted 3 coats, the last coat being an enamel (Pullman Car Finish) is the most Desirable and Satisfactory. Our wire netting and cloth we guarantee to be the best made. We offer a large line of woods and finishes, as will be seen from our price list.



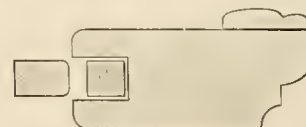
SECTION OF DOOR RAIL REDUCED
Regular size, 1½ x 3¾



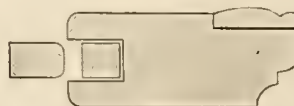
SLIDING WINDOW SCREEN
Suburban Grade, Inside View



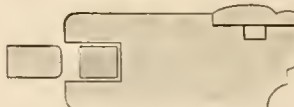
SLIDING WINDOW SCREEN
Suburban Grade, Outside View



SECTION (Reduced)
Showing Moulding on Wire Cloth, Suburban Window Screen. Regular Finish



SECTION (Reduced)
Showing Flush Moulding over Wire Cloth, Suburban Window Screen



SECTION (Reduced)
Showing Wire Cloth Secured by the Welt or Spline Process, Suburban Window Screen

MEASUREMENTS—We desire the exact dimensions of the openings, and paper patterns of special forms. We make all allowances.

Samples of Woods, Finishes and Wire Cloth free to possible patrons.

PRICES OF WINDOW SCREENS—Either sliding or stationary frames. Three coats of finish. Base prices are for screens with 12 mesh black wire cloth. See below for other kinds of cloth.

Screens measuring less than four square feet are charged as four feet. Agents in making estimates will add their expenses for measurements, transportation and installation.

PRICE LIST OF SUBURBAN PATTERN WINDOW SCREENS

WOODS	White Pine and Yellow Pine	Cypress Poplar	Cherry Beech Birch	Ash	Oak Plain Sawed. Gloss Finish	Oak Quarter Sawed. Polished	Solid Mahogany				
	FINISHES	Paint or Natural	Enamels	Natural	Natural	Imitation Mahogany	Natural or Antique	Natural No. 21	Special Finishes Nos. 22 to 31	Natural No. 1	Special Finishes Nos. 2 to 11	Polished
3 Coats											
BASE PRICES in cents per sq. ft.	12	14	14	15	18	15	16	19	22	25	40



SECTION OF SLIDING SCREEN Being Spring onto the Runners

DEDUCTIONS—Suburban pattern, finished with only two coats, deduct 1 cent per sq. foot. Suburban pattern, "in the white" (no finish) deduct 2 cents per sq. ft.

EXTRAS FOR PATTERNS AND THICKNESS

Stationary screens, 1 1/8 inch thick, 10 per cent. extra. Bow windows, 50 to 100 per cent. extra. Special tops, 50 to 100 per cent. extra. Bronze flush lifts, inserted 15 cents per lift (see hardware). Bronze flange springs, (special springs with guide) 15 cents per window extra.

EXTRAS FOR FINISHES

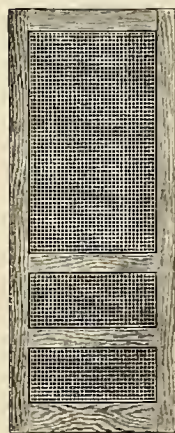
Polished or rubbed finish (except quarter sawed oak and mahogany) 2 cents per sq. ft.

EXTRAS FOR WIRE CLOTH

At list prices, doors and windows are covered with 12 mesh black wire cloth. For other grades of cloth, add to list prices as follows:

- 14 mesh Black Enamel..... 1 cent per sq. ft. extra
- 14 mesh White Metal finish (Galvanized)..... 2 cents per sq. ft. extra
- 14 mesh Black Enamel, Galvanized..... 2 cents per sq. ft. extra
- 12 mesh "Pearl"..... 3 cents per sq. ft. extra
- 14 mesh "Pearl"..... 4 cents per sq. ft. extra
- 12 mesh Black Enamel, extra heavy..... 3 cents per sq. ft. extra
- 14 mesh Genuine Bronze (either bright or antique)..... 7 cents per sq. ft. extra
- 18 mesh Genuine Bronze..... 8 cents per sq. ft. extra
- 12 mesh Genuine Bronze, extra heavy..... 12 cents per sq. ft. extra

APARTMENT HOUSE SCREENS—Our Apartment House grade of Screens are made of first-class material, but at a low price, as we manufacture them in very large quantities.



APARTMENT HOUSE SCREEN DOOR



SECTION (Reduced) Of Apartment House Door Stock. Regular sizes 3 1/2 x 7/8 and 2 1/4 x 1 1/8 inches



SECTION (Reduced) Of Apartment House Window Stock. Regular size 1 1/2 x 13/16 in.



Outside View



Inside View

APARTMENT HOUSE WINDOW SCREEN

APARTMENT HOUSE DOOR SCREENS—One coat dark green paint, 12 mesh black enamel Wire Cloth.

- Yellow Pine 3 1/2 in. stiles, 7/8 in. thick..... 9 cents per sq. ft.
- Yellow Pine 2 1/4 in. stiles, 1 1/8 in. thick..... 10 cents per sq. ft.
- White Pine 2 3/8 in. stiles, 1 1/8 in. thick..... 11 cents per sq. ft.

APARTMENT HOUSE WINDOW SCREENS—White Pine frames, hardwood runners, brass plated springs, frames numbered, brass numbers for sills.

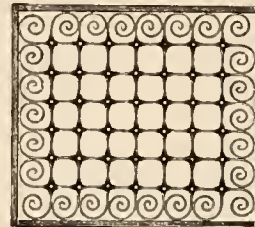
12 mesh Black Wire Cloth, with one coat of dark green paint.....10 cents per sq. ft.
 "In the white" (no paint)..... 9 cents per sq. ft.

Stationary Screens, same prices.

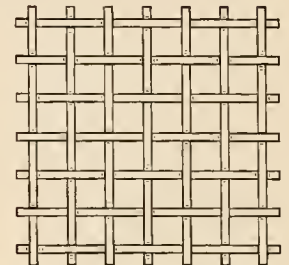
PRICES OF REINFORCING NETTING AND WICKER WORK

	<i>Per sq. ft.</i>
No. 1—1-inch Mesh Poultry Netting, for rear doors.....	\$0.07
No. 3— $\frac{1}{2}$ -inch Mesh Galvanized No. 21, heavy cloth.....	0.07
No. 5— $\frac{1}{2}$ -inch Mesh Galvanized and Bronzed, soldered joints....	0.10
No. 56—Flat Steel Wire Wicker, painted.....	0.50
No. 56E—Flat Steel Wire Wicker, electroplated.....	0.65
No. 55—Flat Steel Wire Wicker, painted.....	1.45
No. 55E—Flat Steel Wire Wicker, electroplated.....	1.75

Our smallest charge for each panel is for 4 sq. ft. Otherwise, charge is made for square feet of material used.



No. 55 WICKER WORK
1 1/2 inch Mesh



No. 56 WICKER WORK
"Ribbon Steel" 1 1/2 inch Mesh

PRICES OF SCREEN HARDWARE

Bronze Flush Lifts	each, \$0.15
Brass Numbered Tacks (Free with Suburban Screens).....	per 100, 0.75
Spring Bolts for Window Screens.....	each, 0.01
Suspension Hinges (Black) to hang Screens at the top (with screws)	per pair, 0.15
Porcelain Knobs with Screws.....	each, 0.02
Coiled Wire Springs, Elastic.....	each, 0.10

HOOKS AND EYES

1 1/2 in. Bright Steel.....	each, \$0.01 1/2
2 1/2 in. Bright Steel.....	each, 0.02
1 1/2 in. Brass	each, 0.04
2 1/2 in. Brass	each, 0.05

DOOR PULLS

No. T1408A Tuscan Bronze.....	each, \$0.06
No. 551P Cast Bronze, Plain.....	each, 0.20
No. AB551P Cast Bronze, Ant. Copper.....	each, 0.25

BRONZE BOLTS FOR DOUBLE DOORS

(With Screws)

No. 506P Plain, Square Bolts.....	each, \$0.35
No. 522P Plain Neck Bolts.....	each, 0.40
No. AB522P Ant. Cop. Neck Bolts.....	each, 0.60
No. 582P Plain Chain Bolts.....	each, 0.90
No. AB582P Ant. Cop. Chain Bolts.....	each, 1.10

SPRING HINGES

(With Screws)

No. 1 Holdback, Jap.....	per pair, \$0.15
No. 80 Detachable, Jap.....	per pair, 0.20
No. 1265 Double Acting, Jap.....	per pair, 0.35
No. Y177 Steel Im. Bronze.....	per pair, 0.65
No. AB177 Steel Ant. Copper.....	per pair, 0.75
No. 178P Plain Cast Bronze.....	per pair, 1.50
No. OB178 Old Brass.....	per pair, 2.00

We will also furnish tacks, brads, screws, mouldings and window screen frame sticks to make your own screens and adjustable window screens at very reasonable prices.

LOOSE PIN BUTTS

(With Screws)

No. 731 Japanned, 2x2.....	per pair, \$0.13
No. 731 Japanned, 3x3.....	per pair, 0.15
No. YT2434 Im. Bronze, 2x2.....	per pair, 0.18
No. YT2434 Im. Bronze, 3x3.....	per pair, 0.25
No. Y2431 Yeddo Bronzed, 3x3.....	per pair, 0.40
No. AB2431 Ant. Cop. finish, 3x3.....	per pair, 0.45
No. RB2431 Ant. Cop. Sand finish, 3x3.....	per pair, 0.50
No. 2536P Wrought Bronze, 2x1 1/2.....	per pair, 0.25
No. 2536P Wrought Bronze, 3x2.....	per pair, 0.45
No. 830P Cast Bronze, 3x3.....	per pair, 0.90
No. OB830 Old Brass, 3x3.....	per pair, 1.00

CATCHES FOR DOORS

(With Screws)

No. D519 Tuscan Bronzed.....	each, \$0.10
No. T5460A Tuscan Bronzed.....	each, 0.18
Duplex, Blued, no knob or handle.....	each, 0.25

DIAMOND BOLT CATCHES

No. Y5462 Bronze Plated, polished.....	each, \$0.50
No. 5792P Bronze Metal, polished.....	each, 0.70
No. AB5792P Bronze Metal, Ant. Copper.....	each, 0.75
No. OB5792P Bronze Metal, Old Brass.....	each, 0.75

Mortise Latches with Keys, send for Special Sheet.

CATCHES FOR SWINGING WINDOWS

No. T3445A Tuscan Bronzed.....	each, \$0.10
No. Y3445 Polished Bronzed.....	each, 0.30

PORTER SCREEN MANUFACTURING COMPANY

BURLINGTON, VERMONT

PRODUCT—WINDOW, DOOR AND PORCH SCREENS, made as ordered, from wood specified, and finished as desired. We guarantee quality, finish and durability of our product.

FACILITIES—We have the largest exclusive screen factory in the world, choice stocks of material, and twenty years' experience in the manufacture of screens. We are in a position to fill orders of any size promptly. The time required depends largely upon the finish.

ESTIMATES—In writing for estimates, kindly give number of openings, approximate size of screens, kind of wood, wire cloth, and finish desired; also state whether screens are to be sliding or stationary. If hardware is to be furnished with doors, state the kind and finish required. Architects and others are requested to furnish drawings with measurements for screen doors, porch and screens of irregular shape. On receipt of the above information we will cheerfully estimate on screens delivered at your nearest railroad station.

TERRITORY—Our territory extends wherever flies, mosquitoes and fever-infecting insects are found.

INSTALLATION—Our screens can be installed by any local carpenter.

CONSTRUCTION—The frames are put together with mortise and tenon joints and glued. The shoulders of tenon on the rails are coped to fit the moulding on the stiles and a flush moulding with mitered joints covers the wire cloth. The window screens may be made to slide same as sash, or stationary, covering one-half of the entire window, and may be constructed for outside or inside use. Each screen is numbered and a numbered tack furnished for sill.

The sliding screens may be easily removed from the window by a slight pressure to the left, and as easily replaced.

LUMBER—Only selected lumber which has been well seasoned and kiln dried is used in Porter Screens. Any kind of lumber may be used. We recommend, and unless otherwise ordered, will make all frames for window, door and porch screens from pine. It is light, strong, and not inclined to warp.

WIRE CLOTH—Only the best wire cloths of our own manufacture are used in our screens.

Bronzoid cloth made from copper and alloys is absolutely non-corrosive in any climate, and is recommended because of its great durability.

Pearl Coated wire cloth has a white, hard pearl-like finish; it is made from hard steel wire, coated with non-rusting metal. This cloth is not as durable or as handsome in appearance as Bronzoid, but will last for many seasons.

Standard Black Enamel cloth is made from hard steel wire, and is covered with a durable coat of black enamel baked on after weaving.

Samples of wire cloth will be sent on request. --

SPECIFICATIONS—Architects should guard themselves and their clients against receiving inferior screens by incorporating these words, "PORTER SCREENS," in their specifications.

THE ROEBUCK WEATHER STRIP AND WIRE SCREEN CO.

MANUFACTURERS OF

Wire Window and Door Screens, Weather Strips, etc.

MAIN OFFICES AND SHOW ROOMS

172 FULTON STREET, NEW YORK CITY, N. Y.

WORKS

GOWANUS CANAL, BROOKLYN, N. Y.

PRODUCTS.

WIRE WINDOW and DOOR SCREENS, WEATHER STRIPS, WINDOW VENTILATORS and MOSQUITO CANOPIES.

FACILITIES.

Located as we are, in the recognized commercial centre of the world, with the most skilled cabinet-makers at our command, aided by the latest improved labor-saving machinery, with shipping facilities second to none, and with our long experience (established 1858), we confidently believe that, in our particular line, we are in a better position to sell strictly high grade cabinet-finished work at lower prices than any other maker.

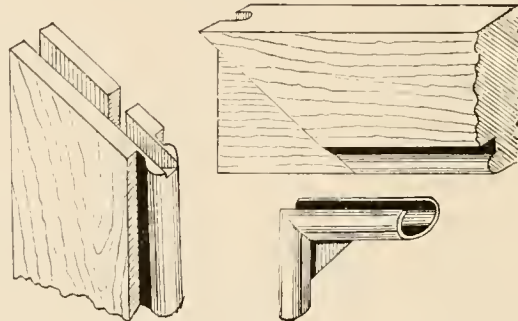


FIG. 1. SHOWING DETAILS OF CONSTRUCTION IN OUR IMPROVED METAL CORNER

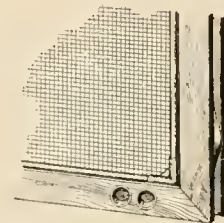


FIG. 2. SASH OF ROEBUCK'S SCREENS SHOWING THE FLUSH LIFT

SPECIAL FEATURES OF ROEBUCK SCREENS.

All the screens described here we make from measurements sent us to fit the particular opening intended. We make them of any kind of wood, finished to match the woodwork where they are to be placed either inside or out, and are held in position by steel springs in the side.

Improved Metal Corner—By the use of our Improved Metal Corner (Fig. 1) we have secured a corner for our window screen which in construction is the acme of grace, strength and durability. The corners of other screens are simply mortised and glued.

Our Method of Placing the Netting in the Frame insures it against bagging, and brings it flush to sash, thereby keeping out all insects.

Flush Lifts (Fig. 2) only are used on our window screens. The cost of manufacture is a little more; but they are more graceful, durable and satisfactory than the common handles usually used for this purpose.

Prices and detail catalogues furnished on application.

ROEBUCK'S NEW WEATHER STRIP WINDOW SCREEN SLIDE.

Slides for wire screens are usually placed upon the stop bead of windows when screens are placed inside. These slides have to be removed in the Fall and replaced during the summer months where weather strips are used, as the weather strip can be placed only in the same position as the screen slide. *Roebuck's Screen Slide and Weather Strip* combined does away with this difficulty, as it answers both purposes—a slide in summer, and a strip when specially ordered at slight additional cost.

Prices and detail catalogues furnished on application.

ROEBUCK'S WEATHER STRIPS.

We are the original inventors of this very useful and desirable article, and they most certainly save their cost the first season in coal and plumbers' bills. We manufacture some thirty different kinds of Weather Strips to meet all requirements. We are also large manufacturers of Metallic Strip used extensively on railroad cars and other places.



ROEBUCK'S WEATHER STRIP No. 2
For Light Inside Doors

ROEBUCK'S WEATHER STRIP No. 3
For the Lower Sash

ROEBUCK'S WEATHER STRIP No. 6
For Closing the Joint between the two Sash

ROEBUCK'S ELASTIC CUSHION STRIP No. 7

No. 2 is used for the bottom of doors, the rubber to press gently on the sill.

No. 3 is applied to the lower sash of lift-windows. It makes them air-tight and prevents them from rattling.

No. 6 is a neat and effective device for closing the joint between the two sashes of lift-windows.

No. 7, or Cushion Weather Strip, is an entirely new and superior arrangement calculated to supersede all others for the purpose for which it is adapted. Its cushion shape makes it more elastic, and consequently more effective in its operation than any other form. It is suitable to use on doors and windows of every description.

Prices and detail catalogues furnished on application.

ROEBUCK'S NEW SCREEN DOORS.

Roebuck's New Screen Doors are made in extra heavy wires of all grades, and can be placed on the outside of Vestibule Doors, closing with springs or spring lock, making it absolutely safe against undesirable parties to enter the house.

Prices and detail catalogues furnished on application.

ROEBUCK'S WINDOW VENTILATORS.

For offices, dwellings, schools, churches, etc. By having one of these ventilators adjusted to your window, it will keep your apartments supplied with fresh air without the danger of any drafts, as will be seen from the accompanying cut. Made in all kinds of finish to match wood work.

The accompanying illustration (view of an office) shows the circulation of air through the Ventilator. The air, as shown by the arrows, takes a positive upward course and not directly upon the person sitting at the window. The Ventilator not only purifies the air in the room, but prevents colds, pneumonia, etc.

Prices and detail catalogues furnished on application.



APPLICATION OF ROEBUCK'S WINDOW VENTILATORS

ROEBUCK'S PATENT MOSQUITO CANOPIES.

These canopies are made in all sizes and of the best Plain Gauze Netting, woven in one piece. Prices and detail catalogues furnished on application.

WATSON MANUFACTURING COMPANY

JAMESTOWN, N. Y.

- PRODUCTS.** SLIDING, VENETIAN and FOLDING BLINDS, BRONZE, STEEL and WOOD FRAME WINDOW SCREENS and SCREEN DOORS, PORCH SCREENS, WINDOW GUARDS and PORCH AWNINGS.
- QUALITY.** Particular attention to High Grade Work from special architectural details when required.
- FACILITIES.** Many years' experience, complete machinery and equipment for work in metal and wood. Trade extending to all parts of this country. Equipment comprises departments as follows: Clerical-Detail, Wood Working, Metal Working, Wood Finishing, Metal Plating and Finishing, Guard and Grille Galvanizing, Hardware, Power-Heat-Light and Shipping. All under competent management and complete in details. Transportation by several Main Trunk Line Railroads.
- TERRITORY.**
- PRICES.** Will quote delivered prices on receipt of inquiries, giving details.
- INSTRUCTIONS AS TO ORDERS.** Goods are not kept in stock. No special preparation of windows required, but is often desirable. We will give full information on receipt of inquiries. Agents in all principal cities attend to estimating and installing work.
- SCREEN DOORS.** *All Hardwood Doors veneered*—Best construction.
Ornamental Door Corners of wood or metal scrolls.
Metal Door Moulding.
Ornamental Grilles, to protect wire cloth, of round or flat wire, Crimped and Quarter Twist, Scrolls and Rods.
Wire Guards—Woven Wire—Crimped, Diamond and Square Mesh in Brass, Bronze and Galvanized Wire.
Carved Moulding and *Carved Rails.*
Special Shapes and from special details.
- METAL SCREENS.** Our All-Metal Window Screens are simple, durable and practicable. *Radically different* from any other, establishing a new class of *artistic screens.*
Patented—Fully protected by patents, issued, allowed and pending.
Material—Steel Frames, galvanized inside and out, finished in baking Japan.
Bronze Frames—Solid bronze metal, finished in any metal finish. Absolutely rustless.
Weight—As light as wood screens, much lighter than other metal screens.
Strength—Tubular construction gives maximum strength with minimum weight.
Decorative Features—Plain frames, no rivets, screws, nails, bolts or unsightly projections of any kind. Well adapted to fine metal finishes and ornamentation by scroll corners or decorative designs.
Styles—Sliding. Full Size and Stationary Screens.
Casements—Double or Single. The exceptional stiffness and rigidity of frames admits of hinging side or top without difficulty.
Slides—Are of bronze, insuring permanency.
Inside Screens—Artistic appearance, adaptability to fine finishes and flush wire, makes a perfect inside screen.
Bent Frames—All curved shapes are bent, the framework remaining smooth and the same contour as the straight frames.
Window Numbers—Stamped in the metal, insuring permanency.
Water Tight Frames—Moisture cannot enter along the edges.
Wire Cloth—Stretched smooth, tight and even, no bags or sags. Every strand independently fastened.
Rewiring—The only metal screen in which the wire cloth can be removed and replaced *without tools* and *without taking the frame apart* or *injuring the finish* in any manner.
Springs—Can be easily and quickly removed and replaced without tools, cannot be lost or pulled off, no holes to weaken and no rigid fastening.
Samples—We will send sample corners free of charge to the trade when requested.
- WOOD SCREENS.** All woods and finishes, wires, improved construction and hardware, metal slides, lock wiring. Everything in wood screens.
- AGENTS.** Desirable territory open to responsible and experienced agents in various parts of the country.

AUSTRAL WINDOW BALANCE CO.

703 Times Building
NEW YORK CITY, N. Y.

TELEPHONE, 1770 BRYANT

PRODUCTS.

Manufacturers of the AUSTRAL WINDOW BALANCE (Knox-Abell Patents). A self-balanced window that does away entirely with the use of sash weights, cords, pulleys, and their attending disadvantages.

SCIENTIFIC SYSTEM OF VENTILATION.

The sashes moving simultaneously in opposite directions make it impossible to open the window, without admitting fresh air and providing an outlet at the top for the escape of foul air. (Figs. 2 and 5.)

DESCRIPTION.

By reference to the illustrations it will be seen that the two sashes are connected by a lever (A) pivoted in the centre, fixed on the parting bead (B) and attached to both sashes so that they exactly counter-balance. Thumb bolts are fitted on each side at the top of the upper sash and the bottom of the lower sash, and travel in a groove (C) made in the window frame. These bolts serve as guide pins to keep the sashes in the normal position, and when withdrawn from the groove allow the sashes to be reversed and brought inward for cleaning (Fig. 6). When the lower sash is raised, the upper sash swings outward and is lowered, owing to the lever connection (Figs. 2 and 5). The window can be opened as wide at top and bottom as the ordinary sliding sash window (Fig. 4).



FIG. 1

Window Sashes Closed at bottom but slightly open at top and centre, or meeting rails. Ventilation without direct draught

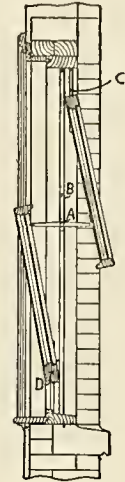


FIG. 2

Window Sashes Open at top, bottom and centre, which illustrates full ventilation

Ordinary fly screens and roller blinds can be easily applied.

The light area is increased by the amount of space that would otherwise be occupied by sash weight pockets.

COST.

Existing sashes can be altered at small cost, and in new construction a large saving can be effected. Full details, plans and estimates will be furnished on request.



FIG. 3

Window Partly Opened in the middle and top and bolted at the bottom, thus making it secure against intruders, though giving perfect ventilation



FIG. 4

Window Fully Opened



FIG. 5

Window Opened at top, middle and bottom, giving a full ventilation



FIG. 6

Top Sash Swung in for cleaning. The Bottom Sash can also be reversed in a similar manner

CHAMBERLIN METAL WEATHER STRIP COMPANY

DETROIT, MICH.

BRANCH OFFICES

NEW YORK CITY, 57 West 26th Street
 PHILADELPHIA, PA., 419 Mint Arcade
 CHICAGO, ILL., 84 La Salle Street
 BOSTON, MASS., 620 Atlantic Avenue
 MILWAUKEE, WIS., 313 Cedar Street
 MINNEAPOLIS, MINN., 837 Guaranty Loan Building
 HARTFORD, CONN., 519 Connecticut Mutual Building
 PITTSBURG, PA., 432 Diamond Street
 CLEVELAND, O., Builders' Exchange
 CINCINNATI, O., 9 West 4th Street
 NEW HAVEN, CONN., 150 Orange Street
 WASHINGTON, D. C., 218 Bond Building

LOUISVILLE, KY., 303-4 Tyler Building
 HELENA, MONT., 709 9th Avenue
 ST. JOSEPH, MO., 414 Francis Street
 MEMPHIS, TENN., 804 Tenn. Trust Building
 SCRANTON, PA., 1400 W. Gibson Street
 TORONTO, ONT., 319 Yonge Street
 WINNIPEG, MAN., 375 Young Street
 KANSAS CITY, MO., 421 Shukert Building
 ST. LOUIS, MO., 4320 Olive Street
 INDIANAPOLIS, IND., 631-2 Newton Claypool Bldg.
 BUFFALO, N. Y., 658 Main Street
 PROVIDENCE, R. I., 17 Custom House Street

BALTIMORE, MD., 441 Equitable Building
 ROCHESTER, N. Y., 122 E. & B. Building
 SYRACUSE, N. Y., 703 University Building
 NEW BEDFORD, MASS., 35 Hillman Street
 NEWARK, N. J., 205 Lawyers' Building
 OMAHA, NEB., 219 N. Y. Life Building
 WATERTOWN, CONN., 22 Stone Street
 DENVER, COLO., 444 Equitable Building
 DES MOINES, IA., R 8 News Arcade
 GRAND RAPIDS, MICH., 97 N. Ottawa Street
 PORTLAND, ORE.

PRODUCTS.

Manufacturers of the CHAMBERLIN METAL WEATHER STRIP for doors and windows, made of heavy sheet zinc, copper, brass or bronze.

ADVANTAGES.

The Chamberlin Metal Weather Strip is a permanent fixture which, when applied to windows and doors excludes draughts and cold winds, dust, dirt, and other atmospheric filth, cuts off outside noises from the house, tightens loose sash, and does away with rattling. The Chamberlin Metal Weather Strip is cut across the grain, thus giving it life and strength, immunizing it from cracking, warping, rusting, and, practically speaking, wearing. It is fashioned with a rib running lengthwise of the strip (Fig. 1), each side-strip having a number of longitudinal corrugations (Fig. 2), which reduces the contacting surface of the runway or sash channel to a minimum; thus offering an unusually tight fit and at the same time the contact of the sash with the Strip, being on two narrow points only, provides a means for the easy and free sliding of the window at all times. Sticking is a mechanical impossibility.

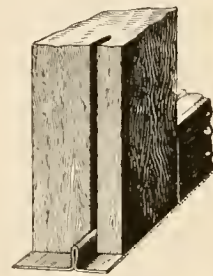


FIG. 1. WEATHER STRIP
 Used for Top and Bottom of Sash



FIG. 2. "CORRUGATED" WEATHER STRIP
 For Sides of Sash

APPLICATION.

This Weather Strip is tacked into the window casing channel, top, sides and bottom, the rib pointing outward. Next a groove is made in the window sash (Fig. 6). The rib in the zinc fits into the groove in the sash, thus making a joint very similar to that in matched lumber.

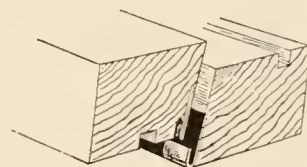


FIG. 3. WEATHER STRIP
 As Applied to Meeting Rail

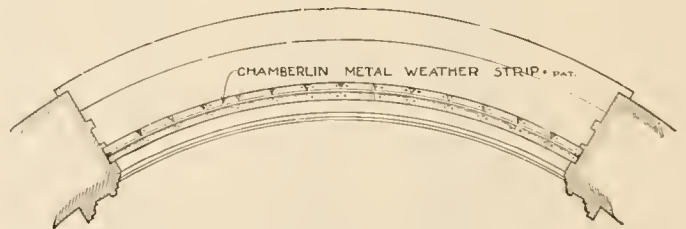


FIG. 4. WEATHER STRIP As Applied to Swell Windows

Chamberlin Metal Weather Strip can be applied to any and all classes of windows, such as straight windows (Fig. 5), swell windows (Fig. 4), casement windows (Fig. 6), and doors.

No special preparation of casing or sash need be called for in plans or specifications. We take the window as it is found, and guarantee the proper installation and working of strip.

INSTALLATION.

Chamberlin strip is not sold to the trade, but is installed in every instance by our own experienced workmen, of whom we have a number in every section of any importance throughout the United States. Estimates on work are submitted by the Managers of our branch offices. With our Headquarters and Factory in Detroit, together with our branch offices in 35 different cities throughout the country, we manufacture and install more weather strips than all other like concerns in the world, which statement a record of 100,000 windows equipped in 1904, should verify. Our arrangement of branch offices brings us into close touch with patrons, wherever located.

TESTIMONIALS.

When we make the assertion that the Chamberlin Metal Strip reduces coal bills from 20% (low) to 40% (high) we are advancing no mere theory but a hard proven fact.

We have records in the shape of voluntary testimonial letters from all sections of the United States, from builders of private residences, business and public buildings, which constitute irrefutable evidence that the Chamberlin Strip is doing and will continue to do, so long as the building in which it is installed stands, all we claim for it, and in many cases, much more. Copies of these letters incorporated in a handsome catalogue, which also shows prominent residences, business blocks and public buildings equipped with the CHAMBERLIN METAL WEATHER STRIPS, may be had for the asking.

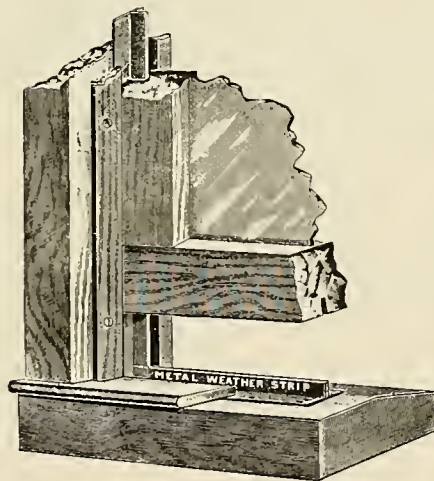


FIG. 5. WEATHER STRIP
Applied to Ordinary Window

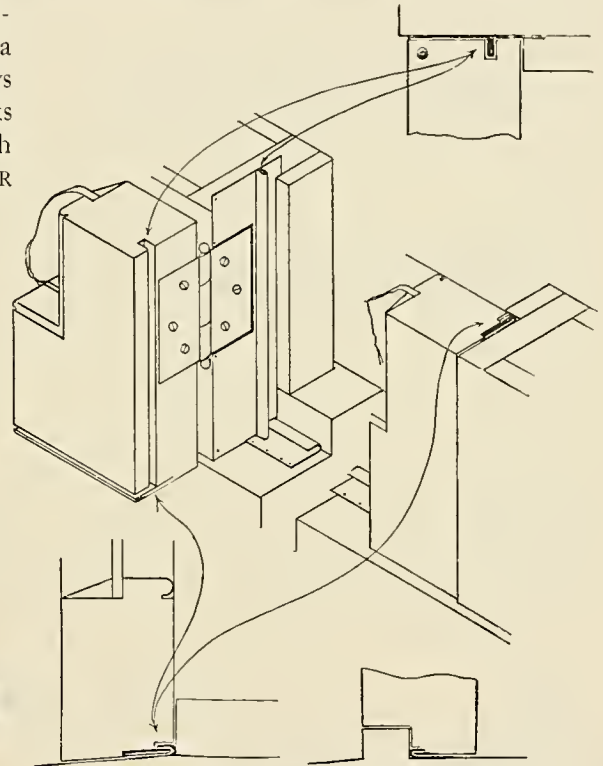


FIG. 6. THE CHAMBERLIN WEATHER STRIP
As Applied to Casement Windows, Opening In or Out

SUMMARY.

To epitomize, the Chamberlin Metal Weather Strip proves its wide usefulness and money saving principle by:

- 1st. Strengthening and adding life to the window.
- 2nd. Preventing the admittance of winter blasts and cold.
- 3rd. Keeping out dust, dirt, and annoying outside noises.
- 4th. Saving from $\frac{1}{3}$ to $\frac{2}{3}$ of the fuel bills.
- 5th. Making the home more comfortable in numberless ways.

ESTIMATES.

Estimates and samples will be furnished from our nearest branch office.

THE WIMMER ADJUSTABLE WINDOW SHADE CO.

OFFICE AND FACTORY

Cor. Leonard Ave. and 19th Street
COLUMBUS, O.

PRODUCTS.

Manufacturers of SLIDING WINDOW SHADE BRACKETS (Adjusters), WINDOW SHADES and appliances.

ADAPTATION.

Our Sliding Shade Brackets are all of standard size and make, and any spring roller shade will fit in them without altering the journals of the roller, and they can be readily attached to any window irrespective of size or width.

INSTRUCTION AS TO ORDERS.

Our goods may be had from any first-class shade dealer, or they will be furnished direct from our factory.

In ordering sliding brackets to be used in windows larger than five feet wide, it should be so stated, as large rollers require brackets with larger sockets.

ADVANTAGES.

The purpose of the Wimmer Sliding Window Shade Bracket is to provide for lowering the shade from the top, as well as raising it from the bottom, so as to admit the upper light and proper ventilation. The sliding brackets are similar to the old style socket bracket, and are adjustable. They work perfectly in a grooved window stop (Fig. 4), or small steel channels (Fig. 3). The steel channels are for equipping old or finished windows, and are provided with a flange which is slipped under the old stop (Fig. 3), but in new buildings it is advisable to groove the stops. The brackets when placed in the window are invisible, simple, practical, durable, neat, and easily operated. They will not stick and hang and become disarranged in the window, and are superior to all other makes. We guarantee them.

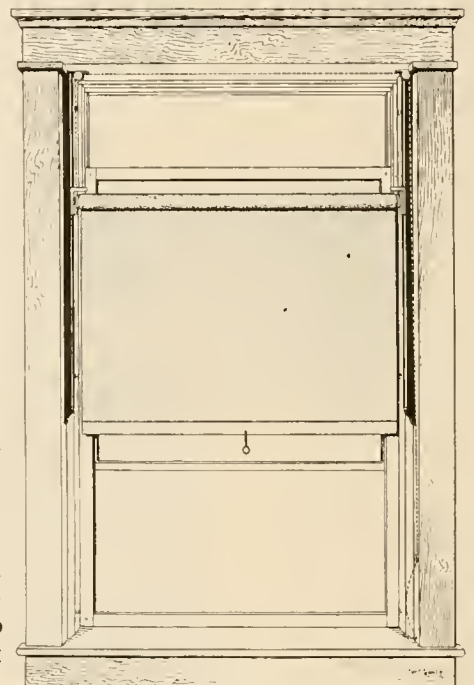


FIG. 1

Showing Window Equipped with a Shade Hung on Our Adjuster Lowered from the Top and Raised

COST AND ESTIMATES.

The price of the brackets, without steel channels, to be used in grooved stops, per window, all sizes, 35 cents; with steel channels, 50 cents, F.O.B. Columbus, O. Special discount to the trade. Estimates given on shades upon application.



FIG. 3

Section of an Old or Finished Window Equipped with Steel Channels. These can be attached without removing the old stop

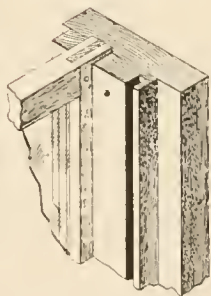


FIG. 4

Section of a New Window Equipped with a Grooved Stop Ready to Receive the Adjuster

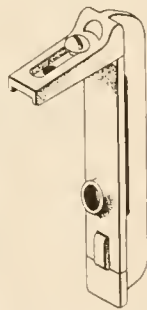


FIG. 5

Right hand side bracket in its normal position.

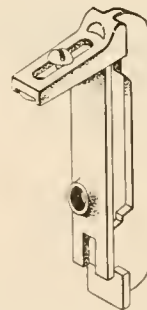


FIG. 6

Bracket Adjusted to Accommodate the Variation in length of the Roller

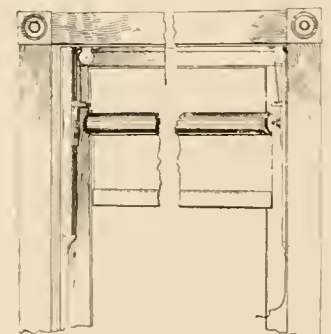


FIG. 2

Showing Brackets in Position and ready to receive shade

SAMSON CORDAGE WORKS

BOSTON, MASS.

CHICAGO OFFICE
142 Lake Street

NEW YORK OFFICE
155 Chambers Street

PRODUCTS.

Manufacturers of SASH CORD, VENTILATOR CORD, MASONS' LINES, CHALK LINES, etc.

FACILITIES.

The mills are equipped with the latest machinery for making high grade goods—both yarn and cord. They are the largest of the kind in the country.

TERRITORY.

The operations of the Company cover the entire United States and many other countries.

SAMSON SASH CORD.

Sash Cord, Pulleys and Weights should be adapted to the service. The manufacturers recommend the following:



SIZE No. 6. DIAM. 3-16 In.
About 18 lbs. per doz.; about 66 ft. per lb.
Suitable for weights of less than 5 lbs. Minimum diam. of pulley allowable 1 1/2 in.



SIZE No. 9. DIAM. 9-32 In.
About 33 lbs. per doz.; about 36 ft. per lb.
Suitable for weights from 20 to 30 lbs. Minimum diam. of pulley allowable 2 1/4 in.



SIZE No. 7. DIAM. 7-32 In.
About 22 lbs. per doz.; about 55 ft. per lb.
Suitable for weights from 5 to 12 lbs. Minimum diam. of pulley allowable 1 3/4 in.



SIZE No. 10. DIAM. 5-16 In.
About 44 lbs. per doz.; about 27 ft. per lb.
Suitable for weights from 30 to 40 lbs. Minimum diam. of pulley allowable 2 1/2 in.



SIZE No. 8. DIAM. 1/2 In.
About 27 lbs. per doz.; about 44 ft. per lb.
Suitable for weights from 12 to 20 lbs. Minimum diam. of pulley allowable 2 in.



SIZE No. 12. DIAM. 3/4 In.
About 60 lbs. per doz.; about 20 ft. per lb.
Suitable for weights from 40 to 50 lbs. Minimum diam. of pulley allowable 3 in.
The number indicates the diameter in 32ds of an inch.

These goods are sold through the dealers.

SAMSON SPOT CORD.

Sash Cord is carried in stock in cotton, in all sizes and also usually in Linen and Italian Hemp. The most popular Sash Cord and in the opinion of the manufacturers, the most durable of any cord made is the Samson Spot Cord. We recommend it because it is so much more economical in the end than the common rough or soft cords, or than chain or tape. It is made of extra quality cotton and warranted free from bad splicing, rough braiding and finishing which destroy common cords so quickly. The colored "Spot" is a Trade Mark used only in this extra quality. Tests show that it wears longer than any other device for hanging windows. The following summary of tests, made at the Massachusetts Institute of Technology, is instructive. Full tests will be sent upon application. The wear was determined by pulling the weight up and letting it down over the pulley. Every lift corresponded to once opening and shutting a window.



SAMSON SPOT CORD (TRADE MARK)

WEIGHT USED, 25 LBS. PULLEYS USED, 2 1/2 IN. DIA.	NUMBER OF LIFTS BEFORE BREAKING			COST PER FOOT	COST PER ONE HUNDRED WINDOWS
	Highest	Lowest	Average of All Tests		
Samson Spot Cord No. 8 Best Metal Sash Chain	428,188 382,002	96,988 20,735	214,371 75,848	3/4 ct. 5 cts.	\$ 18.00 120.00

Some architects prefer the Samson Solid Braided Linen Cord, partly on account of its color and partly on account of its greater tensile strength, especially if made of "Shoe Thread." It is advisable to order Linen Cord ahead of requirements, as some of the sizes are not always in stock.

SAMSON SOLID BRAIDED LINEN CORD. PRICES.

Samson Spot Cord	Per lb. \$.50	Linen (Sail Twine) Cord	Per lb. \$.65
Linen (Shoe Thread) Cord	1.00	Italian Hemp Cord	.50

FORM OF SPECIFICATION.

Architects who wish to guard themselves and their clients and insure that no substitution can be made for Samson Cordage Works products, should incorporate the following words in their specification of Sash Cord:

- Samson Spot Cord No. (6 to 12)
- Samson Linen Cord No.
- Samson Linen Shoe Thread Cord No.

SILVER LAKE CO.

Sash, Bell and Signal Cord

78 Chauncey Street,

BOSTON, MASS.

PRODUCTS.

SILVER LAKE SOLID BRAIDED COTTON SASH CORD, RAILROAD BELL and SIGNAL CORD.

SILVER LAKE CORD.

The hanging of window sash by means of cord is the universal practice, and the consumers recognizing the truth of "The Best is the Cheapest," our cord has for thirty-five years been the "Original and Standard Braided Cord." Silver Lake Solid Braided Cotton Sash Cord has been in general use since 1868, to the complete satisfaction of Architects and owners.

MACHINE BRAIDED.

This cord is made from the best quality of selected cotton yarn, twice doubled, then braided on our own Solid Braiding Machines by the most experienced workmen obtainable, and guaranteed in every particular.

ADVANTAGES.

Silver Lake Cord costs less per pound than linen and other fine fibre, and its weight is so slight that it costs less per foot than lower priced cords.

Cotton is the only fibre that will stand constant bending over a window pulley.

The ordinary twisted-cord kinks badly in coming out of the hank, requiring a great deal of time to straighten the line. Silver Lake Braided Cord comes out smoothly, making it possible to hang a much larger number of sashes in a given time.

By our own process of finishing, the stretch is removed so that the weight settles to its permanent place, and there is no untwisting by which the cord lengthens as it wears.

The smooth finish and handsome appearance of this cord at once commands attention.

The vexation caused by broken sash cord is so great that buyers of houses often look at the lines. A good sash cord will help to sell a house.

TRADE MARK.

Every three feet of our cord is stamped with our name and "trade mark." Architects who wish to guard their clients and themselves against substitution are enabled to tell at a glance whether their specifications have been followed.



TRADE MARK

SIZES AND WEIGHTS.

The following table gives the size and weight of each bank of cord in sizes 6 to 12, inclusive. The table also gives the weight which each size will carry safely.

This cord varies in 32ds of an inch in diameter, and is adapted to all weights and all pulleys. The smaller sizes are used with great economy for light weights.

SIZE, DIAMETER AND WEIGHT OF SILVER LAKE CORD

Size	Dia.	Weight per Doz. Hanks	Feet per pound	Suitable for Weights
No. 6	3/16"	18 lbs.	about 66	up to 10 lbs.
No. 7	7/32"	23 lbs.	about 52	10 to 15
No. 8	1/4"	27 lbs.	about 44	15 to 25
No. 9	9/32"	33 lbs.	about 36	25 to 35
No. 10	5/16"	44 lbs.	about 27	35 to 45
No. 12	3/8"	60 lbs.	about 20	45 lbs. and up

The prices of Nos. 6 to 12 cord and of our Railroad Bell and Signal Cord are as follows:

White Cotton.....	35c per pound	Italian Hemp.....	40c per pound
Drab Cotton.....	40c per pound	Linen	57 1/2c per pound
Mahogany Cotton for Railroad Bells and Signals only	47 1/2c per pound		

VAN KANNEL REVOLVING DOOR COMPANY

High Class Wood and Metal Workers

Office and Plant, 524-534 East 134th Street

NEW YORK CITY, N. Y.

AGENCIES

CHICAGO, ILL.
BOSTON, MASS.

WASHINGTON, D. C.
CLEVELAND, OHIO

ST. PAUL, MINN.
SAN FRANCISCO, CAL.

MONTREAL, QUEBEC
TORONTO, ONT.

PRODUCTS—HIGH CLASS ARCHITECTURAL WOODWORK, including DOORS, INTERIOR FINISH for banks, office buildings, etc.; ART METAL of all kinds in IRON, STEEL, BRONZE, BRASS, etc.

SPECIALTIES—VAN KANNEL REVOLVING DOORS—For exterior and interior use in all classes of buildings.

ENUPHYLL WORK—Better and cheaper than solid bronze for all architectural and ornamental uses, especially adapted for entrance doors, bank screens, fittings, etc.

VAN KANNEL REVOLVING PANTRY WINDOW—For noiseless and odorless dining-room service in residences, apartments, hotels, etc.

TURNSTILES—For railway stations, exposition grounds, etc. Electrically and pneumatically controlled for public libraries, banks, etc.

FACILITIES—Our plant embraces complete woodworking and metal working shops, and a force of designers, draughtsmen and mechanics skilled in all branches of wood and metal construction, thus enabling us to execute in our workrooms and under our own supervision, all the classes of work above mentioned.

PATENTS—Our products are all fully protected by Patents.

SUGGESTIONS AS TO ORDERS—Our products are for the most part made to order, following designs and plans of the architect, or those specially prepared by ourselves; the standardizing of many of the parts is such, however, as to facilitate selection and promptness of delivery. In order to enable us to prepare drawings, make suggestions and submit proposals in a satisfactory manner, full information is required as to the name, nature and uses of the building in which our products are to be used, with such plans, drawings and dimensions as may affect our work.

Orders should be accompanied by samples of finish desired for wood and metal. The time required for execution depends upon the character of the work and the season of the year.

GENERAL INFORMATION—The wide variety of our products does not permit of their complete treatment in this work. In the following pages we give as much information as possible regarding our specialties, which will enable architects to intelligently specify them in the majority of cases.

All further information required will be cheerfully furnished, and our designers, draughtsmen and our technical experience are at the free disposal of all architects, contractors and builders.

Illustrated literature describing our specialties and their application to different uses, as General Circular No. 1, etc., can be produced on application.

THE REVOLVING DOOR—The Van Kannel Revolving Door is in general use throughout the civilized world as the STANDARD ENTRANCE DOOR FOR BUILDINGS OF ALL DESCRIPTIONS. It obviates all storm doors and double sets of swing doors and is the *only form of entrance door* which absolutely excludes drafts, cold air, snow, rain, dust, etc. It requires no closing, cannot be left open. It affords a large initial economy in reducing heating plant and a continuous economy in maintenance. It is equally valuable for INTERIOR USE to prevent circulation of air from room to room, excluding sight, sound, heat or cold, odors, dust, etc., and is thus specially indicated in Corridors of Office Buildings, in Court-rooms, Committee-rooms, in Legislative Buildings, Libraries, Hotel-kitchens, Bar-rooms, Toilet Rooms, Hospitals, Factories, Mills, Printing Rooms, Bath Houses and Cold Storage Plants, etc. As a FIRE DOOR, it is the only form of door preventing fire from spreading from room to room at the same time permitting people to pass freely, but excluding flame and smoke. It is invaluable as a safe exit leading to fire escapes, elevator shafts and stairways.

The mechanical construction of the standard revolving door is such that it can be placed in a few seconds in any of the different positions indicated by Figures 1, 2, 3, 4 and 5.



FIG. 1.
REVOLVING POSI-
TION



FIG. 2
HALF OPEN POSITION



FIG. 3
CENTRAL OPEN
POSITION



FIG. 4
FULL OPEN POSITION



FIG. 5
LOCKED POSITION

Revolving Doors are made in all wood, solid bronze, enuphyll, iron and other metal construction, also combinations of wood and metal, also wings in wood or metal for use in circular vestibules constructed of marble or other stone.

STANDARD TYPES OF REVOLVING DOORS

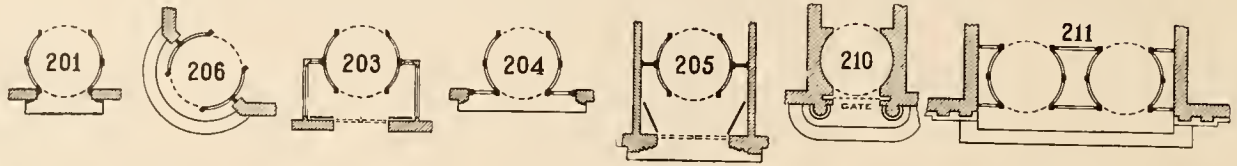


FIG. 6. SOME OF THE MANY PRACTICAL POSITIONS FOR REVOLVING DOORS IN ENTRANCES

Standard types of walls, ceiling and wings, each described by letter and number, permit of a large number of combinations, a sufficient number of which are here illustrated to permit the architect to make a selection, or to make any other combination of the walls, ceilings and wings shown, to meet his requirements. (The usual height for Standard doors is eight feet. See foot of page 353 for dimensions of Standard Door in Horizontal Section).



R. 1—Walls A, 101; Ceiling B, 101; Wings C, 108.



R. 19—Walls A, 106; Ceiling B, 133; Wings C, 106.



R. 22—Walls A, 106; Ceiling B, 119; Wings C, 106.



R. 28—Walls A, 109 with glass to left; Ceiling B, 127; Wings C, 106.



R. 30—Walls A, 109; Ceiling B, 103; Wings C, 106.



R. 32—Walls A, 109; Ceiling B, 116; Wings C, 106.



R. 7—Walls A, 103; Ceiling B, 111; Wings C, 108.



R. 11—Walls, solid sections, A, 101; Glazed Sections, A, 103; Ceiling B, 127; Wings C, 106.

COLLAPSIBLE REVOLVING DOORS—For use in Department Stores, Theatres, Churches, Schools, etc. where large crowds of people congregate who might in case of fire or panic make a simultaneous rush for the exits. In case of such emergency, the unusual pressure of the crowd causes the revolving structure to instantly collapse, and swing outwardly, folding together like a fan, thus furnishing a full and free exit. The accompanying illustrations show this type of Revolving Door in its revolving and in its collapsed positions. These doors are in use in a large number of the principal department stores throughout the United States and Canada.



Collapsible Revolving Doors.

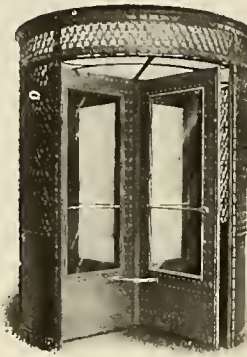
SOME SPECIAL TYPES OF REVOLVING DOORS



**HOTEL REGINA,
PARIS, FRANCE**
Mahogany, elaborately carved,
Glass Dome electrically lighted.



**METROPOLITAN LIFE BUILD-
ING, NEW YORK CITY**
Walls, interior Enuphyll, Marble
bases. Ceiling cut-back, Wings,
Enuphyll bronze.



**BESSEMER BUILDING
PITTSBURG, PA.**
Walls Sheet bronze and plated
cast-iron. Ceiling, bronze and plate
glass. Wings, Enuphyll.



**HOTEL ST. REGIS,
NEW YORK CITY**
Walls, Ceiling and Cornice, solid
bronze. Glass dome, elaborate hand
chasing and hammered leaf work.



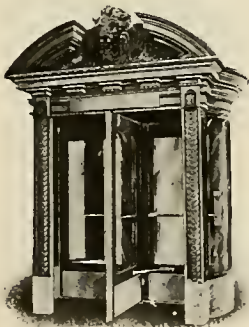
U. S. P. O., ELKHART, IND.
Walls, ceiling and wings of
quartered oak, special hardware;
marble bases. Sliding doors on
exterior.



**METROPOLITAN LIFE INSURANCE BUILDING,
NEW YORK CITY**
Walls, ceilings, marble; wings, solid bronze, hand
chased hardware; bronze automatic slot closer.



**Y. M. C. A. BUILDING,
WASHINGTON, D. C.**
Walls, ceiling and wings quar-
tered oak, marble bases under
curved walls.



**KILMER PRESS BUILDING
BINGHAMTON, N. Y.**
Walls, ceiling and wings of
mahogany; pediment and pilasters
hand carved mahogany; gold
veined black marble bases



**MOQUIN'S RESTAURANT,
NEW YORK CITY**
Walls and ceiling Enuphyll
bronze; name "Moquin's" on three
sides, illuminated by electric lights;
wings birch.



**CAFE DE PARIS,
PARIS, FRANCE**
Walls mahogany interior, white
enamel exterior, gold tracings, ceil-
ing same, wings mahogany.

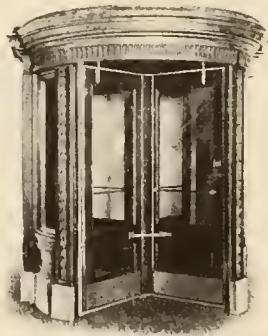


**PUBLIC BATHS
NEW YORK CITY**
Walls, ceiling and wings quar-
tered oak; hand carved; marble
bases.

SOME SPECIAL TYPES OF REVOLVING DOORS—(Continued)



WALDORF-ASTORIA HOTEL,
NEW YORK CITY
Walls, ceiling and wings are of mahogany, conical roof of metal.



U. S. P. O., WATERLOO, IOWA
Walls, ceiling and wings quartered oak, all of which are handsomely carved. Marble bases. Sliding doors on exterior.



HOTEL PFISTER,
MILWAUKEE, WIS.
Walls, ceiling and wings of mahogany. Large glass openings in the walls and wings.



KNICKERBOCKER TRUST CO.
NEW YORK CITY
Walls, ceiling and wings of Enuphyll bronze construction finished in color to harmonize with all other work.



U. S. P. O., HARTFORD, CONN.
Walls, ceiling and wings of quartered oak, marble bases. Sliding doors on exterior.



BALTIMORE AMERICAN,
BALTIMORE, MD.
Walls, ceilings and wings of mahogany, all of which are handsomely carved. Marble bases.



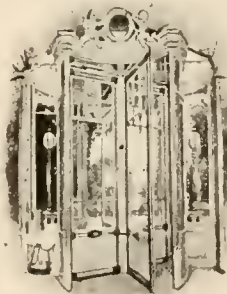
EVENING STAR BUILDING,
WASHINGTON, D. C.
Walls and ceiling of bronze to special design; wings of mahogany.



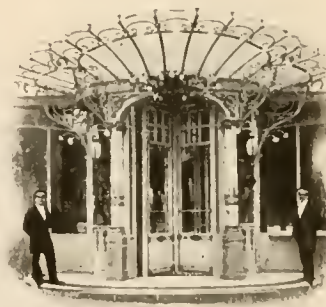
ELTON HOTEL,
WATERBURY, CONN.
Walls, ceiling and wings entirely quartered oak.



ROCKEFELLER BUILDING,
CLEVELAND, OHIO
Wings Enuphyll Bronze chemically etched back ground, rendering design shown. Installed in marble walls and ceiling.



Interior
PAVILLON D'ARMENONVILLE, PARIS, FRANCE
Walls, white enameled wrought iron; mirrored panels; white enamel cast iron figures and bevelled mirror; concealed zinc boxes, filled with growing plants; wings, white enameled oak; gold plated bronze ornamentation.



Exterior
PAVILLON D'ARMENONVILLE, PARIS, FRANCE



PHILLIPSBURG BUILDING,
YONKERS, N. Y.
Walls, ceiling and wings of quartered oak, folding gates for locking purposes, fold in pockets adjoining jambs of curved walls.

ENUPHYLL BRONZE—Our Enuphyll (trade mark registered and patent applied for) is not an especial metal or alloy, but is a form of bronze construction. It is not to be confused with kalamein, plating or other like methods, nor with other filled construction. Enuphyll presents a continuous surface of real bronze, so deep that it cannot buckle, dent or wear away any more than solid bronze. In the construction of the interior to which this surface is unalterably attached, and the application of the metal upon it, lie the perfection of this great improvement in metal working. The surface of Enuphyll is free from sand holes, and, therefore, more perfect than that of cast bronze, and all the richness, massive effect, and durability of solid bronze, from which it cannot be distinguished by the eye, is maintained; but, owing to its peculiar construction, the weight is greatly reduced, thus making Enuphyll more practical and desirable for all architectural purposes, and reducing its cost sufficiently to make bronze work possible, and an especially massive effect attainable where often the cost of solid bronze is prohibitive.

Enuphyll is especially applicable for revolving doors, swing doors, frames, bank screens, fittings, balustrades, etc.

Proposals furnished from our own designs or plans or from designs of architects carefully executed.

VAN KANNEL REVOLVING PANTRY WINDOW—The Revolving Pantry Window offers the only means of quick, noiseless and odorless service between kitchen and dining-room in residences, apartments, restaurants and hotels. It is installed between the kitchen and butler's pantry or serving room; or where such room does not exist, directly between dining-room and kitchen. It consists of a rotating cylinder with two compartments one above the other with opening on opposite sides, yet it is "always closed." The standard dimensions are as follows: Height of revolving cylinder, 31"; diameter, 27"; rough wall opening required, 28" wide and 37" high.

The Revolving Pantry Window with slight modifications is applicable for telegraph offices, newspaper offices, stamp and ticket windows, and other establishments where facility for conveying papers or other articles to or from a room without the passage of air, noise, fumes, etc., is desirable.

TURNSTILES—Our electrically controlled library Turnstile is especially adapted for public circulating libraries for controlling the entrance and exit of persons to and from the distribution desk. The Turnstile is normally locked, and is released so as to revolve and permit the passage of persons by touching a button at the clerk's desk. Pneumatic control is substituted for electrical control when the former is found more convenient for installation. The operation of this Turnstile is noiseless and easy, and it is the only Turnstile meeting fully the requirements for this purpose. Send for particulars as to size, designs, etc.

PRICES—The nature and variety of our products and the difference in the expense of installation following in each case does not permit of the arrangement of price lists. Complete estimates supplied on application.

SPECIFICATIONS—Architects desiring to protect their clients from the possible use of infringing articles of similar nature should use the name "VAN KANNEL" in specifying Revolving Doors and Pantry Windows, and our registered trade-mark "Enuphyll" when specifying our superior form of metal construction.

FORM OF SPECIFICATION FOR STANDARD REVOLVING DOOR—The structure of the revolving door to be made of..... finished in color as may be directed.

Hardware—All exposed hardware to be bronze satin finish.

Glass—All glass, both bent and flat to be of clear American plate.

Walls—Make each of the two curved walls in two sections.

Ceiling—The ceiling is also to be made in two sections.

Wings—The four revolving wings are to be made detachable from each other, two wings to be hinged for folding, and to be secured to the two permanent wings which are to have pivoted automatic drop braces.

Fixtures—The fixtures are to be of type having trolley suspended above the ceiling, enclosed, which will securely hold the revolving structure in a central rotating position by a lower pivot and trolley lock plate, both of which can be released by one operation, and permit of the folded wings being moved to one side, leaving an unobstructed passage. Provide renewable floor socket which will permit of the renewal of the wearing socket. Provide one hand rail for approaching side of each wing, with a suitable push plate, and kickplates (not over 14 gauge in thickness).

For special types of doors consult our office for special specifications.



ENUPHYLL BRONZE CONSTRUCTION



PANTRY WINDOW



TURNSTILE

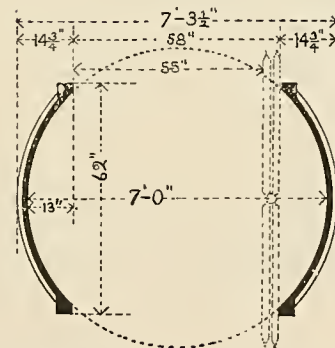


FIG. 7
DIMENSIONS OF STANDARD DOOR
IN HORIZONTAL SECTION

THE ARCHITECTURAL RECORD CO.

14 and 16 Vesey St.,
NEW YORK CITY, N. Y.

WESTERN OFFICE
MONADNOCK BUILDING
CHICAGO, ILL.

PRODUCTS. Publishers of "THE ARCHITECTURAL RECORD" (monthly magazine) and "SWEET'S INDEX."

THE ARCHITECTURAL RECORD. A Monthly Illustrated Magazine; same size and class as "Harper's," "Century," "Scribner's"; established 1891; devoted to Architecture and the Allied Arts and Industries; the "only national publication" of its class. The greatest writers of the day, in the United States and in Europe are regular contributors to its pages, and its illustrations are of the highest order. It supplies the reader with a complete critical record of all events in the fields it covers.

ITS READERS. The architectural profession in every State of the Union, the general public interested in the erection, equipment and furnishing of all classes of buildings, contractors, building material firms, engineers and others.

GUARANTEED CIRCULATION. This is the only architectural publication that possesses a "general circulation" or that guarantees its circulation to advertisers. Its bona-fide circulation is at least three times as large as that of any other periodical of its class.

ITS CLIENTS. The leading building material firms.

SUBSCRIPTION PRICE. Three Dollars a year.

ADVERTISING RATES.		Contracts for less than	Year
		one year per issue	Contract
	One-Sixteenth Page.....	\$ 6.00	\$ 60
	One-Eighth Page.....	11.00	110
	One-Quarter Page.....	19.00	190
	One-Half Page.....	36.00	360
	Whole Page.....	60.00	600

SPECIAL INSTRUCTIONS. All cuts, photographs and drawings supplied by THE ARCHITECTURAL RECORD to be paid for by the advertiser.

When a contract made for less than a year runs twelve times or more consecutively, the advertiser will be credited the difference between the short-time rate and the yearly rate.

CHESTER MANTEL AND TILE COMPANY

38 East 21st Street,

NEW YORK CITY, N. Y.

TELEPHONE CONNECTION

PRODUCTS. MANTELS, TILES and FIREPLACES.

TERRITORY. We will ship our products to any part of the United States or foreign ports. Same can be set by competent local contractors. We prefer when possible to set our own goods.

ILLUSTRATIONS. The following is an example of one of our stock mantels and Fireplaces, a large selection of which is always on hand. Architects and others are invited to inspect our stock at our salesrooms.



Mantels

Trinity Building,
111 Broadway,
New York City, N. Y.

Tiles

Mr. Chas. M. Schwab (Residence),
73d Street and Riverside Drive,
New York City, N. Y.

REPRESENTA-
TIVE WORK.

NEW YORK MOSAIC & MARBLE CO.

JOSEPH BAYAN, *Pres.*

Office and Works, 226 East 42nd Street,

NEW YORK CITY, N. Y.

TELEPHONE 1556 38TH STREET

PRODUCTS. MARBLE and STONE MANTELS, GARDEN FURNITURE and STATUARY, GENERAL MARBLE WORK, VENETIAN and GLASS MOSAICS.

FACILITIES. We have unique facilities for reproducing in marble or stone, antique Mantels and Statuary from any European Museum, Palace, or Garden.

TERRITORY. We contract for work to be set up in any part of the country.

PLANS. We have a very efficient staff of designers who will prepare plans for builders and architects.

ILLUSTRATIONS. Figures 1, 2 and 3 are typical of our work in Statuary, Mantel and general decoration effects.



FIG. 1. GARDEN STATUARY



FIG. 2. STONE MANTEL



FIG. 3. VESTIBULE WITH MOSAIC FLOOR AND MARBLE AND BRONZE FOUNTAIN

ESTIMATES. Estimates on architects' plans will be cheerfully furnished.

AMERICAN ENCAUSTIC TILING COMPANY, Ltd.

FACTORY AND GENERAL OFFICES
ZANESVILLE, O.

NEW YORK OFFICE
1123 BROADWAY

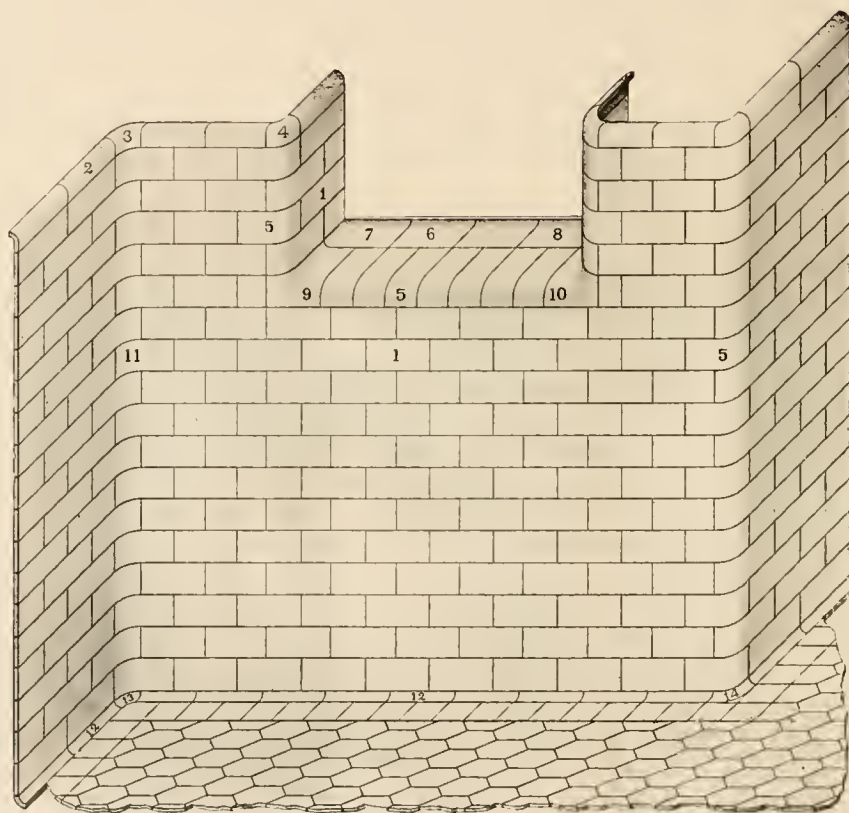
ADDRESS ALL INQUIRIES TO ZANESVILLE, O.

- PRODUCTS.** FLOOR, WALL, ENAMEL, EMBOSSED and DECORATED TILES for all purposes.
- FLOOR TILES.** Plain UNGLAZED TILE made in all standard shapes and sizes. Colors: Buff, Salmon, Light Grey, Dark Grey, Red, Chocolate and Black.
- For Porch Floors, Engine Rooms, etc. HYDRAULIC TILES made in sizes 5"x 10", 6"x 6", 6"x 3", 4 $\frac{1}{4}$ "x 4 $\frac{1}{4}$ ", 21-32" thick, and in all above colors excepting Black.
- CORRUGATED PAVING TILES, 6"x 6", 13-16" thick.
- OHIO FLINT PAVING TILES, 6"x 6", with Patent Grip Back, in Silver Grey only.
- VITRIFIED TILES made in standard sizes for this class of goods up to 3"x 3". Colors: Alabaster White, Silver Grey, Celadon, Green Vitreous, Blue Green, Light Blue, Dark Blue and Pink.
- CERAMIC TILES in all above mentioned colors (vitrified and plain.)
- WALL TILES.** WALL TILES with Patent Grip Back, made in the following sizes: 6"x 3", 6"x 2", 4 $\frac{1}{4}$ "x 4 $\frac{1}{4}$ ", 4 $\frac{1}{4}$ "x 2 $\frac{1}{8}$ ", $\frac{3}{8}$ " thick. Also 6"x 6" and 9"x 3", which is made $\frac{1}{2}$ " thick.
- (Glazed.) BRICK TILES, 9"x 3", with Patent Grip Back, in White Glaze and Enamel colors on White body, 1" thick; also Bull Nose (exterior corner), 5 $\frac{1}{2}$ "x 3".
- ENAMELED TILES.** FIREPLACE, WAINSCOTING TILES, etc., made in Enamel colors, Onyx colors, Marble colors and Dull Finish.
- EMBOSSED TILES.** EMBOSSED DECORATIVE TILES for fireplace facings, friezes, wainscoting and hearth borders, made in numerous decorations.
- DECORATIVE TILES.** HAND-PAINTED DECORATIVE TILES. Work executed from architects' drawings. Special designs furnished on request; also Printed and Hand-filled tiles.
- TERRA VITREA TILES.** "FAENZA," made in sizes 8"x 8", 8"x 4", 6"x 6", and 6"x 3".
- ART CERAMIC MOSAICS.** These are produced in Hand Cut tiles. Special designs furnished on application. ZIGZAG MOSAIC produced in geometrical tile in similar shades to our regular ceramic, as previously given.
- ENAMEL MOSAIC for mural decorations, hearths, facings, ceilings, etc.
- TERRITORY.** The operations of the Company cover the entire United States and Canada.
- QUOTATIONS.** For prices apply to the trade. All goods are of standard sizes, as above described, and can be obtained through the local dealers.
- ARCHITECTS' DESIGNS.** Architects' special designs promptly executed.
- SPECIFICATIONS.** In order to obtain the products of this Company architects should embody the name of the Company in full in the specifications.

SANITARY
TILES FOR
HOSPITALS AND
BATHROOMS.

The illustration below is an arrangement in SANITARY GLAZED WALL TILES of a number of new and special shapes especially adapted to produce, in their assembled form, rounded corners in all angles of a room; thus combining with the glazed finish of the tiles themselves those features of sanitation absolutely essential to the modern construction of Hospitals, Bathrooms, Kitchens and spaces of similar nature.

The UNGLAZED TILE FLOOR may be composed of Art Mosaic, Ceramic Mosaic, or other Encaustic Tiles in Vitreous or Semi-Vitreous colors. The cut represents a floor section of 3 inch Hexagons with the marginal line or border of 3x3 Squares, all in Alabaster White Vitreous.



SPECIAL SHAPES OF SANITARY GLAZED WALL TILE

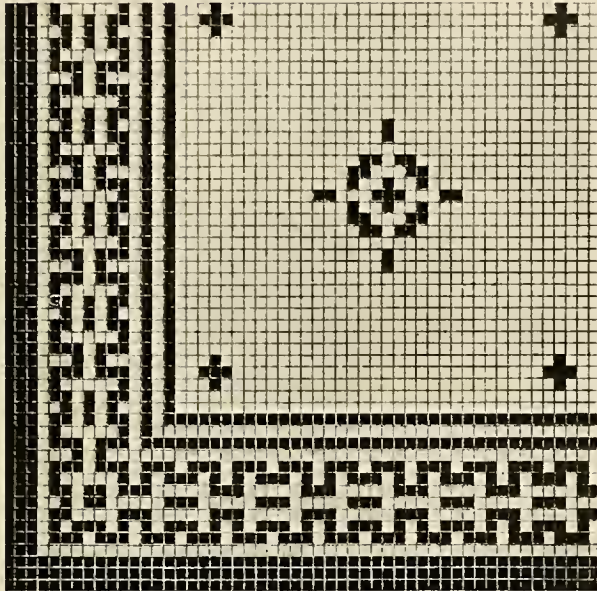
EXPLANATION
OF KEY
NUMBERS.

- | | | | |
|---|--|----|--|
| 1 | 6 x 3 Wall Tile. | 8 | Pattern 845, Right Hand Stop. |
| 2 | Pattern 722, 6 x 2 Cap. | 9 | Pattern 843, Left Hand Combination Angle. |
| 3 | Pattern 722, Concave Angle, 2 in. Radius. | 10 | Pattern 843, Right Hand Combination Angle. |
| 4 | Pattern 722, Convex Angle, 2 1/2 in. Radius. | 11 | Pattern 843, 5 1/2 x 3 Cove, 2 in. Radius. |
| 5 | Pattern 843, 5 1/2 x 3 Bead, 2 1/2 in. Radius. | 12 | Pattern 842, 6 x 2 1/8 Cove, 1 in. Radius. |
| 6 | Pattern 845, 6 x 3 Window Sill Cove. | 13 | Pattern 842, Concave Angle, 2 in. Radius. |
| 7 | Pattern 845, Left Hand Stop. | 14 | Pattern 842, Convex Angle, 2 1/2 in. Radius. |

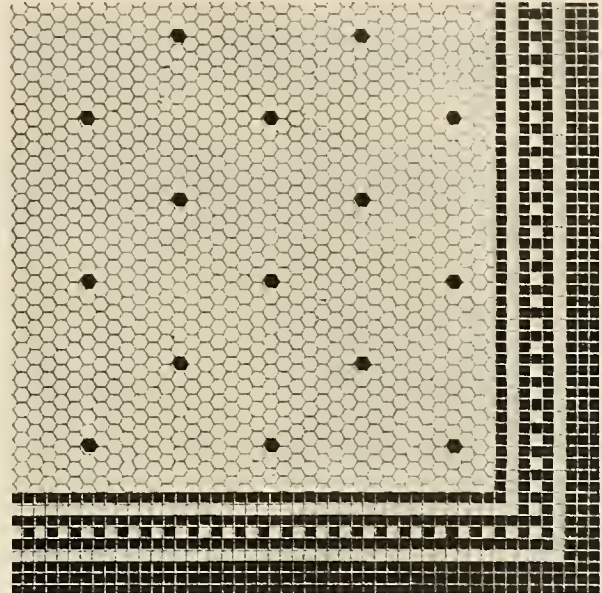
Where it may be desired to carry this wainscoting up to the ceiling, this may be done by omitting the cap member, Pattern No 722.

CERAMIC-
MOSAIC AND
VITREOUS
FLOOR TILE.

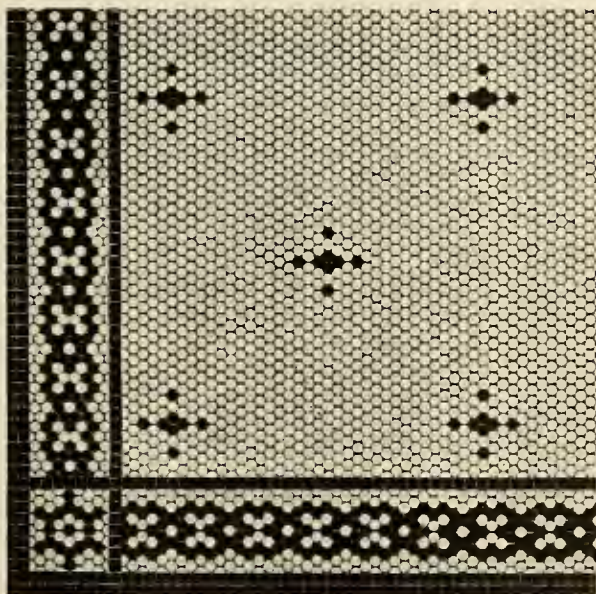
The sizes of tile shown on this page are manufactured in the following colors: Alabaster White, Dark Blue, Light Blue, Green, Celadon, Silver Grey, Pink, Black, Chocolate, Red, Dark Grey, Light Grey, Buff, Salmon, Fawn, Cream, Dove, Sage, Blue-Green.



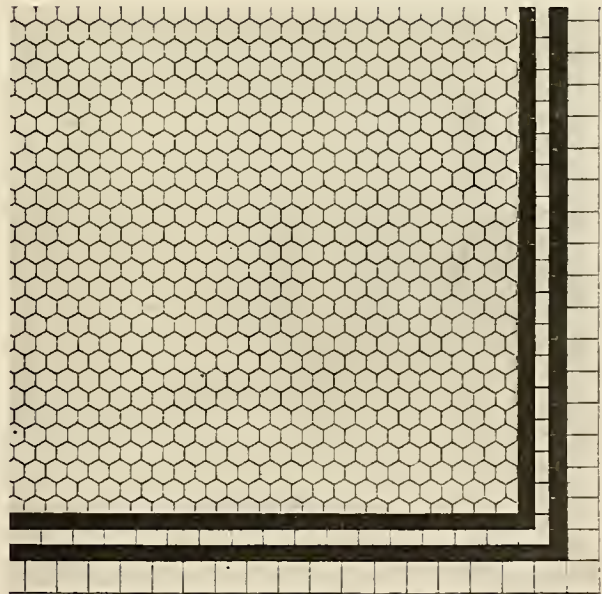
Border 2008—12 in. wide. Body 2099. Size Tiles, $\frac{3}{4}$ inch square.
Colors, Black and Alabaster White



Border 2090—7 $\frac{1}{4}$ in. wide. Body 2091. Size Tiles, $\frac{3}{4}$ " square. 1"
Hexagon. Colors, Black and Alabaster White



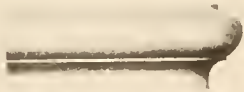
Border 2098—8 in. wide. Body 2099. Size Tiles, $\frac{3}{4}$ inch square,
 $\frac{13}{16}$ " round. Colors, Black and Alabaster White



No. 586—Border in lines of White or in colors. 2-inch Hexagon
Body made in all the above colors, except Fawn, Cream, Dove and Sage

ILLUSTRATIONS.

The cuts herewith show the forms of some of our leading patterns.



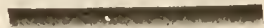
No. 786. Cap Moulding, 6 x 1 1/2, with Angles and Stops.

No. 752. Cap, 6 x 3, with Angles and Stops



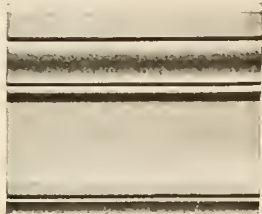
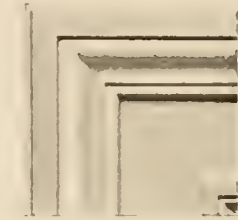
No. 829. Cap, 6 x 2, with Angles and Stops

No. 635. Cove, 6 x 2. Concave and Convex Angles, round and square



No. 722. Cove. 6 x 2. Glazed inside for Cove, and outside for Cap. All Angles, round and square, for both Cove and Cap. Can be used also as shoe base

No. 837. Angle for Door Trim, 5 x 5



No. 836. Door Trim, 5 x 6, with patent Grip Back



No. 805. Sanitary Base, 6 x 6, with Angles and Stop Ends

No. 751. Sanitary Base 6 x 6. Large Cove at floor line. Large Cove Angles to meet Cove 635 in corners of room. Stop Ends and Square Angles for corners



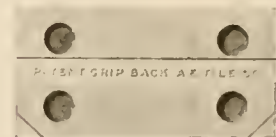
No. 806. Straight Base, 6 x 6, with Angles and Stop Ends

No. 822. Ceiling Cove, 6 x 7 1/2, Radius 4 1/2



METHOD OF ATTACHMENT.

The accompanying cut illustrates our patent Grip Back, a circular dovetail mortise on back of our Wall Tiles, Door Trim, Bases, Caps, Beads, etc. The Grip Back guarantees against tiles coming loose.



OTHER FORMS.

We also make an extensive line of combination angle beads and combination coves; Grip Back beads for convex angles; Coves for concave angles, etc.; also Cap Mouldings and Bases in plain and embossed patterns, samples of which can be had upon application.

THE CAMBRIDGE TILE MANUFACTURING CO.

COVINGTON, KY.

GOLD MEDAL HIGHEST AWARD
ST. LOUIS, 1904

BRANCH OFFICES
NEW YORK CITY, N. Y.
SAN FRANCISCO, CAL.

PRODUCTS.

CERAMIC MOSAIC FLOOR TILE, ART CERAMIC TILE, WALL TILE, VELVET FINISH TILE in all colors, TERRA VITREA BRICK, TWO INCH HEXAGON WHITE VITREOUS TILE for bathroom floors, ENAMELED TILE in plain colors and mottles, ANTIQUE FINISH and DECORATED TILE.

MOSAIC FLOOR TILE.

Our MOSAIC FLOOR TILES are made in the following colors: White, black, salmon, red, buff, chocolate, silver grey, celadon, light blue, dark blue, peacock, dark green, pink. Samples will be sent on application.

They are made in three shapes, one inch Hexagon (Fig. 1), $\frac{3}{4}$ inch Square (Fig. 2), and 13-16 inch Round (Fig. 3).

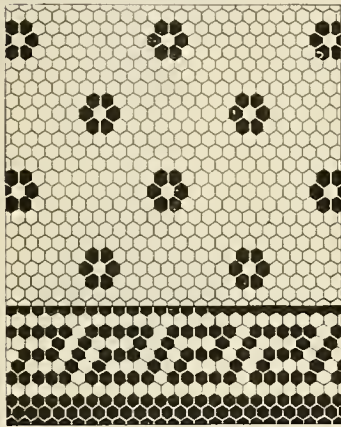


FIG. 1
HEXAGON MOSAIC FLOOR TILE

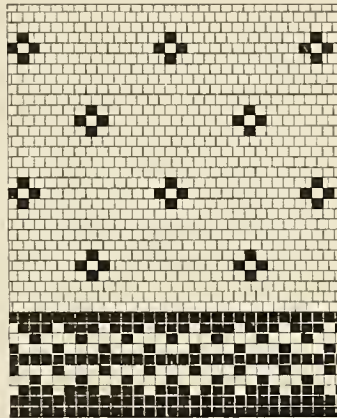


FIG. 2
SQUARE MOSAIC FLOOR TILE

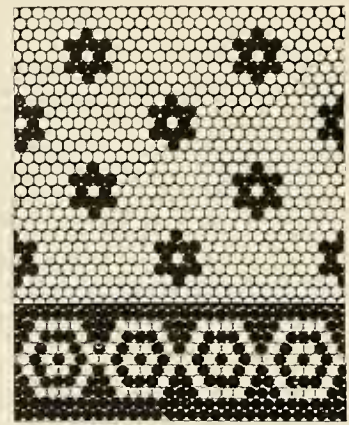


FIG. 3
ROUND MOSAIC FLOOR TILE

WEARING QUALITIES.

The wearing quality of our Mosaic Floor Tile and their superiority over Marble Mosaic is fully shown in the following extract from the *Scientific American*, July 3, 1897:

"The samples were all placed face downward upon a horizontal iron rubbing wheel, ten feet in diameter, which was run for a space of one hour at a speed of seventy-five revolutions per minute. A suitable frame held the blocks loosely in place and prevented them from rotating with the wheel, care being taken to let the full weight of the blocks bear upon the wheel. The face of the wheel was freely supplied during the test with the best sharp rubbing sand and water.

"The Marble Mosaic collapsed altogether, the one-inch strip, being rubbed entirely away within fifteen minutes, under a pressure of a little over half a pound to the square inch. The whole slab disappeared in thirty-five minutes under the same pressure.

"The earthen tile (Ceramic) showed by far the best results, losing only one-eighth of an inch in thickness after sixty minutes test."

WALL TILE.

Fig. 4 illustrates a Wall Tile with a glazed sanitary base and coves. No corners are left for dirt and germs to accumulate. This style of wall is fully endorsed by all physicians and is especially recommended for use in hospitals, bathrooms, laboratories, kitchens, etc.

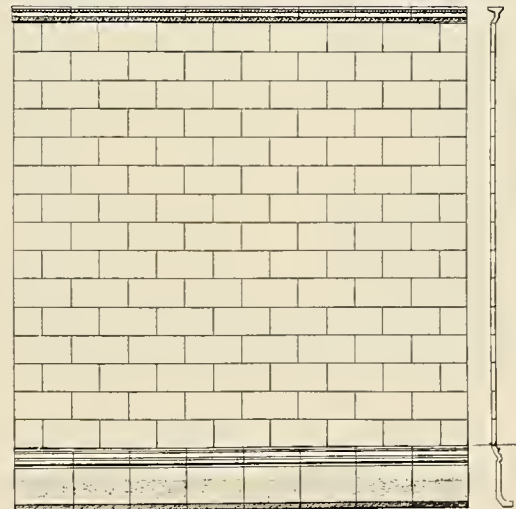


FIG. 4. WALL TILE WITH SANITARY BASE

THE GOODYEAR TIRE AND RUBBER COMPANY

Interlocking Rubber Tile Floors

LONG DISTANCE TELEPHONE, No. 12

AKRON, OHIO.

PRODUCTS.

INTERLOCKING RUBBER TILING, MOTOR TIRES, etc.

INTERLOCKING RUBBER TILING.

The Tile are made from carefully selected stock, chosen with a view to withstand severe usage, and will wear a lifetime.

STYLES.

Goodyear Interlocking Rubber Tiling can be worked into carpet or mosaic designs. Style is formed by combining tile of patterns A and B. The simplicity of shape of these tile permits an almost endless variety of attractive combinations. This is an advantage worth considering, as many combinations are thus obtainable that could not be successfully produced from tile of more complicated or less symmetrical design. Floor patterns in both plain and ornamental styles, squares, continuous designs, borders, etc., in a multiplicity of patterns, are readily available with Goodyear Interlocking Rubber Tiling. Patterns A and B are reduced in size, four tile of Pattern A occupying one foot in length; hence there are sixteen tile of Pattern A and a corresponding number of Pattern B to the square foot.



PATTERN A
GOODYEAR TILE



PATTERN B
GOODYEAR TILE

DESIGNS.

We issue a catalogue of a few suggestive patterns, and this will be sent upon request. If favored with a drawing of the room to be covered, we will gladly make up special designs. Write for references.

SCALED DESIGNS.

Our designs are all scaled an inch to the foot, being worked upon special paper furnished for the purpose. Scaled sheets are furnished to those desiring to draw their own designs or to make suggestions or criticisms.

ADAPTATION.

The Goodyear Interlocking Rubber Tiling is noiseless, sanitary, restful, waterproof, and artistic. It is particularly adapted for use in Offices, Banks, Public Buildings, Vestibules, Corridors, Elevators, Club-rooms, Kitchens, Laundries, Hospitals, Court-rooms, Ships, Yachts, Bath-rooms, etc.

COLOR.

Our Tile is made in Black and White and the following colors: Buff, Red, Blue, Gray, Chocolate, Yellow and Green.

INSTALLATION.

Goodyear Interlocking Rubber Tiling can be laid on any kind of a base, wood, iron, cement, stone, etc., and while it is not necessary to use cement, its use is recommended. The cement should be spread as thinly as possible with a trowel. After the Tiling has been allowed to set, it should be rubbed with a pumice or hobby stone and cleansed with water and soap. We allow a space of $\frac{3}{8}$ of an inch in order to bring the finished floor up to the level desired.

GRUEBY FAIENCE COMPANY

MAKERS OF

Enameled Terra Cotta, Tiles, Grueby Pottery, etc.

K and First Streets

BOSTON, MASS.

OFFICES

BOSTON, MASS.

K and First Streets

Telephone, 534 So. Boston

PHILADELPHIA, PA.

618 Weightman Building

Telephone Connection

NEW YORK CITY

1133 Broadway

Telephone, 2175 Madison Square

PRODUCTS.

Makers of ENAMELED TERRA COTTA, TILES, GRUEBY POTTERY, etc.

TILES FOR
FIREPLACES.

Sizes 2x6, 4x4, 3x9, 4x8, 4½x9 and 6, 8, 10 and 12 inches square; ⅞ inch thick; enameled in dull surfaced Grueby colors, greens, blues, yellows, browns and grays, are usually in stock or can be had on short notice.

THIN WALL
TILES.

These are 3x6 and 6x6 on a ⅜ inch thick white biscuit for bath-rooms or other wall surface.

FLOOR TILES.

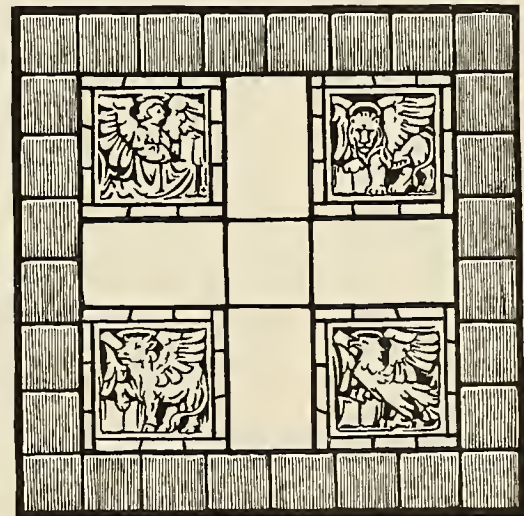
Two inch hexagons, squares and other shapes enameled on a hard fired red clay are used for floors or halls, conservatories and public rooms and have been thoroughly tested for strength and wearing qualities.

DECORATIVE
FAIENCE.

Modeled Faience ornamental work in Grueby colors for interior decoration and on a hard fired red body for exterior ornament is made under architects' directions; also decorative tiles with designs incised, raised or enameled on the surface.

GRUEBY
POTTERY AND
GARDEN
POTTERY.

The Grueby Pottery turned on the wheel and modeled by hand is designed to harmonize with the colors and forms of nature. The Garden Pottery is made in red, gray and white terra cotta hard burned and fire-flashed.



SPECIMEN DESIGN OF GRUEBY FAIENCE

SKETCHES AND
ESTIMATES.

Sketches and schemes for the use of Grueby tiles will be furnished on application.

AWARDS OF
MERIT.

Gold medals at Paris, St. Petersburg, Turin and Buffalo.

Grand prize at St. Louis by Superior Jury for Faience, Tiles and Pottery.

THE MOSAIC TILE COMPANY

Factory and General Office
ZANESVILLE, OHIO

EASTERN OFFICE
508 TO 512 BROOME ST., NEW YORK CITY, N. Y.
TELEPHONE, 626 SPRING

PRODUCTS.

Manufacturers of FLOOR, WALL and ENAMELED TILE, including CERAMIC MOSAIC, VITREOUS and ENCAUSTIC for FLOORS—WHITE GLAZED with MOLDINGS for WALLS and ENAMELED TILE for FIREPLACE WORK.

FACILITIES.

We carry a large stock of our materials both at the factory and at our Eastern Office in New York City, thus enabling us to fill orders promptly.

A large and well equipped Design Department is maintained, and we are glad to prepare special hand-made designs, showing proposed treatment of floors, walls, etc., when such sketches would be of service to the architects or their clients. Our complete catalogue (H) will be sent on application.

We enjoy the reputation of being the largest manufacturers of Ceramic Mosaic Floor Tile in this country, if not in the world, having for several years given to this line almost our undivided attention. With the five different sizes and many colors we are able to meet any requirement in design or color effect.

Our heavy Damask designs, as shown in Fig. 1, were first introduced by this factory and have demonstrated to architects and others that certain architectural details can be carried out in the floor design.

The demand for a high grade of Mosaic work is met in our Cut Ceramic. The infinite number of colors and shades in which the clay tile can be manufactured enables the Mosaic worker to produce far more beautiful effects with it than in the use of Marble. The unfading qualities of the tile give it a great advantage over its competitors.

We maintain an Art Ceramic Department under the supervision of competent designers and skilled workmen.

Plicaro Mosaic, Fig. 2, consists of a regular Vitreous Ceramic Tile laid on a flexible base with Plicaro Cement and can be easily placed on wooden floors, as no preparation of the floor or cutting of the joists is necessary, and the Plicaro Mosaic is not heavier than hard-wood floor.

Plicaro Cement will stick to wood or tile. It is flexible, and together with the tile, adds only about 7 pounds per square foot to the weight, and raises the floor line only about $\frac{5}{8}$ of an inch. It is a very suitable material to be used in the remodeling of old buildings, where a tile floor is desirable, and where the structure will not stand the additional weight of 45 pounds to the square foot of tile and concrete. The floor laid in this manner is durable, and is as sanitary as though laid in Portland cement, and being

CERAMIC
ROMAN
MOSAIC.

ART CERAMIC
MOSAIC.

PLICARO
MOSAIC.
LAID ON
WOOD FLOORS.



FIG. 1. HEAVY DAMASK FLOOR DESIGN

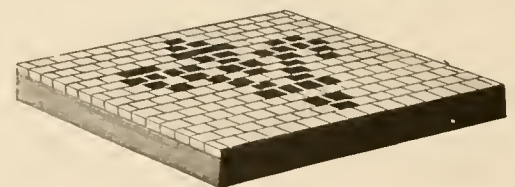


FIG. 2. SECTION OF TILE LAID IN PLICARO CEMENT

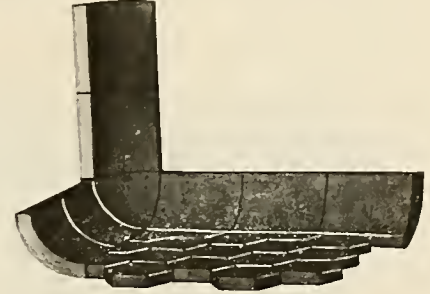
VITREOUS
COVE BASE

flexible, will not crack when the building gives. We recommend the use of this cement where it is not possible to use concrete.

The accompany illustration (Fig. 3), shows our Vitreous Cove Tile, which is now demanded by sanitary experts to do away with sharp angles in floors for Hospitals and places where absolute cleanliness is a necessity. It joins the floor with surrounding wall finish, giving an angle easily kept clean. The stock is manufactured in all the colors of our Ceramic, Vitreous and Encaustic Tile.



FIG. 3. VITREOUS COVE BASE

FIG. 4. VITREOUS COVE BASE
TREATMENT OF CORNERS

Two sizes are made, namely: 3"x 3" and 3"x 1½".

For private bathrooms or for any room where there is a desire to eliminate all corners, we suggest the treatment shown in Fig. 4.

MARBRAMIC
FLOORS.

It has been the desire of all architects to get a combination of Ceramic colors which, when blended together, will give the soft warm effect of Marble Mosaic, and, at the same time, have the sanitary and lasting qualities of Ceramic Mosaic. After considerable experimenting, we have at last effected a combination which we believe embraces all the good points of both marble and ceramic, and we have named this combination MARBRAMIC FLOORS.

GRANITE
FLOOR TILES
FOR OUTSIDE
USE.

Considerable trouble has been experienced in securing a tiling which is suitable for outside porch and terrace floors, and other spaces exposed to the elements. Until we introduced our Red and Grey Granite Tiling no satisfactory material for this purpose had been produced. This granite tiling is made from a combination of clays which can be burned at the greatest heat in a kiln. The result is a tiling which cannot be disintegrated by the weather and hence will retain its appearance when used for outside work. It is also very attractive in color and can be made into very pleasing designs by combinations with some of our other standard colors.

We make this material in all Ceramic sizes, also in 6"x 3", 6"x 2" and 6"x 1½" strips and in 2" hexagons, 3" octagons and 3" hexagons, and are therefore prepared to substitute it for any other material specified.

SPECIAL SIZE
SQUARE
CERAMIC.

Our ½"x ½" square Ceramic is the smallest Ceramic Tile made. By reason of the minute size of this tile we are enabled to faithfully imitate the elaborate and intricate designs of Art Ceramic and Marble Mosaic without the necessity of cutting the tile. This tends to reduce the cost of the floors while the general artistic effect is the same. By using the ½" squares we can make the elaborate Damask and Rococo designs for small spaces and can closely imitate the Turkish Rug effects so much desired.

A panel or rug of our ½" Tile made in elaborate colors and placed in a floor, adds greatly to its general appearance. It is also especially desirable for vestibule floors of irregular shape, as the designs can be so arranged that no cutting is necessary and mitering of the corners is avoided.

SPECIAL SIZE
WHITE
VITREOUS
HEXAGONS.

Many requests have been made for a large ceramic tile which will take the place of the 2" vitreous hexagons and at the same time enable the tile-setter to handle it quickly and profitably. To cover this much felt want we have made the white 1¼" hexagon, which is the largest ceramic tile mounted on paper, and have made the ceramic thickness ¼ per inch.

This tile is particularly recommended for use in private bathrooms, operating rooms and all spaces where a plain white floor is desired. The material used in the manufacture of this tile is the same as that used in the regular 2" and 3" white hexagons, and, as it is burned at such a great heat, there is no possibility of the tile wearing through.

ROBERTSON ART TILE COMPANY

TRENTON, N. J.

WORKS:
MORRISVILLE, PA.

PRODUCTS.

We are manufacturers of FLOOR and WALL TILE of every description, GLAZED WALL TILE, BATHROOM TILE, ARCHITECTURAL TILE, ENAMELED and GLAZED TILE in all colors, ONYX TILE, EMBOSSED AND DECORATED TILE, PALISSY and TANAGARA DECORATIONS; also VITREOUS and SEMI-VITREOUS FLOOR TILE in all colors, CERAMIC ROMAN and PLYCARO MOSAIC.

We give special attention to the sanitary Tile work in public and private institutions.

TERRITORY.

We are represented by dealers and first-class agents in all parts of the United States, Canada and Cuba, and are prepared to furnish materials for any part of the world. It is our endeavor to work through the legitimate channel of responsible Tile Contractors only.

ADAPTABILITY.

Our material is specified in the building clause of New York and other States in connection with bath and toilet rooms, and other places of a sanitary character, and it has also received the endorsement of the National Board of Fire Underwriters.

STOCK AND DELIVERY.

We keep a large stock of Floor and Wall Tile on hand at our Trenton, Anderson and New York stock rooms so that we are enabled to make prompt shipments.

DESIGNS AND ESTIMATES.

Our designing and estimating department is at all times at the disposal of Architects, and we cordially invite correspondence. We are prepared to furnish detail drawings showing the application of the various members manufactured for special purposes and will provide Architects' offices with the necessary samples. Special orders can be filled from within one week to one month.

CONCERNING INSTALLATION.

We take at all times an active interest in the application of Tiling, and while we do not ourselves contract for the setting of Tile we are ready and eager to assist the Architect by referring such work to responsible Tile contractors, who are known to us as careful business men and good mechanics.

HOSPITAL TILE.

The Robertson Art Tile Company has made special efforts in the development of the sanitary character of Tile work, and our Hospital Tile represent the greatest achievement in this direction. We have solved the problem of providing all corners and angles, recesses and projections, window sills, window and door jambs with a system of rounded coves, bull-noses, and corresponding returns or mitres. We have adopted two arrangements; one providing for members with a *three inch radius*, which is generally adopted in hospital work, and the other providing for members with a *one inch radius*, which is more in favor for private work. Both arrangements are very satisfactory, and it is merely necessary for the Architect to specify as follows:

SPECIFICATIONS.

"Hospital Tile, 3-inch radius (or Hospital Tile 1-inch radius) for all coves and corners." Also state in the specifications if window and door trims should be included.

The application of this Hospital Tile will not necessitate any special preparation of the walls other than necessary for ordinary tile work.

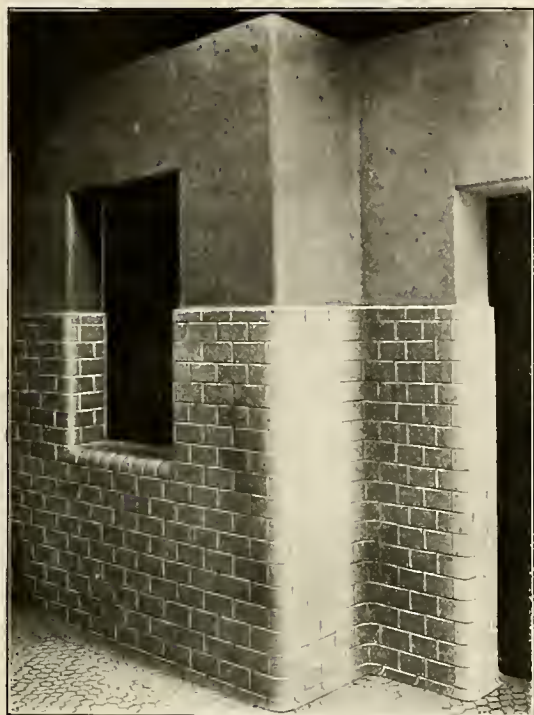
VITREOUS
FLOOR
TILE AND
CERAMIC
MOSAIC.

ENAMELLED,
GLAZED
AND DECORATED
TILE.
SERVICES.

White Vitreous Hexagon Tile are principally used for sanitary work, bathrooms, etc., the *Ceramic Mosaic* finds very satisfactory application in lobbies, corridors, hallways, reading rooms, etc. This material is very durable, perfectly sanitary and its decorative qualities are of a very high order. *Plicaro Mosaic* may be set directly on wood, and the process invented and patented by Mueller and Langenbeck, gives excellent satisfaction. Send for samples and testimonials.

We have made strong efforts to satisfy the growing demand for Tile of "Architectural" character. Our Pilaster Tile, Mouldings, Friezes, etc., are frequently applied and our dull Glazed Enameled Tile grow steadily in demand.

The Robertson Art Tile Company places its technical staff at the disposal of architects and engineers and will thereby assist in the selection and application of appropriate materials.



APPLICATION OF HOSPITAL TILE



APPLICATION OF BATH ROOM TILE



A CERAMIC MOSAIC FLOOR

GRAND PRIX
PARIS, 1900

GRAND PRIX
ST. PETERSBURG, 1901

HIGHEST AWARD
BUFFALO, 1901

HIGHEST AWARD
TURIN, 1902

GRAND PRIZES
ST. LOUIS, 1904

ROOKWOOD POTTERY COMPANY

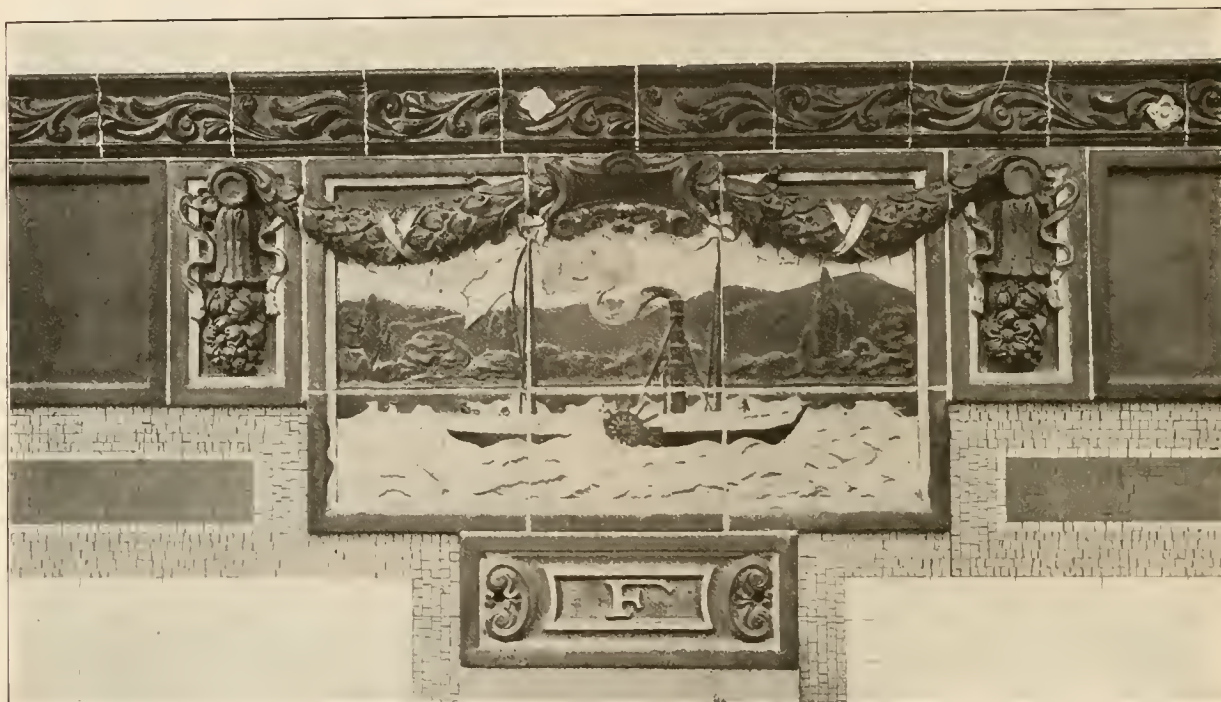
MAIN OFFICE AND WORKS
CINCINNATI, OHIO.
TELEPHONE 345 MAIN



NEW YORK OFFICE
1 MADISON AVENUE
TELEPHONE 6859 GRAMERCY

MANUFACTURERS OF MAT GLAZED ARCHITECTURAL FAIENCE
AND TILE IN ALL COLORS; GARDEN ORNAMENTS, POTTERY
AND OTHER SPECIALTIES FOR EXTERIOR OR INTERIOR USE.

FROM ARCHITECTS' OR OUR OWN DESIGNS.



DETAIL OF FAIENCE CORNICE AND PLAQUE WORK

Fulton Street Station, New York Subway. Heins & LaFarge, Architects

NO OTHER MATERIAL OF EQUAL SCOPE OF APPLICATION PRESENTS THE SAME CHROMATIC POSSIBILITIES COMBINED WITH ABSOLUTE PERMANENCE.

COST AND
ADAPTABILITY.

Well within the customary appropriations in the better class of building projects. Permanent modeled relief may be realized with a richness in color and surface texture otherwise attainable only in the more costly mediums of colored marble and bronze.

FACILITIES.

The Architectural and Pottery Plants of the Rookwood Co. are unrivalled in their technical resources for high class decorative work.

An experience of twenty-five years in the making of colored glazes combined with the special facilities for their production insure the accurate realization of special color schemes and promptness in execution.

The Company employs only the highest class of labor. It also maintains a staff of competent designers and artistic craftsmen and is prepared to collaborate in the preparation of plans by furnishing original designs for faience work.

QUALITY OF MATERIAL.

The superior quality of the body renders it less subject to warping in the fire than the average clay product, insuring greater nicety of jointing and much purer line.

The chemical structure and adjustment of glaze to body is so perfect as to insure the greatest durability under all conditions.

The mat surface is produced in the firing, and not by acid treatment or sand blast, our method yielding richer surface textures and superior sanitary qualities.

INSTALLATION.

We do not contract for installation of material.

ESTIMATING AND ORDERING.

Estimates will be rendered from plans consulted at architects' and contractors' offices when the requirements involve the use of our own designs for ornamental work or tile in plain colors, but all special work will necessitate supplying us with drawings duplicating those at contractors' office.

As prices are materially affected by the number of colors and their distribution in design, these points should be covered as far as practicable by the drawings and specifications for faience work; the distribution of colors indicated preferably by color sketch.

In the above connection note that our existing colors offer a wide range of choice. Special colors or shades of colors not heretofore produced will require time for kiln trials and may involve additional charge.

In all work to order the time for execution is subject to agreement according to conditions and requirements.

In the preparation of plans we will be glad to give further information bearing on cost and economy as affected by design and the natural qualities of the material.

FORM OF SPECIFICATION.

"Mat glazed Faience" or "Tile" (stating number and, if possible, what colors) "to be supplied by the Rookwood Pottery Co." Also incorporate the words "The mat finish to be produced in the kiln and not by acid, sand blast or other treatment after firing."



GARDEN POT

Made in two sizes, 21 $\frac{1}{4}$ " x 26 $\frac{1}{2}$ " and 14" x 19". Also without festoon ornament



WINDOW BOX

Size 10" x 16 $\frac{1}{2}$ " x 10 $\frac{1}{2}$ ". Also made in sections admitting adjustment to any size window and in other designs and dimensions



GARDEN POT

Made in two sizes, 21 $\frac{1}{4}$ " x 26 $\frac{1}{2}$ " and 14" x 19". Also without festoon ornament

STOCK PRODUCTS.

Garden Ornaments and Pottery from our own designs and from the best examples of the Antique and Renaissance are carried in appropriate colors, and also in the unglazed state ready for coloring according to special requirement. Orders involving the duplication in large quantity of any one design or size may be subject to the time requirements for work executed to order, according to conditions of stock at the time.

STOCK
PRODUCTS
Continued.

Decorative Tiles for wainscot, panel or mantel work, and plain tiles in sizes ranging from the usual standard up to 12"x12" are carried in the unglazed state ready for coloring according to requirement. Small quantities of glazed tiles, decorated and plain, in those sizes and colors usually in demand, are carried to accommodate immediate needs.

We also have existing designs for complete Mantel Facings, all-faience Mantel Pieces, Fountains and other specialties. Sample matter and cuts illustrating the above will be furnished with prices on request; also, if desired, our special catalogue of Decorated Vases, Jardinieres and Pottery.

ACCESSIBLE
REPRESENTATIVE
WORK.

The following Stations of the New York Subway; Faience Cornice and Ornamental Plaque Work; Heins & La Farge, Arch'ts. Wall Street, Fulton Street, Twenty-third Street, Seventy-ninth, Eighty-sixth and Ninety-first Streets.



COMPLETE FOUNTAIN IN ROOKWOOD FAIENCE
Hotel Prince George, 14 East 28th St., New York City
Howard Greenley, Architect

Specimens illustrating work in all lines may be seen at the Main Offices and Showrooms, Cincinnati, and the New York Office, 1 Madison Avenue.

Forty-first Precinct Police Station, Mosholu Parkway, N. Y. City; Tile Work on Exterior Walls. Stoughton & Stoughton, Architects.

Hotel Devon, 70 W. 55th St., N. Y. City, Isreals & Harder, Architects. Decorative Tile Wainscot in Coffee Room, designed by Rookwood Pottery Co.

St. Paul's Church, Rochester, N. Y., Reredos in Faience; Heins & La Farge, Architects.

Third National Bank, Cincinnati; Mantel Pieces in Faience; D. H. Burnham & Co., Architects.

St. Mark's School, Southboro, Mass.; Mantel Piece in Faience; Winslow & Bigelow, Architects.

Office of the Secretary of the Treasury of the United States, Washington; Mantel Facing and Arms of the Treasury Dept.

Rookwood Faience, Tiles and Garden Pottery have also been used in many private residences.

Examples of Rookwood Pottery have been purchased by the Luxembourg, Paris; Victoria and Albert Museum, London, and twenty-three other of the principal museums of Europe, America and Japan.



STOCK TILE DESIGNS, Glazed in any Desired Color or Combination of Colors, Sizes 6"x 6" and 8"x 8". Also in other dimensions

TRENT TILE COMPANY

“Della Robbia” Glazed Tile, Enameled Tile, Vitreous Aseptic Floor Tile, etc.

OFFICE AND WORKS
TRENTON, NEW JERSEY, U. S. A.

TELEPHONE CONNECTION

CABLE ADDRESS “TRENT”
PRIVATE, WESTERN UNION AND
A. B. C. CODES USED

PRODUCTS.

TILE for “EVERYWHERE and ANYWHERE.” Specifically, “DELLA ROBBIA” GLAZED TILE, in choice and rich colorings; ENAMELED TILE, plain and embossed, in a large and varied line of plain and onyx colors (we are prepared to make any color demanded); VITREOUS ASEPTIC FLOOR TILE, in all sizes, shapes and colors; CERAMIC MOSAIC for floors, all shapes, sizes and colors; SANITARY WALL TILE, including Bases, Caps, Plinth Blocks, Door and Window trim, etc., in fact all the integral parts required for Wall and Wainscoting; HAND PAINTED TILES in all classes of decoration known to the Ceramic Art, including Palissy and Posterish effects; GLAZED and UNGLAZED CERAMIC MOSAICS for Wall and Fireplace; DULL CRYSTALLINE glazed tile in an artistic line of colors; Designs and Tiles in L'Art Nouveau by a student of Prof. S. Bing, Paris, France, the founder of L'Art Nouveau movement; HAND-WROUGHT ANTIQUE TILE, a distinctive specialty. We make all classes of tile and Ceramic Mosaics known to the tilewright.

SPECIAL DESIGNS.

Original designs prepared and submitted for projects presented by architects and decorators, or any motif that may have been selected will be executed. Architects are assured that accuracy will be observed in carrying out their detail drawings.

MANUFACTURING CAPACITY.

This is sufficiently large to promptly execute any order entrusted to our care. We endeavor to carry a stock of all standard grades and sizes, but should stock be depleted any ordinary sized order can be delivered in five or ten days. Special sizes and shapes will be made to order when desired, and, when the order warrants, the appliances requisite for their production will be at our cost. On small orders cost of the appliance will be charged for at the actual cost thereof.

GENERAL INFORMATION.

We issue catalogues of all our productions, a color book made of glazed tile showing all colors we make. Designs and colors are numbered; orders mentioning design and color number (and size, if plain surfaced tile), will be correctly filled. If we doubt the correctness of the order in any particular, inquiry will be immediately made by telephone, telegraph or mail, according to the exigencies of the case.

We do not set or lay Tile or Ceramic Mosaics; that is done by the several dealers in the cities and towns of the United States, all of whom carry our tile, either in stock or sample. Should a dealer be found who cannot show Trent Tile, if we are advised we will put him in a position to do so. All our tile bear the name “TRENT” stamped in raised letters on the back; without this word they are imitations. The illustrations that follow are typical of our manufacture.

We are represented abroad as follows:

FOREIGN REPRESENTATIVES.

Australia and New Zealand,
CHAS. DOBSON, FRANKS & CO.,
156 Clarence St., Sydney, Australia.

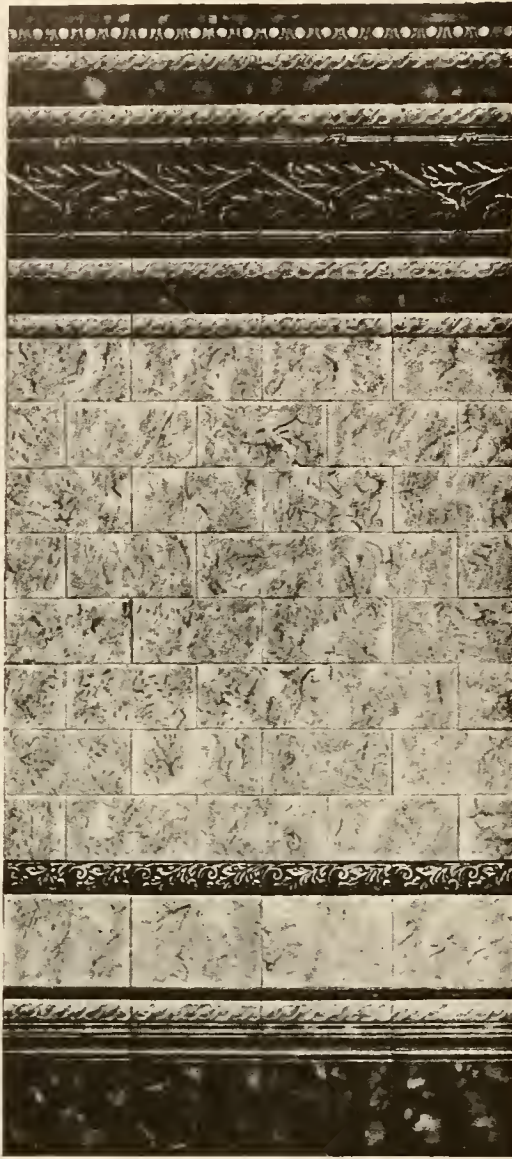
South Africa,
CHAS. F. LAFERME,
Johannesburg, Transvaal.

India,
R. K. MOTISHAW & CO.,
Motishaw Temple, Magazon, Bombay.

Great Britain, France and Germany,
T. A. SIMPSON & CO., Ltd.,
28 Ely Place, London, England.

South America,
KINGSLAND & POPE,
Buenos Ayres, Argentina, and Valparaiso,
Chile.

Russia,
E. L. LIDVALL & CO.,
9 Gorchovaja, St. Petersburg.



Wainscoting in "Della Robbia" Glazes



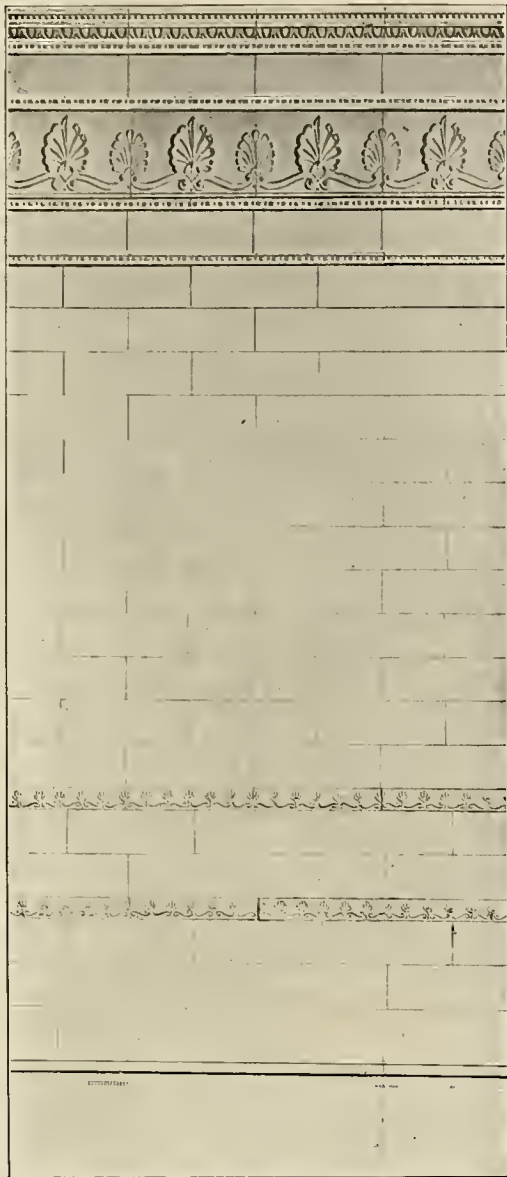
Wainscoting in "Della Robbia" Glazes



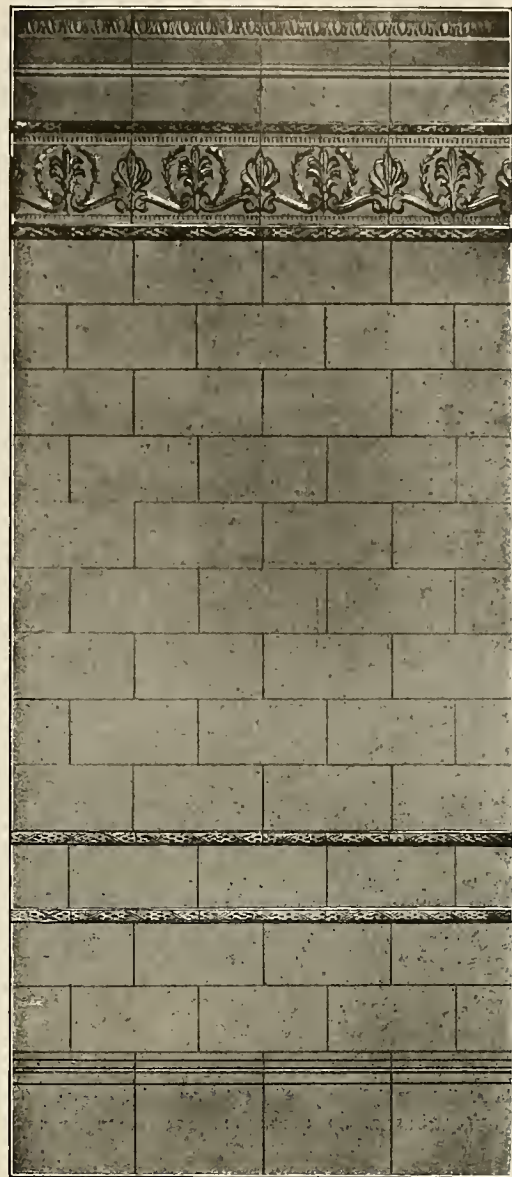
Frieze Tile—L'Art Nouveau Design



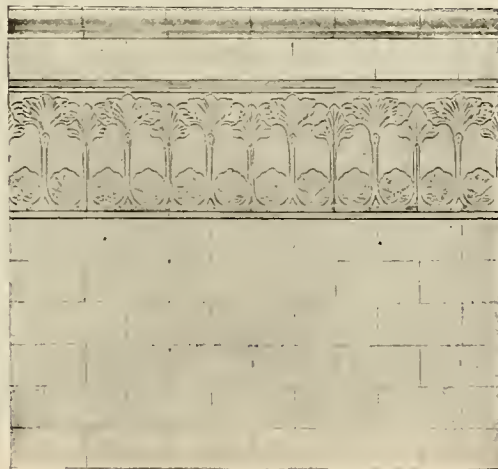
Frieze Tile—L'Art Nouveau Design



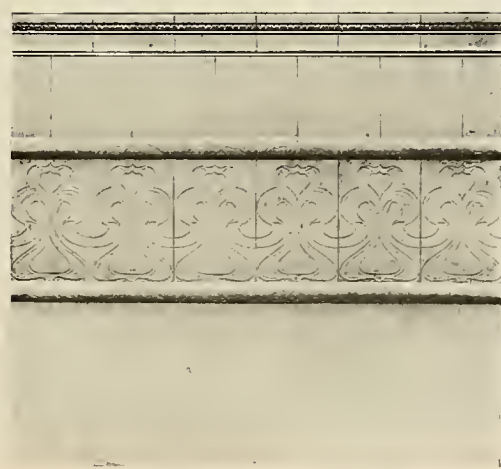
Wainscoting in White Glazed Tile



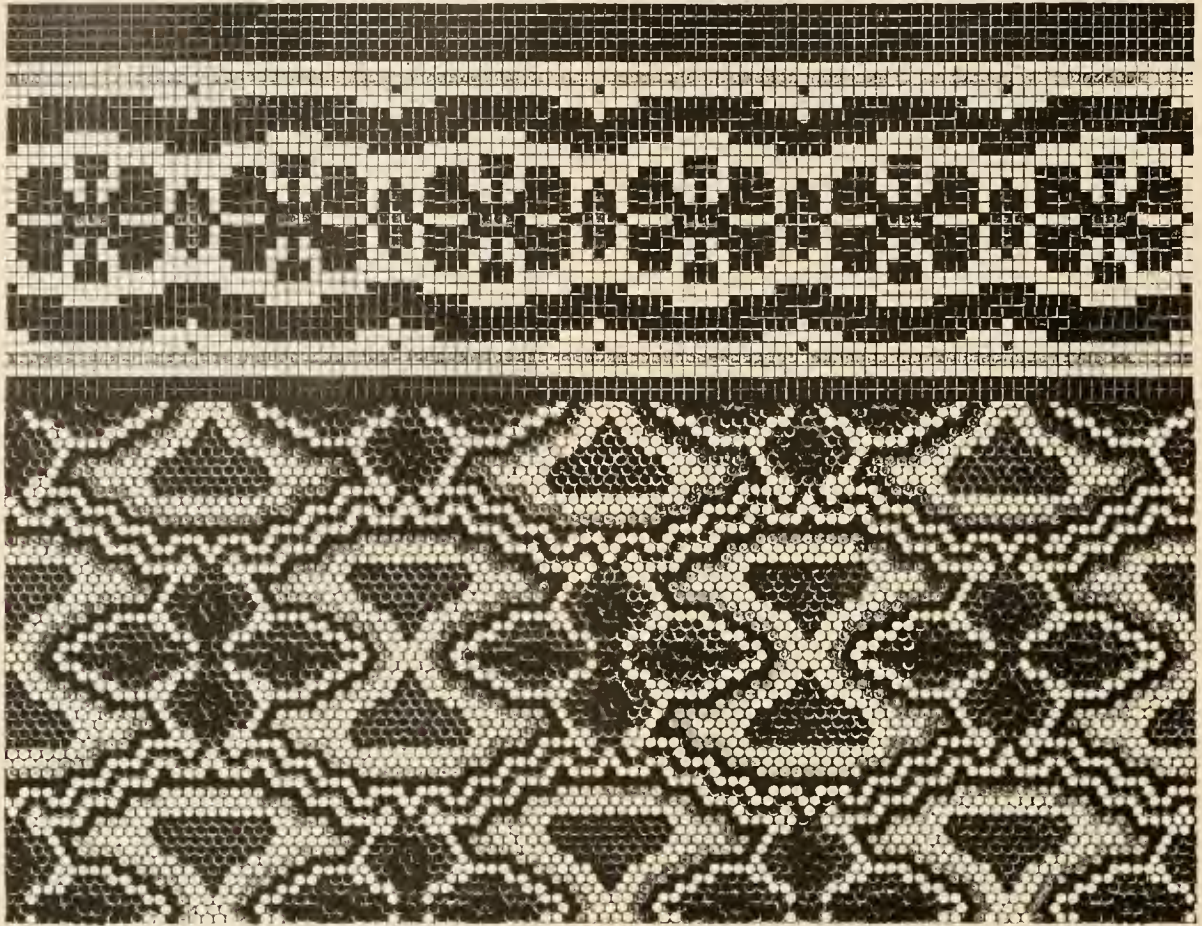
Wainscoting in White and Delft Blue Glazed Tile



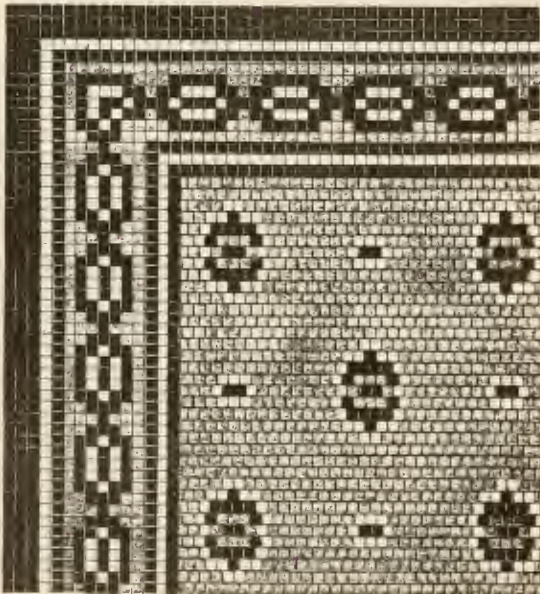
Frieze Tile—L'Art Nouveau Design



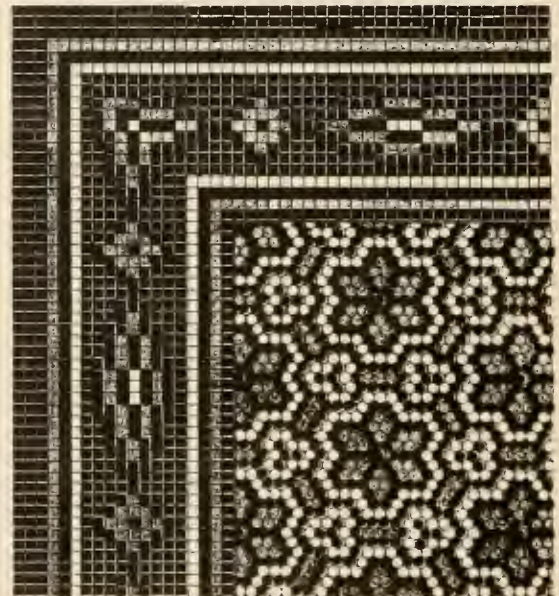
Frieze Tile—L'Art Nouveau Design



Ceramic Mosaic Floor. Circle Ceramic Body, Square Ceramic Border



Ceramic Mosaic Floor. Square Ceramic



Ceramic Mosaic Floor
Circle Ceramic Body, Square Ceramic Border

HAWES & DODD

Tiles and Ceramic Mosaics

24 E. Adams Street, CHICAGO, ILL.

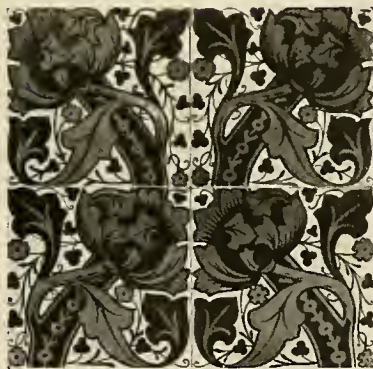
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PRODUCTS. TILES and CERAMIC MOSAICS for all purposes.

FACILITIES. We keep the largest and most carefully chosen stock of Floor Tiles, Wall Tiles, Ceramic Mosaics, Fireplace Tiles, Quarries, Brickettes, etc., in the West. We are sole agents for Maw & Company's English Goods, Lusted Tiles, Painted Tiles, Faience, etc., representing the most advanced and artistic development of the Art of Ceramics. We also have a carefully selected stock of Andirons, Fenders, Screens and Fireplace furnishings of all kinds. We furnish designs and drawings for Fireplace and Mantel work of all descriptions in wood, stone, marble, brick, mosaic, etc.

SERVICES. We undertake work in our line upon Architects' specifications in any part of the United States or Canada, and are ready to furnish sketches, special designs, and estimates upon any work the architect may have, or to offer solution of any problem presented to us. We make specialties of fine Bath-room Tile work of all kinds, floors, walls, ceilings, door and window trim, etc., for Public and Private Buildings, Residences, Hotels, etc.

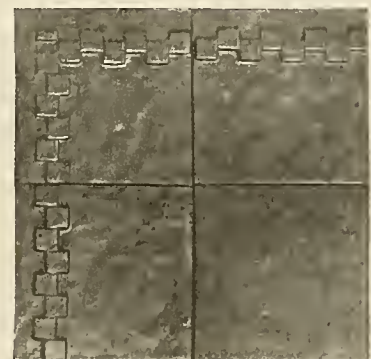
Write us, with plans and specification, description of your wants, and we will undertake the whole of your tile work.



PERSIAN PAINTED FIREPLACE
TILES



CERAMIC MOSAIC
PANEL



DULL-FINISHED ANTIQUE TILES
For Fireplaces, Wainscots, etc.



CERAMIC MOSAIC
FACINGS



BATH-ROOM TILED BY US
For the L. Wolff Mfg. Co., Chicago, Ill.



DECORATIVE MOSAICS FOR
FIREPLACES

WILLIAM H. COOLEY

Hardwood and Parquet Flooring

1158-1168 Clybourn Avenue,

CHICAGO, ILL.

TELEPHONE, NORTH 369

PRODUCTS.

Manufacturers of HIGH GRADE PARQUET FLOORING, HARDWOOD FLOORING, WOOD BLOCK FLOORS LAID ON CONCRETE.

PARQUET FLOORING.

We have made a study of Parquet Flooring for the past twenty years, and we think that if work accurately as well as artistically done will insure success, we can satisfy the wants of our customers, as we have every facility for filling orders promptly, either from stock patterns (of which we carry a large supply on hand) or from special designs, which can be made on short notice.

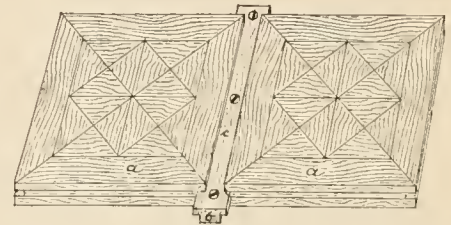


FIG. 1. COOLEY SYSTEM OF PARQUET FLOORING (PATENTED)

AVOIDANCE OF WARPING.

Our patented device (Fig. 1) for Parquet Flooring has no equal. As seen in the sketch, the squares (a) are kept in place by the tongued piece (b); these are fastened to the under floor with screws. When the floor is laid, strips are fitted in the open space (c) and glued down tightly, thus overcoming all warping and twisting. This style of flooring is highly recommended by prominent architects, who maintain, and rightly too, that, although the initial expense is a little more, our floors are economical in the long run, as they do not have to be constantly repaired. Sketches and estimates will be furnished on request.

MATCHED FLOORING.

Our new Matched Flooring makes the most practical flooring extant. Fig. 2 will show the strength of the tongue and the groove. This flooring is easy to lay and absolutely overcomes the splitting off of tongues in nailing. We make this flooring of $\frac{3}{4}$ " lumber and up, of all woods. Samples and prices will be submitted on application.

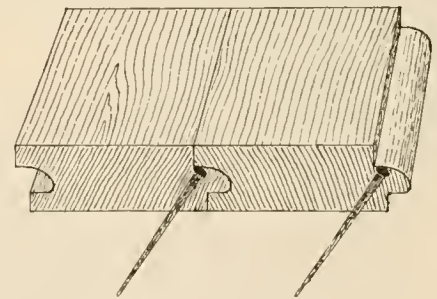


FIG. 2. COOLEY SYSTEM OF MATCHED FLOORING (PATENTED)

STRIPS.

We have made, for a number of years past, from four to five million feet of Strips annually. This enormous output enables us to furnish better goods for the same money than any other firm in the business. The Strips are made of any kind of wood and of any of the standard widths. We carry a full stock at all times in quarter sawed oak.

WOOD BLOCK FLOORS.

Wood Block Floors laid on concrete are greatly used in hospitals, churches, offices, hotels, stores, etc. They have several advantages, among which may be mentioned that they are fireproof and noiseless. All kinds of woods can be used. Estimates will be cheerfully furnished on request.

INSTALLATION.

We will undertake contracts to install Parquet Floorings in any part of the United States. For small contracts it will be found advisable to deal with a local contractor. In such a case care should be taken to specify our products.

FORM OF SPECIFICATION.

When specifying, the following words incorporated in the specifications will insure satisfactory material being used: "All Parquet Flooring to be furnished by William H. Cooley of 1158 Clybourn Ave., Chicago, Ill."

THE M. B. FARRIN LUMBER COMPANY

CINCINNATI, O.

DRY KILNS AND FACTORIES

WINTON PLACE, O.

LONG DISTANCE TELEPHONE, PARK 83

CABLE ADDRESS "FARRIN," CINCINNATI

CODES USED: ZEBRA, LUMBERMANS, INTERNATIONAL, LEIBERS, A. B. C. 4TH AND 5TH EDITIONS

PRODUCT. CENTURY OAK FLOORING.

FACILITIES. Our dry kiln capacity is 800,000 ft., and as we constantly have on hand 2,000,000 ft. of CENTURY OAK FLOORING, we are enabled to make prompt shipments of any amount from 100 to 100,000 ft.

GRADES. CLEAR—For private residences or for any purpose where the best is desired.

SELECT—Contains minor defects, suitable for apartment houses, or any other purpose requiring a good medium-priced floor.

COMMON—Contains larger and more gross defects than Select, but lays and makes a good serviceable floor. For mills, warehouses, etc., is more durable than any other wood floor.

SIZES AND PRICES.

	<i>Per 1,000 ft. B. M.</i>
Three-eighths inch Clear Quartered.....	\$55.00
Three-eighths inch Clear Plain.....	40.00
Three-eighths inch Select Quartered.....	35.00
Three-eighths inch Select Plain.....	30.00
Lengths 2 to 16 feet.	
Finished widths 1½" and 2", counted ¼" more than finished face, kiln-dried, side-matched, end-buttet or end-matched, with smooth sawed back.	
Thirteen-sixteenths inch Clear Quartered.....	35.00
Thirteen-sixteenths inch Clear Plain.....	30.00
Lengths 2 to 16 feet.	
Thirteen-sixteenths inch Select Quartered.....	50.00
Thirteen-sixteenths inch Select Plain.....	40.00
Thirteen-sixteenths inch Common.....	25.00
Lengths 1 to 16 feet.	
Finished widths, 2", 2½", 3", and 3½", counted ¼" more than finished face, kiln-dried end-matched, hollow backed and bored.	
One and one-eighth inch Clear.....	55.00
One and one-eighth inch Common.....	35.00
Lengths 4 to 16 feet.	
Finished widths, 2", 2½", 3", and 3½", counted 1¼" x ¾" more than finished face, kiln-dried, end-buttet and hollow-backed.	
One and three-eighths and one and three-fourths inch Clear.....	55.00
One and three-eighths and one and three-fourths inch Common.....	35.00
Lengths 4 to 16 feet.	
Finished random widths, 3¼", 4¼", 5¼", and 6¼", counted 1½", and 2" x ¾" more than finished face, air-seasoned, end-buttet and flat-backed.	

All prices are for strip count, and f.o.b., Winton Place, Ohio. Figures are approximate only. Write for delivered prices.

HEATON & WOOD

Parquetry Floors

1706 Chestnut Street

PHILADELPHIA, PA.

MEMBERS AND DIRECTORS OF
WOOD MOSAIC FLOORING COMPANY
New Albany, Ind., and Rochester, N. Y.

PARIS OFFICE
64 RUE TAILBOUT

PRODUCTS.

HARDWOOD FLOORS, PARQUETRY FLOORS, FIREPROOFED WOOD FLOORS and WOOD FLOORS for FIREPROOF BUILDINGS; SPECIAL FLOOR FINISHES.

FACILITIES.

We have the largest factory devoted exclusively to the manufacture of Parquetry Floors in this country. We represent also the largest as well as the most celebrated factory in Europe. Only the latest and most accurate machinery is used in our factories, and we have a large well-trained force of experienced workmen.

REFERENCES.

We have furnished Flooring in the finest residences, hotels, public buildings, etc., all over America, as far West as the Pacific Coast and in the South American States.

We illustrate a few of the representative buildings in which we have furnished our work.



FIG. 1. "WHITE HOUSE,"
First Home in the Land
Washington, D. C.



FIG. 2. HOTEL BELLEVUE-
STRATFORD
Philadelphia, Pa.



FIG. 3. RESIDENCE OF MRS. WM. ASTOR
Newport, R. I.



FIG. 4. SECTION OF ENGLISH WOOD
BLOCK FLOOR
Laid in Mastic on Concrete Foundation,
Fireproof Construction

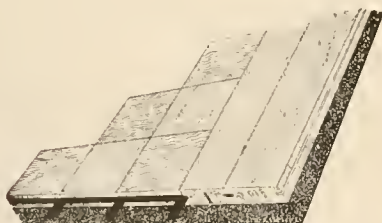


FIG. 5. STEEL WOVEN WOOD BLOCK
FLOORING
As laid in Vanderbilt Memorial Room, St.
Luke's Hospital, New York City, N. Y., eight
years ago. Fulfilled every expectation



FIG. 6. SIMPLE AND ARTISTIC
DESIGNS
From Rare and Selected Woods



FIG. 7. LOUIS XV. PARQUETRY
The Finest Floor Made in the World

G. W. KOCH & SON

Parquet Floors

450 Fifth Avenue,
NEW YORK CITY, N. Y.

FACTORY
537 to 547 West 53rd St.

ESTABLISHED 1857

PRODUCTS.

PARQUET FLOORS.

PARQUET FLOORS.

We have given Parquet Floors our exclusive attention for thirty years, during which time our work has been recognized throughout the country as "THE STANDARD OF MERIT."

We make only the highest grade of flooring, using carefully selected and properly seasoned woods, and the most substantial construction.

We have on exhibition, in our showrooms, a collection of full-size designs and woods which cannot be duplicated elsewhere.

DESIGNS AND ESTIMATES.

The design of floors, and the woods used, should harmonize with the decorations and furnishings. We do not publish a catalogue, but illustrate our designs by means of miniature models of the work in wood, made to an inch and a half scale. These are of convenient size to be shipped in a small box by express, which we do at our own expense. From them a much more accurate idea of the work can be obtained than from a catalogue.

On receipt of a diagram, giving sizes of rooms to be laid, and stating what woods they are to be trimmed in, we will send an appropriate variety of designs and quote exact cost of floors laid and finished complete.

INSTALLATION.

We do not sell material for other people to lay. Our men, being specially skilled in this work, can do the work better and cheaper than the general mechanic. Numerous contracts which we have in different parts of the country enable us to lay floors at almost any point at a slight additional cost.

WORLD'S FAIR AWARD.

Our floors were awarded the medal at the Paris Exposition of 1900. One of the eminent architects in charge, Mr. Chas. A. Coolidge, writing of that exhibit says: "Your Parquet Floors were greatly admired by everybody—a revelation to the French architects."

REFERENCES.

The following is but a partial list of persons in whose distinguished residences we have laid floors.

Mr. Andrew Carnegie	5th Ave., New York City	Mr. Spencer Kellogg	Buffalo, N. Y.
Mr. C. Vanderbilt	5th Ave., New York City	Mr. John G. Meyer	Albany, N. Y.
Mr. C. P. Huntington	5th Ave., New York City	Mr. James Crouse	Syracuse, N. Y.
Mr. W. K. Vanderbilt	5th Ave., New York City	Mr. Jacob Amos	Syracuse, N. Y.
Hon. Wm. C. Whitney	5th Ave., New York City	Ex-Judge Hilton	Saratoga, N. Y.
Mr. John Jacob Astor	5th Ave., New York City	Mr. J. C. Havemeyer	Yonkers, N. Y.
Mr. Jay Gould	5th Ave., New York City	Mr. Whitelaw Reid	Ophir Farm, N. Y.
Hon. Levi P. Morton	5th Ave., New York City	Col. DeLancey Kane	New Rochelle, N. Y.
Mr. W. D. Sloane	5th Ave., New York City	Mr. Henry W. Poor	Tuxedo, N. Y.
Mr. Wm. Rockefeller	5th Ave., New York City	Mr. J. Henry Smith	Tuxedo, N. Y.
Mr. J. P. Morgan	Madison Ave., New York City	Mr. W. K. Vanderbilt	Oakdale, L. I.
Mr. H. Q. Marquand	Madison Ave., New York City	Mr. Foxhall Keene	Westbury, L. I.
Mr. Jos. W. Drexel	Madison Ave., New York City	Mr. W. Storrs Wells	Newport, R. I.
Mr. Brayton Ives	39th Street, New York City	Mr. Cornelius Vanderbilt	Newport, R. I.
Mr. Henry Clews	40th Street, New York City	Hon. N. W. Aldrich	Providence, R. I.
Dr. E. G. Janeway	40th Street, New York City	Mr. Wm. Ziegler	Noroton, Conn.
Hon. C. M. Depew	45th Street New York City	Mr. P. T. Barnum	Bridgeport, Conn.
Mr. H. B. Hyde	40th Street, New York City	Col. A. Roebing	Trenton, N. J.
Mr. W. Rhineland	48th Street, New York City	Mr. Thomas A. Edison	Orange, N. J.
Hon. Daniel S. Lamont	53d Street, New York City	Mr. C. Ledyard Blair	Far Hills, N. J.
Hon. Jos. H. Choate	63d Street, New York City	Mr. J. F. Dryden	Bernardsville, N. J.
Gen. U. S. Grant	66th Street, New York City	Mr. Thomas Barbour	Bernardsville, N. J.
Hon. Elihu Root	71st Street, New York City	Mr. F. A. Bell	Madison, N. J.
Gen. W. T. Sherman	71st Street, New York City	Mr. Geo. J. Gould	Lakewood, N. J.
Mr. Stuyvesant Fish	78th Street, New York City	Mr. W. W. Scranton	Scranton, Pa.
Hon. W. B. Hornblower	89th Street, New York City	Mr. A. J. Cassatt	Philadelphia, Pa.
Mr. Geo. Eastman	Rochester, N. Y.	Mr. H. C. Frick	Pittsburg, Pa.

E. B. MOORE & CO.

Hardwood Flooring and Finishes

76 Wabash Avenue

CHICAGO, ILL.

TELEPHONE, 3388 CENTRAL

AUTO TELEPHONE, 9298

PRODUCTS. Manufacturers of HARDWOOD FLOORING and FINISHES.

GENERAL INFORMATION.

A good carpenter will have no difficulty in laying the most intricate patterns of our flooring if our instructions furnished with the flooring are carefully followed.

Since 1878 we have devoted our entire attention and energies to the manufacture of fine hardwood floors. In this age of keen competition quality is often sacrificed for price. This is particularly disastrous in our line, for if a floor is not made of wood carefully selected and cured, and extreme caution used in every detail of manufacture, the floor, instead of being one of the most beautiful and satisfactory features of the home, will be a source of constant care, annoyance and expense.

We do not make the lowest priced flooring, but we do claim to make the best, and that in the end is always the cheapest. No manufacturer can offer goods at lower prices than we quote without sacrificing either quality, workmanship or design. Better have no hardwood floor than a poor one.

We are located where we can obtain all the different hard woods to good advantage, and nearly all our skilled workmen have been in our employ for years.

All of our materials are carefully selected and inspected, and no inferior stock or faulty workmanship ever find their way into our product. When you buy anything—whether floors or finishes—bearing our name and trade mark, you may be sure that there is no better made.

We are always glad to submit estimates of cost with colored sketches when we can have sizes of rooms, together with some idea of styles desired.

PARQUETRY.

Our $\frac{5}{16}$ inch thick parquetry is glued up in slats 12x36 inches, 18x36 inches, or 24x48 inches, depending upon the size of the figures. Heavy cotton cloth is glued to the back to hold the pieces together until they can be securely nailed to the foundation floor. Parquetry packed in crates ready for shipment, containing 75 feet each, weighs $1\frac{1}{2}$ lbs. to the square foot.

Thick parquetry, $\frac{7}{8}$ inch, 1 inch or $1\frac{1}{2}$ inch in thickness, is made by glueing quarter inch face of hard wood to pine backing. The blocks are either 12x12 inches or 18x18 inches square, grooved on four sides. $\frac{7}{8}$ inch thick border is made in the same manner in lengths to fit the side of the room.

The thin, or $\frac{5}{16}$ inch thick borders are glued to cotton cloth same as thin parquetry, the widths varying from 6 inches to 24 inches. Our $\frac{5}{16}$ inch thick borders are put up in 12 foot lengths, packed in bundles. Corner pieces are separate from borders. All material is sent in the White, viz: just as it leaves the planer and sander.

ROLL FLOORING.

Roll Flooring is formed of slats of wood usually $1\frac{3}{8}$ inch wide and either 28 inches or 36 inches long, glued to cloth and rolled up in pieces of 5 yards each, for convenience in shipping. Roll goods can be laid straight or mitred. The best effect is produced by using one wood only, but we can supply alternate strips of another wood if desired. Our roll goods form just as durable and permanent a floor as any that can be laid.

STRIP FLOORING.

Our strips are $\frac{5}{16}$ "", $\frac{3}{8}$ "", $\frac{5}{8}$ " and $\frac{7}{8}$ " thick, varying in lengths from 6 to 12 feet, in any desired wood and width. Our stock strips are $1\frac{3}{8}$ "", $1\frac{3}{4}$ " and 2" in width.

Strips are packed in bundles containing from 250 to 500 lineal feet. One thousand lineal feet of $1\frac{3}{4}$ " strips will cover 130 square feet and weigh 125 pounds.

INSTRUCTIONS AS TO ORDERS.

Work undertaken, on Architects' specification, in any part of the United States. Architects' requests for designs and estimates will receive most careful attention, and the necessary information for specification will be sent with estimate.

JOHN SCHROEDER LUMBER COMPANY

Hardwood Flooring

Foot of Walnut Street



MILWAUKEE, WIS.

PRODUCT—"STEEL-POLISHED PERFECTION," a richly-finished, perfect-fitting brand of HARDWOOD FLOORING, Kiln-dried, Hollow-backed, End-matched, Bored, Bundled and Labeled. Woods: Maple, Beech, Birch, Cherry, Walnut, Red and White Oak, plain and quarter sawed.

SIZES AND GRADES—Made in standard thicknesses, three-eighths and seven-eighths inches. Standard widths, $1\frac{3}{8}$, 2, $2\frac{1}{4}$ and $3\frac{1}{4}$ inches. Special sizes are made to order. Three grades: Clear, Number 1, and Factory.

PRICES—We send samples and quote delivered prices promptly upon receipt of letters from interested parties.

SPECIFICATION—In specifying our product, use this form: Schroeder-Milwaukee, "Steel-Polished Perfection."

PROCESS OF MANUFACTURE—We have the finest factory in the world for the scientific manufacture of Hardwood Flooring. It is equipped only with that machinery which expresses the most advanced ideas in floor-making. Combined with this are patents and improvements of our own, the whole being developed to a point which justifies the use of the phrase "The Schroeder Process of Manufacture."

By our own special "double-drying" or steaming-and-drying process, the air-dried lumber is placed on trucks and passed into the steaming-chamber where it is thoroughly steamed to open up the pores of the wood, so that later, when it is passed into the adjoining kilns, the hot, dry air has a chance to penetrate the stock and dry it evenly, through and through.

After regaining its normal temperature, the lumber is manufactured into perfect flooring and then, without one second's exposure to dampness, it is automatically conveyed to the dry-air storage warehouse, located directly over the kilns, where it stays until the day of shipment—absolutely dry.

As a result of this extra care, "Steel-Polished Perfection" never shrinks, if it is well taken care of after it leaves our hands. Furthermore, it matches so easily and accurately that it can be laid for about one-half the ordinary cost.

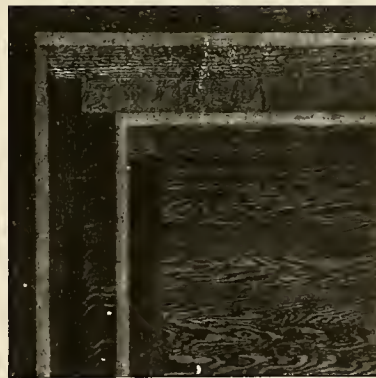


FIG. 1. BORDER EFFECT IN "STEEL POLISHED PERFECTION"



FIG. 2. BORDER EFFECT IN "STEEL POLISHED PERFECTION"

BORDER EFFECTS—Figures 1 and 2 illustrate samples of our Border Effects, produced by combining dark and light woods of varying widths. The narrow strips are tongued and grooved the same as the standard widths, and match just as accurately.

"Steel-Polished Perfection" Floors with ornamental borders are rapidly supplanting parquetry floors. Besides wearing immeasurably better, they are more striking by reason of their rich simplicity and freedom from wearisome design.



FACTORY OF THE JOHN SCHROEDER LUMBER COMPANY, MILWAUKEE, WIS.

THE TERWILLIGER MANUFACTURING CO.

23d Street, Under Fifth Avenue Hotel
NEW YORK CITY, N. Y.

BRANCH

302 FULTON STREET, BROOKLYN, N. Y.
TELEPHONE, 2334 MAIN

TELEPHONE
6720-6721 GRAMERCY

PRODUCTS.

Manufacturers of all kinds of HARDWOOD, PARQUET and WOOD-CARPET FLOORING, WAINSCOTS, GRILLE-WORK and CEILINGS.

SERVICES.

Our thirty-five years' experience has enabled us to become competent judges of matters pertaining to floors, and we will promptly and cheerfully reply to all inquiries regarding them, furnish sketches of appropriate designs to harmonize with various styles of decorations, and state the cost for the work laid and finished, or for the materials only. We have every facility for filling all contracts promptly anywhere.

LAYING AND FINISHING.

We prefer to lay and finish our floors ourselves, but where this is impracticable we can furnish the material and supply such instructions, working plans, etc., as will enable any carpenter of ordinary ability to lay them.

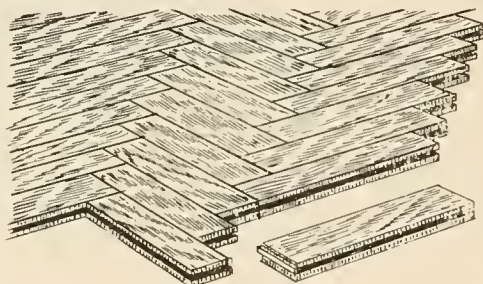


FIG. 1. PARQUET FLOOR

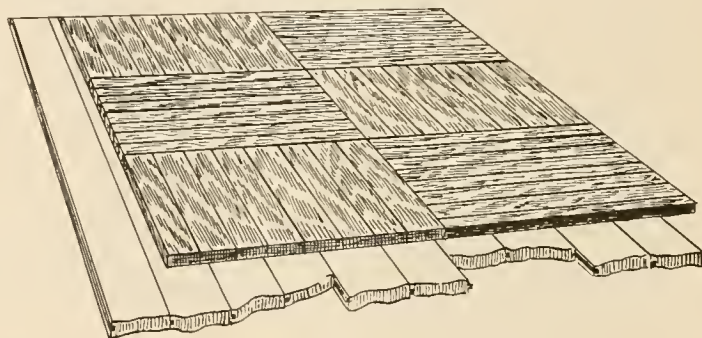


FIG. 2. WOOD-CARPET

PARQUET FLOOR.

The above illustration (Fig. 1) represents a $\frac{7}{8}$ inch Parquet Floor, Herringbone design. It consists of 2"x $\frac{7}{8}$ "x 24" pieces, each strip laid separately, tongued and grooved on sides and ends and blind nailed. This style is usually laid over rough diagonal "Builder's Floor."

PRICE.

Approximate price, for material and labor, 45 cents per square foot.

WOOD-CARPET.

The above illustration (Fig. 2) shows a $\frac{3}{4}$ inch Parquet Floor in the style usually called Wood-carpet. Each block is laid separately and nailed through the surface, and must be laid over a comparatively firm and solid floor.

PRICE.

Approximate price, for material and labor, 25 cents per square foot.

REPRESENTATIVE CONTRACTS.

The following are a few representative buildings wherein our floorings have been specified and used:

ST. LAWRENCE APARTMENT HOUSE, New York City,
Charles Romeyn, Architect.

WOOLSEY HALL, YALE COLLEGE, New Haven, Conn.,
Carrère & Haisting, Architects.

CLARENCE MACKAY RESIDENCE, Roslyn, L. I., McKim,
Mead & White, Architects.

W. K. VANDERBILT'S RESIDENCE, Oakdale, L. I., Hunt
& Hunt, Architects.

NEW YORK TELEPHONE BUILDING, New York City, Cyrus L. W. Eidlitz & McKenzie, Architects.

CATALOGUE.

Catalogue sent on application.

WOOD-MOSAIC FLOORING COMPANY

CHIEF SALES OFFICE

ROCHESTER, NEW YORK.

FACTORY, LUMBER YARDS AND SAW MILL, NEW ALBANY, INDIANA

FACTORY AND DISTRIBUTING DEPOT, ROCHESTER, NEW YORK

PRINCIPAL AGENCIES

Baltimore, Md., J. M. Adams, 227 N. Charles Street

Boston, Mass., R. T. Adams, 24 Bromfield Street

Brooklyn, N. Y., Wood-Mosaic Co., 153 Lawrence Street

Buffalo, N. Y., Stevens Floor Co., 658 Main Street

Columbus, O., Krauss, Butler & Benham Co.

Cincinnati, O., Moores-Coney Co., 1511 Union Trust Co.'s Bldg.

Cleveland, O., Cleveland Hardwood Floor Co., 29 Colonial Arcade

Milwaukee, Wis., Jno. Doubrawa, 88 Biddle Street

New Haven, Conn., W. H. Malay, 87 Orange Street

New York City, N. Y., Wood-Mosaic Co., 9 E. 32d Street

Philadelphia, Pa., Heaton & Wood, 1706 Chestnut Street

Pittsburg, Pa., C. W. Allen Co., 428 Penn. Avenue

Providence, R. I., Ardrey & Adams Co., 174 Washington Street

Rochester, N. Y., Abner Adams, 29 East Avenue

Syracuse, N. Y., Abner Adams, 301 E. Fayette Street

Toledo, O., E. G. McFillen, 1014 Monroe Street

Washington, D. C., J. M. Adams, 1126 Connecticut Avenue

PRODUCTS.

High grade ORNAMENTAL WOOD FLOORING; PARQUETRY, WOOD CARPET, TONGUED and GROOVED FLOORING, STEEL WOVEN FLOORING, etc.

TIMBER SUPPLY.

Indiana White Oak is the high standard by which all White Oak is judged. We are the only ornamental floor manufacturers using and owning our own timber and sawmill in the Southern Indiana White Oak Belt. We are thus in the favored position of always having an unlimited supply of thoroughly seasoned lumber ready for our dry kilns of 400,000 feet capacity.

FACTORIES.

We have at New Albany, Indiana, a large band-saw mill and lumber yard, also a large electrically driven flooring factory and a storage house with a capacity of half a million feet of flooring. A Baetz Heater keeps the air circulating rapidly and maintains the temperature at 90 degrees, so that the lumber is never exposed to variations of temperature until it is shipped.

At Rochester, N. Y., is situated our sales office and parquetry factory, where dry kilns, storage rooms and a large force of skilled mechanics and cabinet makers give every opportunity for thorough work and prompt shipments.

STANDARD SIZES.

Our standard sizes are always kept in stock and we maintain on hand for immediate shipment a great many designs in parquetry. We have our stock of materials so arranged that it is rarely the case that we cannot fill a complicated order for a special design in less than a week.

FACTORY ORDERS.

Where we have no agent, orders are filled direct from the factory or sales office. A plan giving accurate measurements should be submitted and then we will furnish a colored sketch and an accurate estimate of the cost of the flooring. The goods are carefully prepared and crated for freighting.

ORDERS THROUGH AGENTS.

It is always best that orders be given through one of our agents if possible, for they are all floor experts and a good floor can be easily spoiled in laying by a careless or inexperienced person. However, in sections where we have no agents, we will ship direct and send instructions and laying plans which will enable any first-class carpenter to lay our floors satisfactorily.

HARDWOOD FLOORING.

We are prepared to fill orders for high grade Ornamental Flooring of all kinds, from thoroughly seasoned lumber of our own cutting. Every truck load is tested for percentage of moisture before it leaves the kiln and none but perfect lumber is delivered from our factories. In addition to the above, all floors are laid by our own special agents, thereby securing perfect results and satisfaction.

Whenever a fine ornamental Hardwood Floor is wanted, our goods, being of the very highest class, will be found satisfactory. We are equipped to carry out any decorative scheme demanded by Architect or Decorator.

TONGUE AND GROOVE FLOORING.

We make a very high grade of Tongue and Groove Flooring $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{7}{8}$ " and $\frac{9}{8}$ " thick. In our Tongue and Groove strips we quote surface (not strip measure as do strip manufacturers) and we cut out all small defects so that the floor may be laid as nearly as possible without waste, to cover actually the space in square feet for which orders are given.

We also cut the Tongue and Groove strips into short pieces for squares, and the ever popular French Herring-bone. Our strips are practically perfect and four feet long or longer. The tongue is made in the center and there is no undercut to the stock, so that pieces may be turned over and used on either side, thereby allowing the entire floor to have the grain all one way, insuring uniformity.

FIREPROOFED FLOORS.

We can supply Fireproofed Floors in conformity with special rules of Underwriters, but require some time to get them out. For use in fireproof buildings we make a steel woven base that is not attached to the concrete but is woven together by means of steel tongues, making the only perfect hardwood floor for such buildings. (See Fig. 6.)

PARQUETRY.

The principal wood used in Parquetry is Oak. Next in point of quantity comes Mahogany. The best hard Cuban Mahogany is the only kind we use, not only as it is much harder, but it is less affected by moisture than any of the other varieties of this wood. South American and Mexican Mahogany are soft and show heel marks and bruises from furniture. We carry about thirty high grade fancy cabinet woods.

FLOOR DESIGNS.

Our Floor Designs range from the $\frac{5}{16}$ " thick wood-carpet and squares, to the finest European Designs such as the newer French designs and the older patterns found in the palace at Versailles.

FIELD No. 163
IN 12 INCH
SQUARES, OAK.

This design (Fig. 1), in 12" square Oak is the most popular low priced field which we sell. The size of the square can be changed to suit the size of the room.

	<i>List Price</i>	<i>Per Sq. ft.</i>
$\frac{5}{16}$ " thick, sq. edge slats on canvas.....	\$	.19
$\frac{3}{8}$ " tongue and groove, separate slats.....	.	22½
$\frac{4}{8}$ " tongue and groove, separate slats.....	.	32½
$\frac{5}{8}$ " tongue and groove, separate slats.....	.	36½
$\frac{7}{8}$ " tongue and groove, separate slats.....	.	39
$\frac{9}{8}$ " tongue and groove, separate slats.....	.	45½

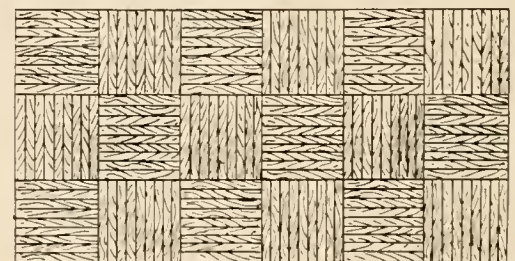


FIG. 1. FIELD No. 163
In 12" Squares, Oak

Small squares in Tongue and Groove stock are slightly higher in price per square foot. The $\frac{5}{16}$ " stock is assembled in squares carefully shaded as to uniformity of color.

The Tongue and Groove squares are composed of assembled slats grooved at the ends, and kept together by slip tongues.

FIELD No. 285
FRENCH
HERRINGBONE,
OAK.

	<i>List Price</i>	<i>Per sq. ft.</i>
5/16" thick, square edge.....		\$.19
1/2" thick, tongue and groove.....		.32½
5/8" thick, tongue and groove.....		.36½
7/8" thick, tongue and groove.....		.39
9/8" thick, tongue and groove.....		.45½

Lengths shorter than 12" are slightly higher in price per square foot. Beautiful teak floors in this pattern, 5/8" thick, have been recently shipped to the McCurdy mansion, Morristown, N. J., and laid by our New York Agents, The Wood-Mosaic Company.

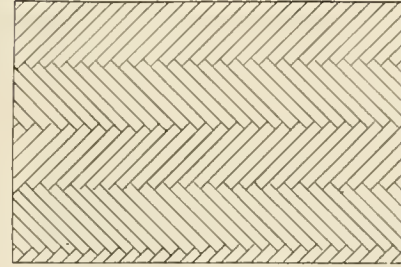


FIG. 2. FIELD No. 285
French Herring-Bone, Oak

BORDER No. 241,
OAK AND
MAHOGANY.

Old Grecian Design (Fig 3). 5,000 lineal feet of this border 18" wide has been laid in the new Chicago Post Office. Another beautiful design may be made by substituting Antique Oak for Mahogany.

	<i>List Price</i>	<i>Per lineal foot</i> <i>12" wide</i>
5/16" thick		\$.50
7/8" thick .....		.68

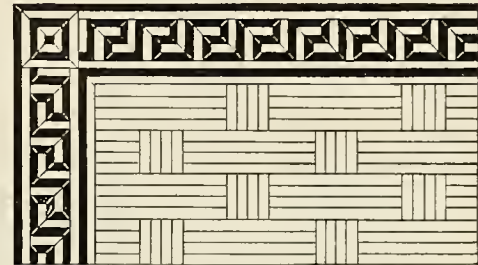


FIG. 3. BORDER No. 241
Oak and Mahogany, Oak Field No. 197

OAK FIELD
No. 197.

Oak Field No. 197 (Fig. 3), shown in this engraving is 5/16" in thickness. List Price, 19 cents per square foot.

FIELD No. 305,
OAK AND
MAHOGANY.

This style of floor was laid by our Philadelphia Agents, Heaton & Wood, in the Ladies' Reception Room of the Bellevue-Stratford Hotel.

	<i>List Price</i>	<i>Per sq. ft.</i>
5/16" thick		\$.40
7/8" thick .....		.58

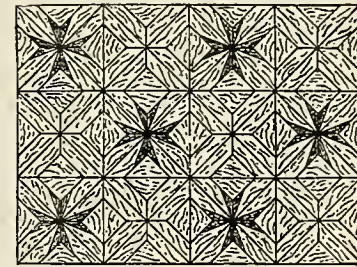


FIG. 4. FIELD No. 305
Oak and Mahogany

FANCY
EUROPEAN
BORDER.

This Fancy European Border was laid by our Boston Agent, R. T. Adams. The border is composed of White Oak and Mahajua, a Cuban Wood (only lately utilized for this purpose), which is of a fine dark green color.

	<i>List Price</i>	<i>Per lineal foot</i>
5/16" thick.....		\$.98
7/8" thick.....		1.16



FIG. 5. FANCY EUROPEAN BORDER No. D-38
12" wide made of White Oak and Mahajua

STEEL WOVEN
FLOOR.

This floor (Fig. 6) was laid on concrete in St. Luke's Hospital, New York, by The Wood-Mosaic Co., 9 E. 32d St., New York City, and in the Bar Library of the Baltimore Court House by our Baltimore Agent, J. M. Adams. It is supplied either 7/8" or 9/8" in thickness, in blocks 4" square.

From its peculiar construction (not being cemented to the concrete but woven to-

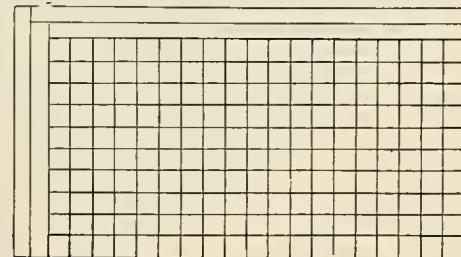


FIG. 6. STEEL WOVEN FLOOR, OAK

gether with steel bands) variations of temperature act on the whole floor at once. Compression wall-strips take up any expansion of the whole field and no cracks show between individual blocks. These facts make it greatly superior to floors glued or cemented to the concrete, as atmospheric changes tend to tear them from the foundations. We consider the Steel Woven Patent the only perfect floor for use in fireproof buildings.

	<i>List Price</i>	<i>Per sq. ft.</i>
7 8" thick		\$.58
9 8" thick .....		.62½

**DISCOUNTS
AND PRICE
COMPARISON.**

The prices given for the several Fields and Borders are for the purpose of comparing the cost of the several designs.

Discounts will be quoted on application.

SPECIFICATION.

If perfect floors are wanted, we would recommend the following clause inserted in the specifications:

"Floors to be of Wood-Mosaic Flooring Company's Two Ply Parquetry or Two Faced Tongue and Groove stock with no undercut; to be laid and furnished by their Agents."

**BORDER
DESIGNS.**

We illustrate herewith a few representative designs of our Parquetry Borders, naming widths, and prices per lineal foot, 5/16-inch thick.



No. 414. 12 inches wide. 63 cents
Oak and Mahogany



No. 153. 8 inches wide. 30 cents
Oak, Mahogany, Walnut and Maple



No. 411. 8 inches wide. 40 cents
Oak, Mahogany and Maple



No. 474. 8 and 12 inches wide. 50 cents
Oak, Mahogany and Maple



No. 360. 16 inches wide. 60 cents
Oak, Mahogany and Maple



No. 219. 6 inches wide. 25 cents
Oak, Mahogany and Maple



No. 339. 12 inches wide. 45 cents
Oak, Mahogany, Walnut and Maple



No. 161. 12 inches wide. 35 cents
Oak, Mahogany and Maple



No. 272. 6 inches wide. 30 cents
Oak, Mahogany and Maple



No. 240. 8 inches wide. 25 cents
Oak, Mahogany and Maple



No. 177. 12 inches wide. 40 cents
Oak, Mahogany and Maple

DETROIT SHOW CASE CO.

Corner Posts and Transom Bars
DETROIT, MICHIGAN

PRODUCT.

Manufacturers of the "PETZ" CORNER POST and TRANSOM BAR for setting plate glass. (John Petz, Patentee.)

TERRITORY.

"Petz" Corner Posts and Transom Bars are handled by the following warehouses of the Pittsburg Plate Glass Co.:

New York City, N. Y., Hudson and Vandam Sts.
Boston, Mass., 41-49 Sudbury St., 1-9 Bowker St.
Chicago, Ill., 442-452 Wabash Ave.
Cincinnati, O., Broadway and Court St.
St. Louis, Mo., Cor. 12th and St. Charles Sts.
Minneapolis, Minn., 500-510 S. Third St.
Detroit, Mich., 53-59 Larned St., E.
Pittsburgh, Pa., 101-103 Wood St.
Milwaukee, Wis., 492-494 Market St.
Rochester, N. Y., Wilder Bldg., Main and Exchange Sts.
Baltimore, Md., 221-223 W. Pratt St.

Buffalo, N. Y., 372-378 Pearl St.
Brooklyn, N. Y., 635-637 Fulton St.
Philadelphia, Pa., Picairn Bldg., Arch and 11th Sts.
Davenport, Ia., 410-416 Scott St.
Cleveland, O., 149-153 Seneca St.
Omaha, Neb., 1608-1612 Harney St.
St. Paul, Minn., 349-351 Minnesota St.
Atlanta, Ga., 32-34 S. Pryor St.
Savannah, Ga., 745-749 Wheaton St.
Kansas City, Mo., Fifth and Wyandott Sts.
Birmingham, Ala.

ADAPTABILITY.

For store fronts and for all conditions where the strongest, most compact and attractive corner posts and transom bars are desired, specify the "Petz." Samples of any style or finish are sent free on request.

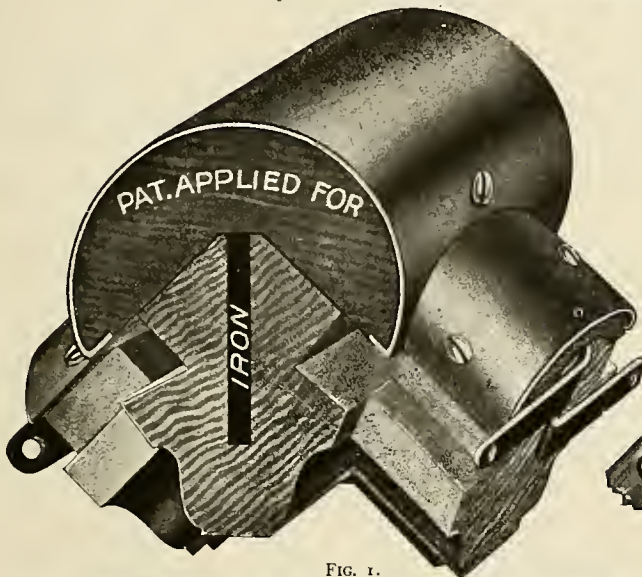


FIG. 1.

No. 31 CORNER POST WITH No. 34 TRANSOM BAR COPED ON

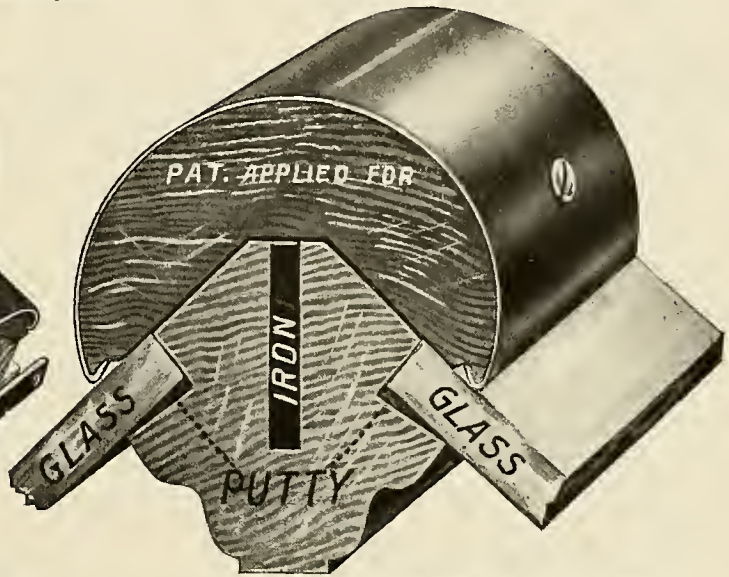


FIG. 2. No. 30 CORNER POST (FULL SIZE)

CONSTRUCTION.

The outer core is made of cypress with a heavy metal cover tightly drawn over and clinched at both sides. (Figs. 1, 2, 3.) The inner core is reinforced by a heavy steel bar extending the full length and turned over at each end so that it may be screwed to the framework of the building.

The outer or metal covered core may be easily removed by taking out the screws and the glass may be set from the outside.

The "Petz" Corner Posts (Figs. 1 and 2) and Transom Bars (Fig. 3) are made in many styles and finishes, to cover every possible need of contractor or builder. Copper, brass, bronze, German silver, nickel-plated, oxidized copper, antique brass and gun-metal are the regular finishes.

SIZES AND FINISHES.

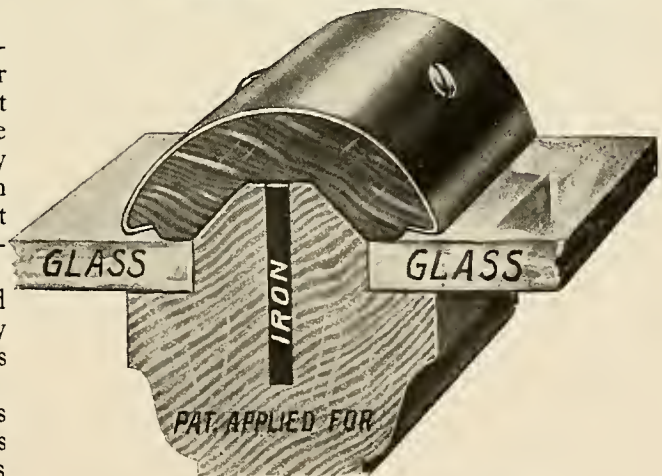


FIG. 3. No. 33 TRANSOM BAR (FULL SIZE)

PITTSBURGH PLATE GLASS COMPANY

CARRARA GLASS DEPT.

PITTSBURGH, PA.

NEW YORK CITY OFFICE, 1133 BROADWAY

Branch offices in all principal cities

PRODUCT.

CARRARA GLASS, a White Sanitary Structural Glass. Its appearance is more like a perfect piece of statuary Carrara Marble than any other material. It is made in both Statuary White and Black.

USE.

Carrara Glass is being used extensively for wainscoting and flooring in all classes of buildings.

In the Tiffany Building, 37th Street and Fifth Avenue, New York City, it is used extensively; the Coupon room, one of the most expensive rooms in the building, has the walls lined with this material inlaid with glass mosaic. The material is also particularly adapted for lavatory work; being used in this building for partitions, wainscoting and flooring in all lavatories.

It is also particularly adapted for wainscoting and flooring in bathrooms. In the residence of Senator Wm. A. Clark, Fifth Avenue, New York City, all the bathrooms, including the plunge, are lined with Carrara glass.

It is being used by the Government and nearly all the prominent Architects throughout the country.

COST.

The cost of this material varies according to the treatment, just the same as the cost of Marble. It corresponds in price to a good grade of White Marble.

HENRY E. SEALEY & COMPANY, INCORPORATED

Glass, Decorated and Otherwise

230-232 North 12th Street,

PHILADELPHIA, PA.

BELL TELEPHONE, WALNUT 887

KEYSTONE TELEPHONE, RACE 7-56

PRODUCTS.

Manufacturers of DECORATED GLASS, including CHRYSTALINED or CHIPPED, GROUND or SAND BLAST, EMBOSSED and CUT GLASS. GLASS SIGNS. LEADED CATHEDRAL GLASS of every description. LOOKING GLASS PLATES, plain and beveled. Dealers in POLISHED PLATE GLASS, WINDOW GLASS and FANCY GLASS.

SPECIAL DESIGNS.

We furnish on request special designs for Leaded, Embossed or Cut Glass.

The prices depend entirely on the design selected, and whether the glass used is Polished Plate or Window Glass.

Decorated and Leaded Cathedral Glass are sold by the square foot.

In writing for estimates it is particularly desirable to give the exact size of the opening to be filled, and to state the kind of glass wanted and the design selected.

PRICE-LIST.

We shall be glad to send on request our price-list for Polished Plate, Window Glass and Looking Glass Plates, also designs for Decorated Glass and Glass Signs.

BOOK OF DESIGNS.

We have recently issued a new catalogue of original designs in Leaded Cathedral Glass and hard metal work. This book will be sent to responsible parties on application. Our Leaded Glass business has been of phenomenal growth. Our designer is ready at all times to make special designs and give information on this subject.

ADAPTABILITY.

The products we manufacture are used extensively in Churches, Clubs, Theatres, Public Halls, Private Dwellings, Steam Cars and Steam Vessels of every description. A 'phone call will bring our representative with designs, who will be qualified to give full information regarding our products.

HARRY ELDREDGE GOODHUE

23 Church Street

CAMBRIDGE, MASS.

PRODUCTS.

Designer and manufacturer of MEMORIAL WINDOWS and all CHURCH DECORATIONS.

FACILITIES.

Mr. Goodhue's shop in Cambridge has a capacity enabling him to execute promptly commissions of any size, from any part of the world.

ORDERS.

In ordering designs or glass, clients are requested to send accurate measurements, depth of rebate, etc., and blue prints or tracings if possible, as, in giving an estimate, it is positively necessary to know the footage of the glass; also a tentative suggestion as to the amount of the contemplated expenditure is of great assistance.

INSTALLATION.

If windows are to be set in position by Mr. Goodhue it should be specified in the contract; otherwise orders will be carefully packed and shipped F. O. B. Boston.

GENERAL INFORMATION.

Mr. Goodhue's glass is the equal in every way of the windows imported from abroad, and by ordering from him, the heavy duties are avoided.

CHURCH WINDOWS.

Mr. Goodhue does not follow the methods of "Opalescent" glass workers, but believes that the most satisfactory results can only be obtained by the study of old French Glass. Even where the modern English style is required, an effect of color purity is gained by bearing in mind the reserve of the thirteenth century master-craftsmen, rather than by obscuring the transparency of the glass with an excessive use of paint as is often done in our day. Since the opening of his shop a little over two years ago, he has made twenty-seven figure windows of his own design, besides a number of ornamental variety and much work of the better class for private houses. (See Fig. 1, showing the Memorial to Sarah Elizabeth Corey, designed and built by Mr. Goodhue, for All Saints Church, Brookline, Mass.)

REFERENCES.

Mr. Goodhue is privileged to refer to all his clients, but for lack of space, mentions only the following names:

Shepley, Rutan & Coolidge, Architects, Ames Building, Boston; Cram, Goodhue & Ferguson, Architects, 15 Beacon Street, Boston, 170 Fifth Avenue, New York; Maginnis, Walsh & Sullivan, Architects, 100 Boylston Street, Boston; Rev. Chas. E. Hutchinson, Rector Church of the Ascension, Boston; Rev. Herman Page, Rector St. Paul's Church, Chicago, Ill.; Rev. Emery H. Porter, Rector Emmanuel Church, Newport, R. I.; J. H. Walker, Esq., Walkerville, Ontario; Miss Harriet S. Cousins, Newton Centre, Mass.; G. Waldron Gillespie, Monticito, California.



Memorial to Sarah Elizabeth Corey, All Saints' Church, Brookline, Mass.

RAMBUSCH GLASS AND DECORATING CO.

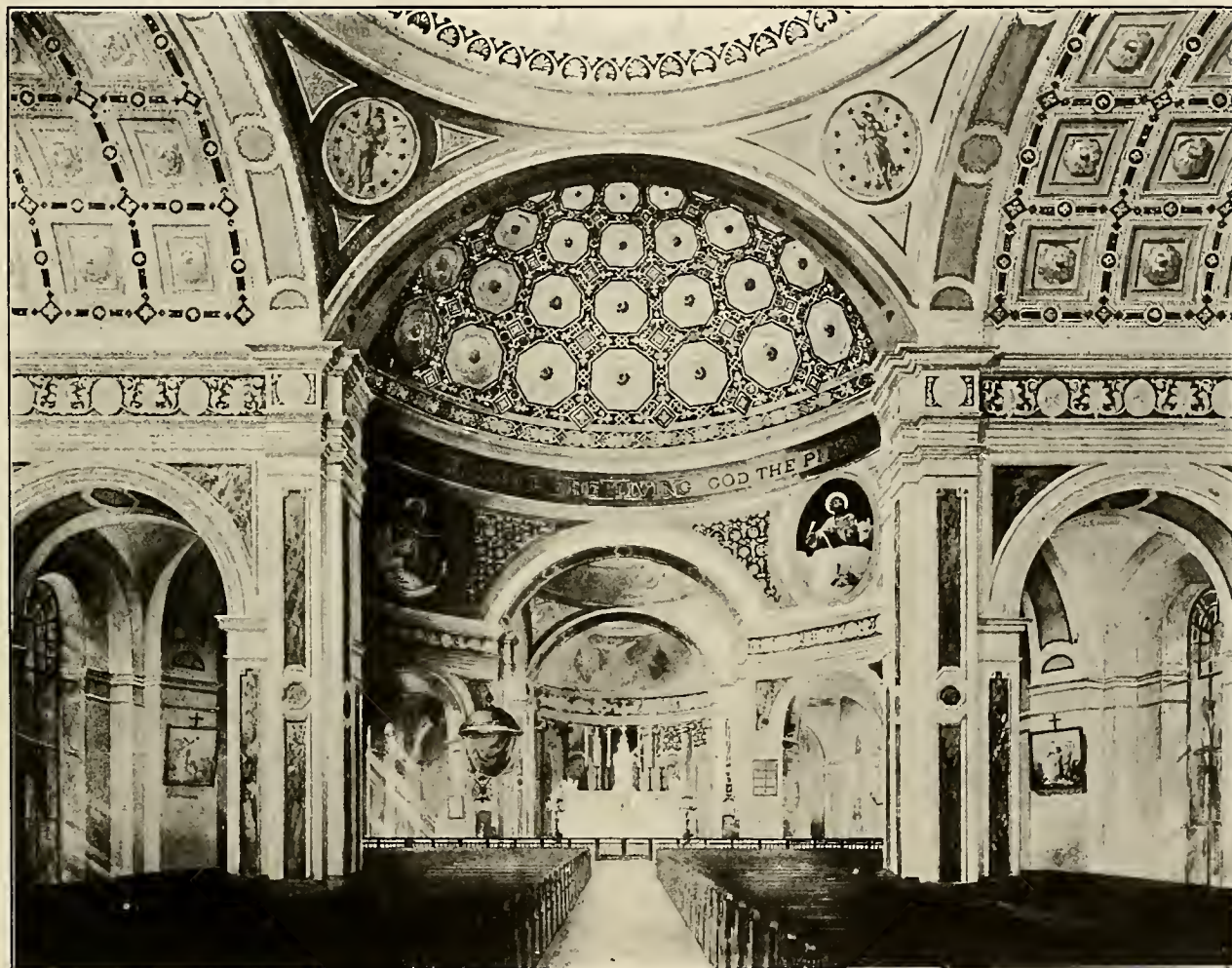
Interior Decorations, Mural Paintings, etc.

160 Fifth Avenue
NEW YORK CITY, N. Y.

TELEPHONE, 3954 GRAMERCY

PRODUCTS.

INTERIOR DECORATIONS, MURAL PAINTINGS, WALL HANGINGS, RELIEF WORK,
PAINTING AND WOOD FINISHING, AND CABINET WORK.



BALTIMORE (MD.) CATHEDRAL

Decorations by Rambusch Glass & Decorating Co.

EXAMPLES.

The following are some of the notable buildings which we have decorated:

BALTIMORE CATHEDRAL, Baltimore, Md.

ST. JOSEPH'S CATHEDRAL, Buffalo, N. Y.

ST. JEROME'S CHURCH, New York City.

CHURCH OF THE REDEEMER, Brooklyn, N. Y.

SEABOARD NATIONAL BANK, New York City.

CORN EXCHANGE BANK, New York City.

WILLIAMSBURG TRUST CO., Brooklyn, N. Y.

LEONORE HOTEL, New York City.

GRAND OPERA HOUSE, Cincinnati, Ohio.

TRENT THEATRE, Trenton, N. J.

ORPHEUM THEATRE, Brooklyn, N. Y.

AMERICAN THEATRE, New York City.

RESIDENCE, 1006 Fifth Avenue, New York City.

RESIDENCE, 811 Fifth Avenue, New York City.

RESIDENCE, 39 West 53d Street, New York City.

RESIDENCE, Roselawn, Greenwich, Conn.

RICHARD N. SPIERS

Leaded Mosaic Glass

859 Sixth Avenue,
NEW YORK CITY, N. Y.

TELEPHONE, 2770 38TH STREET

PRODUCTS.

ECCLESIASTICAL and DOMESTIC STAINED and LEADED GLASS for CHURCHES, PUBLIC BUILDINGS, DWELLINGS, etc.

FACILITIES.

I make high class work in this line and my unlimited facilities enable me to produce very fine windows at very moderate prices; simple designs in artistic effects with a touch of color for the country house and residence. Mosaic glass for walls, ceilings, etc.

DESIGNS.

I have several hundreds of beautifully colored designs from a simple domestic sketch up to the most elaborate figure or subject window. Any of these designs I am pleased to send to my clients upon request, or I will make a special design for any subject. Catalogue gives a general idea of leaded and stained glass from the simple, geometrical design to figure work. My colored sketches show exactly, both in color and design, how work will appear when completed.

MEMORIAL WINDOWS.

In manufacturing, I employ the very best artists, men who have made this highest branch of our art a life-study, and I am fully prepared to undertake the most elaborate work, such as memorial windows, numbers of which can be seen in the churches where I have erected them, or work of a simpler character suitable for private houses.

GENERAL.

In connection with my Art Glass and manufacturing plant I carry a large stock of plain Sheet Glass, French Plate Glass, Colored Glass of ever kind in large sheets and cut to sizes, Florentine Wired, Ribbed and Skylight Glass, and Mirrors, beveled and plain. In short, I am prepared to quote figures on anything in the glass line.

Catalogues and quotations on request.



EXAMPLE OF MEMORIAL WINDOW

ALLITH MANUFACTURING COMPANY

Taylor Street and 43d Avenue,
CHICAGO, ILL.

BRANCH OFFICES AND WAREHOUSES

244 WATER STREET
NEW YORK CITY, N. Y.

2013 MARKET STREET
PHILADELPHIA, PA.

787 TO 793 BRANNAN STREET
SAN FRANCISCO, CAL.

410 SOUTH BROADWAY
LOS ANGELES, CAL.

166 DEVONSHIRE STREET, Room 32
BOSTON, MASS.

1520 ARAPAHOE STREET
DENVER, COLO.

FACTORIES

CHICAGO, ILLINOIS

HAMILTON, ONTARIO

PRODUCTS—Manufacturers of THE RELIABLE ROUND TRACK DOOR HANGERS, ALLITH FIRE DOOR EQUIPMENT, MERCHANDISE CARRIERS and STORE LADDERS.

THE RELIABLE DOOR HANGER—The Reliable Door Hanger is made of highest grade malleable iron, the frame being one solid piece, with no bolts or rivets to break or become loosened. The wheels are malleable iron; the upper wheels having hardened steel axles, bushings and roller bearings, which make the hangers absolutely anti-friction and very durable. The lower wheel, by contact with the brake, prevents derailing or bending should the door be raised. The Reliable Hanger has all the advantages of any swing-out hangers and none of their weak points.

RELIABLE TRACK AND SUPPORTS—The track is made in lengths of four, six, eight and ten feet. It is a heavy round steel tube, with a three-eighths-inch slot in the back, allowing the insertion of the track supports. This shape makes it much stronger and more rigid than a flat track. It cannot get out of line or sag. The supports are malleable iron, fitting inside of the track tightly, and may be spaced to fit any requirements.

SIZES—No. 1 Reliable Hanger Frame is 9½ inches long and 4 inches wide. The upper wheels are two inches in diameter. No. 1 Reliable Track is ¾ inches outside diameter.

No. 2 Reliable Hanger Frame is 12 inches long and 6 inches wide. The upper wheels are 2½ inches in diameter. No. 2 Reliable Track is 1 5/16 inches outside diameter.

No. 3 Allith Hanger Frame is 21 inches long and 8 inches wide. The upper wheels are 4 inches in diameter. No. 3 Allith Track is 1 7/16 inches outside diameter.

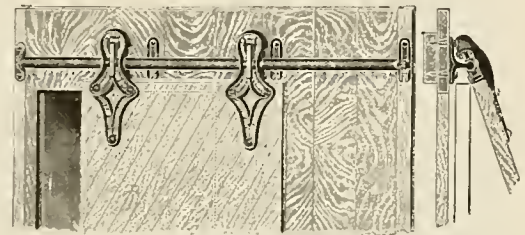
CAPACITIES—We guarantee No. 1 Reliable Door Hangers and Track for 300 pound doors with supports every two feet, and for 500 pound doors with supports every eighteen inches.

No. 2 Reliable Hangers and Track for 800 pound doors with supports every two feet, and for 1200 to 1500 pound doors with supports every eighteen inches.

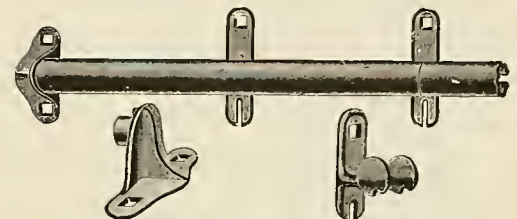
No. 3 Allith Hanger and Track for heavier doors.

PRICES

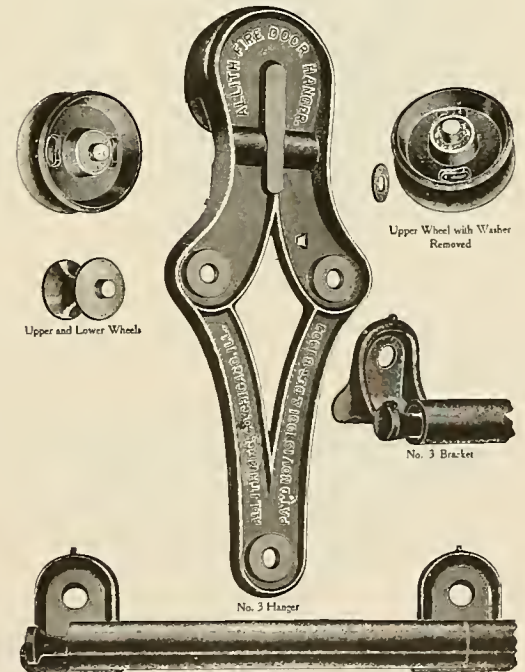
No. 1 Reliable Track with supports every two feet, per foot.....	\$.11
No. 2 Reliable Track with supports every two feet, per foot.....	.14
No. 3 Allith Track with supports every two feet, per foot.....	.25
No. 1 Reliable Hangers, per dozen pairs.....	16.00
No. 2 Reliable Hangers, per dozen pairs.....	19.20
No. 3 Allith Hangers, per pair.....	3.50



THE RELIABLE DOOR HANGER



RELIABLE TRACK AND SUPPORTS



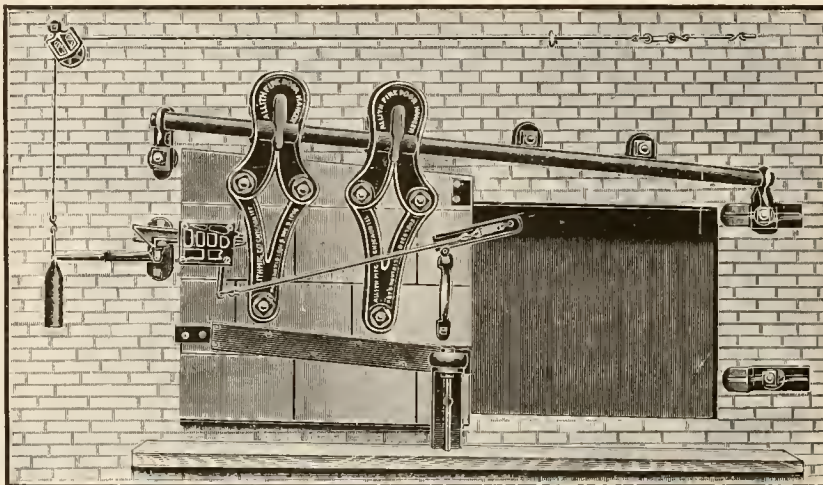
DETAILS OF No. 3 ALLITH HANGERS AND TRACK

THE ALLITH FIRE DOOR HANGER—We furnish everything complete as illustrated except the bolts. A track bracket is furnished with every two feet of track. In ordering the Fire Door Fixtures, give width of opening (not width of door) and thickness of door. Allith Fire Door Fittings are included in the list of approved Fire Door Fixtures issued by the National Board of Fire Underwriters.

PRICES.

Hangers, per pair.....	\$3.50
Track, per foot.....	.25
Fixtures, per set.....	8.00

AUTOMATIC LATCH—Our Automatic Latch, which does away with the weight as formerly used, is included with the fixtures. With this Latch we not only have the fusible link in the opening, but above the opening near the ceiling. The melting of either of these links immediately releases the latch, causing the small weight to strike the door, which will at once close automatically. The addition of this extra link guarantees the closing of the door even where a sprinkling system is installed. The latch may be released without interfering with the fusible links, allowing the door to be closed or opened at any time.



THE ALLITH FIRE DOOR HANGERS, TRACK AND AUTOMATIC FIXTURES

CONSTRUCTION—The hangers throughout are made of the highest grade tested malleable iron. The frame of hanger is one solid piece of iron, with no bolts or rivets to break or become loosened, measuring 21x8. The upper wheel is 4 inches in diameter with hardened steel axles, bushings and roller bearings, making it absolutely anti-friction and very durable. The lower wheel by contact with the track when door is raised, prevents derailing or binding. The track is of heavy steel tube 1 7/16 inches outside diameter, with a slot in the rear for the admission of the track brackets or supports. These brackets are heavy malleable iron, giving a very wide bearing on the wall and fitting perfectly inside of the track. This combination makes the strongest and most satisfactory track possible. The fixtures are all of the same grade of malleable iron. Each part has a small lug or piece that is bent to show the quality.

APPLYING AND INSTALLING—In applying hangers and tracks be sure to place a track bracket under each hanger when door is closed. We furnish blue print showing details for installing. The length of track needed for fire doors is double the width of the opening plus fourteen inches.

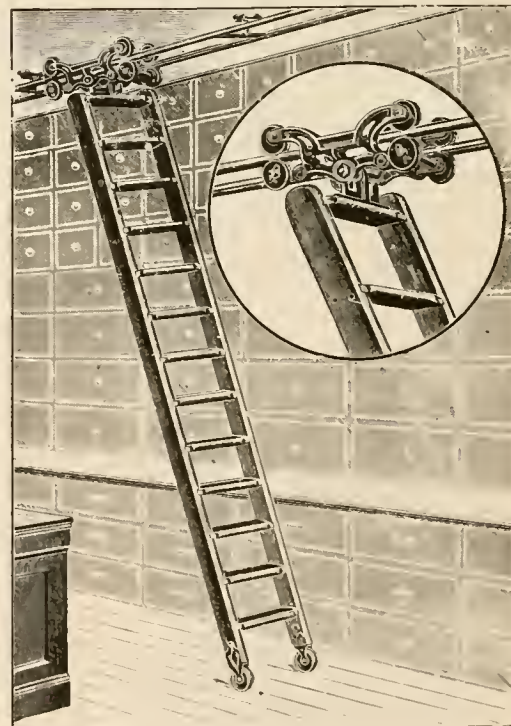
RELIABLE STORE OVERHEAD LADDER—The fixtures are made of malleable iron, self-adjusting with four roller-bearing hard paper wheels, reducing noise and friction to a minimum. The floor wheels are 3 1/2 inches in diameter, roller bearing and rubber tired. The steel track is our No. 1 double tread, fitted with malleable iron ceiling brackets.

The ladder is made of thoroughly seasoned lumber, highly finished and varnished. Each step is mortised into side pieces and fastened with four screws. We use on all ordinary length ladders three stay-rod or bolts through side pieces to give additional strength.

ORDERING—In ordering, give height of ceiling and length of track.

PRICES.

Hard pine ladder and fixtures, complete, each.....	\$16.00
Oak ladder and fixtures, complete, each.....	19.00
Ladder fixtures only, per set.....	8.00
Track, complete, per foot.....	.25



RELIABLE STORE OVERHEAD LADDER

THE ALLITH AUTOMATIC SELF-CLOSING DROP FIRE DOOR FIXTURES—The track used is our No. 2 with fire door brackets. Hangers are special drop Fire Door Hangers. Fixtures and hangers are made of malleable iron.

A set of fixtures consists of three pulleys, one fusible link and bracket, loop to attach ropes, twenty feet of sash cord and twelve pounds of counterweights. The heavy weights to balance door, with ropes for attaching, and bolts are not included.

ORDERING—In ordering fixtures, give thickness of door and size of opening. If heavy weights for balancing doors are ordered, give weight of doors. If bolts are desired, give thickness of walls.

Blue Prints are furnished showing details for installing.

PRICES

Drop Door Hangers, per pair.....	\$2.00
Drop Door Fixtures, per set.....	6.00
Drop Door Track, including brackets, per foot.....	.20
Heavy Weights for counter balance, per pound.....	.06

RELIABLE PARLOR DOOR HANGER—This is a radical departure in parlor door hangers. The hanger and plate for attaching to the door are made of malleable iron. The adjusting screw has an extra long bearing in the frame of the hanger, making a very strong and positive adjustment. The track is our No. 1 round steel track with malleable iron supports, fitting tightly inside of the track. The wheel is 3 1/4 inches in diameter, steel cased with hard paper tread and brass bushing. We use the same high grade of material and workmanship that have made the Reliable Barn Door Hanger the most perfect hanger on the market.

PRICES

Full Set Hangers for double doors with 14 foot track, per set.....	\$5.00
Half Set Hangers for single doors with 8 foot track, per set.....	2.50

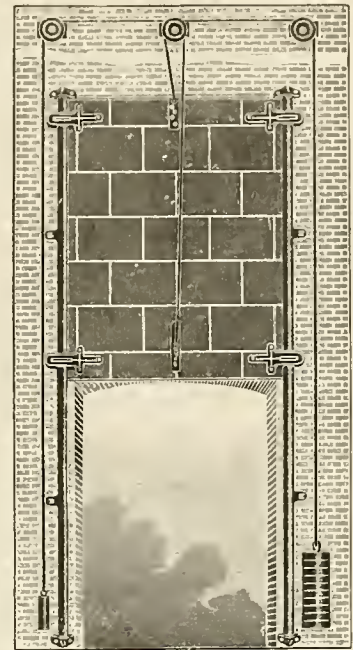
RELIABLE TANDEM MERCHANDISE CARRIERS—The wheels have case-hardened roller-bearings, bushings and axles; the connecting bar is fitted with double swivel, allowing carrier to pass around curves and the load to be turned in any position desired.

The carrier takes very little space, as track may be placed within four inches of ceiling and still leave room for carriers.

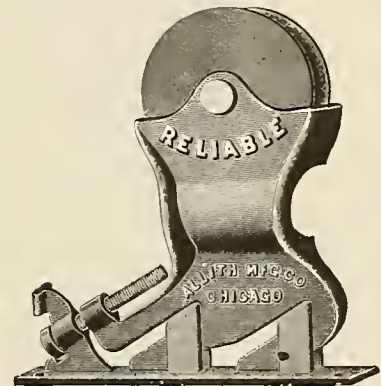
The Reliable Merchandise Carriers are the simplest, strongest and easiest running carriers made. They are made from the highest grade malleable iron and are guaranteed to carry safely the loads as listed.

SIZES, LOADS, PRICES AND WEIGHTS

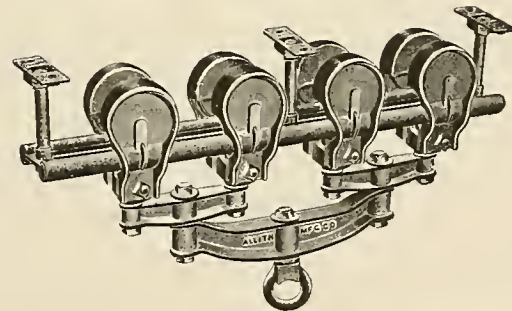
No. 100 carrier weighs 40 lbs. each and is 23 in. long and 15 in. high	
No. 200 carrier weighs 60 lbs. each and is 28 in. long and 18 in. high	
No. 300 carrier weighs 86 lbs. each and is 30 in. long and 20 in. high	
No. 100 Tandem Merchandise Carrier will carry 1000 lbs. Each \$10.00	
Using No. 1 Double Track	
No. 200 Tandem Merchandise Carrier will carry 3000 lbs. Each \$16.00	
Using No. 2 Double Track	
No. 300 Tandem Merchandise Carrier will carry 3000 lbs. Each \$24.00	
Using No. 3 Double Track	
No. 1 Double Merchandise Carrier track, per ft. with supports every 18 in...\$.30	
No. 2 Double Merchandise Carrier track, per ft. with supports every 18 in...\$.40	
No. 3 Double Merchandise Carrier track, per ft. with supports every 18 in...\$.60	
No. 1 Curved Merchandise Carrier track, per ft. with supports every 18 in.. 1.00	
No. 2 Curved Merchandise Carrier track, per ft. with supports every 18 in.. 1.20	
No. 3 Curved Merchandise Carrier track, per ft. with supports every 18 in.. 1.50	
Two-Way Switches, each	12.00
No. 1 Track, weight per 100 feet with supports 125 lbs.	
No. 2 Track, weight per 100 feet with supports 250 lbs.	
No. 3 Track, weight per 100 feet with supports 450 lbs.	



AUTOMATIC SELF-CLOSING DROP FIRE DOOR FIXTURES



RELIABLE PARLOR DOOR HANGER



RELIABLE TANDEM MERCHANDISE CARRIERS

PHILADELPHIA PITT BALANCE DOOR COMPANY

Pennsylvania Building
PHILADELPHIA, PA.

TELEPHONES
BELL, SPRUCE 5820
KEYSTONE, RACE 785

PRODUCT.
ITS SALIENT
POINTS.

THE PITT BALANCE DOOR—The “ALL THE YEAR AROUND DOOR.”

The Pitt Balance Door owes its power to resist the wind to the simple arrangement of being balanced on its centre. Simplicity of construction prevents its getting out of order. It is quick in action, and in operation does not diminish clear opening in which it is placed. Opens either way with slight pressure, closing silently and quickly, but it cannot pinch or slam against anyone passing through.

Possessing these qualities, quick action, slight resistance to pressure, simplicity in use and economy in working space, the Balance Door is invaluable for the handling of large crowds where an absolutely wind-proof door is desirable. In case of panic it would offer *no obstruction*, as it affords more clear space for passageway than any other type of door, and does not have to be taken down in the spring and replaced in the fall.



FIG. 1. PITT BALANCE DOOR

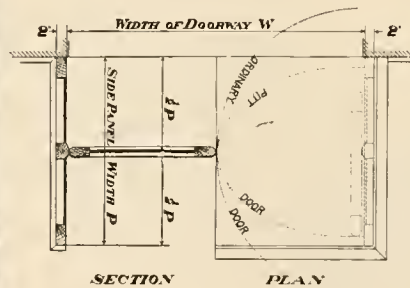
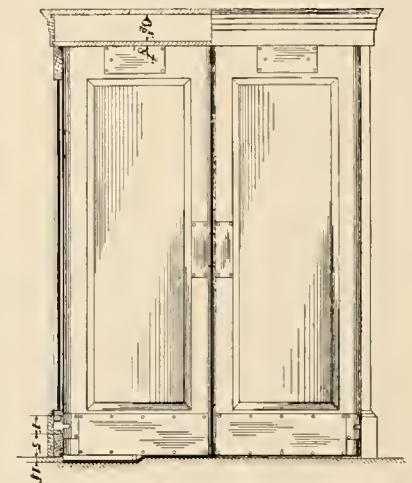


FIG. 2



SECTION ELEVATION
FIG. 3

SPECIFICATIONS.

In drawing the Pitt Balance Door in plants, Architects should make the following allowances (which are shown in Figs. 2 and 3):

Side panels must be at least 2" thick.

Side panels must be flat for a width "P" as follows, "W" being the width of the doorway, as shown on cut:

"W" 4' 4" : 4' 8" : 5' 0" : 5' 4" : 5' 8" : 6' 0".

"P" 2' 4½" : 2' 6½" : 2' 8½" : 2' 10½" : 3' 1" : 3' 3".

The slot in side panel extends full width (P) of same. Soffit overhead must consist of a box containing following free space:

Width of the side panel (P) by length equal to distance out to out of side panels (W 4") by a depth of 6½" as indicated on cut.

Side panels may be set flush with wall, in which case the free space of soffit must extend into wall 2".

T. C. PROUTY CO., LTD.

Door Hangers
ALBION, MICH.

BRANCHES

BOSTON, MASS.
19 PEARL STREET

NEW YORK CITY, N. Y.
84 CHAMBERS STREET

SAN FRANCISCO, CAL.
40 MONTGOMERY STREET

PRODUCTS.

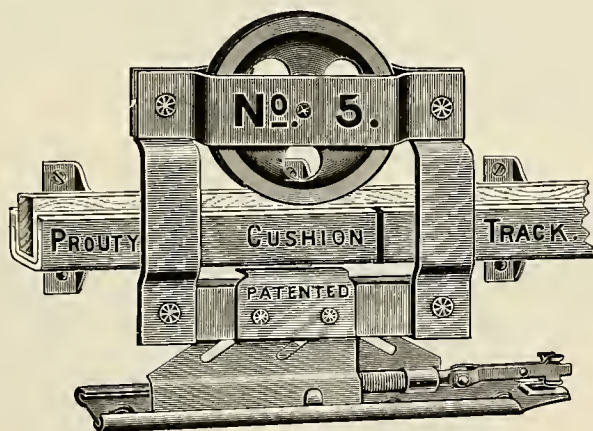
Manufacturers of PARLOR and BARN DOOR HANGERS exclusively.

DISTINCTIVE
FEATURES.

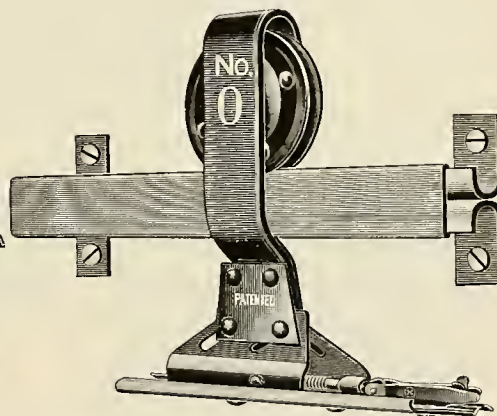
Our hangers contain an absolute lock adjustment and a detachable door plate. Being made of pressed steel, they are uniform in size and shape, and strong. By making only parlor and barn door hangers, we are able to make a close study of each feature, thereby securing perfect construction and the most favorable expressions from Architects, Builders and Users.

NO. 5
CUSHION
TRACK
DOOR
HANGER.

This hanger has its track of hard maple mounted on a felt cushion, supported by a metal case. All sound vibrations are thus entirely checked, making the action of the hanger entirely noiseless. The bearings are also of noiseless construction and felt compression; sound-deadening washers prevent all side-play or rattle of the wheels. These hangers are guaranteed to carry any weight of door, and to operate easily.



PROUTY "CUSHION TRACK" No. 5



PROUTY PARLOR DOOR HANGER, No. 0

NO. 0
ALL-STEEL
DOOR HANGER.

This hanger, as its name implies, is of all-steel construction, and is designed to meet requirements where a hanger is required which is cheap in price but not in construction. The wheel is equipped with double row roller bearings and a vulcanized fiber tread. All the wearing parts are case-hardened and are constructed with the same lock adjustment and detachable door plate as our other hangers.

PRICES.

Prices of our hangers will be promptly furnished upon application.

SUBSTITU-
TIONS.

Worthless substitutions are sometimes offered for Prouty Hangers, and Architects should, in order to protect both themselves and clients, incorporate the word "Prouty" in specifying Door Hangers.

RELIANCE BALL-BEARING DOOR HANGER CO.

1 Madison Avenue

NEW YORK CITY, N. Y.

TELEPHONE, 1874 GRAMERCY

AGENCIES

FACTORY, BROOKLYN, NEW YORK

The Morss & Whyte Co., Boston, Mass.
 F. M. Ryder, New Haven, Conn.
 Chas. J. Fields Sons, Philadelphia, Pa.
 Sterion White Alloy Co., Chicago, Ill.

Dufur & Company, Baltimore, Md.
 Elevator Construction Co., Pittsburg, Pa.
 H. J. Reedy Company, Cincinnati, O.
 Denver Iron & Wire Works, San Francisco, Cal.

J. E. Bolles Iron & Wire Works, Detroit, Mich.
 William J. Murray, Washington, D. C.
 Denver Iron & Wire Works, Denver, Colo.
 J. W. Ruger Mfg. Co., Buffalo, N. Y.

PRODUCTS.

Manufacturers of BALL-BEARING DOOR HANGERS, GRAVITY ELEVATOR DOOR LOCKS.

BALL BEARING DOOR HANGERS.

Since the introduction of our Ball-Bearing Door Hanger to the public, dating back less than three years and manufactured under the improvements and patents (of the inventor) which this Company own, the rapid increase of sales attest the popularity of our device. The practically noiseless and easy-running action, the excellence and high grade of material used in each hanger, combined with the care in manufacture, have quickly won the lead over all competitors.

FACILITIES.

All our goods are made to order with the exception of our locks, which are constantly kept in stock. Any ordinary order for our products can be shipped within a week.

Single Door Open, has three grooved solid steel tracks, steel balls each side of centre track.

No Wheels. No Noise.

Width of back plate from $3\frac{1}{2}$ to $6\frac{1}{2}$ " , according to weight of door.

Walking-beam for moving two doors in opposite directions at the same time.

Width of back plate from 4" to 6". Requires 20" to 24" head room above back plate.

Quadrant-Gear for moving two doors in opposite directions at the same time.

Width of back plate from 4" to 6". Requires same head room as Fig. 2.

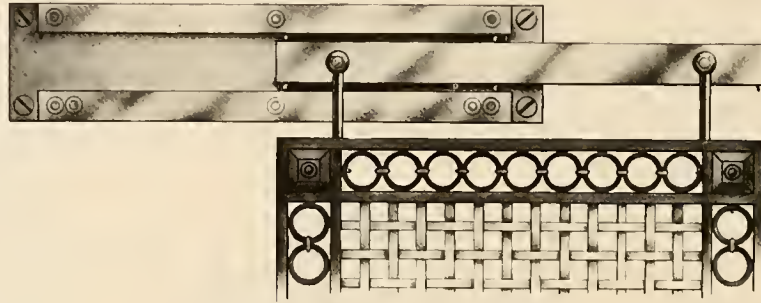


FIG. 1

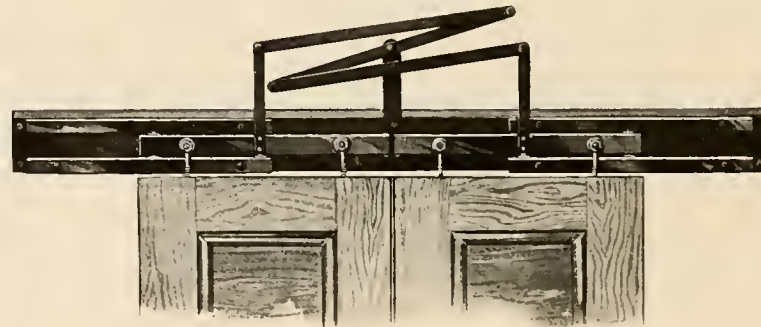


FIG. 2



FIG. 3

Width of back plate from 4" to 6". Requires 3" head room above back plate.

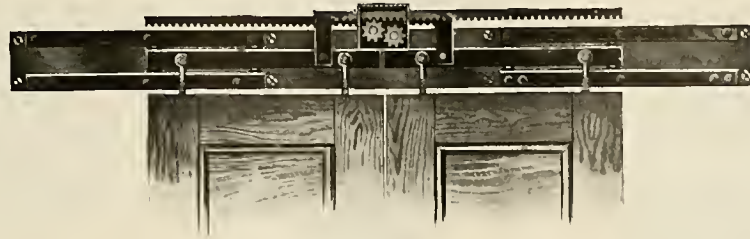


FIG. 4. Double Gear. For moving two doors in opposite directions at the same time

Width of back plate from 4" to 6". No head room required.



FIG. 5. CLOSED. Screw Device for moving two doors in opposite directions

Width of back plate from 4" to 5 1/2". Requires from 1" to 3" head room above back plate.

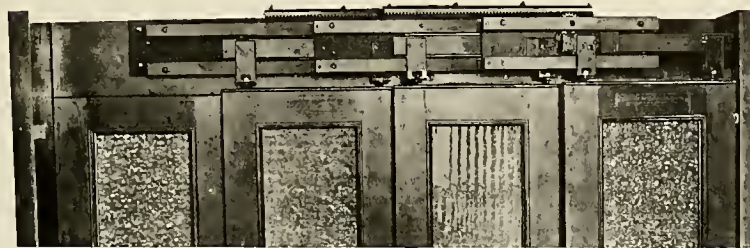


FIG. 6. Device for moving 2 or 3 doors in same direction at varying speed, so that all are open, or all are closed at the same time



FIG. 7. OPEN

Elevator Door Lock (Fig. 6). With this lock there is no projection of the Latch beyond the edge of the door when open, thus preventing the catching of clothing so often occurring with other Locks.
Size of plate 5"x7"



FIG. 7. CLOSED

REFERENCES.

BUILDING	LOCATION	ARCHITECTS
Mutual Life Building	New York City, N. Y.	Clinton & Russell
Tiffany Building	New York City, N. Y.	McKim, Mead & White
Metropolitan Building and Annex	New York City, N. Y.	N. LeBrun & Son
Commercial-Cable Building	New York City, N. Y.	Howells & Stokes
Trinity Building	New York City, N. Y.	Francis H. Kimball
Keppel Building	New York City, N. Y.	Geo. B. Post & Son
41 Park Row Building	New York City, N. Y.	Maynicke & Franke
Produce Exchange Bank	New York City, N. Y.	Ernest Flagg
Republican Club	New York City, N. Y.	York & Sawyer
Employers Liability Co.	Boston, Mass.	Shepley, Rutan & Coolidge
Hotel Belvidere	Baltimore, Md.	Parker & Thomas
Bellevue-Stratford Hotel	Philadelphia, Pa.	G. W. & W. D. Hewitt
Wabash Terminal	Pittsburg, Pa.	F. J. Osterling
Rockefeller Building	Cleveland, Ohio	Knox & Elliott
Government Printing Office	Washington, D. C.	J. G. Hill
C. & N. W. R. R. Building	Chicago, Ill.	Frost & Granger
American National Bank	Richmond, Va.	Wyatt & Noelting
National Home D. V. S.	Johnson City, Tenn.	J. H. Frelander

THE RICHARDS MANUFACTURING COMPANY

Door Hangers and Hardware Specialties

MAIN OFFICE AND WORKS

AURORA, ILL.

BRANCH OFFICES

Chicago, Ill., 179-181 Lake Street
New York City, N. Y., 101 Reade Street

St. Louis, Mo., 404 Security Building
Montreal, Canada, 446 St. Paul Street

PRODUCTS. Manufacturers of DOOR HANGERS for SLIDING DOORS of every description, size or weight.

GUARANTEE. Our goods are so well known, and are in such universal use, that they require no general description. We guarantee our products, and will replace, free of charge, any piece of goods sold by us found defective on account of workmanship or material, but we will not be responsible for any goods unless used according to directions.

INSTALLATION. All goods shipped by us are accompanied by full directions for installation, with the help of which any experienced mechanic can put them up. We are also willing to take contracts for the full installation.

HERO TROLLEY BALL-BEARING HOUSE DOOR HANGERS. The No. 19 Richards Hero Trolley Ball-Bearing House Door Hanger (Fig. 1) has noiseless fibre wheels. The wood header is furnished with track, and is easily put up.

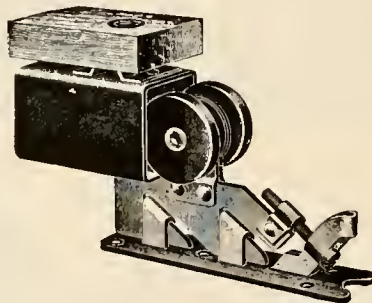


FIG. 1. No. 19, RICHARDS HERO DOOR HANGER

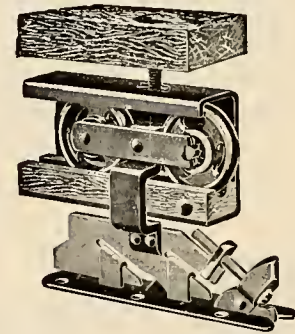


FIG. 2. No. 22, RICHARDS AUTO DOOR HANGER

Screws, stop and floor guides are included with hangers. A full set of hangers weighs 8 pounds; the trolley track $2\frac{1}{2}$ pounds per foot. The track can easily be adjusted or taken down after walls are plastered.

AUTO BALL-BEARING NOISELESS HOUSE DOOR HANGER.

The No. 22 Richards Auto Ball-Bearing Noiseless House Door Hanger (Fig. 2) is adjustable and has an adjustable track, tandem ball-bearing wheels and noiseless wood runway. The track is covered, the wood header is furnished with track and is easily put up.

Screws, stop and floor guides are packed with the hangers. A full set of hangers weighs 10 pounds; track, 2 pounds per foot. The track can be easily taken down after the walls are plastered.

ROYAL BALL-BEARING TROLLEY HOUSE DOOR HANGER.

The No. 122 Richards Royal Ball-Bearing Trolley House Door Hanger (Fig 3) is perfectly noiseless. The wheels run on hard maple adjustment in the hanger and track. The track can easily be taken down after the walls are plastered.

Four sets of balls in each hanger, supplied with an overhead stop. Packed one full or one-half set in a box. Hangers weigh 10 pounds per set, track 3 pounds per foot.

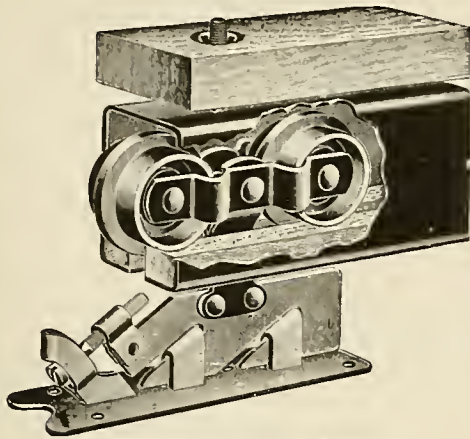


FIG. 3. No. 122, RICHARDS ROYAL DOOR HANGERS

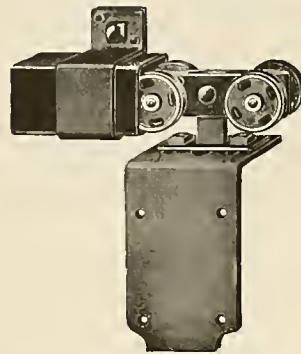


FIG. 4. No. 17, RICHARDS STANDARD BARN DOOR HANGER

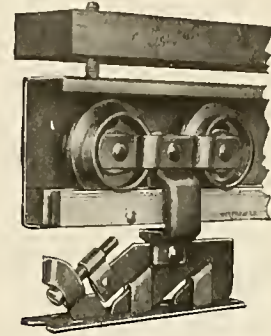


FIG. 5. No. 132, RICHARDS PALACE DOOR HANGER

PALACE BALL-BEARING HOUSE DOOR HANGER.

The No. 132 Richards Palace Ball-Bearing House Door Hanger (Fig. 5) is perfectly noiseless, supplied with adjustable hangers and track. The wheels run on hard maple and the track is covered. The wood in the track is made in two pieces, with an open slot in the center for the wheel guide. It is impossible for the slot to fill up with dirt, and the track can easily be taken down after the walls are plastered. There are four sets of balls in each hanger. The wheels have wide bearing on track. Hangers weigh 10 pounds per set; track 2 pounds per foot.

STANDARD TROLLEY ROLLER-BEARING BARN DOOR HANGER.

The No. 17 Richards Standard Trolley Roller-Bearing Barn Door Hanger (Fig. 4) is suitable for doors weighing 400 pounds or less. The pendants are 6 inches long, 4 inches wide and $\frac{3}{16}$ inch thick. The hanger is used regularly with No. 31 track. The track can be attached to side or ceiling supports, and it is furnished in any length up to ten feet, in one piece. Weight, per pair, 12 pounds. Heavier hangers and tracks are furnished for larger doors.

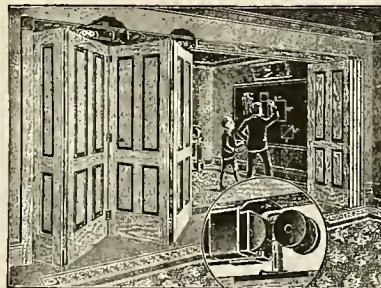


FIG. 6. No. 135, RICHARDS SWIVEL DOOR HANGER

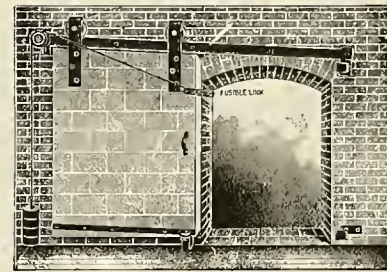


FIG. 7. No. 104, RICHARDS STANDARD FIRE DOOR FIXTURES

BALL-BEARING SWIVEL DOOR HANGER.

The No. 135 Richards Ball-Bearing Swivel Door Hanger for folding partitions (Fig. 6) is fitted with a ball-bearing swivel and with vertical screw adjustment, either Fibre or Metal wheels are supplied. Made in two sizes. No. 1, suitable for doors $1\frac{3}{4}$ inches to $2\frac{1}{4}$ inches thick. No. 2, for doors $2\frac{1}{4}$ to 3 inches thick.

Directions for Ordering—Track should be as long as opening is wide. Brackets should be placed 2 to $2\frac{1}{2}$ feet apart. One hanger required for every other door, beginning with door farthest from half-door.

RICHARDS STANDARD FIRE DOOR FIXTURES.

The No. 104 Richards Standard Fire Door Fixtures, closing doors automatically by heat in case of fire (Fig. 7). The fusible link is constantly in the opening and is exposed to either side of the doorway. The top binder, backstop and rope pulley are attached to the track, saving the expense of drilling holes through the walls and furnishing bolts for attaching it to the wall.

In ordering, give width of the opening and thickness of door, and state whether doors will be used on one or both sides of the wall. The doors must be wider than the opening. Do not say doors when you mean openings. If bolts are desired, the thickness of the wall must be given. An extra charge is made for bolts.

WILCOX MANUFACTURING CO.

Door Hangers

AURORA, ILL.

BRANCHES

168 Church St., New York City, N. Y.
 706 Chemical Bldg., St. Louis, Mo.
 925 Market St., Philadelphia, Pa.

5 Pickhuben, Hamburg, Germany
 76 Rue de Turenne, Paris, France
 20 Chapel St., Milton St., London, Eng.

PRODUCTS.

We are the oldest and largest manufacturers of DOOR HANGERS in the world. We make every known type.

APPLICATION.

Wilcox Door Hangers are adapted to all classes of doors, and can be applied by any intelligent local workman.

INSTRUCTIONS AS TO ORDERS.

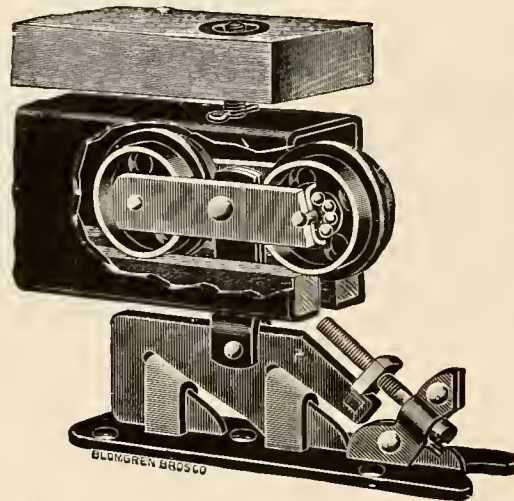
In ordering, specify name and number of hanger desired. We make no charge for cartage or packing except in foreign shipments.

WILCOX WOOD LINED TROLLEY HOUSE DOOR HANGER.

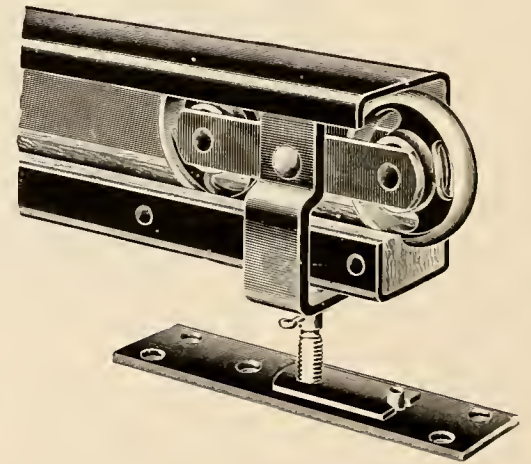
The tracks and hangers of these fixtures are adjustable, which make them suitable for house doors of any size. They are fitted with ball bearings, which not only make them noiseless, but easy in operation.

PRICES.

Average price for full set complete.....\$5.00
 Average price for half set complete..... 2.50



No. 222. WILCOX WOOD LINED TROLLEY HOUSE DOOR HANGER



No. 413. WILCOX ELEVATOR DOOR HANGER

CATALOGUE.

Owing to the great diversity of our products we have issued a number of different catalogues, any of which will be mailed on request.

WILCOX ELEVATOR DOOR HANGER.

These hangers are vertical in adjustment, fitted with case hardened ball bearings, and run on wood track, which insures noiseless operation.

The Wilcox Hanger has been approved by the Board of Underwriters.

PRICES.

Hangers, per pair.....\$1.50 Track, per foot..... .12

THE BOROUGH BRONZE CO.

Gas and Electric Fixtures

PRINCIPAL OFFICE AND SHOW-ROOMS

130-132 West 24th Street
NEW YORK CITY, N. Y.

TELEPHONES

3050 CHELSEA 3051 CHELSEA

BRANCH OFFICE

976 BOSTON ROAD, BRONX

PRODUCTS.

Designers and manufacturers of all varieties of GAS and ELECTRIC FIXTURES, ECCLESIASTICAL ART METAL GOODS.

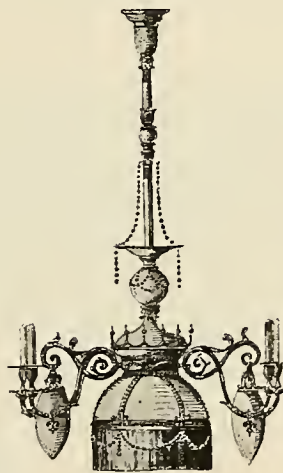
SPECIAL DESIGNS.

As we employ a corps of the best artists and designers, we are enabled to prepare special designs to meet any architectural requirements. Should the architect prefer to furnish his own designs, we have the facilities for executing such work with promptness and at a very moderate cost.

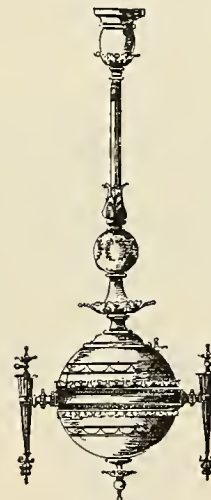
Estimates will be furnished promptly on request.



No. 1355
HALL LIGHT
Length 48"; Spread
22"; Gas and Electric; 2
Lights; Beveled Edge
Glass



No. C. 249
CHANDELIER
Length 48"; Spread 24"; 8
Candle Gas Lights; 4 Electric
Lights and 3 Electric Lights in
12" Dome



No. C. 254
CHANDELIER
Length 48"; Spread
18"; Gas and Electric, 3
Lights; Glass Dome



No. C. 226
HALL LIGHT
Length 48"; Spread
14"; Gas or Electric; 1
Light; Cathedral Glass

STOCK DESIGNS.

At our Show-rooms in New York City may be seen a very extensive and complete line of stock designs of gas and electric fixtures from elaborate chandeliers for churches to simple gas wall brackets.

Our catalogues, showing the more popular styles, will be sent on request.

THE ENOS COMPANY

Makers of Lighting Fixtures

NEW YORK CITY, N. Y.

OFFICE AND FACTORY
SEVENTH AVE. AND SIXTEENTH STREET

SALESROOMS
FIVE WEST THIRTY-NINTH STREET

BALTIMORE, MD.
519 N. Charles Street

WASHINGTON, D. C.
818 Conn. Ave.

SAN FRANCISCO, CAL.
110 Geary Street

TORONTO, CANADA
94 King Street, W.

MONTREAL, CANADA
Bank of Toronto Building

PRODUCT.

Makers of GAS, ELECTRIC and COMBINATION LIGHTING FIXTURES.

SPECIAL DESIGNS.

Our staff of Designers is at the Architects' service, or we will be glad to manufacture from Architects' own designs, if desired.

A cordial invitation is extended to call at our Salesrooms, and inspect our latest examples of lighting effects. The Louis XV. bracket shown herewith and many similar pieces may be seen—French, Early English, Flemish, and all other recognized styles—all adapted for gas or electricity, but strictly correct in design and detail.



BUNSEN FIXTURE.

Designed especially for Incandescent Gas Lighting. Simple, Practical, Artistic. No attachable burners. Made in a variety of designs.

BUNSEN SOCKET-BURNER.

A small detachable burner closely resembling an electric socket. Produces uniformity in a combination fixture, and gives a Gas fixture the appearance of an *Electric* fixture.

BUNSEN CANDLE-BURNER.

By means of these candle-burners many new, artistic effects may be obtained, hitherto confined to the realm of electric light.



BUNSEN
SOCKET-BURNER



BUNSEN FIXTURE



BUNSEN
CANDLE-BURNER

TRADE-MARK.

For the protection of our clients, our trade-mark is stamped on every piece of work manufactured by us.



I. P. FRINK

Frink's Special Patent Window Reflector

551 Pearl Street

NEW YORK CITY, N. Y.

PRODUCTS.

Manufacturer of FRINK'S SPECIAL PATENT WINDOW REFLECTOR and SPECIAL REFLECTORS for Squash Court Lighting, Art Galleries, Concealed Lighting, Church Auditoriums, Public Buildings, and Store Interiors.

SHOW WINDOW ILLUMINATION.

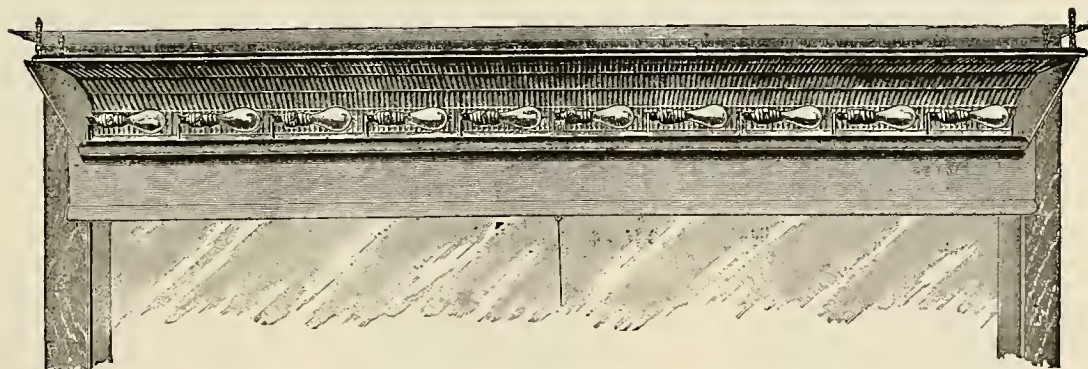
Show windows are an essential feature in modern mercantile buildings, and the consideration and care bestowed upon lighting them is amply shown in the large number of Frink Reflectors that have been installed in hundreds of the leading stores throughout the country.

INSTALLATION.

The Reflector is placed at the top of the window, near the front glass, and hides the lamps from the sidewalk, at the same time brilliantly illuminating the window. It can be put in place by any ordinary mechanic.

CONSTRUCTION.

The Frink Reflector is designed and constructed on thoroughly scientific lines. It is built of metal and lined with silver-plated corrugated glass. It is the only fixture that successfully meets every requirement of window lighting, and specifying architects and engineers have found in it a solution of all their hitherto vexing problems in this class of work.



No. 400. FRINK'S SPECIAL PATENT WINDOW REFLECTOR
 Patented April 20, 1897. Feb. 21, 1899. Sept. 29, 1903

ECONOMY.

The Frink Reflector burns just enough lamps to show up the window display without adding to a store's expense by helping the city to light its streets. Its reflecting angles are so carefully worked out that the entire illumination from the lamps is confined to the window and the darker the sidewalk is the better the window looks

PRICE.

No. 400, as illustrated, per foot.....\$2.20

SPECIAL REFLECTORS.

The nature of the special conditions that exist and have to be met prevents us from describing Special Reflectors until we are fully advised as to the work the reflector has to do. Upon receipt of details, we can base our calculations and will quote prices.

HOLOPHANE GLASS CO.

SALES DEPARTMENT

227 Fulton Street

NEW YORK CITY, N. Y.

TELEPHONE, 6925-6 CORTLANDT

PRODUCTS.

HOLOPHANE GLOBES, HOLOPHANE PAGODA REFLECTORS.

Holophane Globes and Pagoda Reflectors are made of perfectly clear crystal glass with prisms scientifically constructed in such a manner as to both direct the rays of light in downward and outward directions, and diffuse the light so as to make it less glaring and altogether more pleasing to the eye.

ILLUSTRATIONS.

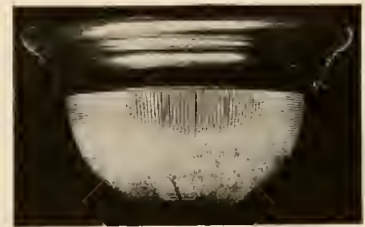
Cuts shown are selections from about 300 styles. Write for particulars in regard to any style. A handsome catalogue bound in flexible leather showing all our styles and complete information and prices, also photometric and distribution curves, can be had upon receipt of personally signed letter from Architects and Illuminating Engineers only. The services of our Engineering Department are at disposal of Architects wishing assistance in designing or altering a system of illumination irrespective of whether or not Holophanes are used.



CUT GLASS PAGODA BALL
Other Styles in Cutting can be had



HALF STALACTITE FOR WALL LIGHT



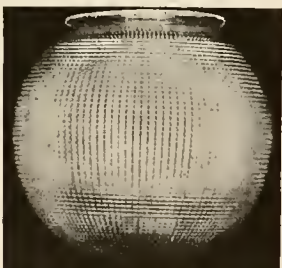
STANDARD HOLOPHANE BOWL
Made from 7½ in. to 20 in. in diameter



CUT GLASS HOLOPHANE STALACTITE
Other Styles in Cutting can be had



CUT GLASS HOLOPHANE BOWL
Other Styles in Cutting can be had



STANDARD HOLOPHANE BALL
Made in 32 sizes



SMALL PAGODA REFLECTORS FOR CLUSTER



HOLOPHANE PENDANT GLOBE



PAGODA REFLECTOR FOR CLUSTER



PAGODA REFLECTOR
2½ in. Neck



PAGODA REFLECTOR FOR ROUND LAMPS

LAWRENCE GAS FIXTURE MFG. CO.

PHILADELPHIA, PENNA.

BOSTON OFFICE AND SHOW ROOM
161 SUMMER STREET

PHILADELPHIA OFFICE AND FACTORY
N. E. CORNER 12TH AND CHERRY STS.

PRODUCTS.

GAS, ELECTRIC and COMBINATION FIXTURES.

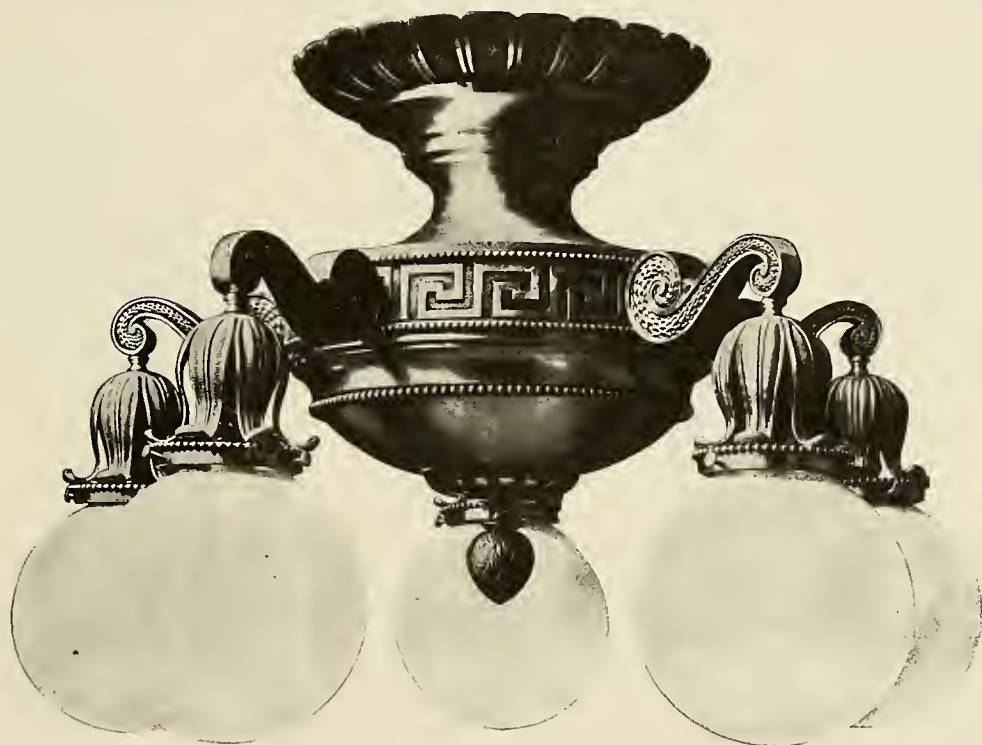
FACILITIES.

We can execute all orders from our regular line, comprising some seven thousand designs, within ten days. Special designs to conform with any style of exterior or interior architecture submitted on request, and orders executed promptly.

ADAPTABILITY.

Our line comprises a variety of the latest designs, illustrating the various periods or styles, embodying a line covering everything requisite for the complete equipment of Fine Residences, Public Buildings, Churches, Hotels, Club Houses, etc., with gas and electric light fixtures.

All our products conform to the rules of the National Board of Fire Underwriters and with the different Municipal Laws.



CEILING LIGHT

ACCESSORIES.

We are prepared to furnish our goods trimmed complete if desired, with all the requisites and accessories needed, such as Sockets, Wiring, Insulating Joints, Tripod Plates, Gas and Electric Shades and Holders, and a full and attractive line of the new Art Glass effects.

AGENCIES.

We are represented in all the principal cities of the United States, by local dealers, the names of any of whom will be sent upon application.

GENERAL INFORMATION.

During the past ten years our goods have given universal satisfaction as to durability and finish. Considering material, workmanship and finish, our goods are the lowest in price on the market. All goods are sold F.O.B. Philadelphia.

MUNICIPAL LIGHTING COMPANY

109-111 West 41st Street

NEW YORK CITY, N. Y.

TELEPHONE, 608 BRYANT

PRODUCTS.

Manufacturers of high class INCANDESCENT LIGHTING APPLIANCES, which include SOCKET BURNERS, BUNSEN FIXTURES, INSIDE ARC LAMPS, INVERTED BURNERS, BUNSEN CANDLES, OUTSIDE ARC LAMPS, and SPECIAL GLASSWARE and MANTLES for the same.

SPECIAL DESIGNS.

We are prepared to make special designs in Bunsen Fixtures to order. Special orders of this kind require from ten to fourteen days' time.

INSTALLATION.

Our goods can be installed by any local workman. We will install them in New York City and Brooklyn.

INSTRUCTIONS AS TO ORDERS.

All goods are made "Standard" size and are kept in stock.



No. 1. INSIDE ARC LAMP



No. 2. INSIDE ARC LAMP



No. 3. INSIDE ARC LAMP



No. 1. OUTSIDE ARC LAMP

ARC LAMPS.

These are handsome fixtures—Full nickel trimmings—Regulate all the Mantles with one needle valve—Made of castings—Practical mechanism—Properly applied gas—Perfect combustion—Consume less fuel—Maximum light—Minimum cost.

THE BUNSEN SOCKET BURNER.



BUNSEN SOCKET BURNER

This is a small detachable burner closely resembling an electric socket, but is properly constructed for incandescent gas lighting.

These burners may be attached to the gas arms of either a gas or combination fixture, producing the symmetry and graceful lines of an electric fixture, with all the economy and efficiency possible in incandescent gas lighting. Can use any electric glassware or mantle. Sold complete with glassware and mantle or otherwise.



BUNSEN SOCKET BURNER, DETACHED

NEW
INVERTED
BURNERS.



INVERTED BURNER

These are especially susceptible to artistic effects and readily adapted to existing gas fixtures. Being inverted, they are absolutely shadowless, casting the maximum light immediately downward where most needed. Smallest gas consumption of any mantle light now on the market. Made in two sizes and two styles. Gives three times more illumination than electric light, at a much lower cost. Designs in glassware to suit any room both in shape and color. Some of the features that make this lamp popular are: Brilliancy, Durability, Efficiency, Simplicity, Economy.



INVERTED BURNER

BUNSEN
CANDLES.



BUNSEN CANDLE

Nothing yet attempted in gas lighting can equal these fixtures in attractiveness nor yield such a soft, pleasant, and abundant diffusion of light. The shade and mantle-supporting structure is readily removed for cleaning or renewal. The mantles are especially durable by reason of their small size, secure support and gentle ignition. Regular No. 63 Welsbach mantle can be used. Four styles of glassware and designs. It is a fixture and burner combined. Shades made to harmonize with design of fixture. Special finish on metal parts made to order.



BUNSEN CANDLE
DETACHED

BUNSEN
FIXTURES.



BUNSEN FIXTURES

These fixtures can be made in an infinite number of varied and attractive designs, both in chandeliers and brackets, and all are adaptable for electric shades and standard mantles. In the case of combination Bunsen-Electric Fixtures, the use of the same glassware on both the gas and electric arms produces a particularly harmonious effect. Special designs and finish made to order.



BUNSEN FIXTURES
Combination Gas and Electric Light

LAMPS AND
SHADES

We also handle a fine line of Portable Lamps, with attachments complete. Many beautiful designs are to be had, and the metal parts can be finished in any color.

Fancy shades, both in glass and silk, with and without beaded fringe, in stock, or can be especially made.

THE TEA TRAY COMPANY OF NEWARK, N. J.

Mulberry and Murray Streets
NEWARK, NEW JERSEY



PRODUCTS.

Manufacturers of INCANDESCENT STREET FIXTURES, HOODS, SHADES and REFLECTORS, FIRE EXTINGUISHERS and METAL SPECIALTIES.

STANDARD GOODS.

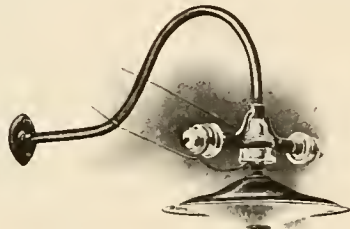
We furnish many sizes and styles of INCANDESCENT STREET FIXTURES, HOODS, SHADES and REFLECTORS, suitable for all situations and voltages, in different metals and a variety of finishes; COPPER HOODS with porcelain enamel deflectors (the don't-rust-out kind); PORCELAIN ENAMEL STEEL SHADES, ALUMINUM SHADES, MIRROR REFLECTORS and complete line of METAL SHADES, for INCANDESCENT and ARC LIGHTING.

SPECIAL WORK.

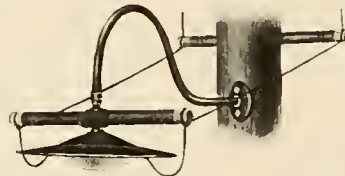
Our factory equipment includes tools and machinery specially designed for our work. These facilities, together with complete polishing, plating, japanning and decorating departments, enable us to furnish special Hoods, Shades and Fixtures as well as our standard goods as shown in our catalogue. We solicit correspondence regarding special sheet metal work.

ILLUSTRATIONS.

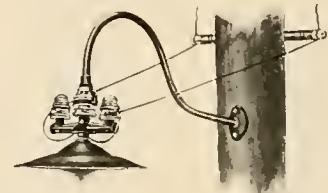
The illustrations below show a few of our "Marten" specialties.



Mfg. No. 111. Jersey Incandescent Street Fixture



Mfg. No. 141. Murray Incandescent Street Fixture



Mfg. No. 411. Prospect Incandescent Street Fixture



Mfg. No. 21. Marter Hood



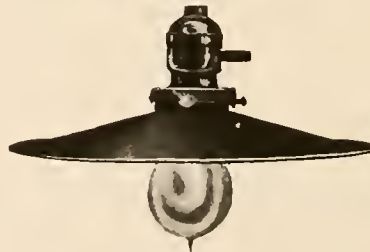
Mfg. No. 38210. Deep Cone Corrugated Mirror Reflector



Mfg. No. 55. Tuxedo Copper Hood



Mfg. No. 83. Arc Lamp Hook



Mfg. No. 6210. Shallow Cone Tin Reflector Shade



Mfg. No. 48. Arc Lamp Hook

THE STANLEY WORKS

Builders' Hardware

FACTORIES

NEW BRITAIN, CONN.

WAREHOUSES

New York City, N. Y., 79 Chambers Street

Chicago, Ill., 22 Lake Street

PRODUCTS.

Makers of WROUGHT STEEL BUILDERS' HARDWARE—BUTTS, HINGES, DOOR BOLTS, SHELF BRACKETS, BLIND TRIMMINGS, etc., BALL-BEARING HINGES of WROUGHT BRONZE and STEEL.

TERRITORY.

Our goods can be obtained from the leading hardware merchants the world over. While our principal product is Wrought Steel Hinges, we are prepared to furnish a line of Wrought Solid Bronze Metal Butts with Ball-Bearing Washers.

IDENTIFICATION OF OUR PRODUCTS.

Architects and others interested frequently ask if we mark our Hinges in any way so that there can be no doubt that the Hinges specified are actually furnished. Our line of Wrought Bronze Ball-Bearing Butts we designate as No. 180, and we stamp this number on the back of the Hinge near the top (Fig. 1).

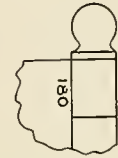


FIG. 1

Our standard plated Butts are very highly polished and heavily electro-plated, so that they are well protected against the atmosphere, and are fully equal in appearance to those made of bronze metal. We call this grade "No. 239," and stamp the number on the Hinge in the same way as "No. 180" above. Our second grade is superior in weight and finish to the best of other makes, and is designated "No. 241½." On these we stamp our trade-mark (Fig. 2). We make these Hinges in any of the popular finishes, and can match any color desired.



FIG. 2

SPECIFICATIONS.

Architects in specifying our goods should use the word "Stanley's," as "Stanley's Steel Butts," "Stanley's Ball-Bearing Hinges," etc., and in addition thereto, if possible, the class number of the article specified.

BALL-BEARING HINGE.

Our Ball-Bearing Hinges (Fig. 3) are acknowledged to be the best hinges made for the hanging of doors. Their use eliminates the disagreeable creaking that accompanies ordinary hinges; they do away with the necessity for oiling, and allow the door to swing smoothly and noiselessly. Doors hung with these hinges never sag, or wear down. The balls used in the bearings are turned from solid steel, and each one will sustain a weight of one thousand pounds without crushing. The Washers in which the bearings are incased are so constructed that they cannot come apart in use.

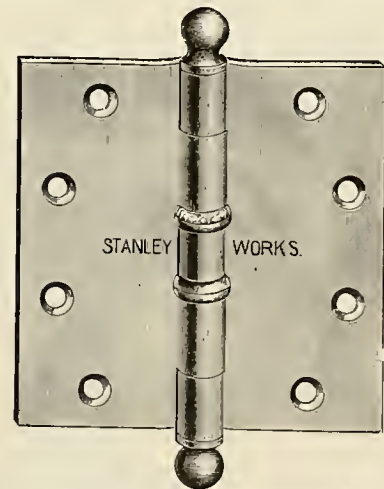
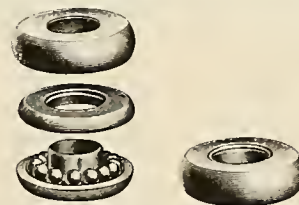


FIG. 3. BALL-BEARING HINGE



WASHER AS NOW MADE
Perfect protection against dust and moisture

THE ASHTABULA MANUFACTURING CO.

Door Bumpers

OFFICE AND FACTORY

ASHTABULA, OHIO, U. S. A.

PRODUCT. HUBBARD'S PATENT SEAMLESS METALLIC DOOR BUMPERS.
(Floor Stops and Base Knobs.)

HOW MADE. Drawn from the best quality of sheet metals with special machines.

SCREWS. Are steel and extend clear through the knob and into the wood.

STRAIN. There is no strain on the knob, the bump is on the screw endwise.

RUBBER TIPS. Are of the best quality of rubber for the purpose. For the *Base Knob* the tip is vulcanized to the head of the screw, and for the *Floor Stop* they are vulcanized to the head of the bolt, which is fastened on inside with a thread and nut.

BASES. Are drawn from sheet metal and flanged on the bottom so they cannot cut into the wood.



FIG. 1. REGULAR PATTERN FLOOR STOPS

Even numbers 2 to 54 inclusive. Made of Steel triple plated and of Bronze Metal and Brass. All Finishes



FIG. 2. HIGH PATTERN FLOOR STOPS

Even numbers 2 to 54 inclusive. Made of Steel triple plated and of Real Bronze Metal and Brass. All Finishes. Add H. P. to number if High Pattern is wanted.



FIG. 3. BEAUTIFUL IN DESIGN AND FINISH

Odd numbers 1 to 53 inclusive. Made of Steel, triple plated, and of Bronze Metal and Brass. All Finishes



FIG. 4. HANDSOMELY FINISHED. VERY ATTRACTIVE

Odd numbers 101 to 153 inclusive. Made of Steel Duplex plated and of Bronze Metal and Brass. All Finishes



FIG. 5. WELL FINISHED. TAKES PLACE OF WOOD BASE KNOBS

Odd numbers 201 to 253 inclusive. Made of Steel extra plated, and of Bronze Metal and Brass. All Finishes

MATERIAL AND FINISHES.

Made of Nicobar Steel electro-plated and of Real Bronze Metal and Brass. Made in all finishes to match other hardware. Sanded finishes cost 10% more than those not sanded. Prefix S to Number when sand finishes are wanted.

SUITABLE.

For Wood, Marble or Tile mopboards and floors.

PRICE LIST OF HUBBARD'S PATENT SEAMLESS DOOR BUMPERS

REGULAR ELECTRO-PLATED FINISHES

	FLOOR STOPS FIGS. 1 & 2	BASE KNOBS FIG. 3	BASE KNOBS FIG. 4	BASE KNOBS FIG. 5
<i>All Listed by the Dozen</i>	<i>Doz.</i>	<i>Doz.</i>	<i>Doz.</i>	<i>Doz.</i>
Polished Bronze	No. 2....\$2.00	No. 1....\$2.00	No. 101....\$1.17	No. 201....\$.75
Brush Bronze	No. 4.... 2.00	No. 3.... 2.00	No. 103.... 1.25	No. 203.... .83
Polished Brass	No. 6.... 2.00	No. 5.... 2.00	No. 105.... 1.17	No. 205.... .75
Old Brass	No. 8.... 2.20	No. 7.... 2.20	No. 107.... 1.38	No. 207.... 1.00
Brush Brass	No. 10.... 2.00	No. 9.... 2.00	No. 109.... 1.25	No. 209.... .83
Polished Oxidized Brass	No. 12.... 2.00	No. 11.... 2.00	No. 111.... 1.25	No. 211.... .83
Antique Brass	No. 14.... 2.20	No. 13.... 2.20	No. 113.... 1.38	No. 213.... 1.00
Brush Copper	No. 16.... 2.00	No. 15.... 2.00	No. 115.... 1.25	No. 215.... .83
Polished Oxidized Copper	No. 18.... 2.00	No. 17.... 2.00	No. 117.... 1.17	No. 217.... .75
Antique Copper	No. 20.... 2.20	No. 19.... 2.20	No. 119.... 1.25	No. 219.... .83
Old Copper (Statuary Bronze)	No. 22.... 2.20	No. 21.... 2.20	No. 121.... 1.25	No. 221.... .83
Polished Nickel	No. 24.... 2.00	No. 23.... 2.00	No. 123.... 1.17	No. 223.... .75
Gun Metal	No. 26.... 2.40	No. 25.... 2.40	No. 125.... 1.25	No. 225.... .83
Dead Black (Rustless Iron)	No. 28.... 2.40	No. 27.... 2.40	No. 127.... 1.38	No. 227.... 1.00
Bower Barff	No. 30.... 2.40	No. 29.... 2.40	No. 129.... 1.67	No. 229.... 1.25
Polished Silver	No. 32.... 3.00	No. 31.... 3.00	No. 131.... 2.08	No. 231.... 1.67
Brush Silver	No. 34.... 3.00	No. 33.... 3.00	No. 133.... 2.08	No. 233.... 1.67
Polished Oxidized Silver	No. 36.... 3.00	No. 35.... 3.00	No. 135.... 2.08	No. 235.... 1.67
Antique Silver	No. 38.... 3.00	No. 37.... 3.00	No. 137.... 2.08	No. 237.... 1.67
Satin Finished Silver	No. 40.... 3.00	No. 39.... 3.00	No. 139.... 2.08	No. 239.... 1.67

REGULAR FINISHES ON REAL BRONZE METAL AND BRASS

Polished Bronze Metal	No. 42....\$4.00	No. 41....\$4.00	No. 141....\$2.50	No. 241....\$2.00
Brush Bronze Metal	No. 44.... 4.00	No. 43.... 4.00	No. 143.... 2.50	No. 243.... 2.00
Polished Brass	No. 46.... 4.00	No. 45.... 4.00	No. 145.... 2.50	No. 245.... 2.00
Old Brass	No. 48.... 4.00	No. 47.... 4.00	No. 147.... 2.50	No. 247.... 2.00
Brush Brass	No. 50.... 4.00	No. 49.... 4.00	No. 149.... 2.50	No. 249.... 2.00
Polished Oxidized Brass	No. 52.... 4.00	No. 51.... 4.00	No. 151.... 2.50	No. 251.... 2.00
Antique Brass	No. 54.... 4.00	No. 53.... 4.00	No. 153.... 2.50	No. 253.... 2.00

SPECIAL.

Fig. 5 is also made 2 inches long for cupboard doors, bookcases, china closets, etc. Prices same as full size.

HOW TO ORDER.

In ordering, simply state Figure and Number wanted.

PRICE LIST.

We list our regular numbers. If you want a finish not listed we will match it.

SAFETY.

They Will Not Tear Ladies' Clothing. There is nothing to catch their skirts on, as they are perfectly smooth on the outside, with rounded corners, and the entire design is such that angular projections are avoided.

GUARANTEE.

All our goods are fully warranted, and if any part is defective and gives out within twenty years we will gladly furnish the same free of charge.

INDORSEMENTS.

While these goods are comparatively a new thing, they are to be found in many fine residences and public buildings in nearly all parts of the country, and we have hundreds of written indorsements from leading architects that have made building a life study.

SOLD BY.

They are carried in stock by nearly all the leading Jobbers and dealers in builders' hardware throughout the country. We can furnish them in any finish wanted within a week from receipt of order.

SAMPLES.

If samples are desired, we will be pleased to send them free with charges prepaid, on request.



"BOMMER" SPRING HINGES

TRADE MARKS. REG. U. S. PAT. OFF.

Factory, 255 to 271 Classon Avenue

BROOKLYN, N. Y.



TELEPHONE, 2623 PROSPECT

ESTABLISHED 1876

PRODUCTS.

BOMMER SPRING BUTT HINGES, BOMMER BALL-BEARING FLOOR SPRING HINGES, BOMMER BOX FLANGED and SURFACE SPRING HINGES for Lavatory Doors and Hospital use. BOMMER FIRE ENGINE HOUSE SPRING HINGES and LATCH CATCHES, BOMMER PIVOT HINGES (without springs), BOMMER SPRING HINGES for Office Gates, and BOMMER SCREEN DOOR HINGES.

HOW TO ORDER.

DESCRIPTION.

These goods can be furnished and included in contracts by all Hardware Merchants and Lock Manufacturers figuring on Builders' Hardware. Prices are guaranteed by Bommer Brothers to be no higher than other similar makes.

Bommer Spring Butt Hinges are made in the strongest and most durable manner and in any finish desired. All bearings are of steel. The springs are of best oil tempered steel wire, are of large diameter and unusual length, have great resilience and power, and never get lame. They are easy to apply to the door. The ball tips can be unscrewed and the hinge readily taken apart, but the ball tips will not work loose of themselves. These hinges will last a lifetime if the proper size is selected.

REQUIREMENTS FOR SPRING BUTT HINGES.

- Use 3 " hinges for doors 6' x 2 ' x 3/4" to 1 1/8" (make allowance for 1/2" hanging strip)
- Use 4 " hinges for doors 7' x 2 ' x 1 " to 1 3/8" (" " " 5/8" hanging strip)
- Use 5 " hinges for doors 7' x 2 1/4" x 1 " to 1 1/2" (" " " 5/8" hanging strip)
- Use 6 " hinges for doors 7' x 2 1/2" x 1 " to 1 3/4" (" " " 3/4" hanging strip)
- Use 7 " hinges for doors 8' x 2 1/2" x 1 1/4" to 2 " (" " " 3/8" hanging strip)
- Use 8 " hinges for doors 8' x 3 ' x 1 1/2" to 2 1/4" (" " " 1 " hanging strip)
- Use 10 " hinges for doors 9' x 3 ' x 1 3/4" to 2 1/2" (" " " 1 1/8" hanging strip)
- Use 12 " hinges for doors 10' x 3 ' x 2 " to 3 " (" " " 1 1/4" hanging strip)
- Use 14 1/2" hinges for doors 10' x 3 1/2" x 3 " to 4 " (" " " 1 1/2" hanging strip)

ALWAYS USE THE LARGEST SIZE HINGE WHICH THE THICKNESS OF THE DOOR WILL PERMIT.

DOUBLE ACTION

Length of Flanges	PLANISHED STEEL						POLISHED STEEL				BRONZE OR BRASS METAL														
	Japanned		Bronze or Brass Plated		Antique Copper, Antique Brass or Dull Brass Finish also Imitation Rustless Black Finish		Bronze, Brass or Nickel Plated, also Genuine Rustless Black Finish		Antique Copper, Antique Brass or Dull Brass Finish		Bronze or Brass, Highly Polished		Antique Copper, Antique Brass or Dull Brass Finish, also Nickel Plated		Silver Plated either Bright or Oxidized										
	Size	No.	Per Pair	No.	Per Pair	No.	Per Pair	No.	Per Pair	No.	Per Pair	No.	Per Pair	No.	Per Pair										
3 in.	29		\$ 1.60	479		\$ 2.00	329		\$ 2.20	79		\$ 4.50	379		\$ 5.00	129		\$ 7.40	429		\$ 8.10	229		\$ 9.40	
4 in.	30		2.00	480		2.40	330		2.80	80		5.00	380		5.50	130		8.50	430		9.40	230		10.80	
5 in.	33		2.50	483		3.10	333		3.50	83		6.00	383		6.50	133		10.20	433		11.20	233		12.90	
6 in.	36		3.50	486		4.30	336		4.90	86		7.50	386		8.30	136		12.50	436		13.70	236		15.60	
7 in.	39		4.50	489		5.50	339		6.30	89		9.00	389		9.90	139		15.90	439		17.50	239		19.80	
8 in.	42		6.50	492		8.00	342		9.00	92		11.40	392		12.70	142		20.40	442		22.50	242		25.50	
10 in.	45		9.00	495		11.00	345		12.40	95		15.50	395		17.10	145		27.20	445		30.00	245		34.00	
12 in.	48		12.00	498		14.50	348		16.50	98		21.00	398		23.00	148		36.80	448		40.20	248		45.90	
14 1/2 in.	49		16.00	499		23.10	349		26.00	99		32.00	399		34.50	149		54.40	449		62.30	249		66.90	
For Office Gates, 1 1/4 to 2 1/2 inches.... Handrail not over 3 1/2 inches....	6 in.	38	\$ 4.50	488	\$ 5.50	338	\$ 6.30	88	\$ 8.50	388	\$ 9.40	138	\$ 15.30	438	\$ 16.80	238	\$ 18.70								

SINGLE ACTION

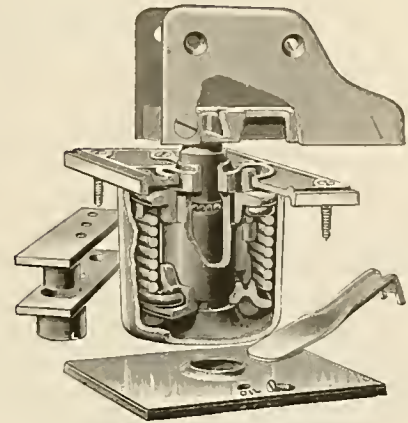
Length of Flanges	PLANISHED STEEL						POLISHED STEEL				BRONZE OR BRASS METAL														
	Japanned		Bronze or Brass Plated		Antique Copper, Antique Brass or Dull Brass Finish also Imitation Rustless Black Finish		Bronze, Brass or Nickel Plated, also Genuine Rustless Black Finish		Antique Copper, Antique Brass or Dull Brass Finish		Bronze or Brass, Highly Polished		Antique Copper, Antique Brass or Dull Brass Finish, also Nickel Plated		Silver Plated either Bright or Oxidized										
	Size	No.	Per Pair	No.	Per Pair	No.	Per Pair	No.	Per Pair	No.	Per Pair	No.	Per Pair	No.	Per Pair										
3 in.	0		\$0.80	450		\$ 1.00	300		\$ 1.20	50		\$ 2.30	350		\$ 2.50	100		\$ 4.00	400		\$ 4.50	200		\$ 5.20	
4 in.	1		1.00	451		1.20	301		1.40	51		2.50	351		2.80	101		4.50	401		5.00	201		5.80	
5 in.	5		1.30	455		1.60	305		1.80	55		3.00	355		3.30	105		5.50	405		6.00	205		7.15	
6 in.	9		1.80	459		2.20	309		2.50	59		3.80	359		4.10	109		6.80	409		7.40	209		8.60	
7 in.	13		2.30	463		2.80	313		3.20	63		4.50	363		4.90	113		8.50	413		9.30	213		10.80	
8 in.	17		3.30	467		4.00	317		4.50	67		5.70	367		6.30	117		10.90	417		12.10	217		14.30	
10 in.	21		4.50	471		5.50	321		6.20	71		8.30	371		9.20	121		14.70	421		16.10	221		18.60	
12 in.	25		6.00	475		7.30	325		8.30	75		11.30	375		12.30	125		19.80	425		21.50	225		24.70	
14 1/2 in.	27		9.50	477		11.60	327		13.00	77		16.00	377		18.00	127		27.20	427		30.60	227		33.40	
For Office Gates, 1 1/4 to 2 1/2 inches.... Handrail not over 4 inches....	5 in.	7	\$2.00	457	\$2.50	307	\$2.70	57	\$4.00	357	\$4.30	107	\$8.00	407	\$8.50	207	\$10.00								

Bommer Spring Hinges are packed complete, one pair in a box, with screws to match the finish.

DESCRIPTION OF FLOOR SPRING HINGES.

"BOMMER" FLOOR SPRING HINGES

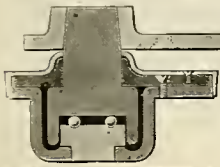
These Hinges swing doors double action, but by using a stop bead they work equally well single action. The tension of the spring can be adjusted; the weight of the door balances on tool steel ball-bearings set upon a raised centre post, giving an easy movement to the door. The ball-bearings are covered by a hollow spindle which allows no water, dirt or grit to touch them, making them wear years longer. Only the best oil tempered steel springs are used. They are easy to apply to the door and give entire satisfaction where used. They can be furnished with invisible shoe and adjustable top attachment instead of side plates if so preferred. All parts are interchangeable. No hanging strip is required, the back edge of door is slightly rounded.



THE BOMMER BALL-BEARING FLOOR SPRING HINGE

Thickness of Door	PLANISHED STEEL						POLISHED STEEL						BRONZE OR BRASS METAL						Dimensions of Top Plate	Depth of Cup	Distance from Centre of Spindle to Jamb	Distance between Bottom of Door and Floor	
	Japanned Dead Black		Bronze or Brass Plated		Antique Copper, Antique Brass, Dull Brass or Imitation Rustless Black Finish		Sand Blast Antique Copper, or Antique Brass Finish		Bronze, Brass or Nickel Plated, also Genuine Rustless Black Finish		Antique Copper, Antique Brass or Dull Brass Finish		Bronze or Brass Highly Polished		Antique Copper, Antique Brass or Dull Brass Finish, also Nickel Plated		Silver Plated either Bright or Oxidized						
	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set					
7/8-1 1/2 in.	2	\$2.35	452	\$2.90	302	\$3.15	252	\$3.75	52	\$3.80	352	\$4.00	102	\$5.85	402	\$6.45	202	\$9.35	3 3/4 x 5 3/8 in.	3	in.	1 5-16 in.	1/4 in.
1 3/8-2 in.	4	2.90	454	3.50	304	3.80	254	3.90	54	4.10	354	4.35	104	7.00	404	7.60	204	10.50	3 3/8 x 5 3/8 in.	3 1/2	in.	1 3/4 in.	1/4 in.
2 - 2 1/2 in.	6	3.50	456	4.10	306	4.55	256	4.60	56	4.70	356	5.00	106	8.15	406	8.75	206	11.70	4 1/2 x 6 1/8 in.	3 3/4	in.	2 in.	1/4 in.
2 1/2-3 1/2 in.	8	6.70	458	7.25	308	7.70	258	7.75	58	7.80	358	8.30	108	11.10	408	11.70	208	15.20	4 3/2 x 6 1/2 in.	3 3/4	in.	2 in.	1/4 in.

BOMMER PIVOT HINGES WITHOUT SPRINGS, PRICES INCLUDE TOP PIVOTS

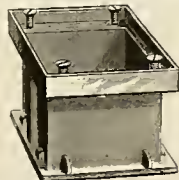


Size of Doors	Japanned Black	Bronze Plated	Antique Copper Plated	Bronze Metal	From Center of Pivot to Jamb	From Bottom of Shoe to Floor
For Small Doors 3-4 to 1 1-4 in.	No. 20 \$ 2.50	No. 470 \$ 3.30	No. 320 \$ 3.70	No. 120 \$ 4.60	5/8 in.	1/4 in.
For Doors 1 1-4 to 2 1-2 in.	No. 24 2.90	No. 474 4.10	No. 324 4.60	No. 124 5.80	1 1/2 in.	3/8 in.
For very Heavy Doors 2 in. to 4 in	No. 28 8.40	No. 478 10.00	No. 328 10.90	No. 128 12.50	1 3/4 in.	1/2 in.



This style of Top Pivot with movable plunger is furnished with all pivot hinges without springs. Adjustable side plates and fixed top pivots can be substituted without extra charge if so ordered.

CAST METAL BOXES FOR SETTING FLOOR HINGES



Into Concrete, Cement or Tile Floors
 For No. 2—Floor Hinge..... Price each, \$0.70
 For No. 4—Floor Hinge..... Price each, 1.00
 For No. 6—Floor Hinge..... Price each, 1.30
 For No. 8—Floor Hinge..... Price each, 1.40
 For No. 24—Pivot Hinge..... Price each, 0.65
 For No. 28—Pivot Hinge..... Price each, 1.40

BOMMER SCREEN DOOR HINGES



No. 999—Price per dozen pairs \$1.50 without screws

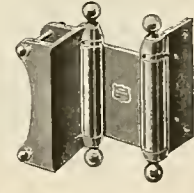
SPRING HINGES AND STRIKES FOR LAVATORY DOORS ON MARBLE OR SLATE PARTITIONS

YOKE HINGE (Not Adjustable)

SURFACE HINGE

ADJUSTABLE SINGLE ACTION BOX FLANGED SPRING HINGES AND STRIKES
 For Marble, 1 inch, 1 1/4 inch, 1 1/2 inch, 1 3/4 inch, 2 inches Thick
 Adjustable 1/8 inch over and under to allow for variations in thickness of marble

DOUBLE ACTION (Not Adjustable)



No. 1015
Price, per pair, \$10.00

No. 1011
Price, per pair, \$6.40

No. 1050
Price, each, \$1.40

No. 1000
Price, per pair, \$6.60

No. 1052
Price, each, \$0.40

No. 1005
Price, per pair, \$9.90

Above prices are for solid brass nickel plated or for solid bronze highly polished. The length of the flanges is four inches. Exact thickness of both marble and door must be stated.

These hinges are regularly made to close the door, but if so ordered, can be made with reverse springs to throw it open, without extra charge. Styles Nos. 1000 and 1015 are also made with box to fit around pipe standards for Hospital use, etc., at special prices. Bommer Spring Hinges are packed complete, one pair in a box with bolts and screws to match the finish.

CALDWELL MANUFACTURING COMPANY

MANUFACTURERS OF

Hardware Specialties

8 and 10 Jones Street

ROCHESTER, N. Y.

PRODUCTS—Manufacturers of SASH BALANCES, EMPIRE DOOR HOLDERS, SASH LOCKS, ACME BASEMENT WINDOW TRIMMINGS, and HARDWARE SPECIALTIES.

SASH BALANCES—We furnish Balances for Sash weighing from 6 to 100 pounds inclusive. The Side Balance is the regular Balance and is shown by the accompanying engraving (Fig. 1). We also make a Top or Mullion Balance for use on narrow Mullion Bay Windows, or on any window where there is not sufficient room to admit the Side Balance.

PRICE LIST OF SIDE AND TOP BALANCES

Per Set of 4 Balances for 2 Sash

No.	Price per Set Four Balances	Weight Each Sash Pounds	Length of Tape Inches	Regular Cases Contain	Dimensions of Face Plate Inches		Dimensions of Mortise Inches		
					Length	Width	Length	Width	Depth
6	\$2.00	4 to 6	30	24 sets	3 ⁷ / ₈	1 ¹ / ₈	2 ³ / ₈	1 ¹ / ₈	2 ¹ / ₂
8	2.20	6 to 8	30	24 sets	3 ⁷ / ₈	1 ¹ / ₈	2 ³ / ₈	1 ¹ / ₈	2 ¹ / ₂
10	2.40	8 to 10	34	24 sets	3 ⁷ / ₈	1 ¹ / ₈	2 ³ / ₈	1 ¹ / ₈	2 ¹ / ₂
12	2.60	10 to 12	38	24 sets	4 ⁷ / ₈	1 ¹ / ₈	2 ⁷ / ₈	1 ¹ / ₈	2 ⁷ / ₈
14	2.80	12 to 14	42	24 sets	4 ⁷ / ₈	1 ¹ / ₈	2 ⁷ / ₈	1 ¹ / ₈	2 ⁷ / ₈
16	3.00	14 to 16	42	18 sets	5	1 ⁵ / ₁₆	3 ³ / ₈	1 ⁵ / ₁₆	3 ⁵ / ₁₆
18	3.20	16 to 18	44	18 sets	5	1 ⁵ / ₁₆	3 ³ / ₈	1 ⁵ / ₁₆	3 ⁵ / ₁₆
20	3.40	18 to 20	46	18 sets	5	1 ⁵ / ₁₆	3 ³ / ₈	1 ⁵ / ₁₆	3 ⁵ / ₁₆
23	4.00	20 to 23	50	16 sets	5 ³ / ₈	1 ⁷ / ₁₆	3 ³ / ₄	1 ⁷ / ₁₆	3 ³ / ₈
26	4.25	23 to 26	50	16 sets	5 ³ / ₈	1 ⁷ / ₁₆	3 ³ / ₄	1 ⁷ / ₁₆	3 ³ / ₈
29	4.50	26 to 29	52	16 sets	5 ³ / ₈	1 ⁷ / ₁₆	3 ³ / ₄	1 ⁷ / ₁₆	3 ³ / ₈
32	4.75	29 to 32	52	16 sets	5 ³ / ₈	1 ⁷ / ₁₆	3 ³ / ₄	1 ⁷ / ₁₆	3 ³ / ₈
35	5.50	32 to 35	54	12 sets	6 ¹ / ₄	1 ¹ / ₂	4 ³ / ₈	1 ¹ / ₂	4 ³ / ₈
38	5.75	35 to 38	54	12 sets	6 ¹ / ₄	1 ¹ / ₂	4 ³ / ₈	1 ¹ / ₂	4 ³ / ₈
41	6.00	38 to 41	54	12 sets	6 ¹ / ₄	1 ¹ / ₂	4 ³ / ₈	1 ¹ / ₂	4 ³ / ₈
44	6.25	41 to 44	54	12 sets	6 ¹ / ₄	1 ¹ / ₂	4 ³ / ₈	1 ¹ / ₂	4 ³ / ₈
47	6.50	44 to 47	50	12 sets	6 ¹ / ₄	1 ¹ / ₂	4 ³ / ₈	1 ¹ / ₂	4 ³ / ₈

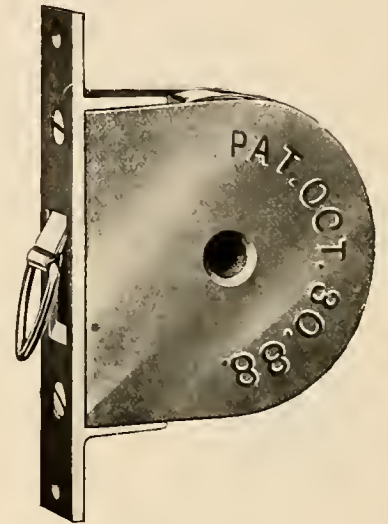


FIG. 1
SASH BALANCE

PRICE LIST OF EMPIRE DOOR HOLDERS

MEDIUM SIZE

100	Malleable Iron, Dead Black.....	\$ 3.75
101	Malleable Iron, Amber Bronzed.....	3.75
1102 ¹ / ₂	Malleable Iron, Antique Copper, Unpolished.....	7.50
102	Malleable Iron, Polished Bronze Plated.....	9.00
102 ¹ / ₂	Malleable Iron, Polished, Plated, Antique Copper.....	10.00
102 ³ / ₄	Malleable Iron, Polished, Dead Black.....	11.00
102B	Malleable Iron, Polished, Plated, Antique Brass.....	10.00
102NP	Malleable Iron, Polished, Nickel Plated.....	10.00
103	Bronze Metal, Polished.....	12.00
103 ¹ / ₂	Bronze Metal, Antique Copper.....	14.00
103 ³ / ₄	Bronze Metal, Dead Black.....	15.00
103B	Bronze Metal, Antique Brass.....	14.00
103NP	Bronze Metal, Nickel Plated.....	14.00



FIG. 2. IMPROVED EMPIRE DOOR HOLDER

GUARANTEE—When sashes are carefully weighted and our directions followed for putting them in, we guarantee the Balances to carry sashes perfectly.

IMPROVED EMPIRE DOOR HOLDER—This Door Holder (Fig. 2) is operated by a slight pressure of the toe. It has a Rubber Tip and Spring Action, which makes it particularly desirable for use on carpets, polished wood, or tile floors. Furnished in three sizes, Small, Medium and Large

CASEMENT HARDWARE COMPANY

17 Van Buren Street

CHICAGO, ILL.

TELEPHONE, HARRISON 783

PRODUCTS. Manufacturers of "HOLD-FAST" CASEMENT ADJUSTER and "HOOK-FAST" CASEMENT FASTENER.

FACILITIES. Our factory is situated in Chicago, and we can fill all orders from standard patterns within two weeks in any style of finish.

Special designs to fit special cases, or to harmonize with other work, can be made to suit particular architects.

APPLICATION. Our standard patterns will fit casement windows of usual detail, not less than $2\frac{1}{8}$ " between sash and screen—not over 1" between screen and face of apron.

INSTALLATION. Our Adjuster and Fastener can be applied to old or new buildings by any carpenter without removing the existing trim.



FIG. 1. HOUSE AT WINNETKA, ILL.
Fitted with "Hold-fast" Adjusters and "Hook-fasts"

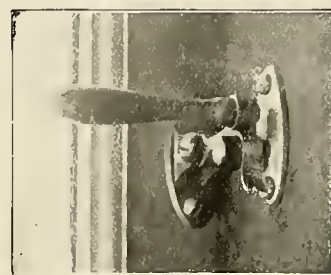


FIG. 2. "HOOK-FAST" FASTENER
Oval Pattern

THE
"HOLD-FAST"
CASEMENT
ADJUSTER.

The "Hold-Fast" (Fig. 3) is the only practicable adjuster operating and holding casement sash (outside or inside swing) securely at any angle from the inside of the window screen. It is simply a bent lever pivoted at "A," with tubular arm "B," in which the solid rod "C" slides as the sash is swung. Knuckle "D" is screwed to the sash. The bushing plate on the stool receives the pivot. The extension lever "F" is a rod screwed into "H" below the stool with a sliding brass sleeve and with a knob handle. Push in, to lock. Pull out, to swing. Plate "E" with scalloped slot is counter-sunk flush in the apron.

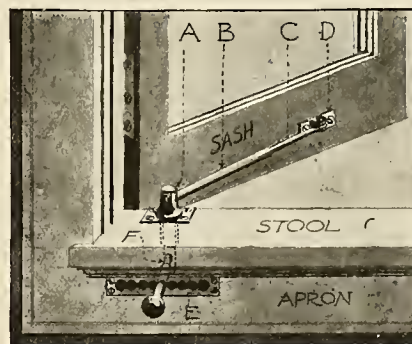


FIG. 3. "HOLD-FAST" ADJUSTER
Showing Sash, Half Open, Outside Swing, Left Hand

THE
"HOOK-FAST"
CASEMENT
WINDOW
FASTENER.

The "Hook-Fast" (Fig. 2) is the modern fastener for outside swinging casement sashes. It is simple, adjustable, easily handled, quickly locked, and won't work loose like a turn-buckle.

CHICAGO HARDWARE COMPANY

MAIN OFFICE
40 DEARBORN STREET
CHICAGO, ILL.

TELEPHONE, CENTRAL 623

FACTORY
NORTH CHICAGO
LAKE CO., ILL.

TELEPHONE, NORTH CHICAGO 88

PRODUCTS—Manufacturers of the NILES SCREWLESS SPINDLE SELF-ADJUSTING KNOBS AND LOCKS, and a complete line of BUILDERS' HARDWARE, embracing designs in all the various schools of Architecture.

FACILITIES—Our extensive line of hardware offers a selection to suit any purse or taste, ranging from the most simple hardware, suitable for the ordinary type of Dwelling House, to the higher grades required for Hotels, Office Buildings, etc. We are prepared to execute orders from Architects' Designs or from designs furnished by our own artists, special attention being given to the interpretation and execution of original work.

NILES LOCKS—The ingenious methods of construction employed in the manufacture of the Niles Locks and Knobs (Fig. 1) has eliminated the use of the side Knob Screws, Machine Screws, Spindles and Washers, with all their inefficiency and annoyance, and is the most perfect and practical method yet discovered in combining perfect adjustment and permanent utility.

Many devices have been offered to the public professing to have the above qualities, but in applying the most simple and mechanically correct principles in the construction of the Niles Locks and Knobs, a high degree of efficiency is secured, not hitherto attained.

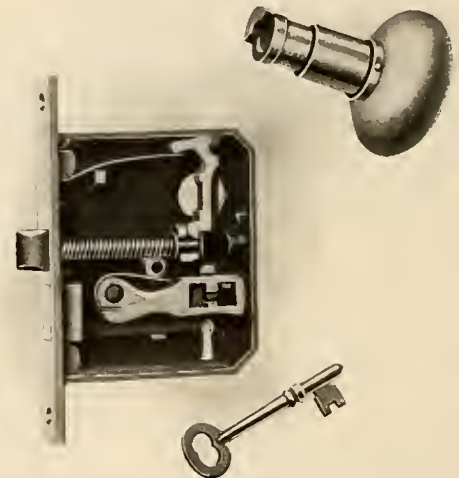


FIG. 1. NILES LOCK, SHOWING CONSTRUCTION.

BOWER-BARFF HARDWARE—We are one of the two manufacturers of Builders' Hardware who are making these goods by the scientific process patented under the name of Oxidized Iron or Bower-Barff Hardware. We have an extensive, modern furnace for this treatment, and we can give our customers the results of most approved methods. We guarantee that this product is the best that can be produced, and for use inside of buildings, to be rust-proof.

GOTHIC SCHOOL, WESTMINSTER DESIGN—The Gothic design, Westminster, illustrated on the next page, is one of our many stock designs, and is a good example of the high character of the Company's products. This design is suitable for Churches, Parish Houses, Lodge Rooms and any room treated in the Medieval School.

The most appropriate finishes in this style are, Genuine Bower-Barff on Iron or any Sand Finish on Copper or Brass.

Our complete catalogue of Builders' Hardware will be furnished on request.

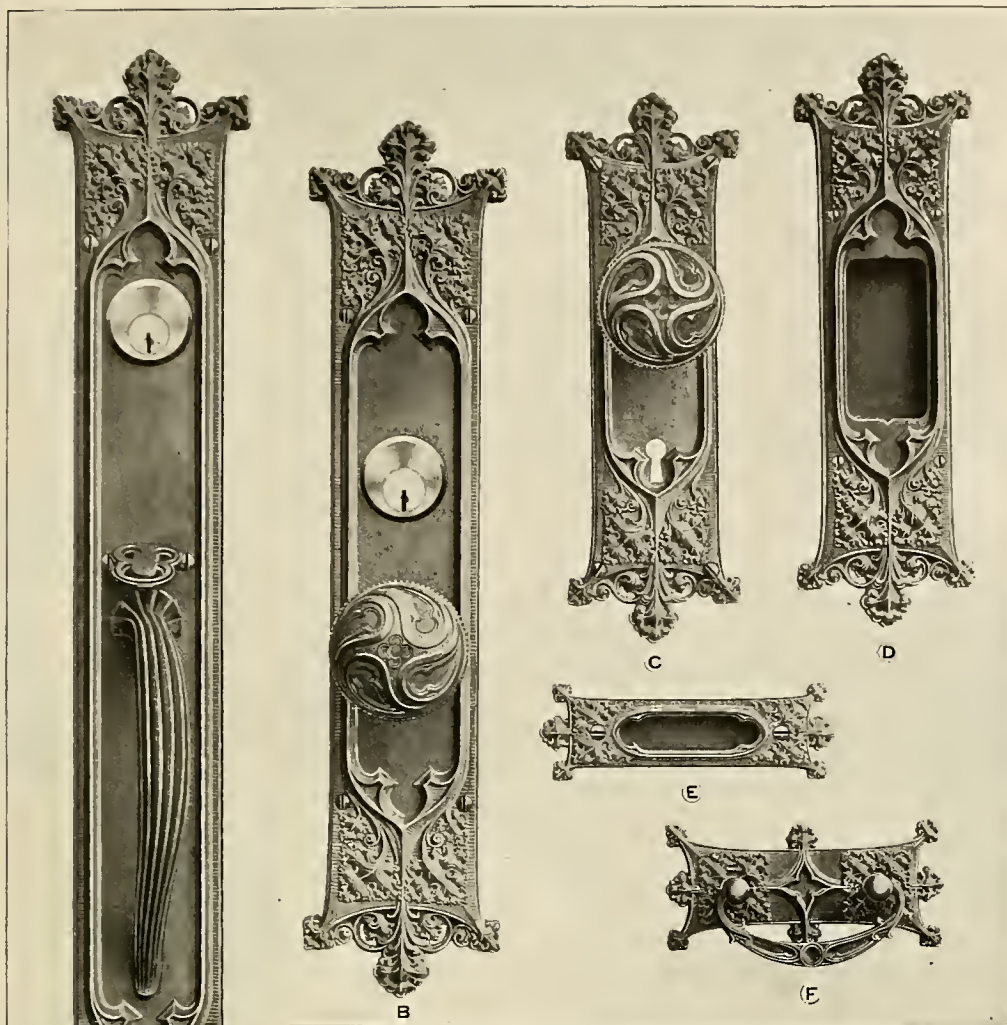


FIG. 2. GOTHIC SCHOOL, WESTMINSTER DESIGN

NUMBER	DESCRIPTION	SIZE		ANY SAND BRASS OR BRONZE FIN.	BOWER BARFF
974F	4 1/4 Inch Inside Lock Set.....	Esc 10 3/4 x 3 3/4	Per Set	\$ 5.00	\$ 4.00
9074A	Cylinder Front Door Set { Out Esc..	16 1/2 x 3 3/4	"	10.00	8.00
	{ In Esc ..	12 x 3 1/4	"		
3117x3274	Single Sliding Door Set } Esetns ...	11 x 3 3/8	"	4.50	3.50
3118x3274	Double Sliding Door Set }			10.00	8.00
4274	Flush Sash Lift.....	5 3/4 x 2	Per Doz.	8.00	6.50
4974A	Push Plate.....	22 1/4 x 3 3/4	Each	4.25	3.50
7030 1/2 x 7674	Store Door Set.....	22 1/4 x 3 3/4	Per Set	12.00	9.50
8074A-B-C	Set of Corner and Center Hinge Plates	{ Width on Style 3 3/4"	"	50.00	40.00
8274D	Drop Drawer Pull.....	5 1/4 x 2 1/2	Per Doz.	12.00	9.50

- A—Cylinder Store Door Handle
- B—Cylinder Front Door Knob and Escutcheon
- C—Inside Door Knob and Escutcheon
- D—Sliding Door Cup Escutcheon
- E—Flush Sash Lift
- F—Drop Drawer Pull

The prices given are subject to a liberal discount to the trade.

Space will not permit our showing all the articles we make in this design; we have therefore selected such pieces as are commonly called for, and if other pieces, such as Push Buttons, Letter Plates, Bar Lifts and Cabinet Hardware, are desired, we will furnish complete information upon application.

CHICAGO SPRING BUTT COMPANY

MANUFACTURERS OF
Hardware Specialties



CHICAGO
UNION PARK PL. & CARROLL AVE.
TELEPHONE MONROE 572

NEW YORK
126 CHAMBERS ST.
TELEPHONE CORTLANDT 361



PRODUCTS.

We are manufacturers of a complete line of patented SPRING HINGES, adapted to the requirements of automatic door operation. Our various types of Spring Hinges are of a recognized preferential nature with advantageous characteristic features distinctly their own, and are guaranteed in every respect. We are in a position to offer expert opinion on special Spring Hinge construction and to manufacture with special features, embodying ideas of architects and others.

Chicago Double Acting Spring Butts, No. 1½ (Fig. 1). This Hinge is constructed with greater leverage power than any Spring Hinge on the market; the power of the spring being taken in such a manner as to produce a free and easy movement of the door and at the same time an endurance of the hinge under excessive and violent use never equalled.

Chicago Double Acting Blank Butts, No. 3½ (Fig. 2). This hinge is for use in combination with the Chicago Spring Butt where doors are light or narrow and owing to the excessive power of the Spring Hinge this method can be employed satisfactorily as well as economically. We recommend the use of a pair of Chicago Spring Butts instead of a Spring Butt and Blank Butt on outside doors where subject to draught. Size description, same as Spring Butts.

Triple End Spring Butts, Double Acting, No. 2001, (Fig. 3). This Hinge in method of construction is a superior article in every detail. It is constructed on scientific principles embodied in no other Hinge, particularly its distinctive features of broad steel bearings and lug bushings, all case hardened, and the disassembly feature with ratchet locking device, originating and introduced on our product. This Hinge as constructed where solid bronze or brass metal is required is "in a class by itself" and fulfills the requirements, heretofore unaccomplished, of a Hinge in these metals that will indefinitely stand up to the work. Use as large a hinge as thickness of door will permit.

Triple End Spring Butts, Single Acting, No. 2002 (Fig. 4). This Hinge, for use on single acting doors, has the same advantageous features as the double acting Hinge. The lugs operate in a case hardened bushing, so constructed as to give an unusual broad bearing surface. The springs are of the best material obtainable, oil tempered with drawn hook ends thereby eliminating practically all breakage. This Hinge can be furnished, when so ordered, with reverse springs to throw the door open when released. Size description, same as for Double Acting Hinge.

For Doors

- 7/8 to 1 in.
- 1 1/8 to 1 1/4 in.
- 1 3/8 to 1 1/2 in.
- 1 3/4 to 2 in.
- 2 1/4 to 2 1/2 in.
- 2 3/4 to 3 1/2 in.
- 3 1/2 to 4 in.

FIG. 1
Chicago Spring Butt



FIG. 2
Chicago Blank Butt



Flange For Doors

- 3 in. 3/4 to 1 in.
- 4 in. 7/8 to 1 1/4 in.
- 5 in. 1 1/8 to 1 1/2 in.
- 6 in. 1 1/4 to 1 3/4 in.
- 7 in. 1 3/8 to 2 in.
- 8 in. 1 1/2 to 2 1/4 in.
- 10 in. 1 3/4 to 2 1/2 in.
- 10 in. 2 1/4 to 2 3/4 in.
- 12 in. 2 1/4 to 3 in.

FIG. 3
Triple-End Spring Butt, Double Acting



FIG. 4
Triple-End Spring Butt, Single Acting



Chicago Ball Bearing Floor Hinge, No. 5001 (Fig. 5). This Hinge possesses features of construction recognized for their practical advantages. It is constructed on recognized scientific principles throughout, having very broad ball bearings distributing weight and friction over a large area, providing ease of action and a minimum of wear. It has a unique tension adjustment requiring no special tool with a tension-pin locking device; neat in appearance and all that mechanical skill and ingenuity can devise. Where floors are tile or concrete, cast metal boxes are used to imbed in the floor into which the Hinge is held by machine screws.

For Doors
 $7\frac{1}{8}$ to $1\frac{1}{2}$ in.
 $1\frac{3}{8}$ to 2 in.
 2 to $2\frac{1}{2}$ in.
 $2\frac{1}{2}$ to $3\frac{1}{2}$ in.



FIG. 5
 Chicago Ball Bearing Floor Hinge

Triple End Lavatory Spring Hinge, Double Acting, No. 2241 (Fig. 6). This Hinge is adapted to all conditions and classes of lavatory construction. Being made of solid bronze or brass metal, we employ the same special construction as on our regular Triple End Hinge in these metals. The 4 inch flange Hinge is used for this work and the marble box flange is made for marble thickness as specified. We make specially constructed Hinges such as our Duplex (No. 2542), comprising two Single Acting Hinges applied to one partition marble box flange for right and left hand doors to same partition.



FIG. 6
 Triple-End Lavatory Hinge, Double Acting

Triple End Lavatory Spring Hinge, Single Acting, Adjustable, No. 2242 (Fig. 7). This Hinge has an adjustable marble box flange and is adjustable $\frac{1}{8}$ inch over and under the following sizes by which they are specified: 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", $1\frac{3}{4}$ ", 2". We recommend, for economy, the use of our Blank Hinge (No. 2244) in combination with the Spring Hinge (No. 2242) instead of a pair of Spring Hinges to the door. This product, when so ordered, can be furnished with reverse springs to throw the door open when released.

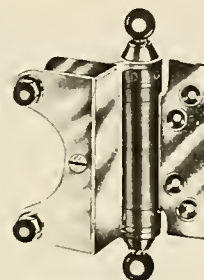


FIG. 7
 Triple-End Lavatory Hinge, Single Acting

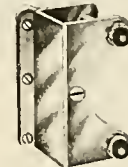


FIG. 8
 Clamp Partition Strike, Adjustable

Lavatory Strikes, Clamp Partition Strike, Adjustable, No. 1247 (Fig. 8). This strike has an adjustable marble box flange as on our No. 2242 Hinge and is specified in similar marble thicknesses. Where doors are not of the same thickness as the partitions, thickness of both should be given so that bumper may be constructed accordingly.

Lavatory Mortise Bolts, No. 1248 (Fig. 9). This mortise bolt is used in combination with strike (No. 1247), a mortise bolt hole being cut in the strike to receive the bolt. This article is a popular fitting for doors hung with our No. 2242 Hinge with reverse spring, throwing the door open when released and avoiding the use of an occupancy indicator.



FIG. 9
 Mortise Lavatory Bolt

Garden City Fire Engine House Spring Hinge, Surface Hinge No. 9 (Fig. 10). Mortise Hinge No. 19 (Fig. 11). This Hinge, as per illustrations, is made either as a surface or a mortise Hinge and is constructed especially for fire department doors where they are held shut and required to be thrown open when released. They are for use on either right or left hand doors and are made in three sizes: Stall Door, Front Door and Extra Heavy Front Door.



FIG. 10
 Garden City Surface Hinge



FIG. 11
 Garden City Mortise Hinge

Engine House Latch and Catch, No. 1229 (Fig. 12). This Latch is arranged to slide in a keeper against the action of a spiral spring, checking the force of the door as it strikes it and holding it against rebound. It is adapted for use with any doors thrown open with spring Hinges, but particularly with our Garden City Engine House Spring Hinge.



FIG. 12
 Engine House Latch and Catch

AS TO
 ORDERING.

The product of this Company is standard in size and finished in the various regular standard finishes of which complete stocks are carried by the Builders' Hardware Trade of the larger cities of the country. Any special finishes can be furnished on short notice to match other hardware of special finish.

It is only necessary to specify the style of Hinge required by number, size and finish, as the Hardware Trade are in possession of lists, finishes and all data pertaining to our complete line of product.

P. & F. CORBIN

Builders' Hardware

WORKS AND GENERAL OFFICES
NEW BRITAIN, CONN.

WAREHOUSES AND SAMPLE ROOMS

NEW YORK CITY, N. Y.

PHILADELPHIA, PA.

CHICAGO, ILL.

PRODUCTS.

BUILDERS' HARDWARE, BUTTS, PIVOTS, STAY or SUPPORT HINGES, FLUSH BOLTS, BARREL BOLTS, EXTENSION BOLTS, FOOT BOLTS, DOOR STOPS, DOOR HOLDERS, TURN BUCKLES, LETTER BOX PLATES, HOUSE BELLS, PUSH BUTTONS, BELL PULLS, DOOR KNOCKERS, SWITCH PLATES, CASEMENT FASTENERS, NAME PLATES, LOCK SETS, DOOR PULLS, PUSH PLATES, MORTISE LOCKS, CORBIN UNIT LOCKS, T. HANDLES, SKYLIGHT and TRANSOM LIFTERS, etc., etc.

BUILDERS' HARDWARE.

Attention is called to the complete line of Hardware manufactured and the study given to the production of artistic designs in keeping with the different schools.

Our 1905 Catalogue contains, carefully classified, the different goods manufactured. The latest and most improved cylinder lock on the market is manufactured by us.

Great care has been given to the assembling of this large line with a view of mentioning everything necessary to equip any kind or style of building that may be erected.

SCHOOL OF DESIGNS.

Schools of designs embrace Adams, Colonial, Elizabethan, Empire, Flemish, Francis I., French Renaissance, Gothic, Greek, Italian Renaissance, L'Art Nouveau, Louis XIV., Louis XV., Louis XVI., Moorish and Plain. These designs are furnished in all the different finishes.



FIG. 1. CORBIN UNIT LOCK, No. 2067

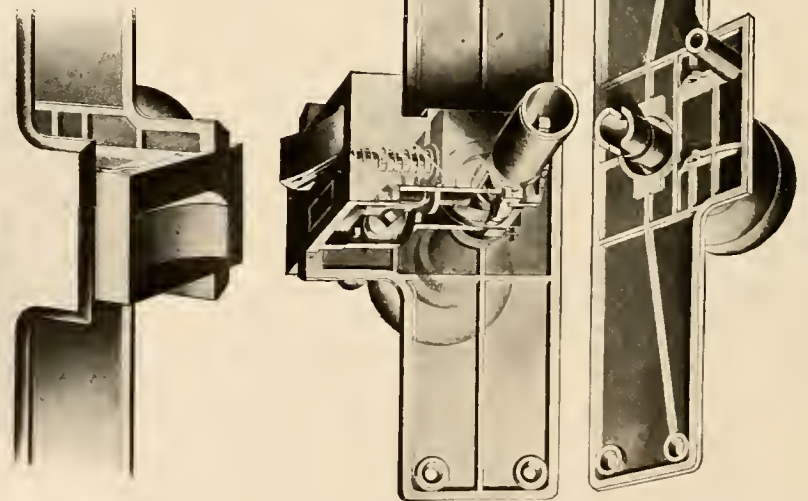


FIG. 2. CORBIN UNIT LOCK, No. 2045
Transparency One-Third Size

CORBIN UNIT LOCKS.

These locks are furnished complete with knobs as shown on pages 605 to 611 and 678 to 1040 of our catalogue. They are not furnished except in complete form, since they are assembled and adjusted when made, and are applied to the door without further adjustment, except as to the thickness of doors. The inside escutcheon permits of an adjustment of about one-half inch.

The transparency shows mechanism of No. 2045 front door lock, and also shows the main features of construction of all Corbin Unit Locks.

THE H. B. IVES COMPANY

11 to 17 Artizan Street
NEW HAVEN, CONN.

NEW YORK OFFICE, JOHN H. GRAHAM & CO., 113 CHAMBERS STREET. TELEPHONE, 2250 FRANKLIN

PRODUCTS—Manufacturers of WINDOW HARDWARE SPECIALTIES:

IVES PATENT WINDOW STOP ADJUSTER, THE IVES WINDOW VENTILATING LOCK, IVES PATENT SASH LOCKS, THE CRESCENT SASH FASTENER and other specialties in Builders' Hardware.

SPECIAL FEATURES—The goods manufactured by us are furnished in all standard and special finishes, on iron, steel, brass or bronze metal, as may be specified. All regular finishes are carried in stock by the leading hardware dealers.

All goods are packed with screws to match. Mounted samples and further data in regard to Window Hardware Specialties free on application.

IVES PATENT WINDOW STOP ADJUSTER—For windows and sliding doors. Its use insures perfect protection from cold draughts, dust, rattling or binding. It is the only stop adjuster made from one piece of metal that will not cup or bend in tightening the screw.

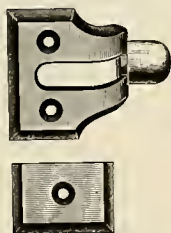


IVES PATENT WINDOW STOP ADJUSTER

POLISHED, PLAIN BRONZE OR BRASS

No.	Per Gross
734	Bronze Metal, Highly Finished.....\$2.90
735	Brass Metal, Highly Finished..... 2.90
742	Nickel Plated 3.20
750	Antique Copper Finish..... 3.15
750½	Antique Copper, Sand Finish..... 3.40
751	Brass Metal, Light, Old Metal Finish..... 3.15
751½	Brass Metal, Sand Finish..... 3.40
752	Brass Metal, Antique Finish..... 3.15
754	Bronze Metal, Oxidized Silver Finish..... 8.00
754½	Bronze Metal, Silver Plated..... 8.00
754¾	Bronze Metal, Satin Silver Finish..... 9.50
755	Bronze Metal, Gold Plated.....20.00

THE IVES VENTILATING LOCK—The latest and best device for ventilation, allowing windows to be left open at the top, the bottom, or both the top and bottom with entire security against intrusion. Just the thing for apartment houses, sleeping rooms, etc. Easily applied, simple, strong, safe and quickly operated.



IVES VENTILATING LOCK

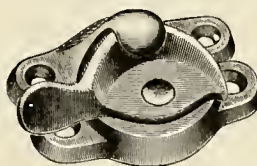
No.	Per Doz.
033	Plain Iron, Bronzed, with Bronze Metal Knob..\$2.50
039	Plain Iron, Electro Copper Plated, Antique.... 3.25
048	Plain Iron, Polished, Bower Barffed, with Bronze Metal Knob 4.00
049	Plain Iron, Polished, Electro Copper plated, Antique 4.00
034	Plain Bronze Metal, Highly Polished..... 6.00
050	Plain Bronze Metal, Antique Copper Finish.... 6.50

SPECIFICATIONS—Architects in specifying should use numbers and the word "IVES," which is copyrighted, to prevent the substitution of inferior goods."

THE CRESCENT SASH FASTENER—This fastener is well known, having been on the market for a number of years. It has the reputation of not only being the best, but the most ornamental of all fasteners.

In addition to finishes mentioned below, we can supply it in ornamental iron, polished and unpolished, and polished ornamental bronze.

The genuine Crescent Sash Fasteners are easily recognized by our Trade-Mark as shown



The Crescent SASH FASTENER

CRESCENT SASH FASTENER

Trade-Mark, Registered

No.	ORDINARY SIZE UNPOLISHED, PLAIN IRON	Per Doz.
831	Bronzed	\$1.00
832	Copper Bronzed	1.10
833	Bronzed, with Bronze Metal Lever	2.34
839	Electro Copper Plated, Antique	1.53
839½	Electro Brass Plated	1.53
839¾	Electro Copper Plated, Antique, Sand Finish	1.65
839¾	Electro Bronze Plated	1.53
846	Bower Barffed	2.34
POLISHED, PLAIN IRON		
833½	Electro Brass Plated	2.70
833¾	Electro Bronze Plated	2.70
840	Nickel Plated	2.90
844	Boston Finish	2.34
848	Bower Barffed	3.30
849	Electro Copper Plated, Antique	2.90
849½	Electro Copper Plated, Antique, Sand Finish	3.20
POLISHED, PLAIN BRONZE OR BRASS		
834	Bronze Metal, Highly Finished	5.50
835	Brass Metal, Nickel Plated	5.50
842	Bronze Metal, Nickel Plated	6.10
850	Bronze Metal, Antique Copper Finish	6.10
850½	Bronze Metal, Antique Copper, Sand Finish	6.40
851	Brass Metal, Light, Old Metal Finish	6.10

No.	LARGE SIZE UNPOLISHED, PLAIN IRON	Per Doz.
931	Bronzed	\$1.58
932	Copper Bronzed	1.75
933	Bronzed, with Bronze Metal Lever	3.50
939	Electro Copper Plated, Antique	2.25
939½	Electro Brass Plated	2.25
939¾	Electro Copper Plated, Antique, Sand Finish	2.48
939¾	Electro Bronze Plated	2.25
946	Bower Barffed	2.70
POLISHED, PLAIN IRON		
933½	Electro Brass Plated	4.25
933¾	Electro Bronze Plated	4.25
940	Nickel Plated	4.50
944	Boston Finish	3.50
948	Bower Barffed	4.60
949	Electro Copper Plated, Antique	4.50
949½	Electro Copper Plated, Antique, Sand Finish	4.85
POLISHED, PLAIN BRONZE OR BRASS		
934	Bronze Metal, Highly Finished	8.20
935	Brass Metal, Highly Finished	8.20
942	Bronze Metal, Nickel Plated	8.80
950	Bronze Metal, Antique Copper Finish	8.80
950½	Bronze Metal, Antique Copper, Sand Finish	9.25
951	Brass Metal, Light, Old Metal Finish	8.80

LAWSON MANUFACTURING COMPANY

MAIN OFFICE
40 Dearborn Street
CHICAGO, ILL.

BRANCH OFFICES

101 Reade Street, New York City, N. Y.

738 Mission Street, San Francisco, Cal.

PRODUCTS.

Manufacturers of the PATENTED MATCHLESS DOUBLE ACTING FLOOR SPRING HINGE; BALL-BEARING, MATCHLESS PIVOT HINGE; and THE MATCHLESS AUTOMATIC BURGLAR-PROOF WINDOW VENTILATING LOCK.

FINISH.

Finished in the standard finishes, to correspond with other hardware.

INSTRUCTIONS AS TO ORDERS.

The Matchless Hinges can be furnished without the side plates, by using an invisible door shoe, but unless otherwise ordered, the side plates will be shipped.

INSTALLATION.

Matchless Hinges are correctly set up for doors specified, and require no adjusting, but provision has been made for adjusting tension if required. They can be installed by any intelligent workman.

DOUBLE ACTING FLOOR HINGE.

The Matchless Double Acting Floor Spring Hinge (Fig. 1) is especially adapted for churches, banks, public buildings, vestibules, butlers' pantries and outside doors. They are constructed of the best material, and their ball-bearings insure a minimum of friction. Doors fitted with these Hinges operate easily and without noise; being pivoted top and bottom, they cannot sag. When desired, we can furnish these Hinges with pintle raised for $\frac{1}{2}$ or $\frac{3}{8}$ inch threshold.

DIMENSIONS.

No. 12—Top Plate, $4\frac{1}{4} \times 4\frac{1}{4}$ inches	Extreme Depth of Hinge, $3\frac{1}{2}$ inches
No. 13—Top Plate, $4\frac{1}{2} \times 4\frac{1}{2}$ inches	Extreme Depth of Hinge, $3\frac{1}{2}$ inches
No. 14—Top Plate, 5 x 5 inches	Extreme Depth of Hinge, $3\frac{1}{2}$ inches
No. 15—Top Plate, $5\frac{1}{2} \times 5\frac{1}{2}$ inches	Extreme Depth of Hinge, 4 inches
No. 16—Top Plate, $6\frac{1}{2} \times 6\frac{1}{2}$ inches	Extreme Depth of Hinge, 4 inches

PIVOT HINGE.

The Matchless Pivot Hinge (without springs) (Figs. 2 and 3) is adapted for all sizes of doors, varying from small secret and cabinet doors to extra heavy ones, weighing up to 2,500 pounds.

CAST METAL BOXES.

Where Matchless Hinges and Pivots are used in cement, concrete or tile floors, Cast Metal Boxes can be furnished to place in floor.

WINDOW VENTILATING LOCK.

The Matchless Automatic Burglar-Proof Window Ventilating Lock (Fig. 4) is constructed of wrought metal, and is strong and effective. It permits the window to be opened 6 inches either at the top or bottom for ventilation, but it cannot be forced from the outside.

PRICES.

Prices and further information can be furnished on application.



FIG. 1. DOUBLE ACTING FLOOR SPRING HINGE

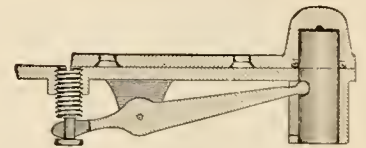


FIG. 2. PIVOT HINGE
Sectional View of Top Attachment

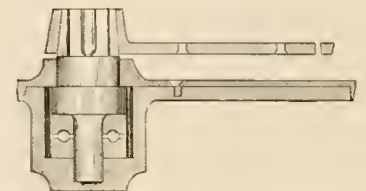


FIG. 3. PIVOT HINGE
Sectional View



FIG. 4. WINDOW VENTILATING LOCK
Patented May 23d, 1905

ELJER CO.

MANUFACTURERS OF

Eljer Flushing Valve, etc.

67 Hamilton Street

NEWARK, N. J.

PRODUCTS.

ELJER FLUSHING VALVE for Water Closets. ERDA and ALBA combination Wash-down Bowl with ELJER FLUSH VALVE.

ELJER FLUSHING VALVE.

The Eljer Flushing Valve is a valve which allows a determined amount of water (which may be adjusted to suit varying conditions) to flow directly from the roof or attic tank through the bowl. The valve automatically closes when this amount has passed through. All closets in the building may be supplied from the one tank, thus dispensing with separate tanks for each closet, and incidentally the siphon, siphon valve, float, and float valve of each tank.

As the wooden tank is often foul and damp and contains some stagnant water, it will be easily seen that the Eljer Valve is far more sanitary. By doing away with the tank it also does away with the gurgling of the siphon and rush of water down the flush pipe, making an almost noiseless closet.

The entire valve is less than 5 inches high, and is symmetrical. It is highly nickled and makes a very handsome fixture.

The Eljer Valve contains no pistons, cup leathers, or other close working parts that cause friction. For this reason it is not affected by corrosion nor gritty and dirty water. This is a very important advantage over any other flushing valve. Will work on any pressure and contains no springs.

The valve opens and closes by means of a weighted lever and independently of the water pressure. The same valve that works on 100 pounds pressure will work equally well on 5 pounds.

THE ERDA WITH CONCEALED ELJER FLUSH VALVE.

The Erda is a full vitreous closet, is quiet, and has a very strong flush. The Eljer Valve used and method of concealing it are the same as in our Alba, Amaranth, and other more costly closets.

Where an inexpensive closet with the sanitary advantages of this construction is desired, this fixture is recommended.

THE ALBA WITH CONCEALED ELJER FLUSH VALVE.

The supply to the flush rim and jet is low, so that the noise of expelling air is obviated. We believe that with the present development of sanitary science, the Alba is the most noiseless closet that can be produced.

The valve used has exactly the same interior parts as our regular exposed Eljer Valve. It has all the advantages of and is as simple and reliable in every way as that valve. All parts can be lifted out together by removing the cap from the rear wall of the closet.

The large water area, deep seal, and full vitreous quality of the ware, together with the removal of all valves, flush pipes, or metal parts (which are liable to foul) from the top of the bowl, place the Alba without a competitor and make it a necessity for the highest class work. Furnished with or without sanitary screw floor flange.

AMERICAN PORCELAIN COMPANY

NEW BRIGHTON, PA.

NEW YORK CITY OFFICE

101 Beekman Street

PRODUCTS.

THE AMERICAN PORCELAIN COMPANY are manufacturers of "PERFECTION" SOLID PORCELAIN, KITCHEN, PANTRY and SLOP SINKS, LAUNDRY TRAYS, LAVATORIES, ACID-PROOF TANKS, ETC.

COLOR.

Our "PERFECTION" SOLID PORCELAIN WARE is usually made in white. All shapes which we make for pantry, kitchen and laundry installation are also made with *cane color outside*, interior and rims only being white. This is especially valuable where the interior finish of these rooms is in natural wood.

ILLUSTRATIONS.

The following illustrations are fairly representative of our line of manufactures and are presented with the aim to give architects a general idea of our class of products.



OVAL LAVATORY ON PORCELAIN PEDESTAL,

33x24 inches

Also made with fluted pedestal



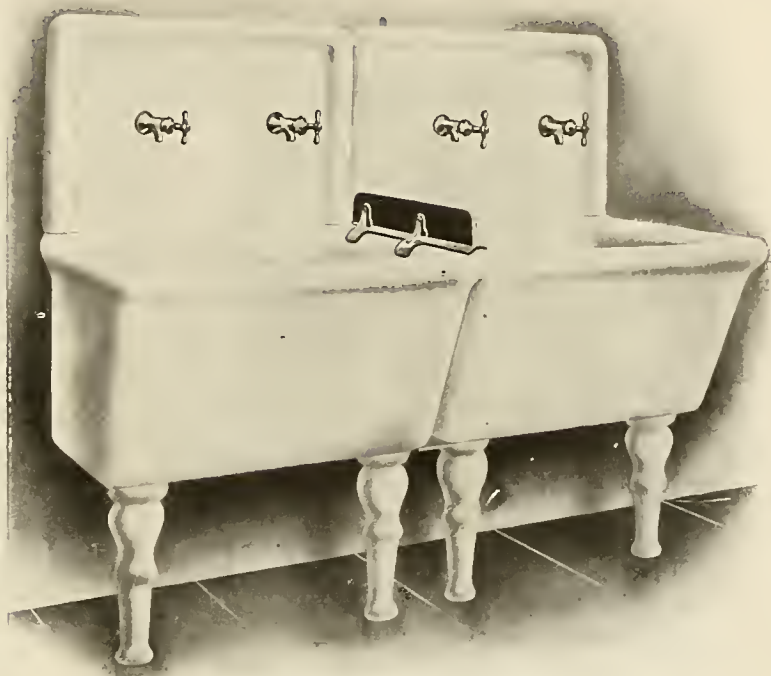
OFFICE LAVATORY, WITH SOLID BACK

20x20 inches



THREE-QUARTER ROLL-RIM LAVATORY

No. 1, Square Lavatory, 24x22; No. 1, Wall Back, 24x12; No. 2, Square Lavatory, 26x21; No. 2, Wall Back, 29x12.



THREE-QUARTER ROLL-RIM LAUNDRY TUBS.

24 inch

29 inch



CORNER LAVATORY WITH SOLID BACK

Length of sides, 19½ inches; extreme width, 28 inches; corner of wall to front, 25 inches. Made also with flat back to recess in tiling.



THREE-QUARTER ROLL-RIM KITCHEN SINK

All measurements outside except depth, which is inside. 24x17x6, 30x20x7, 36x22x7, 42x24x7, 48x24x7. Also made of all roll-rim. Also furnished with tinned or bronzed iron legs.



THREE-QUARTER ROLL-RIM SLOP SINK
20x16x12, 22x18x12, 24x20x12



CONCAVE LAVATORY WITH SOLID BACK
26x21 inches

SPECIFICATIONS.

Architects who wish to guard themselves and their clients and insure that no substitute can be made for the American Porcelain Company products, should incorporate the following words in their specifications of our goods; giving catalogue plate number: "Plate (—) All White Perfection Solid Porcelain Ware, or Plate (—) White and Cane Perfection Solid Porcelain Ware" as the case may be.

PRICES.

"Perfection" Solid Porcelain Ware is handled by all legitimate jobbing houses throughout the United States; any or all of whom will cheerfully furnish estimates of cost. Catalogue, with standard Price List attached, will be promptly furnished on application to either our New York City office, 101 Beekman St., or to our home office at New Brighton, Pa.

HAINES, JONES & CADBURY CO.,

Sanitary Plumbing Fixtures

PHILADELPHIA, PA.

MAIN OFFICES AND SHOW ROOMS

1130-44 Ridge Avenue

PRIVATE BRANCH TELEPHONE EXCHANGES

Keystone, Main 800

Bell, Poplar 2173

FACTORIES AND MAIN WAREHOUSES

1111-17 Buttonwood Street

1112-22 Buttonwood Street

1123-35 Hamilton Street

503-13 N. Twelfth Street

BRANCH OFFICES, WAREHOUSES AND SHOW ROOMS

Congress and Montgomery Streets

SAVANNAH, GA.

Telephones: Bell, 713; Georgia, 933

410-18 McAllister Street

SAN FRANCISCO, CAL.

Telephone, South, 937

Iron Foundry, NORRISTOWN, PA.

PRODUCTS.

Manufacturers of SANITARY PLUMBING FIXTURES and HIGH GRADE PLUMBING SPECIALTIES. We also manufacture a full line of PLUMBING BRASS GOODS, CAST-IRON SOIL PIPE and FITTINGS.

FACILITIES.

Our factories are well equipped with machinery and skilled workmen, and we have every facility for promptly handling orders of any size, for plumbing supplies of every description, whether for the smallest dwelling house, or the largest Hotel, Factory, Office Building, or Institution.

We carry in stock for immediate delivery, alike at Philadelphia, Savannah, and San Francisco, a very complete line of sanitary plumbing fixtures.

TERRITORY.

The operations of this Company cover the New England, Middle Atlantic and Southern States, and also the Pacific coast. Our Branch Offices and Warehouses at Savannah, Georgia, and at San Francisco, California, as well as our Main Office and Warehouses in Philadelphia, enable us to distribute our product from these centres at advantageous prices and under favorable freight conditions.

ADAPTABILITY OF PRODUCTS.

Our goods conform to the usual recognized standards of size, thread, etc. We are in a position to furnish the particular styles of water closets, cisterns, traps, vents, soil pipe and fittings, and other special fixtures required by the Boards of Health of Philadelphia, New York, Trenton, and other cities.

We also manufacture special lines of brasswork and of soil pipe fittings to suit the customary requirements of the Pacific Coast trade.

INSTRUCTIONS AS TO ORDERS.

In ordering, each fixture required should be specified as per description given in the following pages, or in accordance with the description in our illustrated Catalogue. Where the fixture is illustrated in more than one size, the size required should be specified. In addition, the Catalogue plate number should always be mentioned.

Our supplies are sold at wholesale only through the plumbing trade, to whom alone trade quotations will be made. The prices named in our Catalogue may, however, be used for reference, giving the approximate value of the various styles of fixtures. We are always glad to furnish information to Architects and others as to the styles of fixtures suitable for various kinds of work, and can often make suggestions, by means of which difficult conditions may be overcome and unnecessary expense saved.

We also particularly recommend that whenever possible Architects and their clients call at our large and complete Show Rooms, where an actual inspection of the various styles of fixtures will be found much more satisfactory than a selection made from Catalogue illustrations. We have competent salesmen to wait on clients, and no obligation is incurred by such a visit.

FACTS IN REGARD TO INSTALLATION.

While our goods are simple and without complicated parts, we earnestly recommend the employment of experienced and competent plumbers to install them; the best fixtures may be rendered unsatisfactory by not being properly installed.

GUARANTEE.

The goods of the Haines, Jones & Cadbury Company all carry our guarantee. They are the best which experience, care and ample equipment can produce. It is especially important that plumbing fixtures should be absolutely reliable, as the use of imperfect goods may result in the ill-health of those living in contact with them. Architects should specify the products of the Haines, Jones & Cadbury Company because our firm has been manufacturing plumbing goods for nearly fifty years, and enjoys the reputation of giving only strictly reliable goods at prices as low as is consistent with the quality of the material furnished.

Our goods are suitable for use in every kind of building in which plumbing supplies are required. We have special designs, built extra strong, which are adapted for the severe use of factories, prisons and asylums, as well as regular styles for general use and the extra fine grades for handsome residences, etc.

Our products are known by distinctive trade names. In addition to those named in the following pages, we have a very large variety of every kind of fixture suited for every purpose, a complete list of which can be found in our Catalogue M, Architects' Edition, a book of over four hundred pages, which will be forwarded to those interested, on request.

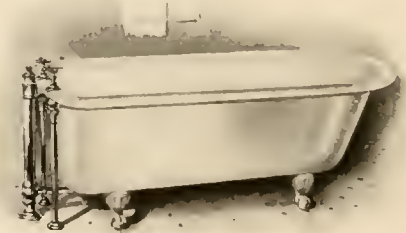
Many of our goods bear the following trade mark, in the form of a label or otherwise.



TRADE MARK

"LIBERTY" ENAMELED IRON ROLL RIM BATH. PLATE 153 M.

With 3-inch roll rim, exterior unfinished, with "Electric" waste with china index and No. 1 "Liberty" combination supply fixture through rim with top nozzle and No. 4 C. china index handles, and 1/2-inch supply pipes, iron pipe size, all nickel-plated.



Dimensions—Length over rim, 48 inches, 55 inches, 61 inches, 67 inches, and 72 inches; width over rim 30 1/2 inches; height, 22 1/2 inches. Fixtures require a space of 4 inches.

Sizes	4 ft.	4 1/2 ft.	5 ft.	5 1/2 ft.	6 ft.
Bath only	\$24.00	\$24.00	\$27.00	\$30.75	\$35.25

Add for fixtures as described.....\$19.00
 Add for No. 1 exterior white finish.....\$11.00

PLATE 153 M. "LIBERTY," ENAMELED IRON, ROLL RIM BATH

The "Liberty" bath is not only handsome in appearance, but having straight sides and a steep slope at the head, it is roomy inside, giving a maximum of actual bathing space in proportion to the amount of floor space occupied. The flat bottom is a feature very much appreciated.

The "Liberty" combination supply fixture, shown above, goes through the rim, where it is convenient of access without being in the way of the bather.

The "Liberty" bath may also be equipped with various other styles of fixtures. For illustrations see pages 22 to 32 in our Catalogue M.

**"POINTER"
ENAMELED
ROLL RIM BATH.
PLATE 190 M.**

With 2 $\frac{1}{4}$ -inch roll rim, exterior unfinished, with "Electric" waste with china index, and $\frac{5}{8}$ -inch compression double bath cock 6 $\frac{1}{2}$ inches centre to centre, and $\frac{3}{4}$ -inch supply pipes. All fixtures nickel-plated.

Dimensions—Length over rim, 48 $\frac{1}{2}$ inches, 54 $\frac{1}{2}$ inches, 60 $\frac{1}{2}$ inches and 66 inches; width over rim, 28 $\frac{1}{2}$ inches; height 22 $\frac{1}{2}$ inches. Fixtures as shown require a space of 4 inches.

Sizes 4 ft. 4 $\frac{1}{2}$ ft. 5 ft. 5 $\frac{1}{2}$ ft.

Bath only \$21.75 \$21.75 \$24.00 \$27.75

Add for fixtures as described (not including shower) \$14.00

Add for No. 1 portable shower, with 5 inch rain shower, rubber tube, ring and curtain as shown.....\$15.00

The "Pointer" bath presents many of the same practical features as the "Liberty" bath, including the flat bottom.

Many other styles of bath tubs, including the "Geneva," "Romano," "Franco," "Superbo," "Rangeley," "Grasmere," "Windermere," "Garda," "Cambrian," "Astoria," "Cayuga," "Aldine," "Civic," "Orient," "Occident," "Narrowene," "Frugal," "Pacific," "Atlantic," "Montauk," and "Nursery," will be found illustrated in our Catalogue M; also illustrations and descriptions of fancy exterior decorations.

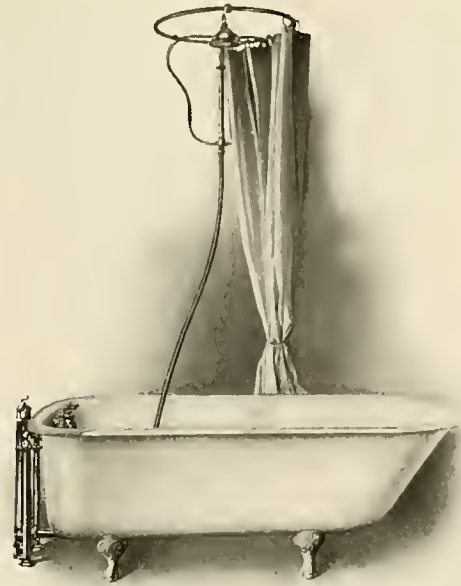


PLATE 190 M. "POINTER" ENAMELED ROLL RIM BATH

**NICKEL PLATED
"EQUALITY"
SHOWER.
(Patented)
PLATE 441 M.**

With $\frac{1}{2}$ inch supply pipes and $\frac{1}{2}$ inch "Equality" non-scalding single lever mixing valve, with China lever handle, 32x27 inch oval curtain ring, white duck or rubber curtain, hook and chain, and 8 $\frac{1}{2}$ inch tubular shower...\$44.50

Plate 443 M. Not illustrated. Shower as above, but without curtain ring and curtain, and with 5 inch rain shower and swing joint.....\$26.00

If with shampoo attachment, add.....\$ 5.00

The "Equality" shower, being operated by a single lever, is simple but efficient. For private residence work it is unexcelled, while for public baths and similar places its proved durability and simplicity make it a very desirable fixture.



PLATE 441 M. "EQUALITY" NICKEL PLATED SHOWER (Patented)

**NICKEL
PLATED
"SANITARIUM"
SHOWER AND
NEEDLE BATH.
(Patented)
PLATE 460 M.**

Wide side needles, 8 inch rain shower, removable face and air inlet valve, connecting pipes, and instantaneous reversible supply fixture with pressure gauge, thermometers, nozzles and rose sprays, all nickel-plated.

Price, not including stall and mounting slab for supply fixture\$300.00

Shower stall of Italian or Tennessee marble or slate, 6 feet 6 inches high, 3 feet 2 inches square, with 1 $\frac{1}{2}$ inch countersunk base, $\frac{7}{8}$ inch sides and nickel plated clamps and floor strainer, also $\frac{1}{2}$ inch mounting slab, 6 feet 6 inches high and 3 feet wide, extra. Prices on application.

The "Sanitarium" bath is intended for use in hydrotherapeutic institutions, hospitals, etc.

We are fully equipped for making to order special needle and shower baths of every description, and to submit suggestions for combinations to suit special requirements. In our catalogue M, twenty pages will be found devoted to shower fixtures of various styles.

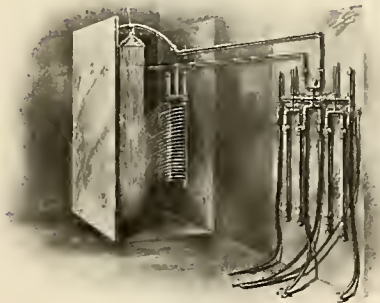


PLATE 460 M. "SANITARIUM" NICKEL PLATED SHOWER AND NEEDLE BATH (Patented)

"HAJOCA"
VITREO
FANCY FRONT
LAVATORY.
(Patented)
PLATE 615 M.

On No. 19 brass legs with wall cleats, "Hajoca" waste with large overflow and style "G" china lever, and Fuller combination supply fixture with style "H" china levers, 1/2 inch supply pipes, iron pipe size, and 1 1/2 inch "Hajoca" trap to floor, all nickel-plated.

Sizes, inches	30X24	33X24
Price as described	\$63.00	\$65.50

The "Hajoca" Lavatory as above may be furnished with compression combination supply fixture with No. 5 C index handles with China arms (Plate 616 M) in place of Fuller fixtures, at \$1.75 extra.

For Vitreo legs in place of nickel plated, add \$2.00.

For sectional view of the "Hajoca" basin see Plate 820 M below.

Vitreo lavatories, in addition to their beauty and symmetry, are very durable and sanitary and have a heavy rich gloss. For illustrations of other styles of Vitreo lavatories, see pages 76 to 88 in our catalogue "M."

"HAJOCA"
BASIN AND
NICKEL PLATED
"HAJOCA"
WASTE.
(Patented)
PLATE 820 M.

Plate 820 M shows in detail the construction of the "Hajoca" basin for use with marble lavatories. The same features will also be found in the "Hajoca" Vitreo Lavatories (Plate 615 M.) and the "Hajoca" enameled Lavatories (Plate 908 M.). The waste and overflow outlets are extra large, rendering impossible the accidental overflowing of the basin, which frequently occurs where the outlets are not of sufficient size, resulting in expensive damages to ceilings, etc. The overflow grate and outlet strainer being removable, every part of the basin and overflow is accessible for cleaning.

The "Hajoca" basin may be equipped with "Hajoca" waste and separate basin cocks, as shown herewith, or with compression or Fuller combination supply fixtures, or it may be equipped with rubber stopper and chain instead of "Hajoca" waste.

Illustrations of marble lavatories equipped with "Hajoca" basin will be found on pages 105 to 111 in our catalogue "M," the complete outfits varying in price from \$45.00 up.

"HAJOCA"
ENAMELED
ONE PIECE
LAVATORY.
(Patented)
PLATE 908 M.

Enameled inside only, with enameled back and aprons and concealed iron wall hanger, with 12x15 inch "Hajoca" basin and "Hajoca" waste and compression combination supply fixture with No. 1 C china index handles, 1/2 inch supply pipes, iron pipe size, to wall, and 1 1/2 inch "Hajoca" trap to wall, all nickel-plated.

Sizes, inches	24X20X12	27X22X12
Lavatory complete as described..	\$42.50	\$44.75

If with "Hajoca" compression basin cocks with No. 1 C China index handles (Plate 912 M) deduct \$5.50.

If with rubber stopper and chain and "Hajoca" basin cocks in place of "Hajoca" waste (Plate 914 M) deduct \$9.00.

The "Hajoca" enameled lavatory is made in one piece, without joints. For sectional view of basin see Plate 820 M.

Many other styles of lavatories will be found illustrated in our catalogue "M," including the following:

Vitreo Lavatories — "Diana," "Minerva," "Juno," "Ceres," "Circe," "Proserpine," "Hebe," "Calypso" and "Cytherea."

Regal Porcelain Lavatories— "Duchess," "Princess," "Marchioness," "Czarina," "Sultana," "Victress," "Countess," "Baroness," "Enchantress," "Directress" and "Governess."



PLATE 615 M. "HAJOCA" VITREO, FANCY FRONT LAVATORY

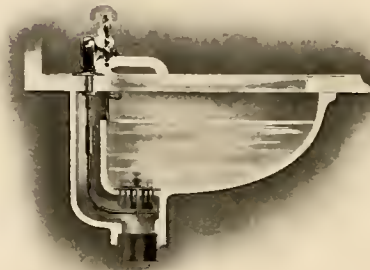


PLATE 820 M. "HAJOCA" BASIN AND NICKEL PLATED "HAJOCA" WASTE Sectional View



PLATE 908 M. "HAJOCA" ENAMELED ONE-PIECE LAVATORY

Marble Lavatories—"Mexico," "Evelyn," "Gladys," "Traymore," "Pointer," and "Electric."
Enameled Lavatories—"Madeline," "Marion," "Corinna," "Janet," "Mildred," "Antoinette," "Cordelia," "Cecilia," "Sylvia," "Ophelia," "Priscilla," "Louise," "Lillian," "Ethel," "Elinor," "Agnes," "Ariadne," "Helena," "Lucretia," "Isabel," "Edith," "Esther," "Dora," "Lena," "Barbara," "Rosalind," "Leonora," "Evangeline," "Caroline," "Elizabeth," and "Emily."

"HYGIENIC"
 REGAL
 PORCELAIN
 DRINKING
 FOUNTAIN.
 PLATE 1104 M.

On bronzed iron standard, with wheel handle self-closing controlling valve, brass jet, strainer, waste and supply pipes to the floor and lock key stop, all nickel-plated.

Dimensions—Height, 30 inches; diameter of bowl, 13½ inches.

Price as described\$30.00
 The sanitary features of the "Hygienic" drinking fountain commend it for use in schools, railway stations, etc. The water supply issues as a miniature fountain from the top of the brass jet pipe, the user drinking from the top of the spray. Thus all contact with the metal parts is avoided and all danger of contagion is removed.

The "Hygienic" drinking fountain is also furnished without self-closing controlling valve (Plate 1105 M) at \$27.50.

A variety of styles of drinking fountains will be found in our catalogue "M," pages 155 to 160.



PLATE 1104 M. "HYGIENIC" REGAL DRINKING FOUNTAIN

"REGULO"
 PLAIN VITREO
 SYPHON JET
 CLOSET.
 PLATE 1454 M.

With "Hajoca" floor plate and bolts, No. 400 "Ivoroid" seat and cover attached to closet, No. 400 "Ivoroid" L. S. Tank with recessed front, lined with 14-ounce tinned copper, with concealed wall hanger, "Regulo" adjustable time valve, compound lever ball cock and glass ball, nickel-plated offset flush coupling and ½" supply pipe, iron pipe size, with wheel handle stop.

Dimensions—Height of bowl, 16½ inches, height of tank, 43 inches; from wall to front of seat, 30 inches.

Outfit as described\$60.50
 For embossed closet (Plate 1455 M) add..... 1.00
 If with "Gastight" sanitary floor plate add..... 3.00

"Ivoroid" is a very handsome and durable pure white finish with a high gloss. Being non-absorbent, it may be cleaned with soap and water. It will not crack, chip or discolor at the edges. It is also a non-conductor, which makes its use for water closet seats very agreeable in cold weather.

The "Regulo" closet may also be furnished with woodwork finished in natural or golden quartered oak, cherry or walnut. Price, with plain closet bowl and plain tank, not recessed (Plate 1451 M.), \$46.00.



PLATE 1454 M. "REGULO," PLAIN VITREO SYPHON JET CLOSET

"EXCELLO"
 EMBOSSED
 VITREO
 SYPHON JET
 CLOSET.
 PLATE 1466 M.

With "Hajoca" floor plate and bolts, No. 500 hardwood seat and cover attached to closet, No. 55 hardwood L. S. Tank with fancy recessed front and lined with 12-ounce copper, with concealed wall support, nickel-plated offset flush coupling and ¾ inch supply pipe, iron pipe size, with wheel handle stop.

Dimensions—Height of bowl, 16½ inches; height of tank, 44 inches; from wall to front of seat, 30 inches.

Outfit as described in natural or golden quartered oak or cherry\$42.00

Plate 1467 M, outfit as above but with plain closet... 41.00
 14" countersunk marble floor slab, 24x27 inches, extra.

The "Excello" closet is very fine in appearance, the woodwork being specially selected and highly finished, and the nickel plated trimmings heavy and ornamental.



PLATE 1466 M. "EXCELLO" EMBOSSED VITREO SYPHON JET CLOSET

"PENNSYLVANIA" EXTRA HEAVY VITREO SYPHON JET CLOSET.
PLATE 1522 M.

With "Hajoca" floor plate and extra long bolts, No. 400 quartered oak seat, no cover, attached to closet, with full box hinge and crescent reinforcing plate at front, silver bronzed counterweight rod to operate tank valve, No. 400 quartered oak tank, lined with 14-ounce tinned copper with automatic flushing valve operated by seat, with compound lever ball cock and glass ball, No. 1 cast brass tank brackets and 1½ inch brass offset flush pipe with combination pedestal bumper strap; all trimmings nickel-plated.

Dimensions—Height of bowl, 16½ inches; from wall to front of seat, 30 inches.

Price as described\$68.00
If counterweight rod is nickel plated brass, add..... 4.50
If with "Gastight" sanitary floor plate, add..... 3.00
For nickel plated plain tank rests in place of No. 1 brackets, deduct 2.50

The seat action mechanism illustrated above is simple but strong, and with the extra heavy "Pennsylvania" closet and the reinforced seat and heavy hinges, it makes an outfit especially designed to withstand the careless and rough usage to which fixtures of this kind are liable to be subjected. It is recommended for asylums, schools, public toilet rooms in railway stations, department stores, etc., and in fact, wherever the flushing of the closets is not always given the proper attention.



PLATE 1522 M. "PENNSYLVANIA" EXTRA HEAVY VITREO SYPHON JET CLOSET

"HAJOCA" EMBOSSED VITREO SYPHON JET CLOSET.
PLATE 1530 M.

With "Hajoca" floor plate and bolts, No. 400 hardwood seat and cover attached to closet, No. 400 hardwood high tank, lined with 14-ounce tinned copper, with "Regulo" adjustable time valve, top supply compound lever ball cock and glass ball, link chain and guide and white celluloid pull, plain tank rests and 1½ inch brass flush pipe, with pedestal bumper strap, all trimmings nickel-plated.

Dimensions—Height of bowl, 16½ inches; from wall to front of seat, 26 inches.

Outfit as described, in natural or golden quartered oak, cherry or walnut\$46.50
If with "Gastight" sanitary floor plate, add..... 3.00
1½" countersunk marble floor slab, 24x27 inches, extra.

Fancy decoration on closet, also "Ivoroid," mahogany and other styles of fancy wood, furnished to order.

The "Hajoca" water closet is a strictly first-class outfit for general use, no expense having been spared in making each part the best that can be produced.

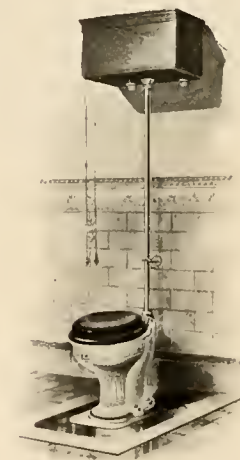


PLATE 1530 M. "HAJOCA" EMBOSSED VITREO SYPHON JET CLOSET

Many other styles of water closet outfits will be found illustrated in our Catalogue "M," including the following:

Closets with Flushometers—"Hajoca," "Estuary," "Municipal," "Ulysses."

Closets with Low Tanks—"Quiet," "Arctic," "Upton," "Paoli," "Wynnewood," "Rosemont," "Superbo," "Sedate," "Malvern," "Eastern," "Northern," "Southern."

Closets with High Tanks—"Republic," "Hajoca Junior," "Nursery," "Ventnor," "Prometheus," "Enduro," "Equality," "Municipal," "Ulysses," "Estuary," "Rivulet," "Bayou," "Buffalo," and "Fronto."

We also furnish a variety of enameled iron closet outfits, anti-freezing hopper outfits, etc.

"HAJOCA"
BASIN OR
SINK TRAP.
PLATE 972 L.

The "Hajoca" trap is absolutely non-syphoning. It has been approved by the Health Departments of several cities after being subjected to the most severe tests. The body of the trap is of sufficient size to hold a large amount of water, and a safe water seal will always remain in the trap, even under the most unfavorable conditions. In addition to the cleanout screw, the body of the trap can be easily disconnected for cleaning. The trap has ample adjustment, a feature much appreciated by the plumber in setting up.

"Hajoca" Basin or Sink Trap—With pipe to floor (or to wall) and flange.

Sizes 1½ inch 1½ inch
Nickel-plated brass, each..... \$4.50 \$5.00

We also make the "Bennor" and "Electric" nickel-plated brass basin and sink traps.

"Hajoca" Grease Trap—For use with kitchen or pantry sinks, etc. With 2-inch polished brass or nickel-plated inlet and outlet connections.

Painted inside, each.....\$25.00
Enameled inside, each..... 32.50

The important feature of the "Hajoca" grease trap is the chilling chamber or jacket which surrounds the body of the trap (but is entirely separate from it). The cold water supply is conducted through the chilling chamber, so that whenever hot water is drawn at the kitchen sink, a fresh supply of cold water passes through the jacket. The waste water in the inner part of the trap is thus constantly cooled, congealing the grease, which floats to the top, where the cleanout plate permits its removal. An inner partition in the trap assists in the separation of the grease.



PLATE 972 L. "HAJOCA" BASIN OR SINK TRAP

"HAJOCA"
GREASE TRAP.
PLATE 988 1-2 L.

NICKEL PLATED
"HAJOCA"
BASIN COCK.
PLATE 1192 L.

Nickel-Plated "Hajoca" Basin Cock—With china index (Style No. 1 C), per pair.....\$4.50
Same, without china index, per pr..... 3.50

Our "Hajoca" basin cocks, pantry cocks, bath cocks and sink bibbs represent the result of more than 40 years' experience in the manufacture of plumbing brass goods. They are made from a special selection of red metal, with raised seat, sliding valve, recessed seat washer and stuffing box cap. We take pleasure in recommending them for use where a strictly first-class article is required.



PLATE 988½ L. "HAJOCA" GREASE TRAP

FORM OF
SPECIFICATION.

To avoid annoyance and loss by evasion of specifications or substitution of inferior goods, each article should be specified as "Plate—H. J. & C. Co.'s catalogue."

INSTALLATIONS.

Owing to limited space, it is possible to give the names of only a very few of the buildings in which our plumbing fixtures have been installed, as follows:

- United States Mint, Philadelphia, Pa.
- United States Custom House and Post Office, Tampa, Fla.
- Wanamaker's, New York
- Chalfonte Hotel, Atlantic City, N. J.
- Willard Hotel, Washington, D. C.
- Hotel Breslin, New York
- Majestic Apartments, Philadelphia, Pa.
- Hotel Hollywood, near Los Angeles, California
- International Correspondence Schools, Scranton, Pa.
- Gymnasium, Library, Dormitories, etc., Princeton University
- Pennsylvania Hospital, Philadelphia, Pa.
- New Jersey State Village for Epileptics, Skillman, N. J.
- State Hospitals for the Insane at Norristown and Harrisburg, Pa., and Morgantown, N. C.
- Arcade Office Building, Philadelphia, Pa.
- Times Building, New York
- Philadelphia Stock Exchange
- Merion Cricket Club, Haverford, Pa.
- Philadelphia & Reading Railway Station, Harrisburg, Pa.
- South Altoona Machine Shops and Soft Iron Foundry of the Pennsylvania Railroad Co., Altoona, Pa.
- Bath Houses of the Philadelphia Public Baths Association
- Avery Office Building, Boston, Mass.
- Continental Trust Building, Baltimore, Md.
- Olympia Cotton Mills, Columbia, S. C.

In addition to those named above, a very large number of residences and other buildings of all kinds are equipped with Haines, Jones & Cadbury Company's fixtures, which are giving constant satisfaction to the users.



PLATE 1192 L. NICKEL PLATED "HAJOCA" BASIN COCK

THE NATURO COMPANY

SALEM, N. J.

PRODUCTS.

The NATURO TYPE of CLOSETS and the NATURO SEAT.

THE NATURO CLOSET.

The Water Closet, as commonly used until the Naturo type was put on the market, was uniformly about 17 inches on the Seating edge, which was on a horizontal plane.

The Naturo Bowl differs from all others in that it slopes from the front to the rear, and is lower at its highest point than the ordinary Closet Bowl.

The Naturo Bowl is 14 inches high in front, and 11½ inches in the rear.

With the Seat on the Bowl, the measurements are 15½ inches in front and 13 inches in the rear.

THE NATURO SEAT.

The Naturo Seat differs from the common Seat in that it has a ridge extending around two-fifths of the opening, at the rear of same, the function of the ridge being to prevent a seat too far back—thus eliminating the soiling of the Seat—now quite common.

The Naturo Slope—2½" higher in front than in the rear—quite removes the possibility of wetting the Seat—a complaint the Architect is familiar with—and accomplishes most effectually what several forms of Closet aim at—but without any suggestive display of its purpose.

THE NATURO PRINCIPLE.

Quite aside from the Sanitary and Hygienic features of the Naturo Closet and Seat, is the physiological feature involved—namely, the proper position while at stool, the body erect and the organs in a normal position—the low elevation of the seat being responsible for this fact.

ADVANTAGES OF THE NATURO CLOSET AND SEAT.

The use of the Naturo Closet and Seat, provide, first, a perfectly Sanitary and Hygienic apparatus, without departing from established and familiar practice.

Second, a principle sound in theory and effective in use, and an assurance that the continued use of the Naturo must result in benefit, both from a Physiological and from a Hygienic view point.

The Naturo Bowl is made in all the accepted types now in use—the Syphon-jet, the Syphon action or Wash down, and the Hopper and Trap.

It is also furnished with the right or left hand local vent or with the 3" Integral Vent—and can be furnished in any style desired, upon notice by the Architect to the Naturo Company.

In specifying, all that is necessary is to state that the Closet Bowl and Seat must be of the Naturo type, as the Naturo Company is prepared to furnish the Naturo Closet and Seat, in any make of Closet desired, through an arrangement permitting the firm whose goods are desired to adapt the Naturo Slope to their respective Closets.



THE No. 1 NATURO COMBINATION

With High Tank, N. P. Brass Flush Pipe and Special NATURO Seat.
 Price in Quartered Oak Woodwork\$40.00
 Birch, Cherry Finish or Mahogany Finish at same price.
 Furnished in any style Woodwork specified. Prices on application.

THE No. 4 NATURO COMBINATION

Same specifications as above, but with Bowl of the Syphon Action type.
 Price in Quartered Oak Woodwork\$32.00



THE NO. 2 NATURO COMBINATION

With Low Tank and Special NATURO Seat.

Price in Quartered Oak Woodwork\$40.00

Birch, Cherry Finish or Mahogany Finish at same price.

Furnished in any style woodwork specified. Prices on application.

THE NO. 5 NATURO COMBINATION

Same specifications as above, but with Bowl of the Syphon Action type.

Price in Quartered Oak Woodwork\$32.00



THE NO. 3 NATURO COMBINATION

With Flushing Valve and Special NATURO Seat.

Fitted to any Flushing Valve specified.

Price in Quartered Oak Woodwork\$45.00

Birch, Cherry Finish or Mahogany Finish at same price.

Furnished in any style Woodwork specified. Prices on application.

THE NO. 6 NATURO COMBINATION

Same specifications as above, but with Bowl of the Syphon Action type.

Price in Quartered Oak Woodwork\$37.00

FLECK BROTHERS CO.

Sanitary Specialties

OFFICES AND SHOWROOMS
44-50 North Fifth Street
PHILADELPHIA. PA.

TELEPHONES
BELL, KEYSTONE

LEAD WORKS, BRANCH STORE AND WAREROOMS
1637-45 AMERICAN STREET

PRODUCTS.

SANITARY SPECIALTIES, WATER, STEAM and GAS SUPPLIES; LOW DOWN CLOSET COMBINATIONS; HIGH TANK COMBINATIONS; BATH TUBS—Solid Porcelain, Enam- eled Iron, Steel Clad; LAVATORIES—Enam- eled Iron, Vitreous China, Porcelain, Marble; HIGH GRADE BRASS WORK; WASH TRAYS—Enam- eled Iron, Soapstone, Ce- ment, Crockery; SOIL PIPE and FITTINGS; WATER and GAS FITTINGS; TERRA COTTA PIPE FITTINGS; BOILERS and RADIATORS.

FACILITIES.

We always carry and have on hand an immense stock of the highest grade goods and can always ship promptly. We carry a complete line of the "Standard" Sani- tary Enam- eled goods and of the Trenton Potteries Porcelain Ware, and in all other lines only the best and most improved makes.

Every article is tested and fully guaranteed.



TRADE MARK

TRADE MARK.

All our products have our Trade Mark stamped on them. Accept no substitution.



BUCKEYE ANTIQUE OAK SYPHONIC
HOPPER COMBINATION
Price complete\$17.75
Roughs in at 14 inches

COLONIAL ANTIQUE OAK SYPHON
JET COMBINATION
Price complete\$28.00
Roughs in at 12 inches

OLYMPIA 1 1/4 D GOLDEN OAK SYPHON
JET COMBINATION
Price complete\$32.00
Roughs in at 13 1/2 inches

GENERAL INFORMATION.

A fully illustrated catalogue of our goods will be furnished on application. We have handsome and elaborate display rooms, fitted out with the latest and best of modern plumbing goods. They are at your service.

SPECIFICATIONS.

Specifications will be furnished when desired.

PENN-AMERICAN PLATE GLASS COMPANY

Sole Manufacturers of "Novus Sanitary Structural Glass"

Westinghouse Building
PITTSBURG, PA.

PRODUCT. The NOVUS SANITARY STRUCTURAL GLASS.

USES. Novus Sanitary Structural Glass has proven, by more than five years' test, its superior adaptation to use for floors, wainscoting and partitions in Public Institutions, Baths, Mortuaries, Hospitals, Depots, Banks, Hotels and Apartments—wherever a sanitary condition is required or desired, together with a handsome and rich appointment.

DIMENSIONS. Novus Sanitary Structural Glass is furnished in thicknesses from $\frac{3}{8}$ inch upwards, in slabs of any width and length needed for extreme requirements.

PERMANENT QUALITIES. Novus Sanitary Structural Glass is non-absorbent, non-crazing, impervious to discolorations or stains. It is not affected by climatic changes. It does not expand or contract, and is installed just like marble or tile work, by the same craftsmen and tools. It may be drilled and shaped to any requirement. Moreover, it possesses all the desirable qualities of marble or tiling, with none of their objectionable characteristics.

FINISH. The distinctive characteristic of Novus Sanitary Structural Glass is its "Novus Finish"—"its thumb-nail polish," giving it the character of statuary marble, found in no other material. It is furnished also in Fire Finish, or highly polished, if desired. It is made in various colors, the "Statuary" and "Princess" White being commended as of especial excellence as to purity and richness of color.

Architects are specifying Novus Glass for Public and Private Baths, Hospitals, Schools, Lavatories, Urinals, Hotels, Banks, etc., with uniformly satisfactory results.

ESTIMATES. We will gladly send a sample of Novus Sanitary Structural Glass, upon request, and will be pleased to correspond with architects in devising plans and in furnishing estimates of the cost of using Novus Sanitary Structural Glass in any quantity, color or thickness.

SPECIFICATIONS. To protect themselves from substitution, architects and other consumers should specify our product as follows, "Novus Sanitary Structural Glass, as manufactured by the Penn-American Plate Glass Company of Pittsburg, Pa."



TOILET ROOM IN BELLEFIELD DWELLINGS,
PITTSBURG, PA.
Walls, Floors and Partitions of "Novus" Glass
Carlton Strong, New York, Architect



OPERATING ROOM, NEW ORLEANS SANITARIUM
Walls, Floor and Sanitary Base of "Novus" Glass
Toledano & Wogan, Architects, New Orleans, La.



LADIES' TOILET ROOM, JOSEPH HORNE CO.,
DEPARTMENT STORE, PITTSBURG, PA.
Walls, Floor and Partitions of "Novus" Glass
Struthers & Hannah, Architects

THE NORCROSS COMPANY

“Euclid” Laundry Trays and Kitchen Sinks

CLEVELAND, O.

PRODUCTS.

We are manufacturers of “EUCLID” STONE LAUNDRY TRAYS and KITCHEN SINKS.

STOCK AND DELIVERY.

We carry a large line of Trays in stock and can make immediate shipment. As Sinks are invariably of special sizes, we do not keep a supply in stock, but can ship within three days after receipt of order.

GUARANTEE.

All our products are protected by letters patent. Our guarantee goes with all our manufactures in the form of our Trade Mark, without which none is genuine.



QUALITIES OF “EUCLID” STONE.

Our stone possesses a uniform hardness, of fine grain, containing no quartz or soft spots; it wears even and smooth and is non-absorbent.

As an additional protection, we prepare the stone with a special compounded filler for non-absorption. Having these qualities, it is the only stone on the market thoroughly adapted to make perfect sanitary work.

“EUCLID” STONE TRAYS AND SINKS.

In “Euclid” Stone Trays and Sinks, we have produced a perfect line with none of the qualities that make other materials undesirable. Slate and cement Trays and Sinks crack, split and leak under sudden changes of temperature. Alberene (soap) stone wears rough, ruins clothes and is mal-odorous.

We have invented a cement for the joints that dries harder than the stone itself. The waterproof cement absolutely prevents leaking, and the method of construction with tongued and grooved joints is an added and necessary feature to insure permanent satisfaction.

All Trays made with or without high backs, as desired. Both styles kept in stock.

TRAYS.

The Two-compartment “Euclid” Tray (Fig. 1) is very convenient and sanitary and simply cannot wear out or leak.

The Single-compartment “Euclid” Tray is much smaller, but just as satisfactory where the demands made upon it are not so varied.

The Three-compartment “Euclid” Tray (Fig. 2) gives the greatest satisfaction for the added expense. It is proportionately cheaper than the two-compartment Tray.

The four-compartment “Euclid” Tray has back and front in one long piece of 96, 102, 108 or 114 inches.



FIG. 1. “EUCLID” TWO-COMPARTMENT TRAY

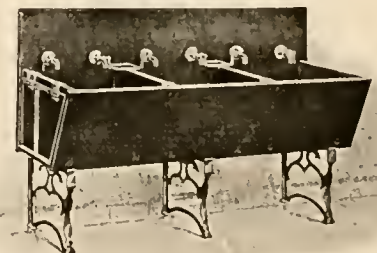


FIG. 2. “EUCLID” THREE-COMPARTMENT TRAY

All our long Trays have one-piece backs and fronts. No other make has this very desirable feature.

"EUCLID"
STONE
COMBINATION
TRAY AND SINK.

The "Euclid" Stone Combination Tray and Sink (Fig. 3) is designed for use where living space is confined, as in flats and cottages. It has 12" high back, galvanized legs and galvanized soap-dish, with movable drain board cover over tray, and is particularly suited for apartment houses because of the small space it occupies. The depth of the tray is 15"; depth of sink 8".

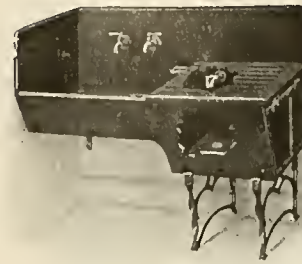


FIG. 3. "EUCLID" COMBINATION TRAY AND SINK

"EUCLID"
SINGLE DRAIN
BOARD SINK.

This is a desirable Sink for houses where wells and cisterns are used. We can supply these on very short notice. Fig. 6 is an illustration giving an idea of its appearance and actual use. Lengths 60 to 90 inches. Prices \$26.00 to \$37.50.



FIG. 4. "EUCLID" DOUBLE DRAIN BOARD SINK

SIZES AND
PRICES.

The Two-compartment "Euclid" Tray. (Fig. 1.)

Length, 48", price, \$21.00; length, 54", price, \$23.50; length, 60", price, \$25.50.

These prices include tray, legs, soap-dish, and brass plugs with couplings.

The "Euclid" Stone Combination Tray and Sink. (Fig. 3.)

Length, 48", price, \$25.00; length, 54", price, \$28.50; length, 60", price, \$32.00.

These prices are for the tray and sink, legs, soap-dish, bracket, brass strainer, and plugs, with couplings and drain board.

The "Euclid" Double Drain Board and Sink. (Fig 4.)

Lengths are from 66" to 108", and widths 20", 22" and 24". The drain boards 18", 24" and 30" in length. Prices run from \$42.00 to \$60.00.

The "Euclid" Single Drain Board Sink. (Fig. 7.)

Lengths are from 48" to 78"; widths 20", 22" and 24". The drain boards are 18", 24" and 30" in length. Prices run from \$32.50 to \$45.50.

The "Euclid" Combination Drain Board Sink and Trays. (Fig. 5.)

Lengths are from 90" to 120"; width, 24". The drain boards are 18" or 24" in length. Prices run from \$50.00 to \$75.00.

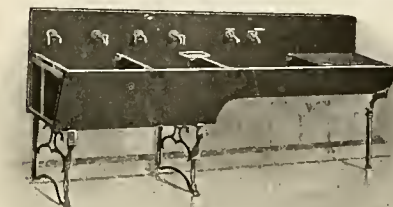


FIG. 5. "EUCLID" COMBINATION DRAIN BOARD, SINK AND TRAYS

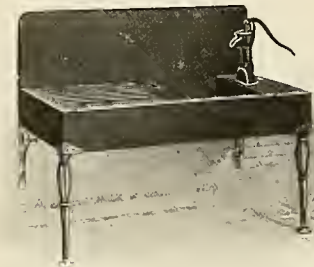


FIG. 6. "EUCLID" SINGLE DRAIN BOARD SINK, WITH PUMP



FIG. 7. "EUCLID" SINGLE DRAIN BOARD SINK

RONALDS & JOHNSON COMPANY

139-41-43 North 7th Street

PHILADELPHIA, PA.

BELL TELEPHONE, WALNUT 2, 89

BRANCH OFFICES

52 and 54 Cliff Street, New York City, N. Y.
Boerum Place and State Street, Brooklyn, N. Y.
435 and 437 Broadway, Brooklyn, E. D., N. Y.

KEYSTONE TELEPHONE, MAIN 4, 89

WORKS

Foundry, Hainesport, N. J.
Boiler Works, Brooklyn, N. Y.
Lead Works, Brooklyn, N. Y.

PRODUCTS.

Manufacturers of SOIL PIPE and FITTINGS, C. I. SINKS, BOILER STANDS, CESS-POOLS, STOP BOXES and PLUMBERS' CASTINGS of every description; also GALVANIZED and COPPER RANGE BOILERS, LEAD PIPE, LEAD TRAPS and BENDS.

A full line of FINE PLUMBING MATERIALS, including the celebrated "HOLLY," "COLUMBIA," "ROYAL FLUSH," "NORWOOD" and "CROWN" CLOSET COMBINATIONS; the "PRUDENT" PORCELAIN LINED and "MAJESTIC" SOLID PORCELAIN BATHS; THE "SESCO" VITREOUS CHINA, THE "MEXICO" ONYX, THE "PURITA" WHITE STATUARY MARBLE, THE "HOLLY" ITALIAN MARBLE, LAVATORIES.

Also ENAMELED IRON AND SOLID PORCELAIN SHOWER RECEPTORS, BATH TUBS, SITZ BATHS, FOOT BATHS, KITCHEN SINKS, PANTRY SINKS, SLOP SINKS, LAVATORIES, etc. WROUGHT IRON PIPE, FITTINGS AND VALVES; GROUND KEY COMPRESSION and FULLER PLUMBERS' BRASS WORK; NICKEL PLATED NEEDLE AND SHOWER BATHS; BIDET FIXTURES; PLUMBERS' TOOLS, etc., etc.

SIZES.

All goods of standard size carried in stock and can be supplied immediately.

SPECIAL DESIGNS.

Any goods of special design or fixtures with special decorations, etc., made to order.

QUALITY.

Our reputation for "quality" extends over more than a quarter of a century, in all of which time our constant aim has been to make our name synonymous with all that is most perfect in modern sanitary equipment.

ILLUSTRATIONS.

It is not our purpose to attempt the illustration of a complete line of Bathroom Furnishings, but simply to convey to the architect an idea of a few well-chosen pieces from the splendid exhibit at our show rooms. We realize to some extent how difficult it is for the architect to familiarize himself with the latest and most Sanitary Appliances or to fully appreciate their attractiveness or form a correct opinion necessary for a choice without some suggestions such as we present through this medium.

SHOW ROOMS.

We have on exhibition at our show rooms an elaborate display of Porcelain and Enameled Bath Tubs, Onyx and Marble Lavatories, Closets and Shower Baths and Bathroom Accessories in great variety.

Not only does our display consist of Bathroom Furnishings, but we have on exhibition all the fixtures necessary to make the house complete from a sanitary point of view, including Kitchen Sinks, Wash Trays, Butler's Pantry Sinks, Slop Sinks and the necessary fittings to complete each fixture.

FORM OF SPECIFICATION.

To insure the installation of material decided upon, we furnish with every selection a form of specification that will protect the architect from substitution.



PLATE No. 22 C, "HOLLY"
LOW-DOWN SYPHON JET CLOSET
PLATE No. 27 C

Closet of Finest Vitreous China, with White Cello Varno Tank, 16-ounce Copper Lining, White Cello Varno Saddle Seat, and Heavy Nickel-plated Flush Connection and Supply Pipe. Price as shown\$50.00
Add for 24x26 inch Italian Marble Floor Slab 7.50



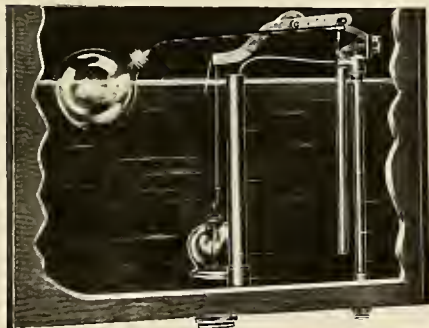
PLATE No. 24 C, "CROWN"
LOW-DOWN CLOSET

Vitreous China Syphon Action Closet, Plain Antique Oak Tank, Seat and Cover, Nickel-plated Flush Connection and Supply Pipe. Price as shown\$18.00
Same Combination in Quartered Golden Oak, with 12-ounce Tinned Copper Lining, and Post Hinge, Saddle Seat.\$23.00



"ROYAL FLUSH"
LOW-DOWN SYPHON CLOSET

Vitreous China Closet with Plain Light or Dark Oak Tank. 10-ounce Lining and Saddle Seat. Price\$20.00
If 1/2 Golden Oak and 12-ounce Lining.... 23.00



TANK. Back Cut Away, Showing Fittings

Architects should specify these Combinations as they are superior to others. The Tanks are constructed with Glass Float and Glass Valve which will outlast any of the old style copper Floats. The Ball-cock has compound Lever adapted for any pressure and is practically noiseless. It is elevated above the water-line which will prevent water in tank syphoning back down the supply pipe. Heavy copper linings are used in all tanks. All the Earthenware is of the finest Vitreous China. The seats are durable and comfortable. We furnish all combinations in any style and kind of Wood, or in Porcelain.



SESCO LAVATORY

This is one pattern of the many designs in Vitreous China, the most substantial kind of ware we furnish. Price complete with Primrose Waste and Vigilant Faucets, Elliptic Trap, etc, \$70.00.



PLATE No. 13 C, "MEXICO"
ONYX LAVATORY

32x22 inch Slab, with 20-inch Back and Aprons, with Hexagon Offset Legs, No. 6 Fuller Basin Cocks and Supplies, Primrose Waste and Elliptic Trap.
 Price\$160.00
 French Plate Mirror in Heavy Nickel-plated Frame 25.00
 Cut-glass Towel Bar 8.00
 Plate-glass Shelf with Rail 7.00

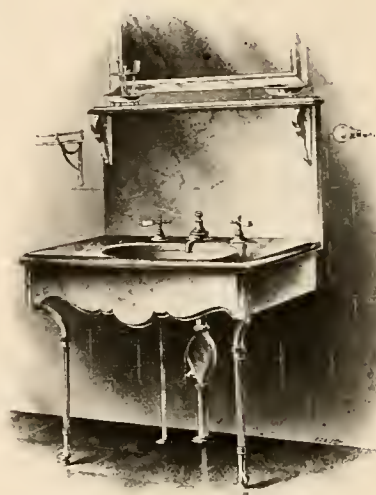


PLATE No. 14 C, "PURITA"
WHITE STATUARY MARBLE LAVATORY

Size 33x24 inch, with 18-inch Back and Marble Shelf, with Ronalds' Nickel-plated Secret Waste and Supply China Handles, and Elliptic Trap and Supplies.
 Price\$95.00
 French Plate Mirror, 30x18 inch 15.00
 Opal-glass Shelf 8.00
 Opal-glass Towel Rack 5.00
 Same Lavatory in White Italian Marble.. 70.00



PLATE No. 18 C, "HOLLY"

ITALIAN MARBLE LAVATORY

Size 30x20x10 inch, Slab and Back on Nickel-plated Brass Bracket, Holly Basin, with Removable Overflow Grate, Vigilant Basin Cocks and Supplies and Elliptic Trap.
 Price as shown\$27.50



PLATE No. 3 C, "PRUDENT"

"PRUDENT" PORCELAIN ENAMELED BATH TUB

With 3-inch Roll Rim and Flat Bottom, Finished White Exterior, Fitted with Primrose Waste and Overflow, Vigilant China Handle, Double Bath Cock.

Size of Tub	4½ ft.	5 ft.	5½ ft.	6 ft.
Price as shown	\$50.00	\$52.00	\$56.00	\$62.00
Length over fittings.	5 ft.	5 ft. 6 in.	6 ft.	6 ft. 6 in.
Width outside, 2 ft. 6 in.	If with Gold Lines add \$4.00			

We can furnish any style or pattern of enamel tub with different kind of fixtures.

We also decorate the tub with any design to order, or to match bathroom tiling.



PLATE No. 1 C, "MAJESTIC"

"MAJESTIC" SOLID PORCELAIN BATH TUB

On Porcelain Feet, Finished White Exterior, and with Nickel-plated, Extra Heavy Primrose Bell Supply Fitting and China Handle.

Length over rim	5 ft.	5½ ft.	6 ft.
Price, Class A.....	\$140.00	\$150.00	\$160.00
Price, Class B.....	120.00	130.00	140.00
Width outside, 2 feet, 6 inches			

Every solid porcelain bath is guaranteed not to craze in the glazing.

These tubs can be furnished to rest on base instead of feet as shown, and with fixtures fitted in back instead of end.

SWAIN MANUFACTURING COMPANY

Pantry Sinks, Plumbers' Woodwork

2106 Wood Street,

PHILADELPHIA, PA.

BOTH TELEPHONES.

PRODUCTS.

PANTRY SINKS and DRAIN BOARDS in GERMAN SILVER. Also all kinds of PLUMBERS' HARDWOOD WORK, including WATER CLOSET SEATS, TANKS and RIMS.

COMBINATION PANTRY SINK.

Our combination German Silver Pantry Sinks with corrugated German Silver Drain Boards, German Silver Back and Hardwood Aprons, are used very extensively and with great satisfaction in Private Houses, Hotels, Clubs, etc. These sinks and boards are lined with German Silver, highly polished, which makes them very attractive, and as to durability, they will last a life-time, there being no coating on the surface to wear off, the German Silver being the same all through. One of the many advantages claimed for these Sinks and Boards is, the metal being pliable there is far less liability to breakage of glass and china ware coming in contact with it.

The same patterns made with copper coverings, or of Hard Woods without Metal Coverings.

Wearing properties exceptional. Full guarantee on all goods.

SPECIAL DESIGNS.

While we carry a large and varied stock on hand, we make a specialty of executing original designs.

GENERAL INFORMATION.

Orders of any size promptly executed. Experienced and skilled workmen employed and only the best material used

Our goods are used in the residence of Andrew Carnegie, New York City.

THE TRENTON POTTERIES COMPANY

TRENTON, N. J.

CABLE ADDRESS, TEPECO

PRODUCTS. Manufacturers of SANITARY POTTERY in VITREOUS and SOLID PORCELAIN WARES, and of BONE CHINA SPECIALTIES.

FACILITIES. This Company is the largest manufacturer of sanitary pottery exclusively in the world. The ownership of six potteries enables us to make practically everything in the sanitary pottery line, to get orders out according to contract and specification, and to accept and promptly execute orders of any size from single articles upward.

INSTRUCTIONS AS TO ORDERS. We carry a complete line in stock of articles in Vitreous China and Solid Porcelain and Bone China Fixtures.

ESTIMATES. We are anxious to furnish estimates on specifications of any size, and are particularly well adapted to make special designs. All correspondence addressed to this Company will receive proper and courteous attention.

SPECIAL DESIGNS. In addition to an unusually wide range of stock sizes, we are able to make any desired size or shape to be set out in a room, in a recess, or in a corner.

VITREOUS CHINA. Our line of this ware includes Syphon Jets, Washouts, Basins, Urinals, and Lavatories. We also make many styles of Car and Ship Hoppers, Urinals, and Basins.

Our Vitreous China is subjected to an unusually high temperature in firing, and is guaranteed to be durable and perfectly sanitary. All Vitreous China of our manufacture bears our trade-mark, as here shown, stamped under the glaze.



BONE CHINA. We make a specialty of Bone China Bathroom Fittings, such as Soap Cup, Paper, Mug, and Comb Holders, Towel Bars, etc.

"IDEAL" SOLID PORCELAIN. In "Ideal" Solid Porcelain we manufacture numerous specialties, including improvements not found in the ordinary stock fixtures. The regular line consists of various styles of Bath Tubs, Lavatories, Laundry Tubs, Kitchen, Pantry and Slop Sinks, Urinal Stalls, and Gutters.

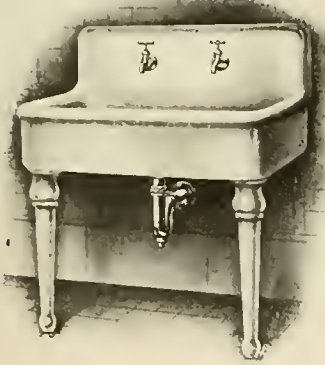
"Ideal" Solid Porcelain is subjected to an unusually high temperature in firing, and special attention is given to durability as well as to finish. All "Ideal" Solid Porcelain bears our label, as shown here, which is a guarantee of the finest workmanship and the best materials obtainable.



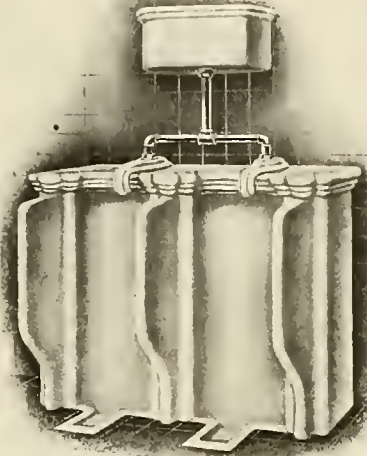
AWARDS OF MERIT. Our products have received the highest awards at every Exposition in which we have been represented.

PRICES. Upon application, we will gladly furnish information regarding prices.

ILLUSTRATIONS. The following illustrations show several representative styles of Bathroom, Toilet and Kitchen articles which we manufacture:



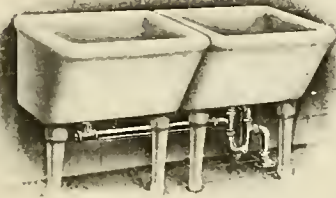
IDEAL PORCELAIN
NEW STYLE INTEGRAL HIGH BACK
KITCHEN SINK
Made in 24", 30", 36" and 42" sizes



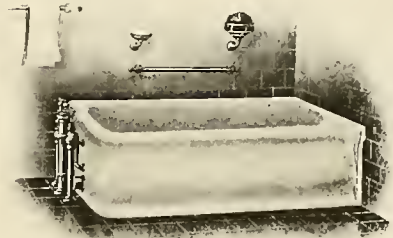
IDEAL PORCELAIN
URINAL STALLS IN BATTERIES WITH
EXTENDED SHIELDS
Height from floor line to top over all, 3' 6".
Width over all of each stall, 24"



IDEAL PORCELAIN
TRENT CORNER LAVATORY WITH
INTEGRAL BACK
Dimensions, 23" length on sides; 33" width
at front; 27" back to front; bowl 16"x12"x6";
back 8" high



IDEAL PORCELAIN
ALL R. R. LAUNDRY TUBS
Made in three sizes, 24", 26" and 29" wide
Made either white outside or buff colored



IDEAL PORCELAIN
NEW MONARCH BATH ON BASE TO
TILE IN CORNER
Made 5', 5 1/2' and 6' long, with swell front
and side



VITREOUS CHINA
PLAIN SYPHON JET CLOSET
With Low Down China Tank



VITREOUS CHINA
"PODMORE" OVAL LAVATORY ON
SWELL PEDESTAL
Thin Apron, Perfect Drain to the bowl.
Size 33"x24"



VITREOUS CHINA
INTEGRAL BACK ROUND FRONT
LAVATORY
Dimensions, 19"x16"; back 6" high; bowl
14"x11"x6" deep

THE FROST MANUFACTURING COMPANY

Manufacturers of Plumbers' Brass Goods

MAIN OFFICE AND WORKS
KENOSHA, WIS.

EASTERN OFFICE
5 AND 7 EAST 42ND STREET
NEW YORK CITY, N. Y.

PRODUCTS.

We are manufacturers of BRASS FITTINGS, PLUMBERS' SUPPLIES, CAST BRASS and SHEET METAL GOODS. We direct special attention to our recent manufacture, the new "FROST" BASIN COCK. Among other LAVATORY FITTINGS, we make a line of SUPPLY PIPES, both Straight and with Air Chamber, SWIVEL TRAPS, BRACKETS, RING HEADS, STRAINERS, SHELL PATTERN SOAP DISHES, TOWEL RACKS, etc.

SPECIAL
MANUFACTURE.

Besides our regular line of manufactures which we keep in stock, we are prepared to contract for special work in accordance with architects' plans.

Our aim is not to carry a very large stock of ordinary plumbing goods, but to make up, on sufficiently large orders, any material required. This special manufacture insures mechanical perfection in all the fixtures we make.

THE "FROST"
BASIN COCK.

We illustrate herewith the new "Frost" Basin Cock, as it is sufficiently different from ordinary basin cocks to make it worth while for the architectural profession to give it careful attention.

The important points for which we claim its superiority over others are as follows: The shank is separate from the body and is made of brass rod; this insures it against leaks, as there will be no sand holes due to imperfect casting, and, furthermore, it always furnishes a perfect seat.

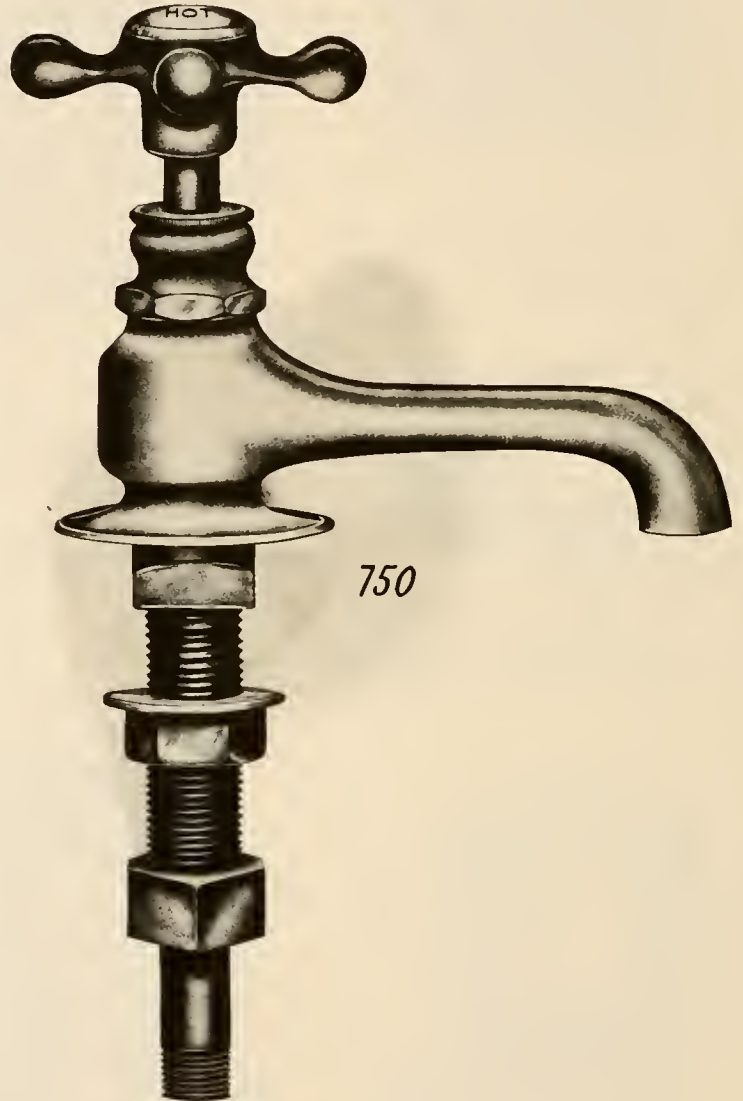
In design the "Frost" Basin Cock, while similar to others on the market in general appearance, is much lower and makes the faucet present a much handsomer appearance when lowered on the Basin.

PRICES.

Our prices are as low as possible, consistent with good work. All requests for quotations will receive prompt and courteous attention.

SPECIFICATION.

Architects will protect their clients by specifying "Frost" goods and insisting that they be furnished.



THE "FROST" BASIN COCK

H. MUELLER MANUFACTURING COMPANY

WORKS AND GENERAL OFFICES

W. Cerrogoro St.,

DECATUR, ILL.

TELEPHONE, BELL 153

EASTERN DIVISION

254-258 Canal St.,

NEW YORK CITY, N. Y.

TELEPHONE, FRANKLIN 4381

PRODUCTS.

We are manufacturers of PLUMBERS' BRASS GOODS, including MUELLER GROUND KEY WORK, COMPRESSION WORK, FULLER WORK, SELF-CLOSING WORK, SOLDERING NIPPLES and UNIONS, FERRULES and DENVER VENT COUPLINGS. We are also the manufacturers of the well-known MUELLER WATER PRESSURE REGULATOR and the MUELLER WATER STRAINER.

EQUIPMENT.

We are equipped to make these goods in any quantity, and are in a position to make quick deliveries to local points or any foreign port. Large stocks of goods are carried at our Decatur, Ill., and New York warehouses, and in a majority of instances we can fill orders immediately upon their receipt.

MAKING SPECIAL GOODS.

We will be pleased to correspond with architects relative to the making of goods after their designs, or to the submitting of our own designs for made-to-order goods. We are particularly desirous of making special patterns of goods for hospitals and other sanitary uses. We are prepared to handle special business with dispatch.

ADAPTABILITY OF MUELLER GOODS.

Mueller Brass Goods are made in all of the standard pipe sizes and styles and can be fitted into any job from the simplest to the most complicated.

They are made in different grades and finishes, so that the architect can select from one make all of the different priced articles that he wishes to use upon one job.

Every article whether of the cheapest or costliest make is given a test as near like actual service use as possible under 200 lbs. hydraulic pressure. This test is so much severer than is required by Building Laws, that architects can specify them with the absolute assurance that they will conform to all legal requirements of any city or locality.

INSTRUCTIONS FOR SPECIFYING.

As will be observed by reference to the list of goods which we manufacture, our line covers the entire brass equipment of a plumbing job. Where the service pipe enters the building, we provide patent cap stop and waste cocks for turning on or off the supply, a water strainer to intercept sediment and cutting particles, and a regulator to control the water pressure to the point of safety and convenience. For waste and vent pipes we provide tested ferrules, and vent couplings, and for the various service outlets at sinks, lavatories, bath tubs, etc., we make an endless variety of tested bibbs and cocks. Architects who desire to use Mueller Goods exclusively may specify them briefly as "Mueller Brass Goods." However, architects are requested to observe:

That Mueller Goods are made in other grades than those shown here, and if other grades are desired such other grades must be specified.

That the standard finish of compression and fuller work is nickel plate, and of ground key work, rough. If other than the standard finish is desired, such other finish must be specified.

If illustrations are desired of other styles or grades of goods than those shown here, we will be pleased to send our own catalogues. Prompt attention will be given to all inquiries.

INSTALLATION.

Any plumber will install Mueller Goods. Our complete catalogues are in the hands of nearly all the plumbers in the United States, and any architect desiring information not to be found in Sweet's Indexed Catalogue can very likely obtain it from the plumber installing the work.

INSTRUCTIONS
FOR
ORDERING.

Architects who specify Mueller Goods are requested to notify us or forward us a copy of the specifications if possible, so that when orders are placed we may see that their choice of grades, finishes, sizes etc., are observed and that accidental substitutions are avoided. In transcribing specifications, plumbers sometimes omit details and serious delays result. By our having a copy of the specifications all needless correspondence with the plumber is dispensed with and the quick execution of orders is facilitated.

In communicating with us either in the matter of inquiries or orders, time will be saved by addressing the house in your territory. All business emanating east of the western line of Pennsylvania and north of the southern line of Virginia is handled through our Eastern Division, New York City, and that originating in other parts of the United States and Canada is handled through the home office at Decatur, Illinois. European export orders are filled in New York, and far Eastern and Australian orders may be filled either by the New York division or the home office, as desired.

UNCONDI-
TIONAL
GUARANTEE.

We claim that Mueller Goods are so well designed, made and tested that they will answer every requirement of service. To insure customers of the absolute sincerity of our claim we ask but to know that our goods have not proved satisfactory. Their guarantee is unconditional.



FIG. 1. TRADE MARK

IDENTIFI-
CATION.

All Mueller Goods are easily identified: Besides having features of construction and operation which easily distinguish them from others, each article bears the Mueller Trade Mark (Fig. 1), *the mark of unconditional guarantee.*

MUELLER
GROUND
KEY WORK.

GENERAL FEATURES. Mueller Ground Key Cocks are shapely in outline and when used upon exposed work are pleasing in appearance.

They are designed upon such lines that the metal is placed where the strength, to withstand the fitting into service and the operation under pressure, is most needed.

They are cast of specially alloyed brass and their coring is clean and true.

The machine work is careful, and the threads and parts are perfect in fit.

The keys and bodies after being ground are polished in oil to make a perfect surface. They are greased with a special composition of grease to make them easy turning.

EXCLUSIVE FEATURES. Mueller Patent Cap Stop and Waste Cocks (Fig. 2) have a patent cap which fits closely over the top and prevents dirt or gritty matter from working in around the key and causing a leak.

The square has a socket top which admits either lever or tee handle, or square rod, thus making it interchangeable.

These cocks do not depend upon a screw to form the stop. The cap is provided with two heavy lugs on the inside which come in contact with a lug on the body and form a strong and substantial check which cannot be sheared off.

Mueller Patent Cap Cocks are made in two grades, extra and special. Special grade cocks have a heavy casting, an extra wide lap of the plug, pipe size water way, milled wrench hexagons and a cap finished over all. Extra grade cocks have a smaller casting, a narrower lap, a smaller water way and do not have the milled hexagons of the special grade cocks.

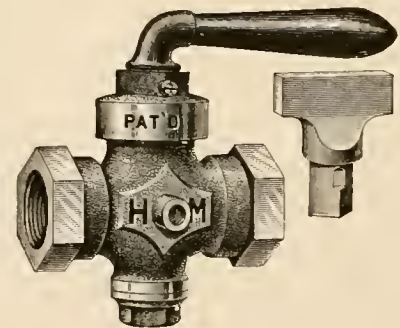


FIG. 2. MUELLER PATENT CAP STOP AND WASTE COCKS

SIZES AND PRICES.

The list below applies to the special grade cock illustrated (Fig. 2). We also make solid handle and socket head ground key cocks in the various pipe styles and sizes and at varying prices.

Size, inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2
List, doz., \$								
C-139, Rgh	17.00	19.00	24.00	28.00	41.00	64.00	96.00	190.00
C-139, Fin	20.50	23.00	29.00	34.00	49.00	.....	.....	.....
C-139, N.P.	22.00	25.00	31.50	37.00	53.00	.....	.....	.....

MUELLER BRASS FITTINGS.

GENERAL FEATURES. Mueller Denver Vent Couplings (Fig. 3), Soldering Nipples, Soldering Unions and Ferrules are made of the same quality of brass as other Mueller plumbing goods, and not of scrap metal as goods of this class are sometimes made.

They have smooth clean cast openings and are designed to have extra strength at parts of strain.

Each article is given a hydraulic test before packing for shipment and is guaranteed to be free from sand holes and other defects of manufacture.

The lists below apply to the articles illustrated. The couplings, soldering nipples, soldering unions and ferrules are all made in other styles and sizes than those shown, at prices corresponding.

SIZES AND PRICES.

DENVER VENT COUPLINGS (Fig. 3.)

Size, inches	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2
List, doz., \$			
Male Coupling, C-077, Rgh	\$12.00	16.00	24.00

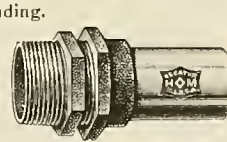


FIG. 3. DENVER VENT COUPLINGS



SOLDERING NIPPLE

SIZES AND PRICES.

SOLDERING NIPPLE AND UNIONS

Size, inches	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	4
List, doz., \$												
Nipple, C-065	2.25	2.25	2.75	3.50	5.00	6.50	10.00	12.50	18.00	32.00	46.00	80.00

SIZES AND PRICES.

BRASS FERRULES

Size, inches	2	3	4	5	6	8
List, doz., \$						
Standard Ferrule, C-224	10.00	18.00	24.00	48.00	69.00	144.00



FIG. 4. MUELLER FERRULE

MUELLER PRESSURE REGULATOR.

EXCLUSIVE FEATURES. The Mueller Water Pressure Regulator has a substantial brass body and the working parts are few and strongly made.

It has no levers, weights or projections, depending entirely upon the automatic working of the plunger and the tension spring.

It can be set either side up upon the pipe and will fit in some places where it would be impossible to use any other pattern of regulator.

The valve is made absolutely proof against water hammer, by reason of its by-pass.

It can be set at any pressure desired and it will reduce to that point until adjusted to another pressure.

It is so constructed that when the main supply is shut off it will close and prevent a vacuum in the house pipes.

It is provided with a relief valve and can be used successfully on a hot water job.

ADVANTAGES OF CONTROLLED PRESSURE—Water is usually delivered from the pumping station at a pressure ranging from 40 to 60 pounds, and when fire pressure is needed it may run up as high as 120 pounds. The Mueller Pressure Regulator (Fig. 5) can be set to admit the ordinary pressure and keep out the fire pressure, or to reduce the ordinary pressure to a point much safer and more convenient to water users.

A pressure of 20 to 30 pounds is considered the ideal for domestic and other ordinary uses. Delivered at this lesser force water will not splash in the lavatories, sinks and tubs, and spatter all over the person or the draperies of the room.

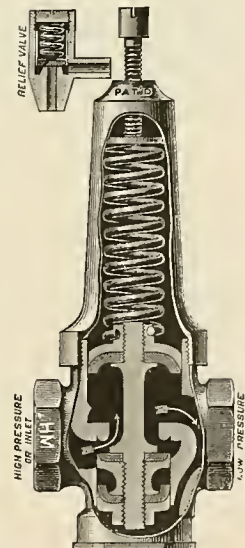


FIG. 5. MUELLER PRESSURE REGULATOR

The maintaining of a uniform low pressure is extremely desirable in water closet plumbing because an unusual or sudden increase of pressure will force open the closet valves and frequently cause an overflow.

The wear and tear of plumbing which many people consider excessive, results more from high pressure than any other cause. Water hammer, or concussion in the pipes is wholly due to it, and it causes more repair bills than will result from the most careless use of the fixtures.

A meter will register more accurately under a reduced pressure, and as the strain upon its working parts is relieved, its cost of maintenance is materially reduced.

Servants are proverbially wasteful of water, and even members of the family will use an excessive amount of it if it is supplied at a wasteful pressure. With a reduced pressure the meter will show a markedly less consumption and there will be a corresponding reduction in the water rent.

The Regulator is made in two patterns, regular and low reducing. The regular pattern will reduce to a medium low pressure only, while the low reducing pattern will reduce to zero if desired. The list below applies to the regular pattern as illustrated (Fig. 5).

SIZES AND PRICES.

Size, inches,	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$
Net Wt. ea., lbs.,	4	4	5 $\frac{1}{2}$	7 $\frac{1}{2}$	20	29
List, each, \$						
Regulator, C-100.....	10.00	10.00	13.00	17.50	24.00	40.00
						55.00

MUELLER WATER STRAINER.

EXCLUSIVE FEATURES. The Mueller Water Strainer (Fig. 6), is made of cast-iron, well japanned, and has a brass gauze screen and a brass plug in the bottom.

The water enters where indicated by the arrow (Fig. 6), strikes the baffle plate and falls to the bottom, where the sediment will remain while the water passes through. This point overcomes the defect found in most strainers in which the force of the water and all matter strikes the gauze screen direct, filling it up and soon retarding the flow; or the pressure drives the sediment through the screen.

The screen sets in a slight recess, the lugs of which, projecting from the inside, hold it in position. A wire stem is attached which extends downward into a recess in the bottom plug. By removing this plug the screen can be quickly cleaned and any foreign matter that has settled in the bottom will fall out.

If by any chance the screen should become slightly filled it is so conveniently arranged that it can be quickly cleaned.

WHY WATER SHOULD BE STRAINED. It is safe to say that if the attention of water users generally were called to the mass of matter that is dumped from a water strainer after it has been in use a few weeks, by far the majority of them would have them placed on their service pipes.

Even where water is filtered and pumped from a reservoir, it contains bits of iron pipe, sand, shells, weeds, fungus growths and fibrous particles, and unless the results of systematic straining can be seen it will scarcely be believed that drinking water contains such quantities and so many different kinds of matter. A strainer that does its work effectually will, in a few weeks' time, gather from the apparently clearest water a double handful of this sediment.

When the water is being pumped direct from a lake or stream, which is often necessary when a reservoir is being repaired, foul matter is all the more likely to enter the service pipes, and, if not intercepted, find its way to the human system.

Not only do these particles of matter render the water dangerous for drinking purposes, but they often work direct and serious damage to the plumbing fixtures. A pebble or a bit of shell or pipe may easily clog a meter or cut out the seat of a valve or other delicate fixture. The damage resulting from ruined plumbing will, in most instances, amount to many times the cost of a good strainer.

The Mueller Water Strainer is made in the style illustrated (Fig. 6) for service pipes up to 3 inch. It is made in other styles for pipes from three inches up to the largest mains. The list below applies to the service strainer illustrated (Fig. 6).

SIZES AND PRICES.

Size, inches	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3
List, each, \$							
Strainer, C-109.....	2.00	2.00	3.00	4.50	6.75	10.00	20.00

MUELLER COMPRESSION WORK.

GENERAL FEATURES. The design is such that the metal is placed where it is needed for strength and not simply where it may happen to come upon casting.

The castings are of heavy construction and are made from a formula of metal which produces the greatest strength for the weight.

The cores are set so that the walls are of even thickness and the opening through the bibb or cock is never eccentric to the body or shell.

The workmanship is thorough and strictly to uniform gauges, so that parts are entirely interchangeable.

The pitch of the stem threads is such that one and one-half turns of the handle produces a flow of full seat opening area.

The body threads extend low enough to engage the lowest stem threads when the washer is seated, so that when the final compression is made all the stem threads have a bearing and not just one or two. This means a long life for the body threads as well as the stem, and that the threads will not wear and allow the stem to chatter.

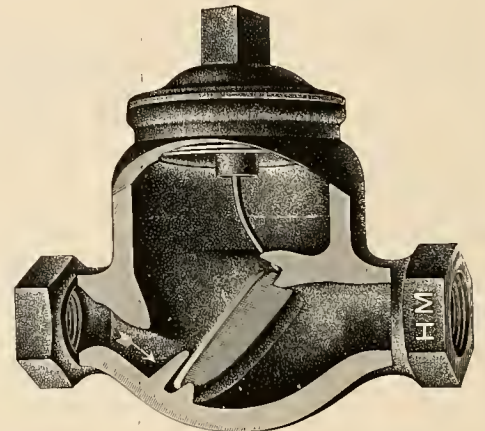


FIG. 6
MUELLER WATER STRAINER

All Mueller Compression Work has a lubricated stem packing. This packing is made in the shape of a washer. It fits snug to the stem, does not lose its lubricating quality with years of use and always insures an easy turning stem.

The washers used are made after a formula of our own experimenting and are superior to any washer sold. They may be used successfully on either hot or cold water.

SPECIAL GRADE BIBBS.

Mueller Special Grade Compression Bibbs (Fig. 7) have a fancy handle which is well in keeping with the neat design of the bibb.

The water way is full open area and the bibb delivers a stream of full pipe size.

A combined stuffing nut and cap is used, its advantage being a cone-shaped interior which causes the packing to pack the stem at all points with a firm inward and downward pressure, assuring a water tight top.

The seat washer is sunk to its entire depth in the base of the stem, making it positively non-spreading.

Mueller Compression Bibbs are also made in the extra and standard grades. Extra grade bibbs have the fancy handles and the combined cap of the special grade, but the castings are not so heavy, the water way is not full area and the seat washer is not encased. Standard grade bibbs have a flat cap instead of the combined stuffing nut and cap, a plain handle, a casting and water way still smaller than the extra grade, and the seat washer is not encased. Extra and standard grade bibbs are made of the same good metal and are good bibbs, but lack the conveniences of the special grade work.

The prices given below are the list prices of the special bibb illustrated (Fig. 7). Prices of other bibbs vary according to grade and style.

Size, inches, List, doz., \$,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	1	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2
Special, C-234, Rgh.....	13.50	14.50	17.00	21.00	39.00	61.00	94.00	190.00
Special, C-234, Fin.....	14.00	15.00	18.00	22.00	43.00	69.00	106.00	210.00
Special, C-234, N.P.....	16.00	17.50	20.50	24.50	46.00	73.00	114.00	222.00

Regular pattern stuffing boxes, loose disc stems and wheel or china scalp indexed handles will be furnished upon any bibb upon specification.



FIG. 7.
SPECIAL GRADE
COMPRESSION BIBBS

SIZES AND PRICES.

SPECIAL GRADE BASIN COCKS.

Mueller Special Grade Compression Basin Cocks have all the good features of special grade bibbs, including the heavy castings, the full open water way, the combined cap and the encased seat washer. They are made in both the regular and low down patterns and with cross or china indexed handles.

We also make standard and extra grade compression basin cocks, the standard grade cocks having the same features as the standard grade bibbs, and the extra grade cocks the same features as the extra grade bibbs. Standard grade cocks can be had with plain, and extra grade cocks with fancy tee, cross or china indexed handles. Standard and extra grade cocks will also be furnished with either plain or fancy nose.



FIG. 8.
SPECIAL LOW DOWN
COMPRESSION COCK



FIG. 9.
SPECIAL GRADE
SILL COCKS

The list below applies to the special low down basin cock illustrated (Fig. 8). Prices of other cocks vary according to grade, style and finish. Special Low Down with China Scalp Handle, List, dozen \$36.00

Mueller Compression Sill Cocks have a great advantage over sill cocks of most other makes, in that different sized bodies are made for the different sized cocks. This permits a cock of certain size to have the area of water way and strength of walls necessary for that size without a scarcity or excess of metal, as is the case when two or three sizes of cocks are made from the same sized body.

Mueller Sill Cocks are made in the straight and bent patterns but in the extra and special grades only. They have the usual features of our extra and special grade work, besides a neat and convenient design which qualifies them especially for their particular use. They are furnished with either tee or wheel handle or loose key.

The list below applies to the special grade bent cock illustrated (Fig. 9). The prices of other cocks vary according to grade, style and finish.

Size, inches, List, doz., \$,	Tee Handle			Wheel Handle			Loose Key		
	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$
Rgh. Body Fin. Trmgs.....	21.00	24.00	27.00	24.00	27.00	30.00	27.00	30.00	33.00
Rgh. Body, Fin. Trmgs, N.P.....	22.00	25.00	28.00	25.00	28.00	31.00	28.00	31.00	34.00
Fin	25.00	28.00	31.00	28.00	31.00	34.00	31.00	34.00	37.00
Fin., N.P.....	28.00	31.00	34.00	31.00	34.00	37.00	34.00	37.00	40.00

PRICES.

SPECIAL GRADE SILL COCKS.

SIZES AND PRICES.

OTHER
COMPRESSION
GOODS.

Besides the Bibbs, Basin Cocks and Sill Cocks illustrated here, we also make compression stops in the standard, extra and special grades, regular and stub pattern wash tray bibbs and urinal, pantry, bath and shampoo cocks in the standard and extra grades. These goods besides having peculiar points of construction for their respective uses, have all the good features of other Mueller Compression Work. Prices of the various articles vary according to grade, style, finish and trimmings.

MUELLER
FULLER
WORK.

We also make self-closing work, including bibbs, stops, and basin, urinal and pantry cocks, at prices varying according to style, finish and trimmings.

GENERAL FEATURES. The design of the Mueller Fuller Work is neat and graceful and the workmanship is first-class throughout.

The body castings are heavier than those usual to this class of goods. The metal is placed for the greatest strength and is specially alloyed for toughness and clean moulding qualities.

The cores are so carefully placed that the opening through the body is always true to the outside and the walls are of uniform thickness.

The stem bearing is of extra length. This gives a bearing that reduces wear and prevents chattering of the stem.

The eccentric pin has a long enough sweep to push the ball well out of the seat, thus providing a large water way and making the opening large enough for any particles of sand or foreign matter to pass out instead of becoming lodged, getting imbedded in the ball, or interfering with the working of the bibb, as is the case with many bibbs of scant water way.

A brass flange in front of the ball gradually closes off the water as the ball is being drawn to its seat, so that when seated, the ball merely closes off a thin stream of water instead of a full stream. This prevents water hammer.

No gritty matter is contained in the composition from which the balls are made. They can be used successfully with either hot or cold water.

The packing is saturated with a special lubricant which permits the stem to turn easily even after years of use.

STANDARD
GRADE BIBBS.

The handles of Mueller Fuller Bibbs (Fig. 10) are graceful in outline, affording a pleasant relief from the ill shaped handles sometimes furnished with this work.

The cap has deep threads which give it a good firm hold under adjustment, and the wrench surfaces of the cap are milled to equal diameters so that the plumber does not mar the finish by trying the fit of the wrench for each turn.

The water way is large and clear, and owing to the wide eccentric spindle movement a good stream is available with a slight turn of the handle.

The nose is so designed that the water is delivered in a compact stream and not thrown or spattered as is the case with some makes of bibbs.

Mueller Fuller Bibbs are made in the standard grade only. However, they are made in both plain and hose patterns, and tail pieces are furnished for any style of pipe connection.

The list below applies to the iron pipe bibb illustrated (Fig. 10). Other bibbs vary slightly in price according to style and finish.



FIG. 10. STANDARD GRADE BIBBS

Size, inches,	$\frac{1}{2}$	$\frac{3}{4}$	1
List, doz., \$			
Standard, I. P., Fin.	24.00	28.00	34.00
Standard, I. P., N.P.	28.00	32.00	40.00
			52.00
			62.00

SIZES AND
PRICES.

EXTRA GRADE
BASIN COCKS.

Mueller Extra Grade Fuller Basin Cocks have a heavy, clean cored casting, the extra length stem bearing shoulder, the good eccentric movement and the non-hammering features of Mueller Fuller Bibbs.

They are made in the standard and extra grades, the latter having a slightly heavier casting than the former. Standard grade cocks have a plain, and extra grade cocks a fancy nose. Cocks of either grade can be had with plain brass or china handle. Extra grade cocks can also be furnished with union in body.

The list given here is for the extra grade No. 0 plain body Fuller basin cock illustrated (Fig. 12). Cocks of other grades and finishes vary slightly from these prices.



FIG. 11.

EXTRA GRADE BATH COCK



FIG. 12.

EXTRA GRADE BASIN COCK

PRICES.

Extra No. 0, N.P., with plain handle List, doz. \$49.00

EXTRA GRADE
BATH COCKS.

Mueller Extra Grade Fuller Bath Cocks (Fig. 11) have a full open water way, extra large couplings to compensate for swollen washers, an extra large jewel cup and an extra large outlet. They also have the quick opening and non-hammering features common to all Mueller Fuller Work.

They are made in the extra grade only, but will be supplied with either brass, china, ebony or ivory handles. The jewel cup will be furnished gold lined at slightly advanced cost upon specification.

The list price below is for the No. 4 $\frac{1}{2}$ cock illustrated (Fig. 11). We also make other sizes and patterns of bath cocks at various prices.

Extra, No. 4 $\frac{1}{2}$, Fin., or N.P., each..... \$12.00

PRICE.

OTHER FULLER
GOODS.

Other Fuller Work of our make includes stops, wash trays bibbs, and urinal, pantry and shampoo cocks. All of these are made in the standard grade and have various prices according to style, finish and trimmings.

THE W. J. SCULLY VENTILATOR AND MFG. CO.

172-198 Beecher Avenue

DETROIT, MICH.

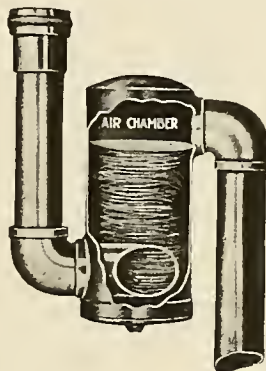
TELEPHONE, WEST 1170

PRODUCTS.

Manufacturers of High Grade PLUMBERS' BRASS GOODS, the SCULLY SELF-CLEANING and ANTI-SYPHONING TRAPS; SCULLY AUTOMATIC CLOSET LOCAL VENTILATORS.

SCULLY SELF-CLEANING AND ANTI- SYPHONING TRAP.

The Scully Self-Cleansing and Anti-Syphoning Trap is of peculiar construction. The waste water from the fixtures entering at the bottom, as shown in the sectional cut, forms a powerful scouring whirlpool up to the outlet. This whirling motion carries all solid particles against the polished sides of the interior of the trap, keeping them bright and smooth as glass, so that there is no lodgment for lint or other material which clogs up the common trap.



THE SCULLY SELF-CLEANING AND ANTI-SYPHONING TRAP

It will be noted from the cut that there is a large deflection chamber at the top of the trap, making it impossible for the trap to be drained by syphoning even by the most powerful vacuum in the drain pipe, as there will always be enough water in the trap to securely seal it, no matter how often the syphoning occurs.

Scully Traps from their guarantee of absolute cleanliness and positive assurance against the breaking of the water seal, should be a part of every plumbing specification. We are very glad to submit to architects and sanitary engineers elaborate tests of Scully Trap or any additional information which may be necessary.

SCULLY AUTOMATIC LOCAL VENTILATOR FOR CLOSETS.

The Scully Automatic Ventilator is a miniature rotary fan driven by a direct connection turbine water wheel, the whole in one small nickel-plated casting attached to the bowl. The water for the wheel is obtained from the water supply of the closet. The water after having passed the wheel is returned to the bowl by the same pipe by which the fan exhausts the air from the bowl. The foul air is driven off to any distance desired outside of the premises. This ventilator is in use in some of the largest buildings in the country, and has the endorsement of many of the best architects and sanitary engineers.

Write for prices and testimonials.

UNION BRASS WORKS COMPANY

7 Sherman Street (Charlestown District)
BOSTON, MASS.

SOLE MANUFACTURERS OF

THE SODERLUND HIGH GRADE PLUMBING SPECIALTIES

For Lavatories, Bath Tubs and Shower Baths

PRODUCTS.

We manufacture high grade COMBINATION LAVATORY and BATH TUB FIXTURES, ANTI-SCALDING SHOWER VALVES, BASIN WASTES, BARBERS' LAVATORY FIXTURES, the "U. B." HIGH PRESSURE BALL COCKS, and "U. B." TANK COMBINATION.

THE SODERLUND TWIN FAUCET. GENERAL DESCRIPTION.

There are other "combination" faucets, so-called, upon the market, but many are nothing more nor less than single faucets with their outlets connected. THE SODERLUND TWIN FAUCET is of a radically different character and is designed for installation wherever hot and cold water is used, and where either, or a thorough mixture of the two at any temperature between the two extremes, is desired.

DETAIL DESCRIPTION.

It will be seen from the annexed diagram that in this faucet there are two valves—one for the hot water and one for the cold, both entirely free and working horizontally *with* the pressure. Upon turning the handle, the cam comes in contact with one of the valve stems, opening it gradually against the pressure. When the valve is opened to its fullest extent, as the handle is turned a little further, the cam comes in contact with and opens the other valve, and a mixture of the two waters is obtained. Then as the operator continues to turn the handle the mixing chamber receives a larger flow from the second valve and less from the first until the latter comes to its seat, leaving the second valve wide open; which latter may be closed by pushing the handle to the stop. In operating this faucet, a half turn only is required of the handle; simply turning from one side to the other.

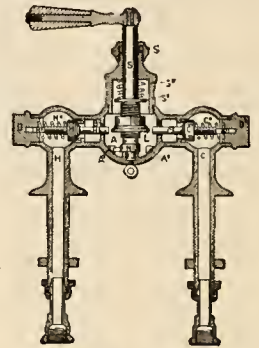


DIAGRAM OF SODERLUND TWIN FAUCET

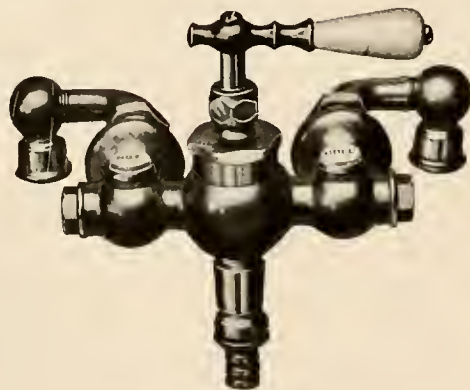
SPECIAL ADVANTAGES.

Apart from the general advantages indicated above it should be noted that this faucet is so arranged that the washers may be replaced in a few seconds upon removing the side nuts. Having but one handle to operate, it is quicker in its action and will give water at the desired temperature in less time than any other faucet.

DURABILITY.

Owing to its simple construction and the use of the best metal in its manufacture, it will last for years. These fixtures have been given a long and thorough test and are pronounced by practical persons to far outclass all other combination fixtures on the market. All fixtures are thoroughly tested before leaving the factory.

STYLES AND PRICES.



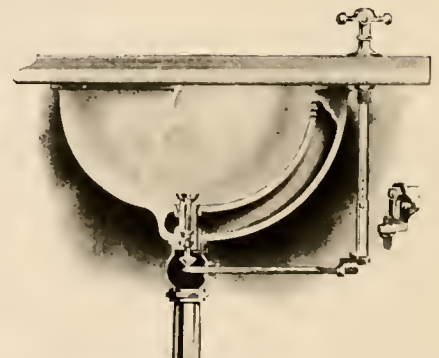
BATH TUB FIXTURE

- No. 21, 3½ in. to Centres.....\$5.00
- No. 22, 5 in. to Centres..... 9.00
- No. 23, 5½ in. to Centres..... 9.00



LAVATORY FIXTURE

- No. 12, 4 in. to Centres \$5.00
- Wider Spread to Centres 7.00



ADJUSTABLE POP-UP BASIN WASTE

- With N. P. 4 Arm or China Lever Handle
- For Marble and Enamel Lavatories.....\$4.00
- For Vitreous and Solid Porcelain Lavatories.. 4.50

THE SODERLUND
SHOWER BATH
VALVE.

This is an ANTI-SCALDING SHOWER VALVE—the simplest, safest, and best fixture of its class on the market. By its use one cannot obtain hot water without cold, all danger of scalding being thereby eliminated. These fixtures are furnished with or without Douche Valve, fitted for any size supplies and outlet, for floor, ceiling or wall connections. We also make complete showers equipped with these valves.

DETAIL
DESCRIPTION.

We have three different cams, or stems, to meet various requirements.

1. The Basin or Bath cam, by the use of which *all cold* or *all hot* water or any intermediate temperature between the two extremes may be obtained. (Not anti-scalding.)

2. The Regular Shower cam, by using which *all cold* but not all hot water may be had, the cold water valve opening simultaneously with the hot, allowing a flow of cold water to temper the hot, thus eliminating the danger of scalding.

3. The Steam Shower cam, by the use of which *cold* water *must* be had *first* from *either* side, the danger of scalding being eliminated as in the case of the Regular Shower cam. This steam cam may be used under a live steam pressure in place of hot water pressure, with equally satisfactory results.

SUGGESTIONS.

For private residences, under ordinary conditions, the shower valve fitted with the No. 1, or Basin cam, will give the best results, although not anti-scalding; but for public institutions the Regular Shower or the Steam (anti-scalding) cam is recommended.

Shower valves always work to better advantage under equal pressures. When the pressures of the hot and cold water supplies are unequal, we recommend that the valves leading to them be adjusted to make the pressures equal or nearly so.

DURABILITY.

The cams of the Soderlund Combination Fixtures are made of the best composition metal, and that end of the spindle that comes in contact with the cam, of phosphor-bronze. Used in conjunction, these two metals possess the most durable wearing qualities.

STYLES AND
PRICES.

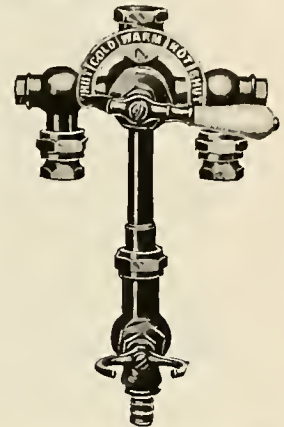
Prices are given with the accompanying illustrations. Discounts and estimates on any desired shape, style, or quantity will be gladly furnished, upon request.

SPECIFICATIONS.

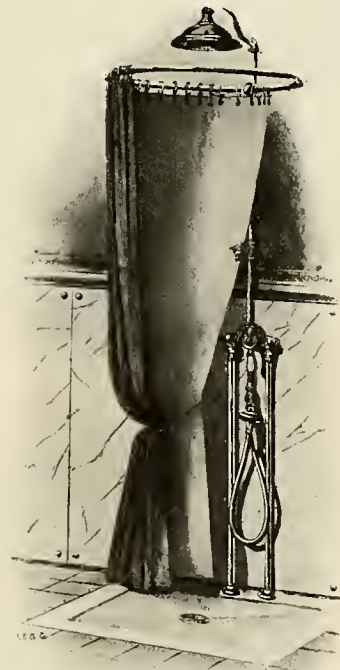
In specifying, it is suggested that architects use the numbers given, and state for what size connections the fixtures are desired.



ANTI-SCALDING SHOWER VALVE
No. 18, 5½ in. to Centres.....\$13.00
No. 19, 4 in. to Centres..... 6.00



ANTI-SCALDING SHOWER
VALVE
With Douche Valve.
No. 16, 5½ in. to Centres..\$15.00
No. 17, 4 in. to Centres.. 8.00



COMPLETE SHOWER
According to size of Valve, \$45 to \$56

E. C. SMITH MANUFACTURING CO.

Bathroom Furnishings

224-226 East Washington Street

CHICAGO, ILL.

TELEPHONE, MAIN 4693-21

PRODUCTS.

Manufacturers of HIGH GRADE BATHROOM FURNISHINGS.

ILLUSTRATIONS AND PRICES.

All our Bathroom Furnishings are made from Solid Brass, Nickel-plated with screw joints. We illustrate below some of our products.



PLATE 89-C.
No. 25 Nickel-plated Soap Dish,
6 in x 3 1/2 in. \$1.75
No. 26 Nickel-plated Soap Dish,
4 1/2 in x 3 in. 1.50



PLATE 137-C.
No. 2 Nickel-plated Double Coat
and Single Hat Hook, height 6 in \$0.75



PLATE 155-C.
No. 6 Nickel-plated Paper Holder
with Glass Sides and Bottom, for
sheets 7 1/2 x 5 1/2 in. \$2.00



PLATE 147-C.
No. 2 Nickel-plated Paper Holder,
heavy pattern, with Spring Paper
Holder \$2.00



PLATE 100-C.
No. 3 Nickel-plated Tumbler Hold-
er and Tooth Brush Rack \$1.75
If with 104-C Tumbler Holder ... 1.50
If with 107-C Tumbler Holder ... 1.75



HAND RAIL. PLATE 25-C.
No. 1. Length 18 inches; bar 1 inch, nickel-plated \$3.00
" 2. " 20 " " 1 " " " 3.25
" 3. " 24 " " 1 " " " 3.50
" 4. " 30 " " 1 " " " 3.75
Special sizes to order.

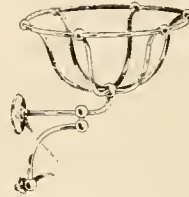
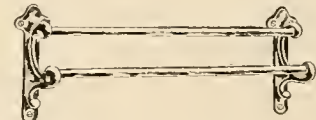


PLATE 70-C.
No. 4 Nickel-plated Sponge Holder,
3 in. diameter, \$2.50



TOWEL RACK. PLATE 41-C.
No. 1 Length 20 inches, width 3 inches, bar 1/2 inch, nickel-plated .. \$1.75
" 2. " 26 " " 3 " " 1/2 " " .. 1.95
" 3. " 30 " " 3 " " 1/2 " " .. 2.10
" 4. " 36 " " 3 " " 1 " " .. 2.30



TOWEL RACK. PLATE 21-C.
No. 1. Length 15 inches, width 3 inches, bar 1/2 inch, nickel-plated. \$0.89
" 2. " 18 " " 3 " " 1/2 " "85
" 3. " 24 " " 3 " " 1/2 " "95
" 4. " 30 " " 3 " " 1/2 " " 1.05
" 5. " 36 " " 3 " " 1/2 " " 1.15
" 6. " 42 " " 3 " " 1/2 " " 1.30
Special length and also racks with large bar made to order.



PLATE 73-C.
No. 7 Nickel-plated Holder and
Glass Sea Salt Bowl, diameter 9 in \$2.60



PLATE 47 1/2-C.
No. 1 Nickel-plated Swing Hooks, Towel or Robe Rack \$2.50



TOWEL RACK. PLATE 33 1/2-C.
No. 1 Length 18 inches, width 3 inches, bar 1/2 inch, nickel-plated \$1.60
" 2. " 24 " " 3 " " 1/2 " " 1.90
" 3. " 30 " " 3 " " 1/2 " " 1.70
" 4. " 36 " " 3 " " 1/2 " " 1.80



PLATE 75-C.
No. 9 Nickel-plated Combination
Sponge Holder and Soap Dish,
length 11 in., width 5 1/4 in. \$1.80



PLATE 64-C.
No. 2 Nickel-plated Comb and Brush Holder, length 11 inches, width 5 inches. . \$1.75



CRYSTAL GLASS TOWEL BAR, WITH NICKEL-PLATED POSTS AND GLASS BALL ENDS
PLATE 34 1/2-C.
Polished Glass, Ball Ends Cut Glass Ends
No. 1 Length 18 inches, width 3 inches, bar 1 inch \$4.75 \$6.75
" 2. " 20 " " 3 " " 1 " 4.85 6.85
" 3. " 24 " " 3 " " 1 " 5.00 7.00
" 4. " 30 " " 3 " " 1 " 5.25 7.25
" 5. " 36 " " 3 " " 1 " 5.50 7.50



PLATE 58 1/2-C.
No. 2 1/2 Plate Glass Shelf, 24 x 5 inches, with Nickel-plated Brass Brackets and
Nickel-plated Towel Rack \$5.75



GLASS TOWEL BAR, WITH NICKEL-PLATED POSTS
PLATE 35-C.
Crystal Bar 1 1/2 in diam Opaline Bar 1 1/2 in diam
No. 1. Length 18 inches, width 3 inches \$2.25 \$3.00
" 2. " 20 " " 3 " " 2.50 3.20
" 3. " 24 " " 3 " " 2.50 3.45
" 4. " 30 " " 3 " " 2.75 3.75
" 5. " 36 " " 3 " " 3.00 4.20
If with Opaline Bar Ends, add to list \$5.00.



PLATE 83-C.
No. 17 Nickel-plated Soap Dish,
length 6 in., width 3 1/4 in. \$1.25
No. 18 Nickel-plated Soap Dish,
length 6 in., width 3 1/4 in. 2.00



PLATE 117-C.
No. 8 Nickel-plated Holder, with China Soap Dish, China Tooth Brush Vase and
Glass Tumbler \$6.00
If with Vitreous Ware 6.75

THE CRAGIN GARBAGE CREMATORY CO.

285 East 43d Street
CHICAGO, ILL.

EASTERN OFFICE
1135 Broadway, New York City
W. T. CROOK, Agent

PRODUCTS. THE CRAGIN COMBINED GARBAGE CREMATORY AND WATER HEATER.

ADAPTATION. Designed for destroying garbage and refuse and heating water in residences, hotels, apartment buildings, hospitals, etc., in an inoffensive and economical manner, keeping the premises in a sanitary condition, attracting no vermin, thereby avoiding danger from disease.

ADVANTAGES. These crematories will consume your garbage and heat your water, with a saving of from 25% to 40% in coal over an ordinary heater, using coal alone.

CONSTRUCTION SAFETY. The Portable crematories are made of boiler plate, stayed and riveted, with hand hole plates for cleaning. They are so constructed that expansion and contraction does not endanger lives of users.

All parts are interchangeable.

The entire shell and coil form a waterway which with the properly proportioned grates gives the greatest amount of heat with the smallest amount of coal.

We recommend soft coal as it gives better satisfaction at half the cost.

SUGGESTIONS. In ordering state whether tank sets to right or left of heater.

Special crematories built to order, prices upon application.

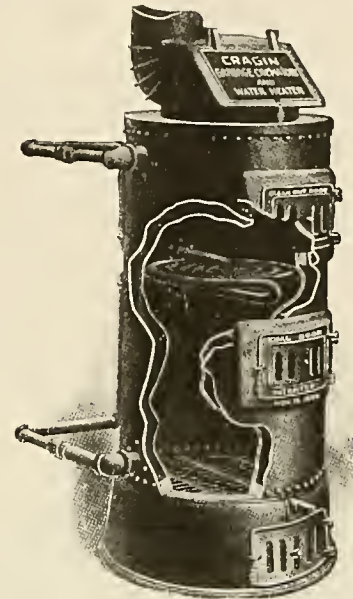
PORTABLE CREMATORIES.

Number	For Flats as Below	Water Capacity per Hour	Floor Space	Height from floor to top of Crematory	Size of Openings	Price F. O. B. Chicago
One	1 to 4	200 Gals.	22" Dia.	56"	1 1/2"	\$145 00
Two	4 to 8	400 "	28" "	62"	2 1/2"	170 00
Three	8 to 12	600 "	31" "	70"	2 1/2"	245 00
Four	13 to 18	800 "	36" x 36"	50"	3"	330 00
Five	19 to 28	1000 "	36" x 42"	50"	3"	415 00
Six	29 to 50	1200 "	36" x 45"	50"	3"	500 00

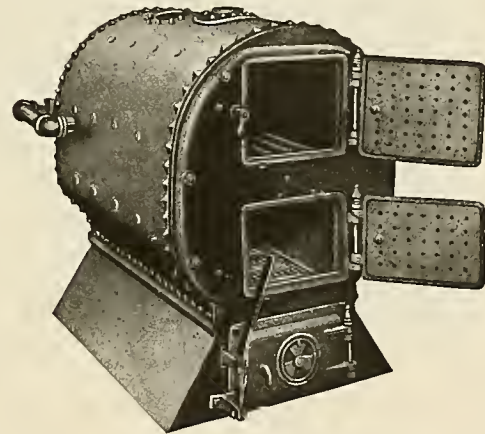
BRICK SET CREMATORIES.

Number	For Flats as Below	Water Capacity per Hour	Floor Space	Height from floor to top of Crematory	Size of Openings	Price set up ready for Plumber's Connections
One	12 to 18	600 Gals.	72" x 50"	72"	2"	\$320 00
Two	18 to 28	750 "	72" x 56"	72"	2"	410 00
Three	28 to 50	1000 "	72" x 62"	72"	2"	440 00

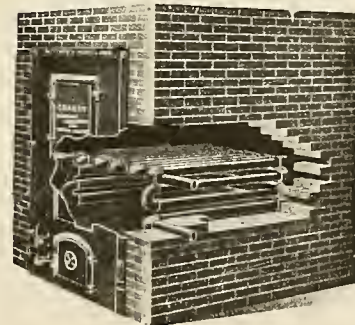
Discount to trade.



No. 1, No. 2, No. 3
PORTABLE CREMATORIES
ONE TO TWELVE FAMILIES



PORTABLE CREMATORIES
No. 4, No. 5, No. 6
THIRTEEN TO FIFTY FAMILIES



BRICK SET CREMATORIES
TWELVE TO FIFTY FAMILIES

THE ELLIS COMPANY

Sewer and Water Supply Apparatus

OFFICE AND WORKS

216 West 23d Street

NEW YORK CITY, N. Y.

TELEPHONE—2142 CHELSEA

CABLE ADDRESS, "THELLISCO"

PRODUCTS.

Manufacturers of ELLIS AUTOMATIC SEWER LIFT, or SEWAGE EJECTOR, ELLIS AUTOMATIC DISPLACEMENT PUMP, ELLIS AUTOMATIC CELLAR DRAINER, ELLIS AUTOMATIC PUMP CONTROLLER, ELLIS AUTOMATIC SUMP TANK, ELLIS AUTOMATIC DRAINAGE TANK, ELLIS AUTOMATIC HYDRAULIC AIR COMPRESSOR, ELLIS SYSTEM OF WATER SUPPLY, ELLIS COMPOUND AIR EJECTOR, ELLIS STRAIGHT-WAY EJECTOR, and SYSTEM OF SEWAGE REMOVAL FOR TOWNS and CITIES.

FACILITIES.

All orders are promptly filled and executed in a first-class manner.

TERRITORY.

The Company controls all sales in the United States, Canada, Great Britain, France, Germany and Russia.

ADAPTABILITY OF PRODUCTS.

Except when manufactured upon special orders, the products of The Ellis Company are of standard size and make and conform strictly to the building and sanitary requirements of New York City, N. Y., Chicago, Ill., Boston, Mass., Philadelphia, Pa., and of various other cities and towns, and have received the approval of the most exacting experts.

INSTRUCTIONS AS TO ORDERS.

All goods are kept in stock and shipments can be made within ten days from receipt of order.

In ordering Sewer Lifts the following information should be given as far as possible:

Building.

Location.

Architect.

Plumbing Contractors.

Number of fixtures below sewer level.

Number of floor drains.

Number of drips from machinery.

Number of gallons per minute.

Size of main drain to street sewer.

Motive power available.

If steam, state pressure.

If electricity, state current and voltage.

Goods are shipped f. o. b. New York, by freight or as otherwise specified by purchaser.

INSTALLATION.

Our goods can be installed by any first-class plumber or contractor, or installation will be undertaken by ourselves or our local agents. Full instructions for setting and installation accompany each apparatus.

THE ELLIS AUTOMATIC SEWER LIFT.

The Ellis Automatic Sewer Lift is especially designed for the removal of sewage or other semi-liquid waste from below the sewer level, is operated by compressed air, has no working parts which come in contact with the sewage, is entirely automatic, requiring practically no attention when once adjusted, thereby greatly reducing the cost

of maintenance, and is capable of discharging from 50 to 250 gallons per minute—single machine—and is positively the simplest, most economical and efficient apparatus for the purpose yet introduced.

TESTS.

This apparatus is thoroughly tested before leaving our works and is fully guaranteed to perform the duty required.

INSTALLATIONS.

The Ellis Automatic Sewer Lift can be installed wherever fixtures are set below the street sewer, in chemical works, hotels, residences, office buildings, underground railroads and for the sewage of towns and villages where a gravity flow cannot be obtained.

SIZES AND CAPACITIES.

The Ellis Automatic Sewer Lifts are made in four sizes, as follows:

- CAPACITY.
- No. 1—25 gallons per minute.
 2—50 gallons per minute.
 3—100 gallons per minute.
 4—200 gallons per minute.

Allow one (1) pound air pressure per foot lift.

PRICE OF APPARATUS.

Prices for apparatus furnished on application, and plans and details covering installation also furnished on request.

FORM OF SPECIFICATION.

Furnish and set in pump pit Ellis Automatic Sewage Ejector made of cast-iron strongly braced with reinforced outlets, size, etc., as per detailed drawings furnished; provided with automatic operating valve, proper checks on inlet and outlet, also provided with necessary gate valve for the perfect operation of the same, guaranteed to discharge not less than.....gallons per minute.

Furnish and set near Ejector a suitable air compressor capable of compressing at least cubic feet of free air per minute and maintaining a pressure of at least pounds, provided with automatic starting and unloading device, arranged to work at any desired pressure. Provide necessary check valves between air compressor and air storage tank, so that there is no possibility of air returning to the compressor. Provide where designated suitable switch and proper connection to compressor.

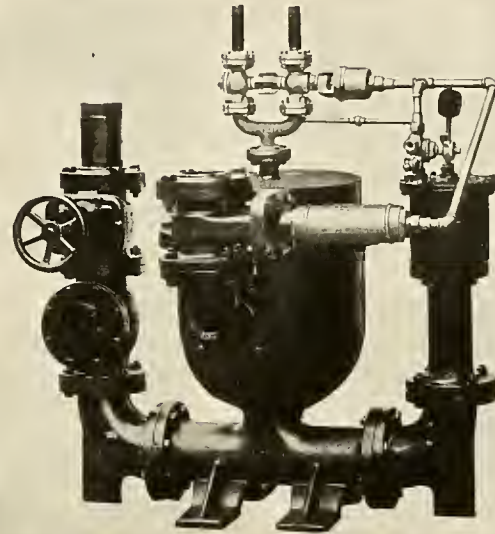
Furnish and set where directed and hung from ceiling or placed on iron stand, one (1) air receiving tank, made of 3/4" steel shell or iron 3-16" heads, double riveted, strongly braced, warranted to stand at least 150 pounds working pressure, provided with reinforced flange inlets and outlets, pressure gauge and valved emptying pipe. Make all connections between this tank and compressor of proper size and provide with valve, check, etc. Make all turns in pipe with long sweep fittings or bent pipe.

All connections in reference to this apparatus to be brought as per detailed drawings, to a point within two feet (2') of where the same sets.

The entire apparatus to be erected by, or under the supervision of the maker, to be thoroughly tested in the presence of the Architects or their representative, and to be fully guaranteed for the period of one year.

These machines are operated by steam or water pressure and are superior to all other drainers on the market owing to their simplicity of construction, capacity, and ability to perform the duty required. They do not require strainers; have an indirect action permitting the drainer always to be on at full pressure or entirely closed and can be adjusted to any desired point.

The Ellis Pneumatic System of pumping water is the simplest yet introduced for raising water from underground, for general building purposes. The water flows voluntarily into the receiving tanks, which are duplicate. Compressed air under pressure is conveyed from the air storage tank to the receiving tank, and forces the water to any desired point. It is arranged to work entirely automatically so that when one tank is discharging the other is refilling. There is no machinery required other than the air compressor, which can be placed at any point, generally in the engine room.



THE ELLIS SEWAGE EJECTOR

THE ELLIS AUTOMATIC CELLAR DRAINER.**THE ELLIS PNEUMATIC PUMPING SYSTEM.**

There are no suction pistons or discharge valves to repair and keep in working order. The liquid has a free flow, passing through no machinery whatever. Economy and simplicity are especially combined in this system.

Among the many buildings we have equipped are the following:		Number Installed
<i>Apartments</i>		
Astor Apartments	New York City	1
City & Suburban Homes Company	New York City	1
<i>Breweries</i>		
Central Brewery	New York City	1
Joseph Hensler Brewery	Newark, N. J.	1
<i>Churches</i>		
Church of the Incarnation	New York City	1
<i>Club and Association Buildings</i>		
The City Club	New York City	1
New York Yacht Club	New York City	2
Y. M. C. A. Building	Brooklyn, N. Y.	1
Y. M. C. A. Naval Branch	New York City	1
Y. M. C. A. Building	New York City	1
First Battery N. Y. Armory	New York City	2
<i>Government Buildings and Institutions</i>		
Governor's Island	New York City	1
United States Navy Yard	Brooklyn, N. Y.	1
<i>Hospitals</i>		
New Jefferson Hospital	Philadelphia, Pa.	3
<i>Hotels</i>		
Columbian Hotel	New York City	1
Hotel Gotham	New York City	2
Hamilton House	New York City	1
Imperial Hotel	New York City	1
Manhattan Hotel	New York City	2
Hotel Martha Washington	New York City	2
Pabst Circle Hotel	New York City	1
Hotel Marseilles	New York City	1
Colonial Hotel	Pittsburg, Pa.	2
St. Regis Hotel	New York City	8
<i>Laboratories</i>		
Schieffelin's Laboratory	New York City	1
<i>Office Buildings</i>		
American Exchange National Bank	New York City	1
Building, 112 Wall Street	New York City	1
Chamber of Commerce	New York City	1
Commercial Cable Building	New York City	2
Commonwealth Title Insurance & Trust Company	Philadelphia, Pa.	2
Corn Exchange Bank	New York City	1
Gimble Building	Philadelphia, Pa.	3
Hanover National Bank	New York City	1
Journal Building	Providence, R. I.	1
Kean Van Cortlandt Building	New York City	1
Knickerbocker Trust Company	New York City	1
N. Y. & N. J. Telephone Building	Brooklyn, N. Y.	2
Fulton Building	Pittsburg, Pa.	1
Prudential Insurance Building	Newark, N. J.	1
Reed & Barton Building	New York City	1
Sonn Brothers Building	New York City	1
State Bank	New York City	1
Redmond Building	New York City	1
Transit Building	New York City	1
Ward Line Building	New York City	1
<i>Public Baths</i>		
Bronx Baths	New York City	1
Hollander's Baths	New York City	1
<i>Residences</i>		
J. F. D. Lanier's Residence	New York City	1
W. K. Vanderbilt's	Oakdale, L. I.	1
<i>Restaurants</i>		
Kugler's Restaurant	Philadelphia, Pa.	2
<i>Railroads and Subways</i>		
Louisville & Nashville R. R. Co	So. Louisville, Ky.	2
Interborough Rapid Transit Subway Railroad	New York City	32
Underground Electric Railroad	London, England	1
<i>Stables</i>		
Naughton's Stables	New York City	2
Stein's Stables	New York City	1
Fiss, Doerr & Carroll	New York City	2
<i>Storehouses</i>		
Manhattan Storage & Warehouse	New York City	2
<i>Theatres</i>		
Maryland Theatre	Baltimore, Md.	1
New Amsterdam Theatre	New York City	2
Trent Theatre	Trenton, N. J.	1
<i>Towns and Villages</i>		
Aldene (Watson-Stillman Company's Factory)	New Jersey	1
Town of West Orange	New Jersey	4

SHONE COMPANY

134 Blackhawk Street
CHICAGO, ILL.

PRODUCT.

THE SHONE PNEUMATIC SEWAGE EJECTOR.

ADAPTABILITY.

The Shone System of discharging the sewage and drainage of buildings is applicable in all cases where there is no natural fall or one not sufficient to convey the sewage satisfactorily and at all times to the point of outfall.

The system is now in use in many of the principal buildings throughout the country. It is adapted to all conditions and for all classes of buildings, there being virtually no limit to the quantity or character of the sewage which can be handled, the height to which it can be raised or the distance to which it can be conveyed.

OPERATING POWER.

The operating power is compressed air, which can be generated by steam, electricity or any available form of power, and is applied directly to the work to be done by means of an apparatus known as the "Shone Pneumatic Ejector."

OPERATION.

The ejector, which is a closed iron vessel, is placed at such a depth that the whole of the sewage of the building (excepting such as originates at an elevation sufficient to allow it to be run off satisfactorily by gravitation) can be brought to it by means of a system of sewers and drains.

As soon as an ejector is filled by the sewage flowing into it, compressed air is automatically admitted, which at once forces the sewage out through the discharge pipe and empties the ejector. The compressed air is then cut off automatically and that inside the ejector allowed to escape to the outside of the building, whereupon the sewage recommences to flow into the ejector and the process is repeated.

The sewage is thus automatically ejected from the building and conveyed to any desired point as fast as it is created.

As there is no connection between the interior of the ejector and the building, the sewage cannot come in contact in any way with the air inside the building. The machine is absolutely inoffensive when in operation and may be located wherever desired.

EFFICIENCY.

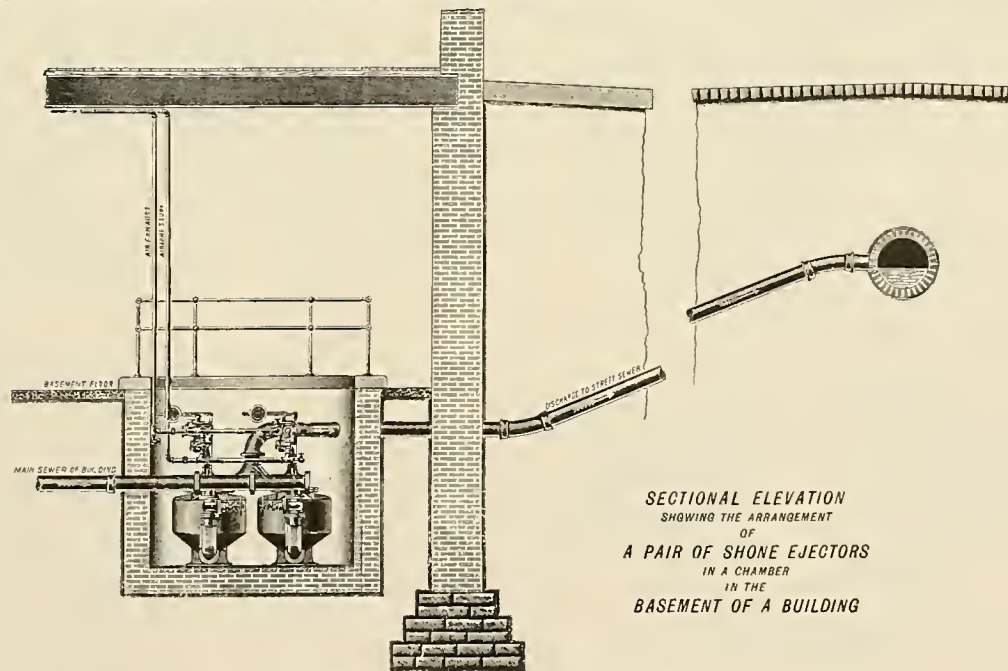
The principal merits of this apparatus are its sanitary efficiency and its certainty of action and freedom from mishap under all conditions.

CAPACITY.

Ejectors are built in various sizes, from a capacity of 50 gallons per minute upwards.

DETAILS.

A pamphlet containing a full description of the Shone System will be sent upon request, and all necessary details will be furnished upon receipt of information regarding the conditions governing any proposed installation.



SECTIONAL ELEVATION
SHOWING THE ARRANGEMENT
OF
A PAIR OF SHONE EJECTORS
IN A CHAMBER
IN THE
BASEMENT OF A BUILDING

THE SHONE PNEUMATIC SEWAGE EJECTOR

THE PERFECT FRESH AIR INLET COMPANY

125 E. 42d Street

NEW YORK CITY, N. Y.

TELEPHONE, 3928 38TH STREET

PRODUCTS.

Manufacturers of the PERFECT FRESH AIR INLET VALVE, the PERFECT SELF-SCOURING ANTI-SYPHON BASIN and BATH TRAP, the PERFECT SEWER, BACK WATER and TESTING TRAPS, PLUMBING SPECIALTIES. All simple, effective, durable devices furnished with great care and accuracy and guaranteed in all respects.

THE PERFECT FRESH AIR INLET VALVE.

The Perfect Fresh Air Inlet Valve (Fig. 1) supersedes all sidewalk and surface methods of fresh air inlets, to which so many objections have heretofore been made on account of their efficiency being so easily destroyed by the accumulation of dirt, frost and snow in winter, when they are placed outside the building. The Perfect Fresh Air Inlet Valve removes all those objections by being placed inside of the building. The seal of The Perfect Fresh Air Inlet Valve is made by liquid mercury which insures a positive and permanent seal against the escape of sewer gases through the fresh air inlet pipe in front of the building. There is a glass set in the top of The Perfect Fresh Air Inlet Valve by which its operation may be readily seen at all times.

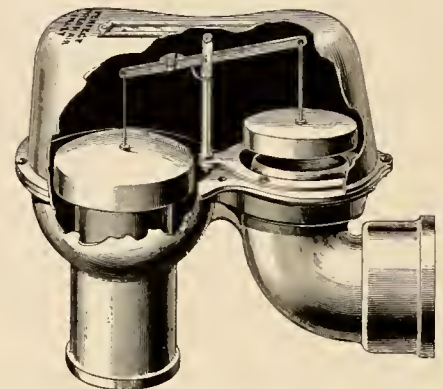


FIG. 1. THE PERFECT FRESH AIR INLET VALVE
Detail Showing Construction

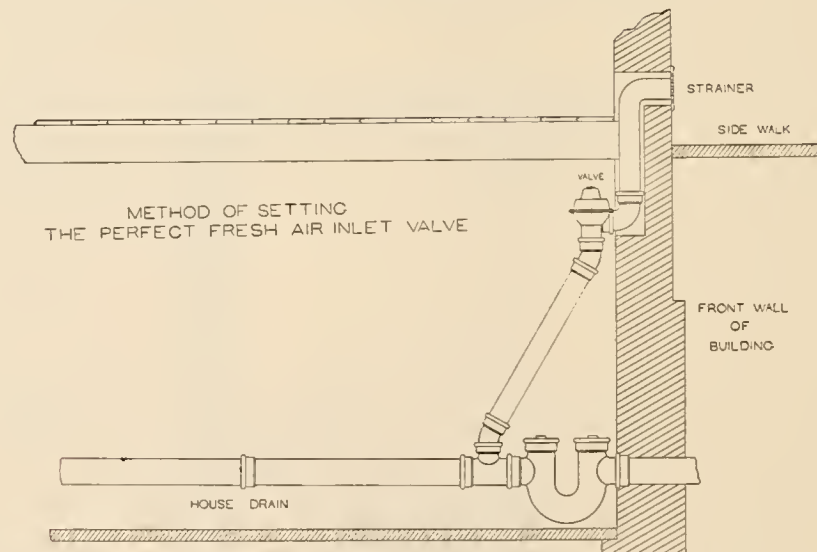


FIG. 2. METHOD OF SETTING THE PERFECT FRESH AIR INLET VALVE WHERE THERE IS NO AREA IN FRONT OF BUILDING
Showing mouth of Inlet coming out through wall of building above sidewalk

INSTALLATION.

The method of setting the Perfect Fresh Air Inlet Valve in buildings and dwellings will readily be understood by a glance at Figs. 2 and 3.

Fig. 2 shows the setting in buildings that are constructed without an area, and it shows the mouth of the Inlet coming out through the wall above the sidewalk. Fig. 3 shows its installation in a building provided with an area.

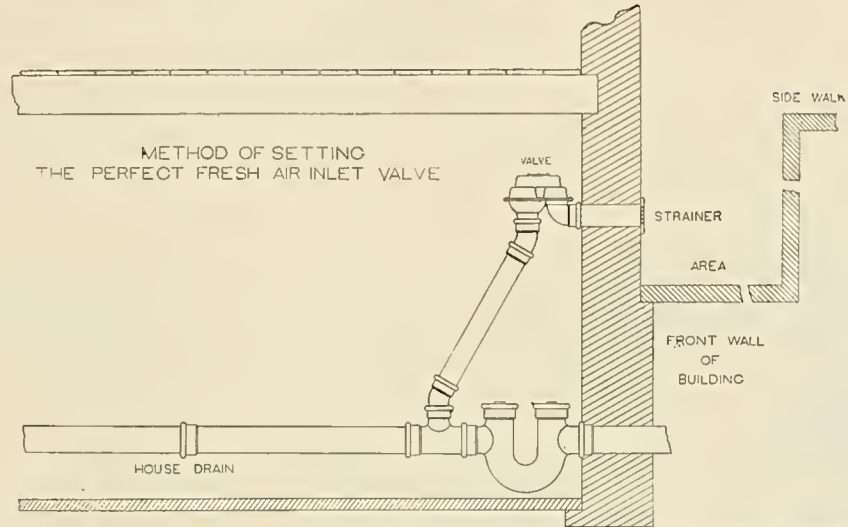


FIG. 3. METHOD OF SETTING THE PERFECT FRESH AIR INLET VALVE WHERE THERE IS AN AREA IN FRONT OF BUILDING

THE PERFECT SELF-SCOURING ANTI-SYPHON BASIN TRAP.

The Perfect Self-Scouring Anti-syphon Basin Trap (Figs. 4 and 5) is the most practical and best proportioned Anti-syphon Trap at present devised. It has great resisting power against syphonic action and has a large evaporating surface. This is also made as a bath or running trap.

We commend these devices to architects without qualification of any sort, as the best, the simplest and most effective of their kind that have ever been offered.

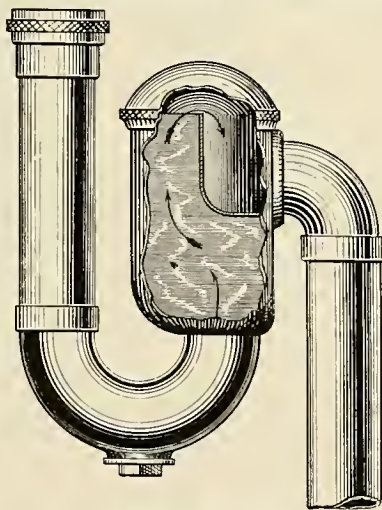


FIG. 4. THE PERFECT SELF-SCOURING ANTI-SYPHON BASIN TRAP Sectional View

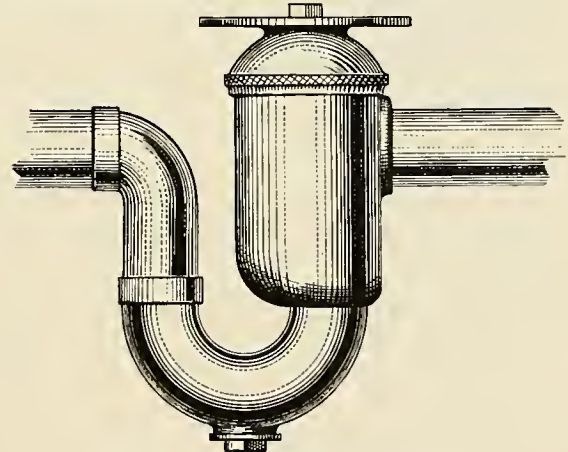


FIG. 5. THE PERFECT SELF-SCOURING ANTI-SYPHON BASIN TRAP With floor flange on clean-out

THE PERFECT TESTING TRAP.

The Perfect Testing Trap prevents the flooding of cellars while testing the drainage system of buildings. Fig. 6 shows valve closed, ready for testing. By unscrewing the hand hole plug about one inch, the water in the drainage system flows off. By using this trap, time and money are saved. After testing, the nipple between the plug and the valve can be removed, making a sewer and back water trap. The flap of a valve can also be removed if necessary.

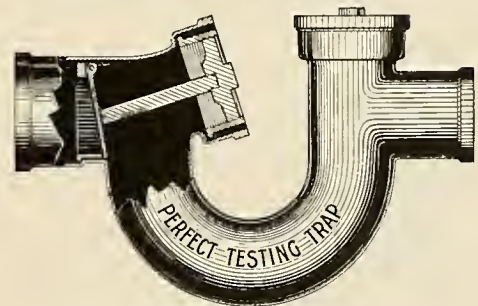


FIG. 6. THE PERFECT TESTING TRAP Sectional View

CENTRAL FOUNDRY COMPANY

116 Nassau Street
 NEW YORK CITY, N. Y.
 TELEPHONE, 5450 JOHN
 BRANCHES
 BALTIMORE, MD.

87 N. MAY ST., CHICAGO

VINCENNES, IND.

PRODUCTS—Manufacturers of “F. & W.” VENT, REVENT and DRAINAGE FITTINGS.

GENERAL INFORMATION—The “F. & W.” system is so constructed as to make it impossible for waste or rust to accumulate and prevent proper venting. “F. & W.” Fittings are made to meet all conditions of drainage and venting. In addition to their sanitary superiority they represent a substantial saving in cost when properly installed. They take up less room between partitions and can be more thoroughly tested than those of any other system.

All “F. & W.” fittings are patented and bear the trade mark, “F. & W.”

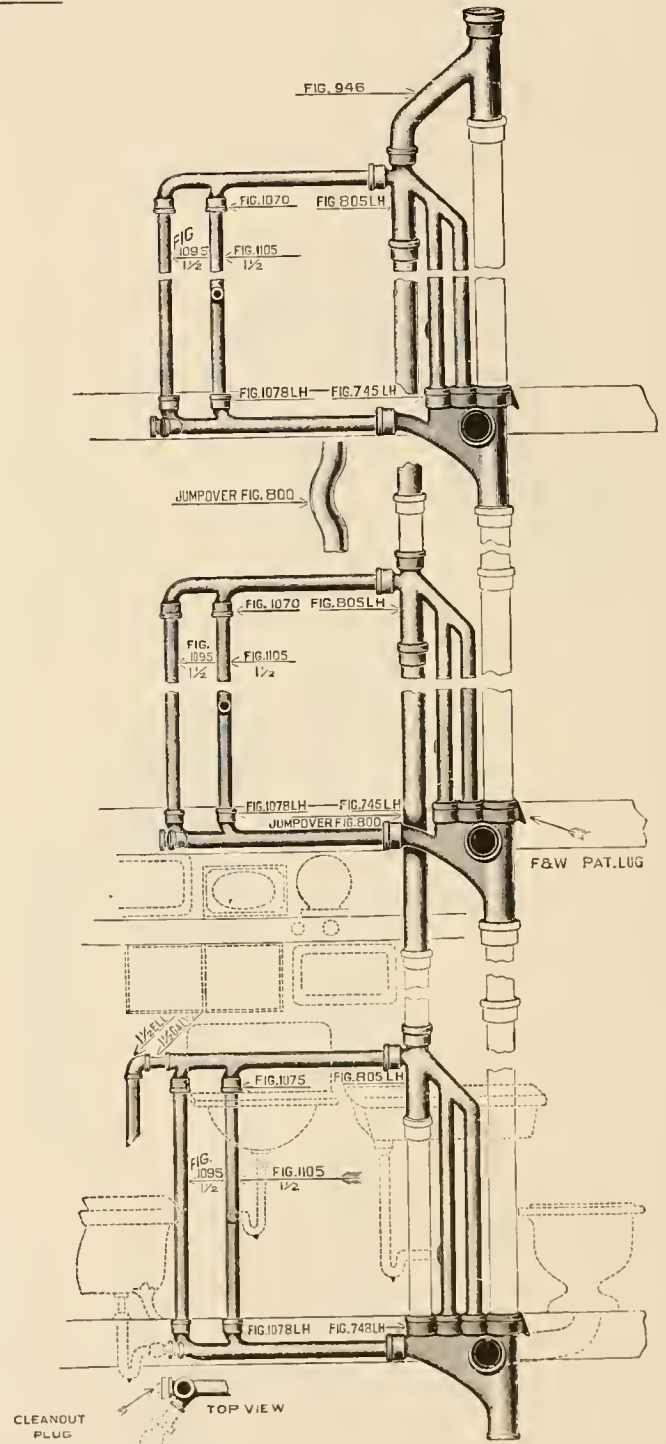
ILLUSTRATION—The accompanying cut illustrates representative stack of “F. & W.” Vent, Revent, and Drainage Fittings with inlet for bath, basin, sink, and closet. It shows clearly the superiority of these Fittings over the old style lead work.

SIZES AND PRICES—The sizes and list prices of the Fittings shown in the accompanying cut are as follows:

	FIGURE	SIZE	LIST PRICE
BASE	748	4X3	\$6.25
	805	3X2	4.25
	1078	2X1½	2.40
	1075	2X1½	2.25
	1095	1½	1.00
	1105	1½	2.00
	745	4X2	4.25
	800 (Jump over)	3	4.00
	946	4X3	2.25

FORM OF SPECIFICATION—In order to assist architects in specifying the “F. & W.” Fittings, we recommend the following form of specification:

“All Vent, Revent and Drainage Fittings, to be installed on these premises must be those known as the ‘F. & W.’ manufactured by the Central Foundry Company, of New York.”



“F. & W.” FITTINGS. (SECOND AND THIRD FLOOR FITTINGS NOT SHOWN IN BASE)

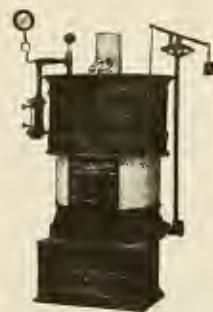
SMITH & ANTHONY COMPANY

52 and 54 Union Street
BOSTON, MASS.

Specialties: Heating, Ventilating, Sanitation, Cookery

HEATING.

HUB HOT AIR FURNACES, HUB STEAM HEATERS, HUB HOT WATER HEATERS, and HUB COMBINATION HEATERS. All of these Heaters are favorably known the country over for heating high class private residences, apartment houses, or any place where ideal heating is required.



HUB STEAM HEATER

VENTILATING.

For Schools, Hospitals, Banking Rooms, Factories, etc., we install the HUB HEATING AND VENTILATING SYSTEM with natural or forced draught. It meets the most exacting requirements of School Boards and Boards of Health in the amount of fresh air supplied and foul air removed.



HUB HOT WATER HEATER

SANITATION.

We are the makers of the celebrated SANITAS PLUMBING APPLIANCES, consisting of Sanitas Closets, Traps, Baths, Lavatories, Showers, Bidets, Sinks, etc., for private houses; also a full line of Sanitas Fixtures for Schools and Institutions, including Urinals, Range Closets, School Sanitariums, and everything in sanitation.



SANITAS LAVATORY

COOKERY.

We manufacture the celebrated HUB COOKING RANGES in over 500 sizes and varieties, for private houses, restaurants, hotels and institutions.



HUB COOKING RANGE

SIZES AND PRICES.

Detailed Catalogue of each department gladly mailed on application.

WARING, CHAPMAN & FARQUHAR

SANITARY ENGINEERS

874 Broadway

NEW YORK CITY

PRODUCTS AND SERVICES.

We are ENGINEERS and CONTRACTORS for the "WARING SYSTEMS" for the DRAINAGE of country houses and institutions of all kinds. Our systems are based upon the principles of SUBSURFACE IRRIGATION, and SURFACE IRRIGATION, the difference being simply one of application, and the local conditions determining which is the more desirable in any given place.

The success of these systems is unquestioned. They are in accord with the teachings of modern scientific sanitation. The methods have been adopted not only by many of the leading architects for fine country houses designed by them, but they are in use in many villages and towns, notably in Massachusetts and New Jersey, where the State Boards of Health are particularly active. Among these may be mentioned South Framingham, Brockton and Stockbridge in Massachusetts, and Freehold, Flemington and Westfield in New Jersey.

EXAMINATIONS AND PLANS.

We are prepared to make examinations for architects and others, and submit plans for the "Waring Systems" of sewage disposal, giving estimates as to the cost for furnishing all materials, labor, and everything required to install the systems in complete working order. We will also be glad to furnish plans and specifications for the disposal of sewage in town and cities.

FACILITIES.

We manufacture our own special materials, including automatic discharging siphons, subsurface sewage disposal tiles, and other materials designed solely for our own work. We have a large staff of assistants to attend to construction, which gives us every facility to work properly, promptly and economically.

OUR CLIENTS.

It may be interesting to point out that among the architects under whose direction the "Waring Systems" have been installed, are the following: Grosvenor Atterbury, Babb, Cook & Willard, Barney & Chapman, Brite & Bacon, Carrère & Hastings, Clinton & Russell, Dehli & Howard, C. L. W. Eidlitz, Ernest Flagg, Geo. A. Freeman, Frank Freeman, Wm. P. Gerhard, C. E., C. P. H. Gilbert, Bradford L. Gilbert, A. J. Haydel, Chas. C. Haight, Hoppin & Koen, Lord & Hewlett, McKim, Mead & White, Benj. W. Morris, Jr., Parsons & Co., (Landscape), Chas. A. Platt, Renwick, Aspinwall & Owen, Rossiter & Wright, Schickel & Ditmars, S. Gifford Slocum, Snelling & Potter, W. E. Stone, J. G. Thorp, Wm. B. Tubby & Bro., J. E. Ware & Son, Warren & Wetmore, Dunham Wheeler, and Edward Lee Young, etc., of New York City; Geo. H. Skidmore, Riverhead, L. I.; I. H. Green, Jr., Sayville, L. I.; Geo. F. Pentecost, Jr. (Landscape) Yonkers, N. Y.; Baker & Dallett, Cope & Stewardson, Guy King, Geo. B. Page, Walter Smedley and C. C. Zantzing, of Philadelphia, Pa.; Alden & Harlow, and Rutan & Russell, of Pittsburg, Pa.; R. Clipton Sturgis, Boston, Mass.; Baldwin & Penington, Baltimore, Md.; Mauran, Russell & Garden, St. Louis, Mo.; Geo. Keller, Hartford, Conn.; Geo. F. Hammond, Cleveland, Ohio, A. P. Clark, Washington, D. C.

Moreover, our systems have been installed (among a great many others) in the residences of H. O. Havemeyer, Bayberry Point, L. I.; Briarcliff Lodge (2), Briarcliff Manor; Lockwood DeForest, R. W. DeForest, Dr. W. B. James (2), Walter Jennings (4), and L. C. Tiffany, of Cold Spring Harbor, L. I.; G. L. McAlpin and E. C. Potter of East Hampton, L. I.; L. F. G. Bourne (3), Oakdale, L. I.; W. Emlen Roosevelt, Oyster Bay, L. I.; Payne Whitney, Port Washington, L. I.; A. Cass Canfield, Roslyn, L. I.; Stanford White, St. James, L. I.; W. Bourke Cochran, Sands Point, L. I.; C. T. Barney, Judge H. E. Howland and J. Hampton Robb of Southampton, L. I.; H. B. Duryea and R. L. Stevens of Westbury, L. I.; Wm. Barclay Parson, Locust, N. J.; H. McKay Twombly, Madison, N. J.; D. H. McAlpin, Jr., Morris Plains, N. J.; C. N. Bliss and M. C. D. Borden (5), of Oceanic, N. J.; Grover Cleveland, Princeton, N. J.; Bryn Mawr College (2), Bryn Mawr, Pa.; Pittsburg Country Club, Pittsburg, Pa.; Mrs. O. B. Jennings (2), Fairfield, Conn.; and Clyde Fitch, Greenwich, Conn.

WILLIAMS & WHITMAN, Inc.

Civil and Sanitary Engineers

17 Battery Place

NEW YORK CITY, N. Y.

TELEPHONE 6214 BROAD

PRODUCTS AND SERVICES—We design and construct Private and Municipal WATER WORKS, SEWER SYSTEMS, WATER PURIFICATION and SEWAGE PURIFICATION PLANTS. We also have a laboratory equipped for the ANALYSES of WATER, SEWAGE and SAND. Our specialties are the design and construction of Private Water Works, and Sewage Purification and Disposal Plants, of all sizes, wherever located.

SEWAGE DISPOSAL—Sewage may be purified to any degree desired, even to absolute potability, but an effluent, clear, odorless and non-putrescible, is usually all that is required. We build plants to meet any conditions and to produce any degree of purification. We have no "pet" system. Every plant installed is studied as an individual problem, and plans are prepared especially for each case, using the particular system which our professional judgment recommends.

SYSTEMS AVAILABLE—The Bacterial process, which is simply Nature's method under scientific control, is the best under ordinary conditions, and includes the SEPTIC TANK, SAND FILTERS, CONTACT BEDS, SUBSOIL FILTRATION (known as the Waring System), BROAD IRRIGATION, and others. When sewage contains chemicals, chemicals may be used to neutralize them, or to precipitate the solids, but are avoided whenever possible.

CONTROLLING DEVICES—Our Automatic Controlling Devices for operating Filters and Contact Beds are the simplest and most efficient made.

ENDORSED BY HEALTH AUTHORITIES—Our Plants comply with the requirements of the Health Authorities and have been approved by the United States Government, War and Treasury Departments, and Boards of Health of New York, New Jersey, Massachusetts, Ohio and other States.

PRIVATE WATER SYSTEMS—We investigate and report on Water Supplies and their suitability for domestic purposes, and we design and construct Water Works Systems for Private Estates, Hospitals, Institutions and Communities.

ANALYSES—We have an especially equipped laboratory for making physical, chemical and bacterial analyses of water, and are prepared to report on the potability of any water supply, and its suitability for drinking and domestic purposes.

We are also prepared to analyze and report on Sand for Filters, and to analyze Sewage for Purification determinations.

PLANS AND ESTIMATES—We are ready to make investigations, and submit plans and estimates upon request. Correspondence is invited. We shall be glad to send, on request, our pamphlet on "The Theory of Bacterial Purification of Sewage" which is not an advertisement, but a monograph written by Prof. B. H. Buxton of the Cornell Medical College, New York City.

OUR WORK—We have installed a large number of Plants of various kinds in all parts of the country, among which may be named the Sewage Disposal Plant for the National Home for Disabled Volunteer Soldiers, at Johnson City, Tenn., James H. Freedlander, Architect for the Home; and improvements in the Water Supply System for the residence of President Theodore Roosevelt, at Sagamore Hill, Oyster Bay, under Heins & La Farge, Architects.

JOHN DAVIS COMPANY

Steam Specialties, Valves, etc.

CHICAGO, ILL.

TELEPHONE: 928 Canal

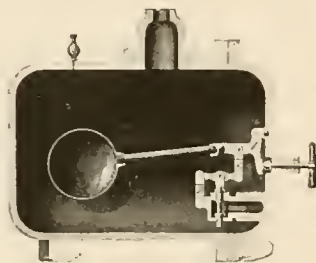
PRODUCTS.

Manufacturers of the ECLIPSE STEAM SPECIALTIES; VACUUM PRESSURE REGULATING VALVES; REDUCING VALVES; BALANCE VALVES; HOCHFELDT BACK PRESSURE VALVES; STEAM TRAPS; AUTOMATIC WATER and AIR REGULATORS; SEPARATORS.

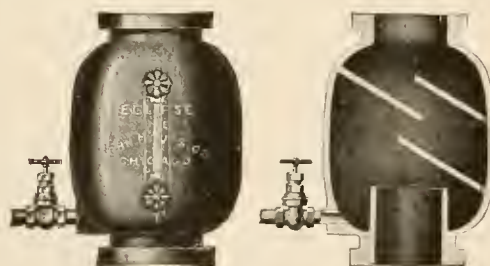


"ECLIPSE" VACUUM-PRESSURE REGULATING VALVE

For use in atmospheric vacuum or very low pressure Heating Systems.

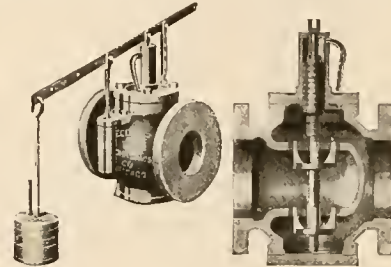


Sectional View
THE "ECLIPSE" STEAM TRAP



Sectional View
THE "ECLIPSE" SEPARATOR

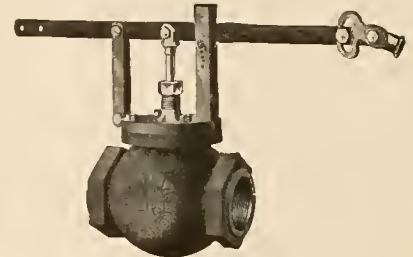
ECLIPSE STEAM SPECIALTIES.



"ECLIPSE"

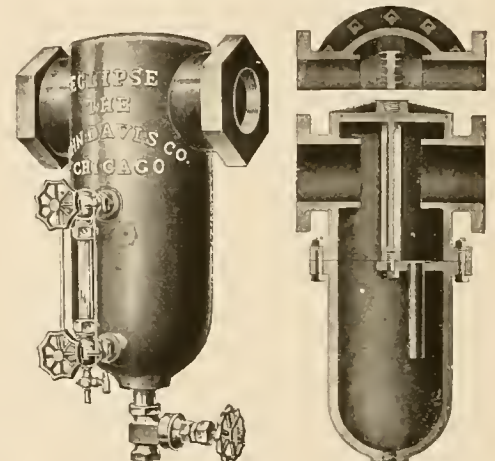
This cut shows our old reliable "Eclipse" Piston Reducing Valve. This Valve has been on the market longer than any other reducing valve made, and while a few changes have been made in its construction, it is practically the same Valve. It is the simplest Valve on the market, requires no packing, has no complicated parts or springs to break or to be looked after. For controlling the steam for a heating plant it has no equal. For use in Breweries, Distilleries, Sugar Refineries, Glue Works, Chemical Works, Rubber Works, Factories and where a uniform pressure is required for manufacturing purposes, this Valve has done the work when others failed.

When high pressure is carried and a low pressure required for dynamos, hoisting and elevator engines, this Valve does the work perfectly. When ordering be particular to give all the information possible as to the purpose the Valve is to be put to. *Give boiler pressure and pressure to be reduced to.*

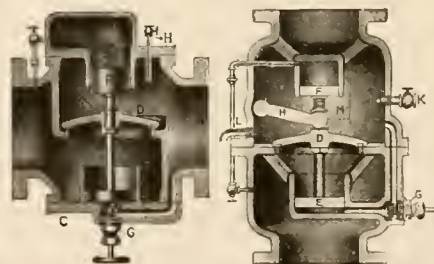


"ECLIPSE" BALANCE VALVE

For use in tank service or for controlling flow of steam to pump or other device in connection with a float. Will operate against high or low pressure. Being perfectly balanced requires only a small float.

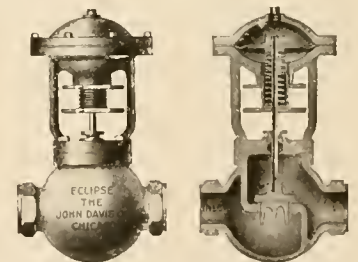


Sectional View
THE "ECLIPSE" SEPARATOR



**SECTIONAL VIEWS
THE HOCHFELDT ECLIPSE BACK PRESSURE VALVES**

This valve can be used for a non-condensing plant or, by closing the controlling valve, it can be converted into a single seated valve for a condensing plant, the lower piston acting as a dash pot.



THE "ECLIPSE" AUTOMATIC WATER AND AIR REGULATOR

This valve is designed to automatically regulate the pressure of water, air or gas. When ordering give full particulars: the pressure carried and the pressure to which it is to reduce.

Eclipse Steam Specialties are manufactured for each individual condition under which steam is used in modern practice.

In requesting details, information or blue prints of any of the valves we illustrate, a full statement of the conditions and the exact duty expected from the device, should accompany the request.

THE EATON, COLE & BURNHAM CO.

SALES OFFICE

253 Broadway

NEW YORK CITY, N. Y.

TELEPHONE, 4660 CORTLANDT

FACTORIES

BRIDGEPORT, CONN.

BRASS DEP'T TELEPHONE, 832

IRON DEP'T TELEPHONE, 1298

PRODUCTS.

IRON, STEEL and BRASS GOODS for Pipe Work of every description; also ENGINE and BOILER TRIMMINGS and STEAM FITTING SUPPLIES.

FACILITIES.

Owning one of the largest and most modern industrial plants in New England, comprising nearly eighty acres, located on the Bridgeport water front and a trunk line railroad, we are natural distributors to all water points throughout the world, and especially Eastern and Seaboard States and Canada; and we are in position to give our customers the best possible service.

To facilitate prompt shipments, we aim to carry at our factory an *ample stock* in all regular sizes of VALVES, FITTINGS, PIPE MACHINES, TOOLS and other standard products, and we are exceptionally equipped to furnish prompt estimates on special work, heavy flange fittings, and valves, etc., of unusual sizes and for unusual pressures.

SUPERIORITY.

Wherever *Approved Standards* exist, our goods conform thereto, and besides the rigid inspection given to all goods, pressure material is subjected to thorough steam, air or hydraulic tests as demanded, and a large safety factor allowed.

Architects are prone to minimize the necessity of specifying fittings and valves particularly; they fail to realize the fact that valves and fittings are an exceedingly important part of the equipment of a building, a part that should receive the same care and attention as the balance of the specification. Cheap and unreliable valves and fittings are sure to cause trouble, if not a serious accident.

Many architects have learned, to their sorrow, the disappointment caused by crooked and leaky pipe lines, due largely to inaccurate tapping and imperfect material and machining.

Our products are well finished, accurate, durable and efficient and the best proof is that "buyers of E. C. & B. goods don't switch."

STEEL VALVES.

We particularly solicit attention to our STEEL VALVES and STEEL CASTINGS for high pressure and super-heated steam. On these we give an unconditional guarantee as to homogeneity and flexure.

VARIETY.

It is impossible to list here our output covering many thousand articles; but we furnish practically every standard device in use in pipe engineering from the smallest $\frac{1}{8}$ " brass valve or elbow, to immense hydraulic gate valves or power machines for threading 12" pipe; we will gladly submit our latest discounts on request.

HOSE NOZZLES.

We are the sole manufacturers of the famous "GEM" HOSE NOZZLES, and we also manufacture all styles of BRASS HOSE FITTINGS, COUPLINGS, etc.

REFERENCES.

The following well known buildings are equipped with our valves, fittings, etc. :

HOTEL MANHATTAN, 42d Street and Madison Avenue,
New York City.

NEW YORK EDISON CO. POWER HOUSE, East 39th Street,
New York City.

BROOKLYN HEIGHTS RAILWAY KENT AVENUE POWER
HOUSE, Brooklyn, N. Y.

TOMBS PRISON, Elm Street, New York City.

NATIONAL SUGAR REFINERY, Long Island City, L. I.

THE THOMAS P. FORD COMPANY

Steam and Water Specialties

81 Centre Street
NEW YORK CITY, N. Y.

TELEPHONE: 3893 Franklin

142 North 6th Street,
PHILADELPHIA, PA.

BRANCH OFFICES

EDWARD P. BROCK & CO.,
104 High Street,
BOSTON, MASS.

PRODUCTS.

Manufacturers of STEAM and WATER SPECIALTIES, which include REDUCING VALVES (Steam, Air and Water), PUMP PRESSURE REGULATORS and TANK VALVES ("Ford" Balanced), HIGH PRESSURE "COMPOUND" STEAM TRAPS, DAMPER REGULATORS, HIGH and LOW PRESSURE.

PRESTIGE AND GUARANTEE.

The Ford products have obtained their prestige with the engineering public through simplicity of design and efficiency in action. Our guarantee of successful operation under fair conditions complete the purchaser's safety in buying Ford's Goods.



FORD WATER PRESSURE REDUCING VALVE FOR TALL BUILDINGS.

The Standard device for reducing water pressure on plumbing fixtures (Fig. 1). It embodies the three essentials for an "Indoor" Water Valve (to be used in Hotels and Office Buildings), viz: no opening to atmosphere, delivers the maximum amount of water, and reduces and maintains the pressure at all times.

The regulator is made of brass (in sizes from $\frac{3}{4}$ inch to 2 inches inclusive), is easily adjusted for any pressure, and is automatic in action and takes no more room than an ordinary globe valve. An adjusting screw is placed in the top of the spring case to regulate the desired pressure.

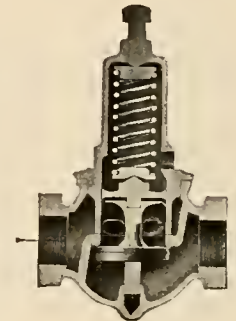


FIG. 1. FORD WATER PRESSURE REDUCING VALVE

FORD PUMP REGULATING VALVE.

This valve (Fig. 2) is used for controlling pressure on water end of elevator, house, fire, boiler feed and brine pumps, and air compressors. Over 8000 of these valves are in daily use both on pressure systems and on open tanks; in the latter case being used in conjunction with Ford Balanced Tank Valves on Roof Tanks.

The regular stock body on all sizes of the Ford Regulating Valve is made extra heavy, and capable of withstanding steam pressures as high as 175 pounds. Screwed pattern furnished unless otherwise ordered. Mention if for brine pumps in ordering, and state water pressure to be maintained.

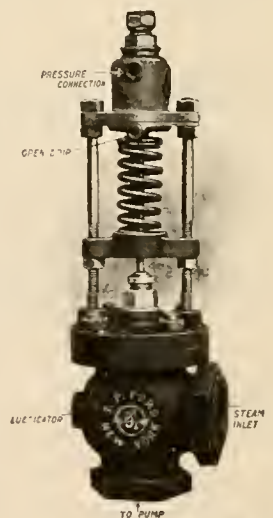


FIG. 2. FORD PUMP REGULATING VALVE

FORD BALANCED TANK VALVE HIGH PRESSURE.

In the equipment of tanks having a supply of one inch pipe or larger, a reliable valve that will operate with a small float is necessary to insure against overflowing. The single seat balanced construction of the Ford Balanced Tank Valve (Fig. 3) fills this requirement, producing a device that can be successfully applied to all water pressure with a small float, and removing entirely the danger of a break in the float lever (so common in ordinary tank valves), from the enormous strain brought upon the valve by a large float. The use of a number of small valves in one tank is no longer imperative, as a Ford Balanced Tank Valve of the size of the supply pipe can be installed with absolute confidence in its ability to open and close without any "hammering," the pressure on the valve piston neutralizing itself upon the

single seat balanced construction. At no time during the operation is there any strain whatever upon the float lever; the float closes the valve simply against the friction of the moving parts. These valves are made of brass, sizes 1 inch to 3 inches inclusive. The 4 inch to 6 inch sizes are of cast-iron, screwed pattern with brass trimmings.

CONNECTIONS.

The valve is connected with inlet on side of valve, and a hush pipe is taken from valve outlet to about 2 feet below highest water level in tank. The valve is then ready to operate on high or low pressure, no adjustment being necessary.

FORD COMPOUND STEAM TRAP.

The Ford Compound Steam Trap (Fig. 4) is a device built on entirely distinctive principles, embodying a *large size outlet valve* that is operated by the pressure in trap, and making it possible to present to the trade a machine that can be applied successfully to high pressure, and still retain the desirable feature of having this *large outlet*. The result is apparent, viz: capacity that cannot be equaled by a trap of the "small outlet" variety and an abundance of power (Steam Pressure) to open valve wide or close it tight, in the latter case preventing the leakage of steam from trap. Then, it should be considered, with a *large outlet* there is a greatly decreased liability of "plugging up."

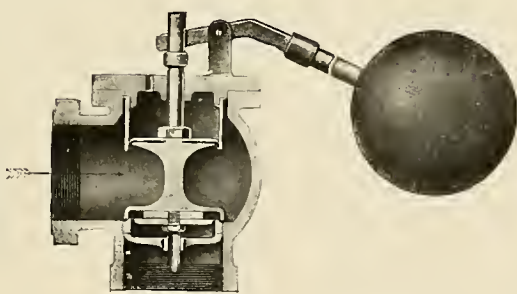


FIG. 3. FORD BALANCE TANK VALVE

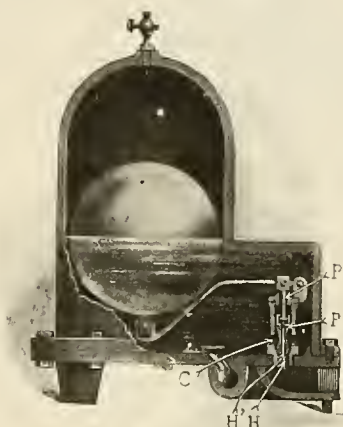


FIG. 4. FORD COMPOUND STEAM TRAP

The Ford Compound Steam Trap discharges condensation only as it is received, *i. e.*, it operates at a regular water level, in this way providing a constant seal of water to the valve.

The Float and small valve form the "pilot" of the machine, leading the large main valve to its operation when the condensation accumulates, and causing it to close when the regular water level is reached.

EQUIPMENT.

The Ford Trap is equipped with by-pass to be used in case of emergency, and also is tapped and plugged on body, providing a means of including a gauge glass where this addition is desired.

STRAINERS.

We furnish strainers at a very small extra cost, and strongly recommend their use on all traps, to arrest iron filings and other matter which is known to menace the operation of all steam traps. Regular stock trap is sufficiently heavy and of proper construction for 125 lbs. pressure.

PRICES.

Complete catalogue and prices of all products will be furnished on application.

THE KENNEDY VALVE MANUFACTURING COMPANY

MAIN SALES OFFICE

57 Beekman Street
NEW YORK CITY, N. Y.

AGENCIES

CHICAGO, ILL., 157 Lake Street

NEW ORLEANS, LA., Godchaux Building

SAN FRANCISCO, CAL., Crossley Building

PRODUCTS—Manufacturers of VALVES, HYDRANTS, etc.

INDICATOR DEVICES and VALVES for AUTOMATIC SPRINKLER EQUIPMENT. Special catalogue on application.

MATERIALS AND WORKMANSHIP—These are of the best. Our appliances, in all branches, are thoroughly "up-to-date." All parts are made interchangeable, and every valve is subject to thorough Test and Inspection before leaving our works.

"STANDARD" BRONZE GATE VALVES—Screwed for ordinary pressures. Solid wedge disks $\frac{1}{4}$ in. to 3 in. Double disk parallel seats $3\frac{1}{2}$ in. and larger. Stationary stems. The larger sizes have bolted bonnets.

DIMENSIONS, INCHES.	SIZES													
	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
Face to Face.	2	2	2 1/8	2 1/2	3	3 3/4	3 1/2	4	4 1/2	4 7/8	5 3/4	6	7	8
Center of Opening to Top of Wheel.	3 3/8	3 9/16	3 3/8	4 1/8	5	5 11/16	6 3/8	7 7/16	9	10 9/16	11 1/2	13	15 1/4	17 1/2
Price List, each.	\$1.25	\$1.40	\$1.40	\$1.80	\$2.50	\$3.50	\$5.00	\$7.50	\$14.00	\$20.00	\$32.00	\$50.00	\$70.00	\$120.
Price with Wood Wheel	1.70	2.25	3.05	4.25	5.85	9.05								



FIG. 27

"STANDARD" BRONZE GATE VALVES—With solid wedge disk, stationary stem, wood wheel and male union.

PRICE LIST, EACH.	SIZES					
	1/2	3/4	1	1 1/4	1 1/2	2
Finished Trimmings.	\$2.75	\$3.35	\$4.20	\$5.50	\$7.25	\$11.35
Rough Body { Nickel Plated Trimmings.. Nickel Plated all over.	3.05 3.10	3.65 3.75	4.50 4.65	5.90 6.10	7.65 7.85	11.80 12.10
Finished Body and Trimmings	3.70	4.50	5.55	7.35	9.10	13.80
Finished and Nickel Plated all over.	4.10	4.90	6.50	8.70	10.40	15.30

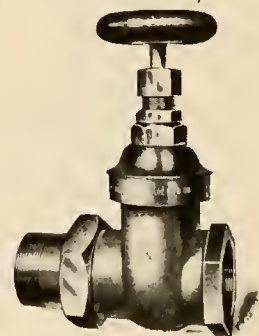


FIG. 34

These valves can be furnished with Lock-shield and key instead of wood wheel.

"STANDARD" IRON BODY, BRONZE MOUNTED GATE VALVES.

DIMENSIONS, INCHES.	SIZES													
	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Face to Face { (without By-Pass) | Screwed .. | Flanged ..	4 5 1/2	5 6	6 6 3/8	6 1/2 7 1/8	6 3/4 7 3/8	7 8 5/8	7 1/2 8 3/4	8 9 1/2	8 3/4 10 1/8	10 11 1/4	10 1/2 11 7/8	11 1/2 12 5/8	11 3/4 13 1/2	13 1/2 19
Diameter of Flanges	5	6	7	7 1/2	8 1/2	9	9 1/2	10	11	12 1/2	13 1/2	15	16	19
PRICE LIST, EACH.														
Inside Stationary Stem { Fig. 57, Screwed .. Fig. 58, Flanged ..	\$10.00	\$10.00	\$12.00	\$15.00	\$18.00	\$20.00	\$23.00	\$25.00	\$30.00	\$45.00	\$55.00	\$80.00	\$100.00	\$125
Outside Rising Stem and Yoke { Fig. 60, Screwed .. Fig. 61, Flanged ..	20.00	23.00	28.00	33.00	40.00	46.00	55.00	70.00	90.00	.....	135.00	170		



FIG. 61.
FLANGED



FIG. 57.
SCREWED

DIMENSION, INCHES.	GEARED																					
	14	16	18	20	22	24	24	30	36	42	48											
FLANGED { Face to Face { Size of By-Pass .. Diameter of Flanges ..	21	23 1/2	25	27 1/2	29 1/2	32	32	38 3/4	45 3/4	52 3/4	59 1/2	Without By-Pass..	14 3/8	14 3/8	15 1/8	16	17 3/4	17 3/4	27	29 3/4	34 1/2	40
												With By-Pass ..	20 3/8	22 3/4	21 1/2	23	23	23	27	30	34 1/2	40
													2 1/2	3	3	3	4	4	5	6	7	8

Special Prices on Application.

BRONZE "MEDIUM HEAVY" GATE VALVES—Solid wedge disk. Stationary stem, for medium heavy pressure.

DIMENSIONS, INCHES.	SIZES							
	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Face to Face.....	1 1/4	2 1/4	2 7/8	3 3/4	3 1/2	3 15/16	5 1/8	6 1/2
Screwed.....	2 3/8	2 3/4	3 3/8	3 11/16	4	4 3/4	5 3/8	6 1/2
Center of Opening to Top of Wheel.....	4 11/16	5 1/4	5 3/4	6 3/8	7 5/8	8 1/2	10 3/8	
PRICE LIST, EACH.								
Screwed.....	\$1.30	\$1.75	\$2.25	\$3.25	\$4.25	\$6.25	\$11.50	\$16.00



FIG. 37

Can also be furnished with wood wheel or lock shield and with or without union at special prices.

MEDIUM HEAVY, IRON BODY, BRONZE MOUNTED LENTICULAR GATE VALVES—With double disks, taper seats, for 160 pounds working pressure.

DIMENSIONS, INCHES.	SIZES													
	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12	14	
Face to Face { Screwed.....	6 3/4	7 1/2	8 3/4	9 3/4	9 3/4	10 1/4	11 3/4	12	12 1/2	13	13 7/8	14 3/4	15 1/2	17 1/2
{ Flanged.....	9 1/2	9 1/2	10 1/2	10 5/8	11 3/4	12 1/2	13 1/4	13 1/4	13 1/2	13 5/8	14 3/8	15 3/8	16 3/8	17 1/2
{ Flanged with By-Pass.....						12 1/2	13 1/4	13 1/4	13 1/4	13 5/8	14 3/8	15 3/8	16 3/8	17 1/2
Size of By-Pass.....						1/2	1	1	1	1	1	1 1/4	1 1/4	1 1/4
Diameter of Flanges.....	7 3/4	8 3/4	9	10	10 1/2	11	12 1/2	14	15	16	17 1/2	20	22 1/2	25
Thickness of Flanges.....	11-16	15-16	1 1-16	1 1/8	1 3-16	1 1/4	1 1/2	1 5-16	1 3/8	1 7-16	1 1/2	1 3/4	1 3/4	1 7/8
Center of Opening to Top of Stem { Inside Screw.....	11 1/4	12 1/4	13 1/4	14 1/4	16 1/4	18 1/4	21 1/4	23 1/2	25 3/8	27 1/2	30 1/2	35	37	37
{ O. R. S. & Y. } Open.....	15 3/4	17 3/4	20 1/2	22 1/2	25 3/4	29 1/4	34 1/2	38	42	46 1/2	51 1/4	59	66	66
{ O. R. S. & Y. } Shut.....	12 3/4	14	15 3/4	17 1/4	19 3/4	22 3/4	26 3/4	29 3/4	32	35 1/2	39	44 1/2	49 1/2	49 1/2
PRICE LIST, EACH.														
Inside Stationary Stem { Screwed.....	\$12	\$15	\$18	\$20	\$23	\$25	\$30	\$45	\$55	\$80	\$90	\$125	\$160	\$190
{ Flanged.....														
Outside Rising Stem and Yoke { Screwed.....	20	23	28	33	40	46	55	70	90	115	135	170	240	
{ Flanged.....														
Add for By-Pass.....									35		35	40	50	

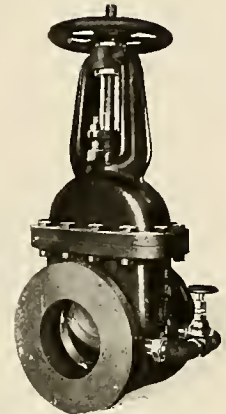


FIG. 75. FLANGED Outside Rising Stem and Yoke with By-pass

"EXTRA HEAVY," IRON BODY, BRONZE MOUNTED GATE VALVES—For working steam pressure up to 250 pounds.

DIMENSIONS, INCHES.	SIZES													
	2 1/2	3	3 1/2	4	5	6	7	8	10	12	14	16	18	20
Face to Face { Screwed.....	9	10	10 1/2	10 3/4	11 3/4	13 1/4	14 1/2	15 3/4	18	19 1/2	21 1/2	21 1/2	22	25
{ Flanged.....	10	11 3/8	11 7/8	12 1/4	15	15 3/8	16 1/2	16 3/4	18	19 1/2	21 1/2	21 1/2	22	25
{ Flanged with By-Pass.....					15	15 3/8	16 1/2	21	22 1/2	23 3/4	25 3/8	29	32	35 1/4
Size of By-Pass.....					1	1	1	1 1/2	1 1/2	2	2	2 1/2	3	4
Diameter of Flanges.....	7 3/4	8 3/4	9	10	11	12 1/2	14	15	17 1/2	20	22 1/2	25	27	29 1/2
Thickness of Flanges.....	1	1 1/4	1 3-16	1 1/2	1 3/8	1 7-16	1 1/2	1 5/8	1 7/8	2	2 1/8	2 1/2	2 3/4	2 1/2
Center of Opening to Top of Stem { Inside Stationary Stem.....	12 3/4	13 1/2	15 3/8	16 1/4	19 3/8	21	22 1/2	25 3/8	28 3/8	34	37 3/8	41 1/2	47 1/2	49 3/4
{ O. R. S. & Y. } Open.....	16 3/4	18 3/4	22 1/4	23 3/4	29 1/2	33 1/4	37	41 1/4	49	60 3/4	67 1/4	75	83	91
{ O. R. S. & Y. } Shut.....	13 3/4	15 3/4	18 3/4	19 3/4	23 3/4	26 3/4	29 3/4	32 3/4	38 3/4	47 3/4	52 3/4	58	64	72
PRICE LIST, EACH.														
Inside Stationary Stem.....	\$35	\$40	\$45	\$50	\$65	\$80	\$100	\$120	\$200	\$300				
Inside Stationary Stem with By-Pass.....					95	110	130	150	250	350	\$450	\$600		
Outside Rising Stem and Yoke.....	45	50	60	65	85	105	125	150	250	350	450	600		
Outside Rising Stem with By-Pass.....					120	140	160	185	300	400	500	650	\$850	\$1150

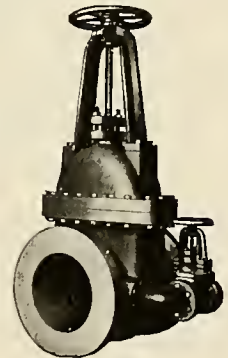


FIG. 77

THE "KENNEDY" RENEWABLE DISK, HEAVY BRONZE GLOBE VALVE

PRICE LIST, EACH.	SIZES									
	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Globe Valves { Screwed.....	\$1.10	\$1.25	\$1.60	\$2.20	\$2.80	\$4.00	\$5.50	\$8.75	\$15.75	\$22.00
{ Flanged.....					6.00	9.00	11.00	16.50	25.00	34.00
Angle Valves, Screwed.....	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00	

THE "KENNEDY" RENEWABLE DISK, HEAVY BRONZE WOOD WHEEL RADIATOR VALVES

STYLE	PRICE LIST, EACH.	SIZES					
		1/2	3/4	1	1 1/4	1 1/2	2
WITH UNION	No. 1 Rough Body, Finished Trimmings.....	\$2.00	\$2.50	\$3.20	\$4.50	\$6.25	\$10.50
	No. 2 Finished all over.....	2.50	3.00	3.75	5.25	7.25	11.75
	No. 3 Rough Body, N. P. Trimmings.....	2.30	2.80	3.50	4.80	6.55	10.80
	No. 4 Rough Body, N. P. all over.....	2.40	2.90	3.60	4.90	6.65	10.90
	No. 5 Finished and N. P. all over.....	2.90	3.40	4.15	5.65	7.65	12.15
	No. 6 Rough Body, Finished Trimmings.....	2.75	3.50	4.30	5.85	7.75	12.60
	No. 7 Finished all over.....	3.20	4.00	4.80	6.40	8.75	13.85
	No. 8 Rough Body, N. P. Trimmings.....	3.05	3.80	4.60	6.15	8.05	12.90
	No. 9 Rough Body, N. P. all over.....	3.15	3.90	4.70	6.25	8.15	13.00
	No. 10 Finished and N. P. all over.....	3.60	4.40	5.20	6.80	9.15	14.25



FIG. 95



FIG. 91 Sectional View

THE "KENNEDY" HEAVY IRON BODY, BRONZE MOUNTED, RENEWABLE DISK, GLOBE AND ANGLE VALVES

DIMENSIONS, INCHES.	SIZES												
	2	2½	3	3½	4	4½	5	6	7	8	10	12	
Globe {	Face to Face { Screwed	6½	8¼	9	10	11	12	13	15¾	16	16½	20	24¾
	Face to Face { Flanged	6	8½	9	10	11¾	12½	13	16	16	16½	20	24¾
Angle {	Center of Opening to Top of Wheel { Open	8	10	12½	13¾	15¾	16½	17¼	18½	20	22½	25	26½
	Center of Face of Inlet { Screwed	3¾	4¼	4½	5	5½	6	6½	7½	8	8½	10	12¼
Diameter of Flanges	or Outlet { Flanged	3	4¼	4½	5	5½	6	6½	8	8	8½	10	12¼
	Center of Outlet to Top of Wheel { Open	8¾	10½	13½	14¾	16	18¼	18½	19	20½	23	25½	28
PRICE LIST, EACH.													
With Bronze Bonnet {	Screwed	\$ 7.25	\$11.00	\$16.00									
	Flanged	8.50	13.00	18.00									
With Yoke	Screwed	10.00	12.00	16.75	\$19.50	\$24.00	\$32.00	\$40.00	\$48.00	\$80.00	\$90.00	\$130.00	\$185.00
	Flanged	11.75	14.00	18.50	21.50	26.00	34.00	42.00	50.00	80.00	90.00	130.00	185.00



FIG. 100
With Yoke

BRONZE SWINGING CHECK VALVES

DIMENSIONS, INCHES.	SIZES										
	¾	1	1¼	1½	2	2½	3	4			
PRICE LIST, EACH.											
Screwed, Fig. 104	\$1.30	\$1.50	\$1.75	\$2.25	\$3.25	\$4.25	\$6.25	\$12.00	\$20.00	\$50.50	\$55.00
Flanged, not illustrated							15.50	25.00	32.50	58.00	69.00



FIG. 103

BRONZE MOUNTED, IRON BODY, SWINGING CHECK VALVES

DIMENSIONS, INCHES.	SIZES										
	2½	3	3½	4	5	6	7	8	10	12	
Screwed Face to Face	7½	8	8½	9½	11½	13½	14¾	15¼	19	22½	
Flanged Face to Face	7¾	8	8¾	10½	12	13½	14¾	15¼	18¾	22½	
Diameter of Flanges	7	7½	8½	9	10	11	12½	13½	16	19	
Bell Ends {	End to End	12		13½	15¼	15¾	16¾	18½	20¾	24	
End to End of Pipe laid in Bell	6¾		7¾	8¾	8¾	9¾	11½	11¾	17	17	
Diameter of Bell Sockets	4¾		5¾	6¾	7¾	9	10	12	14¾	14¾	
Depth of Bell Sockets	2¾		3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	
Diameter of Flanges	6¾	7¾	7¾	8¾	10	11¾	13	14	16½	20½	
PRICE LIST, EACH.											
Screwed	\$15.00	\$18.00	\$24.00	\$27.00	\$38.00	\$48.00	\$62.00	\$75.00	\$125.00	\$200.00	
Flanged	17.00	21.00	27.00	30.00	42.00	52.00	67.00	80.00	135.00	220.00	
Bell Ends		24.00		35.00	48.00	60.00		90.00	160.00	265.00	



FIG. 105

Unless otherwise specified Screwed and Flanged Check Valves will be furnished with Bronze-Faced Disks and Bell End Check Valves with Leather-Faced Disks.

INDICATOR VALVES FOR AUTOMATIC SPRINKLER EQUIPMENT—Inside Stationary Stem

DIMENSIONS, INCHES.	SIZES												
	2	2½	3	3½	4	4½	5	6	7	8	10	12	
Face to Face {	Screwed	5	6	6¾	6¾	7	7¾	8	8½	10	10½	11½	13¼
Flanged	6	6¾	7¾	7¾	8¾	8¾	9½	10½	11	11½	12½	13¾	
Diameter of Flanges	6	7	7¾	8½	9	9¾	10	11	12½	13½	16	19	
Center of Opening to Top	10¾	11½	12½	14¾	14¾	16¼	16¾	18½	21	24	27¾	30¾	
Width across Cap Flange	5¾	6 5-16	6 13-16	8	8¾	9¾	9¾	11½	12¾	14¾	15¾	19¾	
PRICE LIST, EACH.													
Screwed, Figs. 65 and 66	\$13.75	\$16.50	\$20.25	\$24.00	\$26.75	\$30.00	\$32.50	\$39.00	\$53.50	\$65.00	\$85.00	\$113.00	
Flanged (not illustrated)	13.75	17.00	20.75	25.00	27.25	31.00	34.50	41.00	53.50	65.00	85.00	113.00	



FIG. 65



FIG. 66

Measurements are the same as Standard Iron Body Gate Valves (Figs. 57 and 78).

The Western style Indicator is adjustable to face in any one of four directions.

INDICATOR VALVES, OUTSIDE RISING STEM AND YOKE —With bronze stems.

This form of stem makes a positive indicator as to whether the valve is partly or wholly open or closed, the distance stem projects, indicating exactly the extent the valve is open.

INDICATOR POSTS—Underwriter's approved weatherproof adjustable type. It will indicate by the words "open" or "shut," whether the valve beneath the surface is in either the one or the other condition. These posts are made to suit any depth a valve is likely to be buried.



FIG. 70



FIG. 69



VALVE INDICATOR

KITTS MANUFACTURING COMPANY

Steam Specialties

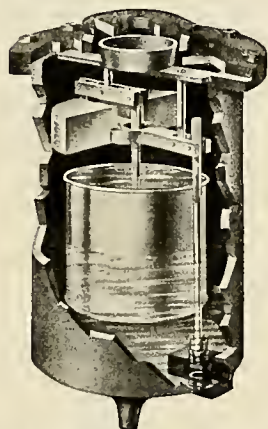
OSWEGO, N. Y.

PRODUCTS.

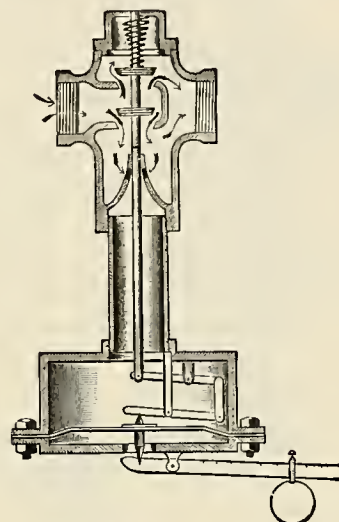
STEAM TRAPS, SAFETY WATER REGULATORS, HYDRAULIC DAMPER REGULATORS, SAFETY WATER COLUMNS, REDUCING VALVES, PUMP GOVERNORS, FAN ENGINES, REGULATORS, FLUE CLEANERS.

KITTS STANDARD STEAM TRAP.

The following are some of the advantages of the Kitts Standard Steam Trap: It has no hollow balls or floats to collapse or leak. It occupies the smallest space in proportion to its capacity. It never blows steam, because it is always half full of water. Its valve and valve seat are made with phosphor-bronze and will not cut or leak. It costs less than any other Trap doing the same amount of work.



KITTS STANDARD STEAM TRAP
For High or Low Pressure



KITTS REDUCING VALVE
For Reducing Pressure on All Kinds of Steam
Heating Apparatus

KITTS REDUCING VALVE.

The most desirable, closest working and reliable valve. Used exclusively by many of the largest steam heating plants in the United States, including the New York Steam Co., the largest steam heating company in the world.

Made in sizes from 1" to 12" inclusive.

Blue prints giving dimensions and all details furnished to architects when requested.

DIMENSIONS AND DETAILS.

When inquiry is made, please state as fully as possible the work required of the machine as regards steam pressure, boiler capacity, etc., that proper appliances and the maximum capacity needed will be understood, thus enabling us to reply specifically.

STANDARD SIZES.

All goods in standard sizes carried in stock for immediate shipment.

SUGGESTIONS AND GENERAL INFORMATION.

Practical steam engineers recommend the Kitts Specialties, because of their simplicity, accuracy and durability. Architects appreciate the necessity of recommending and specifying goods that will prove satisfactory. We guarantee satisfaction in every case.

All of our specialties are the inventions of Mr. Willard A. Kitts, who, as a practical steam engineer, stands high in the estimation of steam experts. Our plant is under his personal supervision, which means perfection before counting the cost.

JAMES P. MARSH AND COMPANY

Gauges and Air Valves
OFFICE AND WORKS
224-226 Washington Street
CHICAGO, ILL.

PRODUCTS.

We manufacture GAUGES for all purposes and are also the sole makers of the original "MARSH-PAUL" and "ACME" AUTOMATIC AIR VALVES for Heating Systems.

GENERAL INFORMATION.

In 1865 we established in Chicago the business of manufacturing Pressure Gauges and since 1884 have been manufacturing Automatic Air Valves. In 1894 we originated and patented the "MARSH-PAUL" AUTOMATIC AIR VALVE with the sealed adjustment. Our aim has always been to furnish our patrons with high grade goods, using only the best material and workmanship.

GUARANTEE.

Our "MARSH-PAUL" and "ACME" AUTOMATIC AIR VALVES always bear our Trade Mark and date of patents. Every valve is guaranteed for a period of five years when properly used.

"ACME" AUTOMATIC AIR VALVE.

The "ACME" AUTOMATIC AIR VALVE (Fig. 1) is the original AUTOMATIC AIR VALVE introduced and patented by James P. Marsh in 1887. The one shown in Fig. 2, is the original "ACME" No. 6 L. AUTOMATIC AIR VALVE. Both of above valves are for direct radiators. The double passage construction of both of these Valves is shown by two openings in the threaded part which provide a separate entrance and exit for steam and water, thus creating a circulation in the valve, which increases the action and syphons the water back.

ADAPTABILITY AND ADVANTAGES.

The "ACME" No. 6 L. VALVE is especially adapted for Public Institutions, Hotels, Office Buildings and Schools because of the Lock-shield and Key arrangement. This is a great advantage inasmuch as the Key prevents all unauthorized persons from tampering with the adjustment.



FIG. 1
"ACME" AUTOMATIC AIR VALVES



FIG. 2



FIG. 3
MARSH-PAUL AUTOMATIC AIR VALVE



"MARSH" GAUGE

"MARSH-PAUL" AUTOMATIC AIR VALVE.

The "MARSH-PAUL" AUTOMATIC AIR VALVE (Fig. 3) is so constructed that the passage for the escape of the air to the drain pipe, is through the center of the tubular expanding post. This air passage is closed when the steam reaches the valve by the expanding member seating on the spring brass cap at the top of the valve, thus forming an improved spring seat which is an important feature of this valve.

The large air opening allows air to be expelled from the radiator much quicker than by any other valve. The expanding member is lined with a brass tube which holds it absolutely straight, thus securing a perfect seat and preventing any possible injury from high pressure, while it works equally well at atmospheric pressure.

The "MARSH-PAUL" AUTOMATIC AIR VALVE is made with either sealed bottom adjustment, or with both top and bottom sealed adjustment, as may be preferred.

GAUGES.

We make and carry in stock Gauges for all pressures varying in size from 1" to 24".

PRICES.

The prices on all our production is as low as is consistent with the high standard of quality which we always maintain.

SPECIFICATIONS.

To avoid imitations, specifications should read: Each radiator to be equipped with the MARSH "ACME" No 6 L. AUTOMATIC AIR VALVE, or the MARSH "ACME" No. 6, or the "MARSH-PAUL" AUTOMATIC AIR VALVE.

NORWALL MANUFACTURING COMPANY

MANUFACTURERS OF
Automatic Air Valves, etc.

42 East 23d Street
NEW YORK CITY, N. Y.

TELEPHONE 1322 GRAMERCY

138 Jackson Boulevard
CHICAGO, ILL.

TELEPHONE 2915 HARRISON

PRODUCTS.

The "ALLEN" AUTOMATIC AIR VALVE, the "NORWALL" AUTOMATIC AIR VALVE, the "NORWALL" AUTOMATIC AIR AND VACUUM VALVE, the "NORWALL" PACKLESS, QUICK OPENING, RADIATOR VALVE, and the "NORWALL" AIR LINE SYSTEM OF VACUUM STEAM HEATING.

THE NORWALL AND ALLEN AUTOMATIC AIR VALVES.

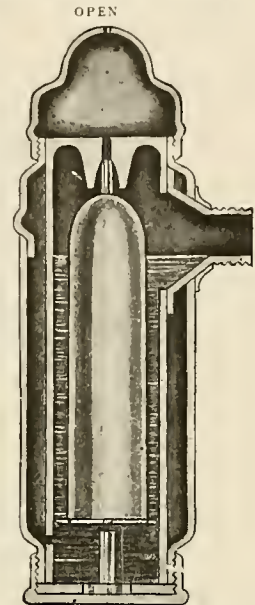
The Norwall and Allen Automatic Air Valves are made entirely of metal. No perishable materials are used in their construction. The expansion force is simply air. The Norwall Automatic Air Valve is of the same general construction as the Allen Valve, but is larger and of heavier construction than the Allen. The principle of operation in both Valves is the same. The mechanical construction of both the Allen and Norwall Automatic Air Valves consists of a double shell, with the Radiator connection so placed as to form a well in the inner shell to receive and retain the water condensed from the steam as it passes into and through the Valve. A sealed metal float is placed in this well. Surrounding the inner shell is an air-tight chamber having a single outlet at the bottom, by means of which this air chamber is connected with the inner shell or float chamber. When steam reaches the Valve, the air in the air chamber is expanded by heat and the water is forced into the float chamber, thus carrying the float to its seat and closing the Valve against the emission of steam. When steam goes off, the air in the air chamber contracts and draws the water from the float chamber into the lower part of the air chamber. The float then drops from lack of sustaining fluid and thus opens the Valve. (See Figs. 1 and 2.)

ADVANTAGES OF THE NORWALL AND ALLEN AUTOMATIC VALVES.

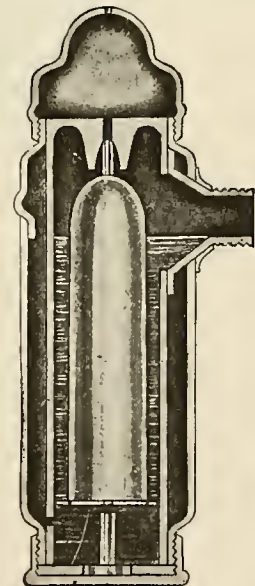
These Valves require no adjustment at any time, as there is no expansion post to buckle or get out of shape.

They are mechanically perfect in their construction. Dirt is the only element that will prevent their perfect operation, but in case of a Valve becoming clogged with dirt the bottom cap can be easily removed, which permits the thorough cleaning of the Valve. The Norwall and Allen Automatic Air Valves are the only Air Valves on the market that can be readily and easily cleaned without harming the Valve.

The Norwall and Allen Automatic Air Valves do not have to be adjusted; do not leak steam; do not leak water; do not do anything they ought not to do, but do automatically vent and heat every loop in every radiator when steam is on, and will keep them hot as long as steam is on. Specify them and be convinced.



(Patent Applied For)
FIG. 1. NORWALL AND ALLEN AIR VALVE OPEN



(Patent Applied For)
FIG. 2. NORWALL AND ALLEN AIR VALVE CLOSED

VACUUM HEATING.

The strong trend in modern low pressure steam heating is undoubtedly toward the combined pressure and vacuum system. It has long been a recognized fact by heating engineers that the ideal system of low pressure steam heating is one in which the apparatus is so constructed that the same can be operated either under pressure or under vacuum at the will of the operator. It is a commonly accepted fact that water boils and generates steam at 212 degrees, but it is not so generally known that the real boiling point of water when pressure is entirely removed from the same is 98 degrees Fahrenheit. The reason why water, ordinarily speaking, does not boil until it reaches a temperature of 212 degrees is, because the atmosphere or air which surrounds the earth's surface exerts a pressure at the sea level of 14.7 pounds per square inch. If we remove this pressure by exhausting the air from a vessel containing water and then seal this vessel, we can boil the water contained in the same at a temperature of 98 degrees, and this water will give off vapor or steam while boiling exactly the same as water does when boiling in an open vessel, under atmospheric pressure, at a temperature of 212 degrees. As we increase the pressure, we also increase or raise the temperature of water at its boiling point. For instance, water from which the pressure of the atmosphere has been entirely removed, will boil at 98 degrees. Water under a pressure of the atmosphere will not boil until it reaches a temperature of 212 degrees. Water under a pressure of ten pounds above the atmosphere, or in other words, the weight of the atmosphere, 14.7 pounds, plus 10 pounds, making a total of 24.7 pounds pressure on the water, will not boil until it reaches a temperature of 240 degrees. It is also a well known fact that it is possible to exhaust air from a vessel by filling that vessel with steam, then sealing the same and allowing the steam to condense. Steam occupies a space 1700 times greater than water from which it emanates, consequently when steam filling a sealed vessel is condensed to water, as the water occupies a space of 1700 times less than the steam, the space occupied by the steam will be left void or vacuum, provided the air is prevented from returning into this space. This phenomenon has long been a recognized fact by leading heating engineers, but the difficulty heretofore has been to find an economical device which would permit the air to be expelled from the system, automatically preventing the emission of steam when the apparatus was operated under pressure, and then automatically preventing the ingress of air to the apparatus when steam pressure was reduced below that of atmosphere. This difficulty has been entirely overcome by the invention of the Norwall Automatic Air and Vacuum Valve and the Norwall Air Line System of Vacuum Steam Heating.

THE NORWALL AUTOMATIC AIR AND VACUUM VALVE.

The Norwall Automatic Air and Vacuum Valve is practically a Vacuum System in itself, when used in connection with an apparatus that is air-tight in all its joints and connections. All that is necessary to do is to screw on the Vacuum Valves in place of the ordinary Air Valves, and a complete system of Vacuum Steam Heating is installed.

The use of the Norwall Automatic Air and Vacuum Valve does not necessitate air lines or any mechanical appliances for exhausting the air. Pressure exhausts the air from the system through the Valve, and when pressure goes off the Valve automatically closes, preventing the ingress of air into the apparatus through the Valve.

FEATURES OF CONSTRUCTION.

The venting portion of the Valve is the Norwall Automatic Valve, operating in the manner previously described, while the Vacuum attachment is a diaphragm chamber, with a diaphragm made of special bronze metal. The diaphragm chamber is directly connected to the radiator by means of the small pipe shown in the cut. A yoke surrounds the diaphragm chamber, being directly supported by the diaphragm. On the under side of the yoke is a Valve pin which seats itself in the upper part of

the Air Valve when the diaphragm is down, thus preventing air from passing into the Radiator through the Valve. When pressure of one-half pound reaches the Valve, the diaphragm is raised, which, in turn, unseats the upper Valve pin, thus allowing air to pass freely through the Valve.

The Norwall Automatic Air and Vacuum Valve is a mechanical device scientifically correct, and is designed for use in buildings heated by low pressure steam, especially in connection with residence work, stores and small apartments where the number of radiators in connection with any one plant is limited, or where the plant is practically in charge of one person.

When placed on every radiator and heating coil in such a building, the result is

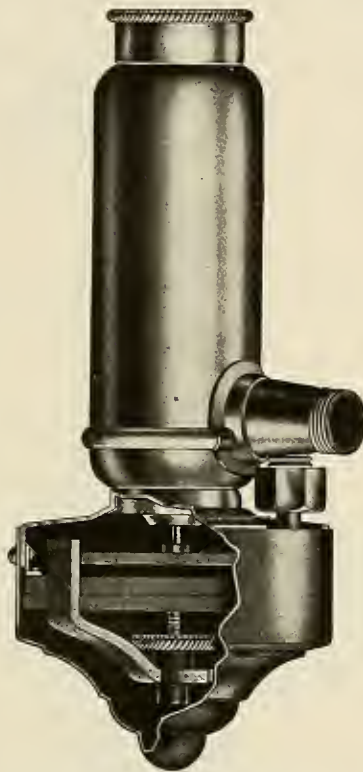


FIG. 3. NORWALL AIR AND VACUUM VALVE, ACTUAL SIZE
(Pat. Feb. 9, 1904)

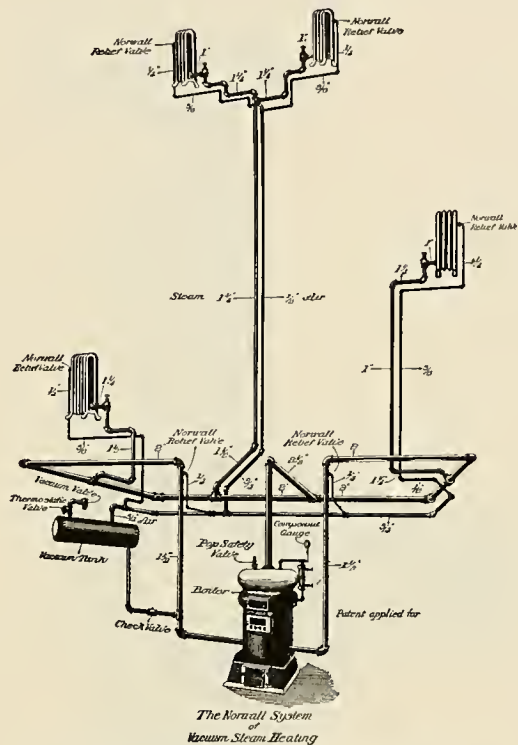


FIG. 4. A SINGLE-PIPE SYSTEM OF VACUUM STEAM HEATING

that the entire system can be operated either under pressure or under vacuum at will by the operator.

THE NORWALL AIR LINE SYSTEM OF VACUUM STEAM HEATING.

This system is designed for use on large buildings, such as apartment buildings, business blocks, etc., and contemplates the use of the Norwall Vacuum appliances in connection with the ordinary low pressure system of steam heating. The diagram illustrates a single pipe system (Fig. 4), but the Vacuum System is equally applicable to a double pipe system or any system of low pressure steam heating. In this system no automatic air valves are used on the Radiators. Each Radiator is fitted with a Relief Valve, which is open at all times when steam is on, permitting air, steam or water to pass freely through the same into the air lines, through which it is conducted to the Vacuum Tank in the basement. When the Radiator Steam Valve is closed, this Relief Valve automatically closes, thereby preventing the short circuit of steam back

into the Radiator through the Relief Valve. All air from the entire system is vented by pressure into the vacuum tank in the basement through the air lines, and from the tank through a large air valve either into the basement or it can be piped to a flue and thus vented directly to the outside atmosphere. When steam reaches the vacuum tank and seeks to find outlet through the thermostatic valve, this valve automatically closes, thus preventing the egress of steam from the tank.

ADVANTAGES OF
NORWALL AIR
LINE SYSTEM OF
VACUUM STEAM
HEATING.

A great advantage of the Norwall Air Line System of Vacuum Steam Heating in a building occupied by tenants, is the fact that the apparatus is at all times in direct control of the Engineer or Fireman. The Relief Valves being open as above described, at all times, insures a complete and rapid circulation of steam at atmospheric pressure throughout the entire system. It does away entirely with any liability of a leakage of water in the different apartments, as in case of any water passing through the Relief Valve from the Radiator, it simply finds its way back to the boiler through the air lines and vacuum tank. After the air has been expelled from the system and pressure ceases, the Vacuum Valve on the Vacuum Tank automatically closes and prevents the return of air to the tank and system, thus enabling the Engineer to operate the plant under pressure or vacuum according to the demands of the weather.

One great objection to the ordinary low pressure system is the fact that when the fires are banked for the night, or allowed to run low during a spell of mild weather, the Radiators soon begin to cool off, and in a very short time become stone cold, and the apartments in which they are placed become more or less chilly, according to the condition of the outside temperature.

By the use of the Norwall Automatic appliances for Vacuum Heating this condition is entirely changed. If the job is tight, the appliances will freely vent the Radiators of all air when pressure at the boiler registers one pound or over, automatically closing when steam reaches the Valves, and, when pressure goes off, by automatically preventing the ingress of air to the system, will keep the Radiators and coils in connection with the boiler hot for hours after pressure is off.

The economies to be derived from the operation of a combined pressure and vacuum system of ordinary low pressure steam heating are so self-evident, that it is apparent that no man who is using, or expects to use, low pressure steam heating would ever be content to continue to operate his plant simply as a low pressure steam heating apparatus, if he was fully advised of the advantages and economies to be derived by adding the Norwall Vacuum appliances to his apparatus. We, therefore, invite your careful consideration of the Norwall Manufacturing Company's systems of Vacuum Steam Heating.

THE NORWALL
PACKLESS QUICK
OPENING RADI-
ATOR VALVE.

This is a packless valve, requiring no packing of any description to insure against the leakage of steam, water or air around the stem of the valve.

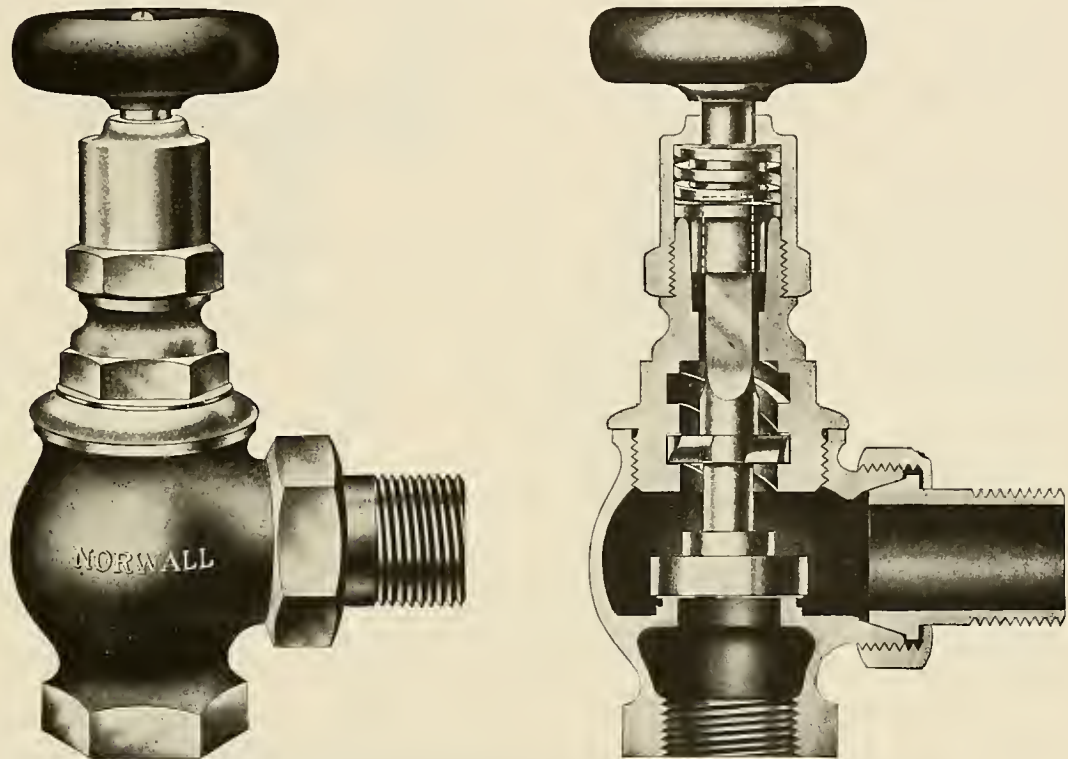
FEATURES OF
CONSTRUCTION.

The sectional cut of the "NORWALL" Packless Radiator Valve (Fig. 6) illustrates the mechanical construction of the Valve. The body and Valve seat are similar to those used in the best grade of Radiator Valves. The upper Valve stem is stationary, with a socket on its lower end which conveys the turning motion to the stem of the Valve seat. The Valve seat stem is a screw, threaded in the valve bonnet, or hood, with a key on its upper end, and as it is turned by the upper Valve stem, rises into the socket in the upper Valve stem, which, as stated above, is stationary. The upper Valve stem has a flange near its lower end, and this flange rests on a turned round edge on the upper end of the bonnet, forming a ground ball-seated joint.

ADVANTAGES OF
NORWALL PACK-
LESS QUICK
OPENING RADI-
ATOR VALVE.

The packless feature of this Valve is the ground ball-seated joint between the bonnet and the flange on the upper Valve stem. This joint being a ground joint is kept in close contact by means of pressure exerted by a steel spring incased in a cap, which is screwed on to the bonnet of the Valve from above. The spring exerts an elastic pressure on the flange, thus keeping the surfaces of the joint between the flange and the bonnet in firm and constant contact, making it not only steam and water proof, but air proof as well. The joint being between the steam chamber and the spring chamber prevents the steam from coming in contact with the spring, thus insuring it against damage by steam.

While the packed Valve causes more or less annoyance and expense when used in connection with the ordinary steam job, it is in Vacuum Steam Heating that its use causes the greatest trouble and expense. No matter how carefully the fitter packs the Valve stems, or what packing he uses, sooner or later the Valves begin to leak,



(Patent Applied For.)

FIGS. 5 AND 6. THE "NORWALL" PACKLESS QUICK OPENING RADIATOR VALVE

and the job as a Vacuum job is a failure until the leaky Valves are repacked. A Vacuum job may be perfect and absolutely tight in all its other joints, and yet if equipped with packed Radiator Valves it will soon begin to develop leaks through the Valve stems, thus making it impossible to hold Vacuum. All this trouble, annoyance and constant source of expense is entirely done away with by using the "Norwall Packless, Quick Opening Radiator Valve."

The Norwall Packless Radiator Valve will not only be steam, water and air tight at the start, but will remain tight, no matter how frequently it may be used or how long. Its use is an absolute insurance against the leakage of steam or water through the Valve when pressure is carried on the boiler, and against the leakage of air into the Radiator when vacuum is desired. The Norwall Packless Radiator Valves are quick opening, requiring but three-quarter turn to open or close same.

SIZES AND
DISCOUNTS.

The Valve is made in the usual sizes, both angle and corner, and discounts are based on same list as standard Valves.

THE PENN ENGINEERING COMPANY

Steam and Water Specialties

312 Cherry Street

PHILADELPHIA, PA.

PRODUCTS.

We are manufacturers of STEAM and WATER SPECIALTIES; HANNA "BALL JOINT" HANGERS and AUTOMATIC AIR VALVES; also the "AUTAVENT" BALL JOINT SYPHON AIR EXPANSION VALVE.

ORDERS.

Our goods are always kept in stock in all styles and sizes as listed below. Consequently, our clients may be assured of an immediate delivery of goods.

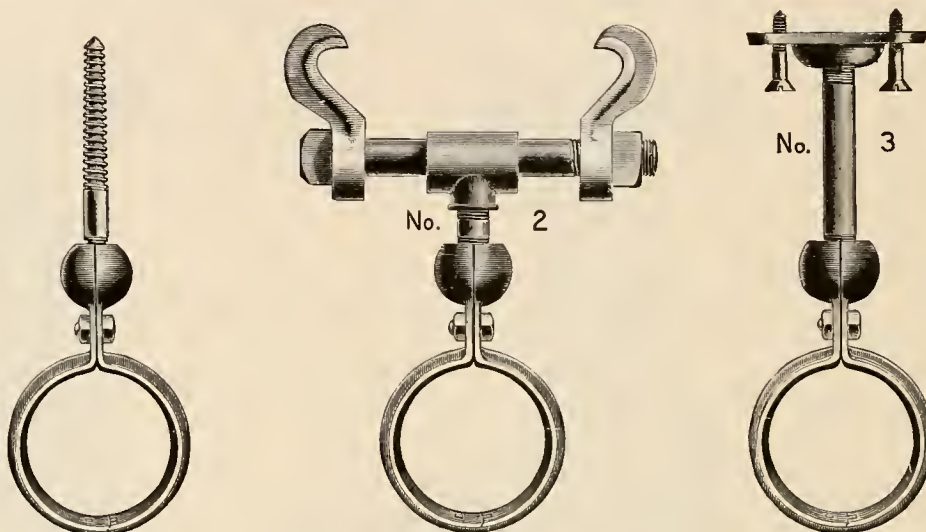


FIG. 1. BALL JOINT HANGER No. 1 FIG. 2. BALL JOINT HANGER No. 2 FIG. 3. BALL JOINT HANGER No. 3

NOTE. In ordering Style No. 2 Hanger, please state the size of iron beams.

"BALL JOINT" HANGERS.

Our "Ball Joint" Hanger is the only thoroughly reliable Hanger on the market. It is neat, symmetrical and guaranteed to be the strongest made. The sizes run from one-half inch to twelve inches and are all made in malleable iron.

The Joint being a Ball and Socket, the Hanger will swing in every direction. The pipe can be either raised or lowered after being hung, without removing the Hanger, the lag screw being turned in or out of beam, the Ball revolving in the Socket. There are no loose parts to drop or get lost.

The Hanger is made in three styles:

Style No. 1, is our Hanna "Ball Joint" Pipe Hanger (Fig. 1).

Style No. 2, which is fitted with a Beam Clamp (Fig. 2).

Style No. 3, not only has the Ball and Socket, but also a half ball in plate, thereby allowing for expansion at both points (Fig. 3).

THE "AUTAVENT" BALL JOINT SYPHON.

The "Autavent" Ball Joint Syphon (Figs. 4 and 5), is an all metal, air expansion valve, constructed to automatically open and allow the escape of cold air from the system, but to close against water by flotation and steam by expansion. The patent Ball Joint insures a perfectly tight valve and no leakage or "sputtering."

The base is made with double passages, whereby a perfect syphon is obtained, and all surplus water is instantly returned to the system. This is a wide departure from the air expansion valves having openings near their tops which prevent all possible chance for perfect drainage.

COST.

Prices and information given on request.



FIG. 4. The "AUTAVENT" BALL JOINT SYPHON

FIG. 5. THE SAME Sectional View

JOHN SIMMONS COMPANY

104-110 Centre Street
NEW YORK CITY, N. Y.

BRANCH OFFICES

451-455 West 125th St., NEW YORK CITY, N. Y.
15 Mechanic St., NEWARK, N. J.
142 Centre St., NEW YORK CITY, N. Y.

BRANCH WORKS

Pipe Bending Works, NEWARK, N. J.
Soil Pipe Works, NEWARK, N. J.

PRODUCTS.

WROUGHT and CAST-IRON PIPE, BRASS and IRON VALVES and FITTINGS, RAILWAY, MILL and FACTORY SUPPLIES, TOOLS and SUPPLIES for STEAM, WATER, GAS, OIL and ELECTRICAL ENGINEERING; PLUMBING SUPPLIES, FIXTURES and TOOLS, and SPECIALTIES of every description.

VICTORIA ACETYLENE GAS MACHINES and ACETYLENE GAS APPLIANCES.

APPROVED FIRE EQUIPMENT SPECIALTIES for skyscraper office buildings and apartment houses, hotels, and mill factory buildings, consisting of approved WROUGHT-IRON PIPE FITTINGS, VALVES, UNDERWRITER LINEN and RUBBER LINED COTTON FIRE HOSE, HOSE REELS, HOSE RACKS, HOSE COUPLINGS, HOSE NOZZLES, etc., all to conform to the requirements of Fire Departments and Underwriter specifications.

FACILITIES.

The shops and factories of the Company are the largest and most extensive in the United States. They consist of Pipe Shops in which pipe is cut to sketch in all sizes up to and including 18"; a Pattern Shop fully equipped for producing the largest patterns required; Machine Shops fully equipped with electric power, with motor applied direct to each machine, and a large force of men to operate same; a Brass Shop covering 25 acres, employing 75 to 100 hands the year round, and Warehouses covering 4 to 5 acres in the heart of New York City, where the largest stock of material in this line in the United States, is carried.

TERRITORY.

Shipments made to all parts of the United States and to all the countries covered by export commission houses generally.

ADAPTABILITY.

All material furnished is guaranteed to comply with the building laws, also the rules and regulations of the Associated Factory Mutual Fire Insurance Companies and the Board of Underwriters. The very best endeavors are used to keep the whole product up to these standards.

APPROVED LINEN HOSE.



FIG. 1. APPROVED LINE HOSE

The "S" Brand is approved of by the Associated Factory Mutual Fire Insurance Companies, and is guaranteed to stand a test pressure of 550 lbs. to the square inch.

The "SS" Brand of Underwriters Linen Fire Hose is also approved by the Associated Factory Mutual Fire Insurance Companies, and is guaranteed to stand a test pressure of 500 lbs. to the square inch.

The "SSS" Plain Linen Hose is guaranteed to stand a pressure of 400 lbs. to the square inch and will stand inspection where an Underwriter grade of Approved Linen Hose is not required.

WHERE
INSTALLED.

The Prudential Life Insurance Company's Building, Newark, N. J.; Post Building, the New York Stock Exchange, St. Regis Hotel, the Mount Sinai Hospital, Lying-In Hospital, the New York Hospital, Simpson, Crawford & Simpson, Siegel Cooper Co., "Wetzel" Building, Street & Smith, I. Townsend Burden Residence, Hammond House, Grand Central Station, all of the New York City and the New York State Hospitals, etc., are fully equipped with this grade of hose.

CRESENT FIRE
EXTINGUISHER.

This is the product of several years' experience, resulting in a Carbonic Acid Gas Fire Extinguisher which has overcome each and every objectionable feature to be found in all other such apparatus manufactured and offered for sale at the present time. The "Crescent" has no "Wheel to Tie" to handle of head to prevent bottle being broken by meddlesome persons, no special acid bottle, lead ball or acid jar, all of which require special moulds to produce, or any devices whatever which makes the purchaser dependent upon the manufacturer for repairs or extra charges. This Extinguisher can be handled right side up or upside down, without becoming operative until actually required for service. Before purchasing any Fire Extinguisher prove to your own satisfaction that the "Crescent" is what we claim for it by comparing it with others.

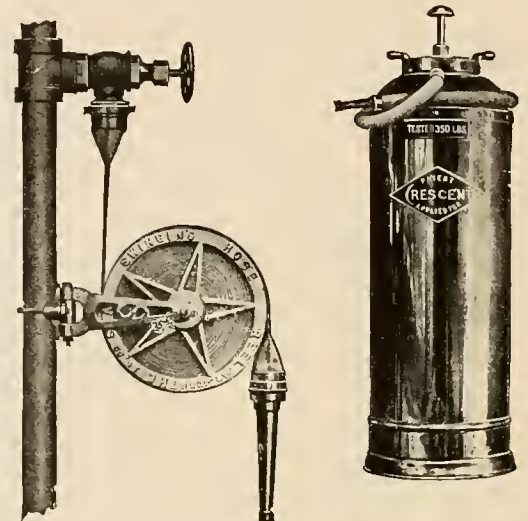


FIG. 3. STAR HOSE REEL

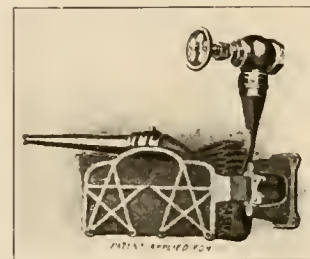
FIG. 2
THE "CRESCENT"
EXTINGUISHER

STAR
HOSE REEL.

The Star Hose Reel (Fig. 3) is made in all sizes to suit conditions as to length and size of hose. It is fitted with attachment for either pipe or wall.

STAR
HOSE RACK.

This is a swinging rack fitted with wall attachment as shown in the illustration. It was patented July 19, 1904. Among other special designs of this apparatus which we have made from architects' drawings and specifications, are those for the New York Stock Exchange and the Hotel St. Regis, here illustrated. (Figs. 5 and 6.) The latter is set in a recess, marble lined, and enclosed by an ornamental bronzed frame and plate glass.



Pat. July 19, 1904

FIG. 4. STAR SWINGING
HOSE RACK.

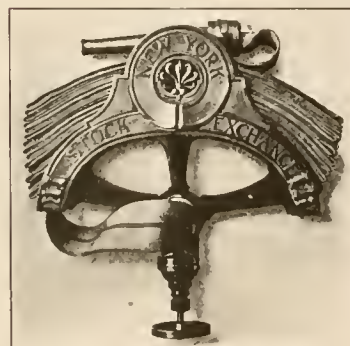


FIG. 5. SPECIAL DESIGN OF
HOSE RACK
Made for the New York Stock Exchange

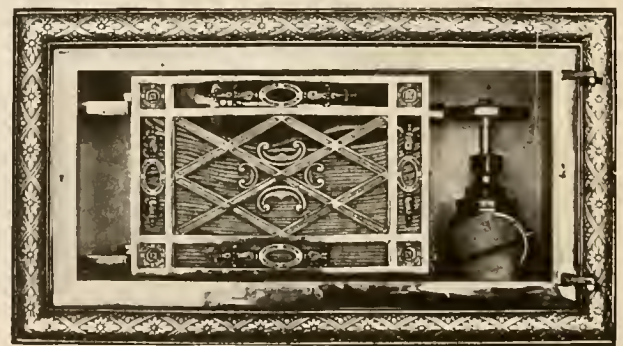


FIG. 6. SPECIAL DESIGN OF HOSE RACK
Made for the Hotel St. Regis

SIAMESE CONNECTION.

The Standard Fire Department Siamese Connection (Fig. 7) is made with Swing Checks, Plugs and Chains. The advantage of Swing Checks is to admit of a second Steamer connection, without shutting down the first steamer.

These connections are made in cast-iron with finished brass trimmings, or all brass or bronze finished to suit conditions. They are fully guaranteed to stand 400 lbs. test pressure to the square inch.

PRICES.

We shall be glad to furnish information concerning sizes and prices of our stock patterns in all our fire apparatus, and to make estimates of cost for special designs, as architects may require.

VICTORIA ACETYLENE GENERATOR.

This is in a class by itself for safety, simplicity, durability and economy of operation.

It uses 2" x 3 1/2" Lump Carbide which produces 20% more gas than smaller sizes.

Cool generation is obtained, which saves the burners and prevents accidents.

There is no after generation to the blow-off point.

Supplies gas under a pressure of 28 to 30 tenths which is required in order to obtain a flame of 24 candle power with a 1/2 ft. burner.

The Victoria Generator has only one working part, Letter I (Fig. 9), which operates to raise the governor when the bell descends, overweighing the governor, thus allowing the gas to pass through the holes indicated.

It has no valves, cogs, hand holds, ratchets, springs, rubber gaskets, or stuffing boxes, as have many other generators.

By a marvelous use of simple and well-understood hydrostatic principles, the inventor has provided that the pressure of the gas and the atmosphere and the weight of the water, without the intervention of any other agency, shall operate to produce the gas exactly as fast as required, and no faster.

Generators installed on trial and removed at our expense if not satisfactory.

Further information and catalogue sent on request.

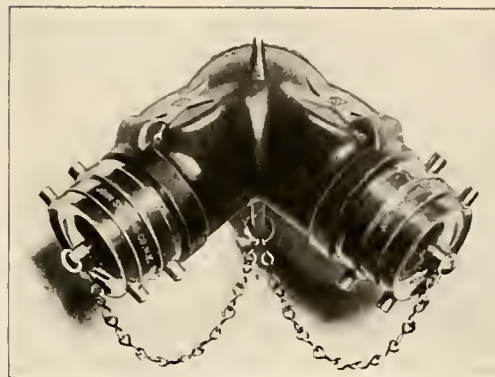


FIG. 7. STANDARD FIRE DEPARTMENT SIAMESE CONNECTION WITH SINGLE CHECK

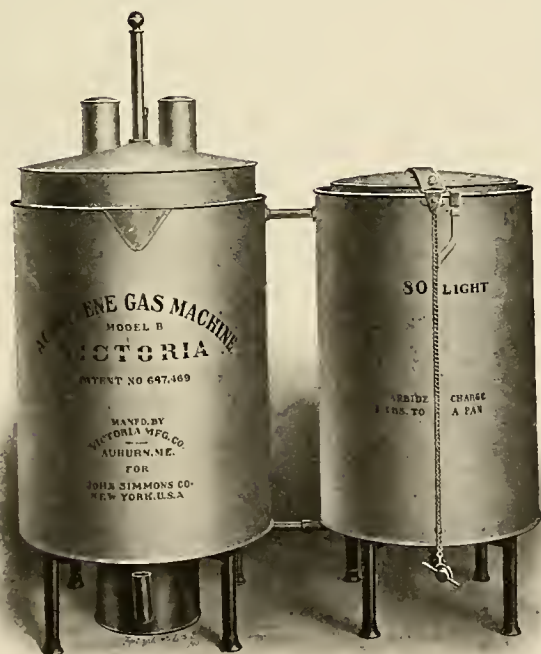


FIG. 8. VICTORIA ACETYLENE GENERATOR

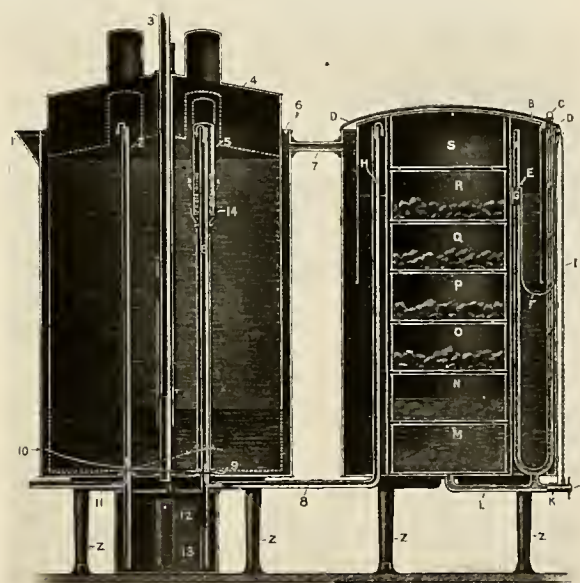


FIG. 9. VICTORIA ACETYLENE GENERATOR Sectional View

- | | |
|----------------------------------|--|
| 1 Filling Lip | B. Dummy Attached to Cap |
| 2 Gas Exit from Gasometer | C. Sounding Rod |
| 3 Blow off | D. Strap Passing Over Generator Cap |
| 4 Gasometer Bell | E. Water Port |
| 5 Governor | G. Slide Gate over Water Port |
| 6 Gasometer Tank | H. Generator Cap with Dummy B attached |
| 7 Water Pipe | I. Chain Locking Machine |
| 8 Gas Pipe | J. Screw Plug |
| 10 Lever | K. Cam on Screw Plug |
| 11 Service Pipe | L. Water Pipe from Carbide Chamber |
| 12 Spout to Condensation Chamber | M. Carbide Pan |
| 13 Condensation Chamber | N. " " |
| | O. " " |
| | P. " " |
| | Q. " " |
| | R. " " |
| | S. " " |
| | Z Standard |

THOMAS & SMITH

Contracting and Manufacturing Engineers

17 and 19 South Carpenter Street

CHICAGO, ILL.

PRODUCTS.

Manufacturers of SPECIAL PIPE FITTINGS for extreme High Pressure; STEAM SPECIALTIES and PIPE BENDING. CONTRACTORS for POWER, LIGHT and WATER SYSTEMS, HEATING and AIR COOLING, and PURIFYING SYSTEMS.

SCOPE OF WORK.

We are prepared to contract for the equipment of complete plants, to purchase and install the necessary machinery, to design and construct all special apparatus required, and to insure the completion of work at a fixed time, irrespective of the market or of labor conditions.



FACTORY EQUIPPED BY THOMAS & SMITH

PLANTS EQUIPPED.

The engraving shows one of the many plants of its class which we have equipped with Power, Light and Water Systems, including the erection of Water Tube Boilers, Induced Draft Apparatus, Fuel Economizers, Pumps for all purposes; also complete installation of High Pressure and Exhaust Steam Piping, Steam Heating, Hydraulic and Pneumatic and Fuel Oil Systems.

PLANS AND DESIGNS.

We have a corps of engineers and draftsmen, each under competent direction, insuring our clients expeditious and thorough execution of all engineering problems. We are prepared to furnish complete plans when required, or to work out details from general plans, as may be found necessary.

PATTERNS. TO ORDER.

When the nature of the work requires it, we are prepared to make patterns and finish up such special fittings and machinery as may be required. For this purpose, we have a shop completely organized and equipped to promptly turn out work to order.

CONTRACT INSURANCE.

Where it is necessary that work be completed at a certain time, we have at our command an Insurance Department which will insure the completion of a given work at a stated time, irrespective of the market or labor conditions. This service will, of course, be the source of some additional cost, but it gives the opportunity for actual time completion of contracts, which is frequently of much greater value than the cost of the insurance.

HEATING SYSTEMS.

We install heating systems for heating by Exhaust, Steam, Vacuum, Forced Circulation Water and Hot Blast for Factories, Office and Warehouse Buildings, etc.; also Central Station Steam and Water Heating Plants for Municipalities, Public Institutions and Large Manufacturing Plants.

We design and erect Low Pressure Steam and Water Heating Systems of Special or Standard Type for Residences, and we put in Hot Blast Heating, Ventilating and Cooling Systems for Schools, Churches, Hospitals, Restaurants and Hotels.

THE MICHIGAN PIPE COMPANY

BAY CITY, MICHIGAN

PRODUCTS.

Manufacturers of STEAM-PIPE CASINGS, WOOD WATER-PIPE, PIPE for Mines, Collieries, Chemical Works, Paper Mills and Distilleries; also TANNERS' LIQUOR LOGS, CREOSOTED WOOD CONDUITS, GUY ANCHOR PLANKS, LUMBER, PILES and PAVING BLOCKS.

We creosote anything within the limits of our tank capacity.

STEAM PIPE CASINGS.

Our Steam-Pipe Casing (Fig. 1) is the most efficient non-conducting steam and hot water pipe on the market. The Pipe and Casings are banded with steel hoop or galvanized wire, under heavy tension, and covered with imperishable asphaltum cement. It is made with or without tin lining, and in all standard sizes. Our Wood Casings are used in all Central Steam and Hot Water plants where heat is distributed the same as water and gas.

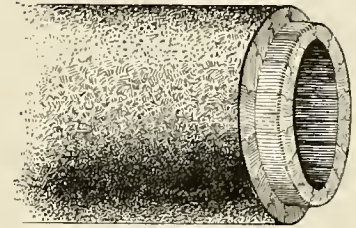


FIG. 1. STEAM PIPE CASING

WOOD WATER PIPE.

Wooden Pipe (Fig. 2) is not new; it has been used in one form or another for centuries, and the durable qualities of wood when saturated with water have been demonstrated by innumerable examples. It is the cleanest of all materials for conveying water. It lasts longer than metal pipe and costs less.



FIG. 2. WOOD WATER PIPE

USES.

Our Wood Water Pipe is especially adapted to conveying water long distances, for water works systems, water supply systems, for iron mills, factories, etc., and for conveying water impregnated with substances injurious to metal pipe. It does not corrode or fill up on the inside as metal pipes do.

ADVANTAGES.

The expense of laying and making service connections is less than in any other pipe. The wood shell is, to a great extent, a non-conductor of heat, which reduces the risk of freezing when exposed, to a minimum, and does not require deep trenching. There is also no occasion for electrolysis.

Our water pipe give the best service under all circumstances.

CREOSOTED PRODUCTS.

All our Creosoted products, namely, Creosoted Wood Conduits, Guy Anchor Plank, Lumber, Plank, Railroad Ties, Poles, Piles, Bridge Timbers, etc., are manufactured to give unlimited durability.

ESTIMATES.

Estimates will be given upon application.

WIRT & KNOX MANUFACTURING CO.

22 and 24 North 4th St.

PHILADELPHIA, PA.

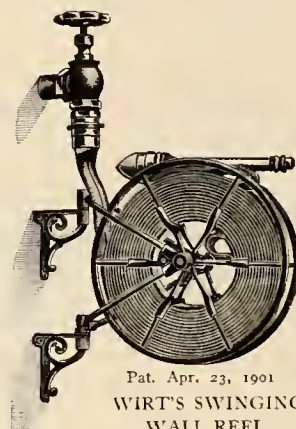
PRODUCTS—Manufacturers of WIRT'S PATENT HOSE CARTS, REELS and RACKS.

TERRITORY—Our goods are handled by the trade generally, and we are prepared to promptly fill all orders from any part of the United States and Foreign Countries.

ADAPTABILITY—All our manufactures conform in every respect to the rules of the Board of Fire Underwriters.

SIZES—Our goods are manufactured in regular sizes as listed below, and are kept in stock at all times. In addition to this, we are prepared to execute Special Sizes, Shapes and Designs at a slight increase in cost over standard goods.

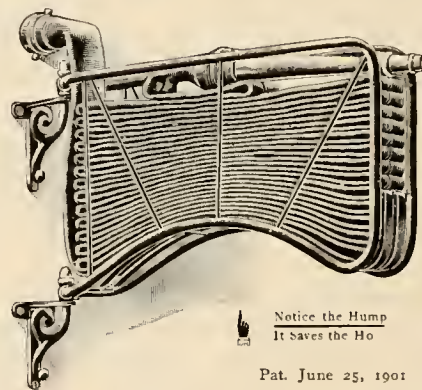
WIRT'S SWINGING WALL REEL is made of steel tubing, steel rod and wire, and malleable castings. It is serviceable and ornamental, and the strongest and most durable Reel made. Tension axles are used so that the Reel may be adjusted to run tight or loose, as desired. This is the only Swinging Wall Reel made for 150 feet of cotton rubber-lined hose. It takes up less space and presents less surface for the accumulation of dust than any other made. It will swing from any angle of the wall, and will unwind without a knot or twist. The Reel is furnished with wall brackets or pipe clamps (up to and including 4 inches without extra charge), as desired. Unless otherwise specified, the Reel is finished in vermilion, but a gold or silver bronze finish can be had without extra charge.



Pat. Apr. 23, 1901
WIRT'S SWINGING WALL REEL

HUMP SWINGING HOSE RACK—So called because of the form of the bottom of the Rack, which saves the hose from breaking at the folds. There are twenty-five breaks or folds in a fifty-foot length of hose. On a straight flat bottom these breaks are sharp; on a bottom that is higher in the centre than at the ends, the weight is taken off the ends, and these breaks become easy folds and therefore the hose will not break at the folds when run off.

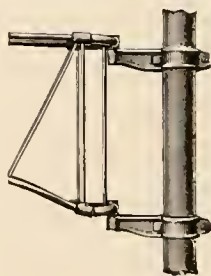
The end or front of the rack is partly enclosed in order that at least five folds of hose must be drawn off. Other racks have the entire end open, and a sudden jerk will often pull the entire length of hose to the floor in a tangled mass. The Hump Racks are attached to wall brackets or pipe clamps, at top and bottom. They are finished in japanned red unless otherwise specified. Bronzed, gold or aluminum finish can be had without extra cost.



Notice the Hump
It Saves the Ho
Pat. June 25, 1901

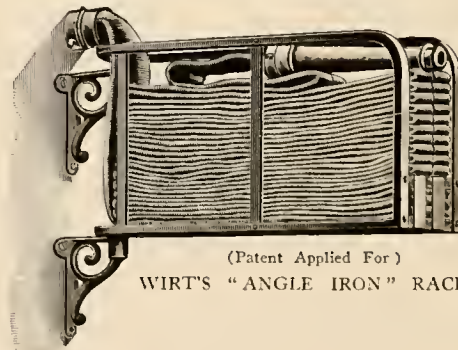
HUMP SWINGING HOSE RACK

WIRT'S "ANGLE IRON" RACK—We are not offering this rack as a rival to the "Hump;" but when the "Hump" feature, which preserves and increases the life of hose, is not regarded as essential, we claim our "Angle Iron" Rack to be a decided improvement over any other rack on the market, both in construction and material used. It can be supplied for less money than the "Hump" Rack, is very neatly designed, and being constructed of "angle iron," its strength and durability cannot be questioned. Like the "Hump" the end or front of this rack is partially enclosed making it necessary for the bottom folds to be drawn off, thereby preventing the entire length of hose from falling to the floor in a tangle. This feature was first introduced in the Hump Rack, and is not found in any other. It is made in japanned red, unless otherwise specified; gold or aluminum finish can be had if desired. The pipe clamps are the same as those used on the Hump Rack and are furnished without extra charge up to and including four inches.



PIPE CLAMP

For pipe up to and including 4-inch. Furnished, when desired, in place of brackets, without extra charge



(Patent Applied For)
WIRT'S "ANGLE IRON" RACK

PRICE LIST OF SWINGING WALL REELS.

Number	Capacity	Size Hose	Description of Hose	Price
0	50 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen One Tier Width 3 in. Diam. 15 in.	\$6.00
00	50 ft.	2 in.	Unlined Linen One Tier Width 3 3/8 in. Diam. 15 in.	6.00
000	50 ft.	2 1/2 in.	Unlined Linen One Tier Width 4 1/8 in. Diam. 15 in.	6.00
0 1/2	75 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen One Tier Width 3 1/2 in. Diam. 17 in.	6.00
00 1/2	75 ft.	2 in.	Unlined Linen One Tier Width 4 1/4 in. Diam. 17 in.	6.00
000 1/2	75 ft.	2 1/2 in.	Unlined Linen One Tier Width 4 3/4 in. Diam. 17 in.	6.00
1	100 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen One Tier Width 3 1/2 in. Diam. 21 in.	6.00
2 1/2	100 ft.	2 in.	Unlined Linen One Tier Width 4 1/4 in. Diam. 21 in.	6.00
3 1/2	100 ft.	2 1/2 in.	Unlined Linen One Tier Width 4 3/4 in. Diam. 21 in.	6.00
2	150 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen One Tier Width 3 3/8 in. Diam. 26 in.	6.00
3	150 ft.	2 in.	Unlined Linen One Tier Width 4 1/4 in. Diam. 26 in.	6.00
4	150 ft.	2 1/2 in.	Unlined Linen One Tier Width 4 3/4 in. Diam. 26 in.	6.50
5 1/2	200 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Two Tier Width 5 1/2 in. Diam. 21 in.	7.00
6 1/2	200 ft.	2 in.	Unlined Linen Two Tier Width 8 in. Diam. 21 in.	7.50
7 1/2	200 ft.	2 1/2 in.	Unlined Linen Two Tier Width 9 in. Diam. 21 in.	8.00
7	300 ft.	2 1/2 in.	Unlined Linen Two Tier Width 9 in. Diam. 26 in.	8.50
8	400 ft.	2 1/2 in.	Unlined Linen Two Tier Width 9 in. Diam. 32 in.	11.50
2	50 ft.	1 1/4 in. or 1 1/2 in.	Cotton Rubber-lined Mill One Tier Width 3 1/2 in. Diam. 26 in.	6.00
3	50 ft.	2 in.	Cotton Rubber-lined Mill One Tier Width 4 1/4 in. Diam. 26 in.	6.00
4	50 ft.	2 1/2 in.	Cotton Rubber-lined Mill One Tier Width 4 3/4 in. Diam. 26 in.	6.50
5	100 ft.	1 1/4 in. or 1 1/2 in.	Cotton Rubber-lined Mill One Tier Width 5 1/2 in. Diam. 26 in.	7.50
6	100 ft.	2 in.	Cotton Rubber-lined Mill Two Tier Width 8 in. Diam. 26 in.	8.00
7	100 ft.	2 1/2 in.	Cotton Rubber-lined Mill Two Tier Width 9 in. Diam. 26 in.	8.50
8	150 ft.	2 1/2 in.	Cotton Rubber-lined Mill Two Tier Width 9 in. Diam. 32 in.	11.50

We can supply any size (excepting No. 8) plated in nickel or copper, at an additional cost of \$2.00 each, net. For No. 8, \$2.50.

PRICE LIST OF HUMP RACKS.

We can supply any of the following sizes in gold or aluminum bronze at the same figures; finished in nickel or copper plate at an additional cost of \$2.00 each, net.

Number	Capacity	Size Hose	Description of Hose	Price
A0	50 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Height 11 in. Length 22 in.	\$5.00
A0X	50 ft.	2 in.	Unlined Linen Height 11 in. Length 22 in.	5.00
A00	50 ft.	2 1/2 in.	Unlined Linen Height 11 in. Length 22 in.	5.00
A1	100 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Height 16 in. Length 24 in.	6.00
A1X	100 ft.	2 in.	Unlined Linen Height 16 in. Length 24 in.	6.00
A2	100 ft.	2 1/2 in.	Unlined Linen Height 16 in. Length 24 in.	6.00
A3	150 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Height 23 in. Length 26 in.	7.00
A3X	150 ft.	2 in.	Unlined Linen Height 23 in. Length 26 in.	7.00
A4	150 ft.	2 1/2 in.	Unlined Linen Height 23 in. Length 26 in.	7.00
A5	200 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Height 34 in. Length 32 in.	7.50
A5X	200 ft.	2 in.	Unlined Linen Height 34 in. Length 32 in.	7.50
A6	200 ft.	2 1/2 in.	Unlined Linen Height 34 in. Length 32 in.	8.00
A3	50 ft.	1 1/4 in. or 1 1/2 in.	Cotton Rubber-lined Mill Height 23 in. Length 26 in.	7.00
A3X	50 ft.	2 in.	Cotton Rubber-lined Mill Height 23 in. Length 26 in.	7.00
A4	50 ft.	2 1/2 in.	Cotton Rubber-lined Mill Height 23 in. Length 26 in.	7.00
A5	100 ft.	1 1/4 in. or 1 1/2 in.	Cotton Rubber-lined Mill Height 34 in. Length 32 in.	7.50
A5X	100 ft.	2 in.	Cotton Rubber-lined Mill Height 34 in. Length 32 in.	7.50
A6	100 ft.	2 1/2 in.	Cotton Rubber-lined Mill Height 34 in. Length 32 in.	8.00

The A0, A0X and A00 will be furnished to hold 75 ft. of hose, adding 50 cents to list price. Size, 14 in. x 22 in.

NOTICE—To avoid mistakes, and to get the proper rack when you order, give size, kind and length of hose. When you order racks with pipe clamps, be sure to give size of pipe they are to fit. If not standard size pipe, you must give the outside diameter. Always use the letter "A" with number or rack.

PRICE LIST OF WIRT'S "ANGLE IRON" RACKS.

We can supply any of the following sizes in gold or aluminum bronze at the same figures; finished in nickel or copper plate at an additional cost of \$2.00 each, net.

Number	Capacity	Size of Hose	Description of Hose	Price
70	50 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Height 11 in. Length 22 in.	\$5.00
71	50 ft.	2 in.	Unlined Linen Height 11 in. Length 22 in.	5.00
72	50 ft.	2 1/2 in.	Unlined Linen Height 11 in. Length 22 in.	5.00
73	100 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Height 16 in. Length 24 in.	6.00
74	100 ft.	2 in.	Unlined Linen Height 16 in. Length 24 in.	6.00
75	100 ft.	2 1/2 in.	Unlined Linen Height 16 in. Length 24 in.	6.00
76	150 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Height 23 in. Length 26 in.	7.00
77	150 ft.	2 in.	Unlined Linen Height 23 in. Length 26 in.	7.00
78	150 ft.	2 1/2 in.	Unlined Linen Height 23 in. Length 26 in.	7.00
79	200 ft.	1 1/4 in. or 1 1/2 in.	Unlined Linen Height 34 in. Length 32 in.	7.50
80	200 ft.	2 in.	Unlined Linen Height 34 in. Length 32 in.	7.50
81	200 ft.	2 1/2 in.	Unlined Linen Height 34 in. Length 32 in.	8.00
76	50 ft.	1 1/4 in. or 1 1/2 in.	Cotton Rubber-lined Mill Height 23 in. Length 26 in.	7.00
77	50 ft.	2 in.	Cotton Rubber-lined Mill Height 23 in. Length 26 in.	7.00
78	50 ft.	2 1/2 in.	Cotton Rubber-lined Mill Height 23 in. Length 26 in.	7.00
79	100 ft.	1 1/4 in. or 1 1/2 in.	Cotton Rubber-lined Mill Height 34 in. Length 32 in.	7.50
80	100 ft.	2 in.	Cotton Rubber-lined Mill Height 34 in. Length 32 in.	7.50
81	100 ft.	2 1/2 in.	Cotton Rubber-lined Mill Height 34 in. Length 32 in.	8.00

Nos. 70, 71 and 72 will be furnished to hold 75 ft. of hose, adding 50 cents to list price. Size, 14 in. x 22 in.

NOTICE—To avoid mistakes, and to get the proper rack when you order, give size, kind and length of hose. When you order racks with pipe clamps, be sure to give size of pipe they are to fit. If not standard size pipe, you must give the outside diameter. Pipe clamps, up to and including 4 inches, furnished without extra charge.

SPECIFICATION—Architects and Builders desiring to obtain the best manufactured goods should specify WIRT'S PATENT WALL REELS, HUMPS, or "ANGLE IRON" RACKS.

PNEUMATIC WATER SUPPLY COMPANY

KEWANEE, ILL.

PRODUCTS.

Manufacturers of the KEWANEE PNEUMATIC TANK, KEWANEE PUMP, KEWANEE WATER SUPPLY OUTFITS.

ADAPTABILITY AND ADVANTAGES.

The Kewanee Pneumatic Tank is designed to replace the elevated or attic tank, for storing water. It is placed in the cellar or buried in the ground, and delivers water by air pressure. The air is supplied automatically by a patented device which forms a part of the tank. Water is pumped into the tank from well, cistern or spring, the pump being operated by hand, or by electric, hot air, gas or wind engine. The Kewanee Tank is superior to the attic tank because it is better protected from freezing, and because the weight of the water is on the ground, avoiding the danger of cracked ceilings, flooding of the house, etc. The Kewanee Tank is superior to the elevated tank and tower because it is not unsightly, is protected from the weather, costs less to maintain, and the aeration of the water tends to purify it. The Kewanee System maintains pressure equal to an elevated tank 80 feet high, or higher if desired. This Company furnishes tanks or complete outfits of from 140 gallons to 27,000 gallons capacity, and can meet the requirements of the smallest cottage or the largest hotel. About 3000 Kewanee Systems are now in operation.

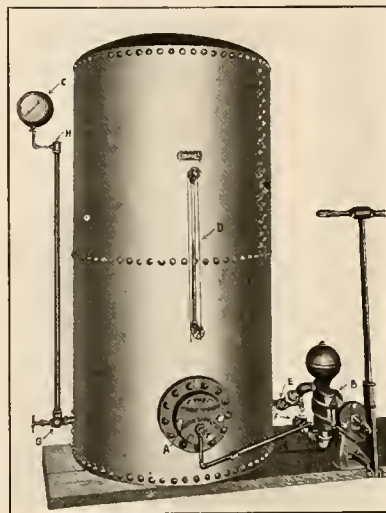


FIG. 1. KEWANEE WATER SUPPLY OUTFIT, No. 14.

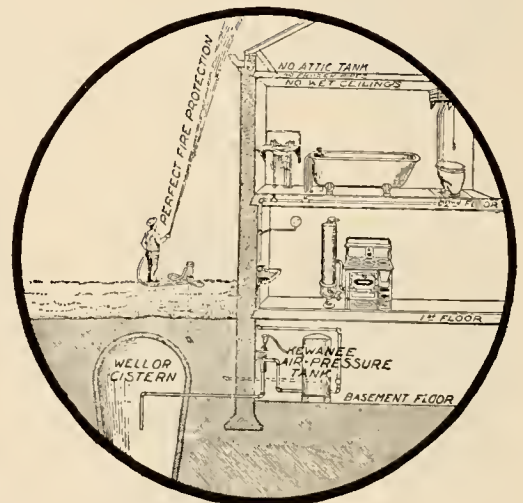


FIG. 2. DIAGRAM OF HOUSE SHOWING THE INSTALLATION OF A KEWANEE OUTFIT.

KEWANEE WATER SUPPLY OUTFIT.

Fig. 1 shows our Kewanee Water Supply Outfit, No. 14, suitable for furnishing water from cistern or shallow well to residences where not more than 100 gallons per day are consumed. It takes up very little room and is a favorite size for supplying water to kitchen, bathroom and laundry (Fig. 2). The pump is especially designed for this work and combines strength with ease of operation.

GUARANTEE.

Every genuine Kewanee Pneumatic Outfit is guaranteed to give first-class service.

INSTALLATION.

Our Outfits can be put together by any steam fitter or plumber. With each Outfit, we send full directions.

SPECIFICATIONS.

To insure that no substitution be made, Architects and Owners should use the following wording in their specifications: "One Kewanee Water Supply Outfit, Number—, of — gallons capacity; manufactured by the Pneumatic Water Supply Company, Kewanee, Ill."



FIG. 3. TRADE MARK.

U. S. WIND ENGINE & PUMP CO.

BATAVIA, ILL.

PRODUCTS.

Manufacturers of TANKS and TOWERS for all purposes, PUMPS, WINDMILLS, and WATER SPECIALTIES adapted for use in factories. GRAVITY SPRINKLING SYSTEMS for suburban or country residences. RAILWAY WATER STATIONS, MUNICIPAL and INDUSTRIAL WATER SUPPLY EQUIPMENT.

CONTRACTORS.

In addition to manufacturing the above lines, we take contracts for the erection and installation of the same, ready for service, anywhere in the United States or Canada.

WATER SOFTENING AND PURIFYING SYSTEMS.

An important branch of our business is the installation of water softening and purifying systems for industrial plants, railroads, distilleries, hotels, municipalities, and hospitals.

SPECIFICATIONS.

We will be glad to have architects send us an outline of their requirements, as we then can supply them with complete specifications covering our proposed work, with an estimate of the cost.

SIZES AND CAPACITIES.

Stave	Diam.	Hoops	Gallons Capacity	Bbls. Capacity	Wt. Pine	Wt. Cypress
10	10	8	4,750	150	3,100	3,700
12	10	9	5,700	182	3,500	4,300
14	10	10	6,680	212	4,000	4,800
10	12	8	7,053	224	4,000	4,800
12	12	9	8,488	269	4,500	5,600
14	12	10	9,902	314	5,200	6,300
16	12	12	11,293	358	5,800	7,100
10	14	8	9,773	310	4,800	5,900
12	14	9	11,774	374	5,500	6,700
14	14	10	13,750	436	6,200	7,600
16	14	12	15,701	498	6,900	8,500
10	16	8	12,935	410	5,700	7,000
12	16	9	15,597	495	6,700	8,200
14	16	10	18,229	579	7,300	9,000
16	16	12	20,833	661	8,200	10,000
18	16	14	23,406	743	9,200	11,200
12	18	9	19,956	633	7,700	9,300
14	18	10	23,340	741	8,700	10,600
16	18	12	26,689	847	9,700	11,800
18	18	14	30,004	952	10,900	13,200
20	18	15	33,288	1,057	11,900	14,400
12	20	9	24,852	788	9,000	10,100
14	20	10	29,080	923	10,100	12,200
16	20	12	33,270	1,056	11,200	13,600
18	20	14	37,423	1,191	12,500	15,100
20	20	15	41,540	1,319	13,700	16,500
12	22	10	30,285	961	10,300	12,500
14	22	11	35,451	1,125	11,500	13,900
16	22	12	40,576	1,288	12,600	15,300
18	22	14	45,660	1,449	14,000	17,000
20	22	16	50,702	1,609	15,400	18,600
12	24	10	36,254	1,151	11,600	14,000
14	24	11	42,453	1,347	12,900	15,600
16	24	13	48,606	1,543	14,300	17,300
18	24	14	54,714	1,737	15,700	19,000
20	24	16	60,778	1,929	17,300	20,800
16	26	13	57,360	1,821	15,700	19,000
18	26	14	64,587	2,050	17,200	20,800
20	26	16	71,766	2,278	19,000	22,900
14	30	12	67,150	2,132	17,300	20,800
16	30	14	77,044	2,446	19,900	23,900
18	30	15	86,790	2,755	21,500	25,800
20	30	17	96,480	3,063	23,700	28,300

Prices on tanks will be furnished on application.



HALLADAY WINDMILL
20 feet in diam.; 90-foot steel tower covered with slate, 5000-gal. tank



A 30,000 GALLON TANK, ELEVATED 100 FEET

POWER SPECIALTY COMPANY

111 Broadway

NEW YORK CITY, N. Y.

CABLE ADDRESS
Rewop

TELEPHONE
8765 CORTLANDT

PRODUCTS.

RIFE HYDRAULIC RAM, FOSTER STEAM SUPERHEATERS, HYDRAULIC MACHINERY and TOOLS, PUMP VALVES, POWER PLANT IMPROVEMENT, DISC FANS and BLOWERS, CORRUGATED BRONZE GASKETS, and KENT WING WALL FURNACE.

INDEPENDENT WATER WORKS.

We install complete water works, large or small, wherever an initial fall of two or more feet may be secured from a lake, stream or spring flowing two and one-half or more gallons per minute.

THE RIFE HYDRAULIC RAM.

We offer the "Rife" as the simplest and most efficient hydraulic engine yet devised. By its means, water at a low head may be made available for raising a portion of the same or other water to a higher level than the supply. Water can be raised thirty feet for each foot of fall used.



THE RIFE
HYDRAULIC RAM

USE AND APPLICATION.

The Rife Hydraulic Engine is adapted for supplying water for country residences, including stable, greenhouses, lawns, fountains, and formal gardens; for stock farms and creameries; hotels and public institutions; railroad tanks, factories, etc. Also for irrigation on either a small or large scale, and for complete water equipment for small towns.

INSTALLATION.

We will either sell an engine, or take contract for complete installation of the water works, with absolute guarantee as to results. With an engine sold we send full instructions for installation; or, for a small charge, we will send an expert to make the survey and superintend the installment.

OPERATION.

If you have a supply of water to which you can connect a Rife Hydraulic Engine, and place the latter at a level of two feet or more below the surface of the water in the supply, and drain away the power-water that escapes from the engine, you will thereby get a constant flow of water delivered to the higher point, without any attention or expense, except the replacing of a valve once in about two years. It is absolutely automatic and runs continuously, never stopping. It is positively air-fed at each stroke of the valve, maintaining an ample air-cushion. The valve is large, strong and easy seating, with adjustable drop and balance.

Engines are made single or double acting, the latter for use when the power is taken from a source other than the water to be raised; by this means pure spring water may be elevated by the power of impure water, without mixing.

CAPACITY.

The different sizes of these rams will operate with a supply varying from two and one-half to seven hundred and fifty gallons per minute; have developed an efficiency of 80 per cent. and will deliver a portion of the water five hundred feet above the ram. The rams can be installed in battery so that any quantity of water can be used.

GUARANTEE.

Every engine sold is guaranteed by us to be in every respect as represented. Should one fail for any reason after 30 days' test, we agree to make it satisfactory or refund the amount paid for it upon its return to us.

SIZES AND PRICES.

Number	DIMENSIONS			Size of Drive Pipe	Size of Delivery Pipe	Gallons per Minute Required to Operate Engine	Least Feet of Fall Recommended	Weight	Price Single Acting	Price Double Acting
	Height	Length	Width							
10	2' 1"	3' 2"	1' 8"	1 1/4"	3/4"	2 1/2 to 5	3	150	\$ 50 00	\$ 65 00
15	2' 1"	3' 4"	1' 8"	1 1/2"	3/4"	5 to 12	3	175	55 00	70 00
20	2' 3"	3' 8"	1' 9"	2"	1"	7 to 16	2	225	60 00	75 00
25	2' 3"	3' 9"	1' 9"	2 1/2"	1"	11 to 24	2	250	66 00	81 00
30	2' 7"	3' 10"	1' 10"	3"	1 1/4"	15 to 35	2	275	75 00	90 00
40	2' 3"	4' 4"	2' 0"	4"	2"	30 to 75	2	600	150 00	170 00
80	7' 4"	8' 4"	2' 8"	8"	4"	150 to 350	2	2500	525 00	575 00
*120				12"	5"	375 to 750	2	2500	750 00	800 00
+120	8' 9"	9' 6"	3' 8"	2-12"	6"	750 to 1500	2	4500	1500 00	1600 00

* Single. † Duplex.

SELECTION OF SIZE.

In order to determine the proper size of engine to be used, the following information is needed:

1. Existing flow of water in gallons per minute.
2. Vertical fall in feet.
3. Distance in which fall is obtained.
4. Vertical height above engine to which water is to be raised.
5. Distance from engine to which water is to be conveyed in raising.
6. How many gallons required per day.
7. If a double-acting engine is required, flow, in gallons, of the spring water per minute, and the fall, in feet, from spring to engine.

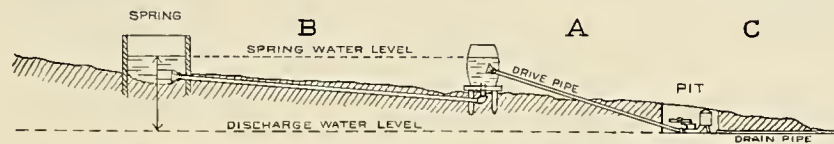


DIAGRAM SHOWING INSTALLATION OF A SINGLE-ACTING ENGINE

- A. Locate the engine the proper distance from the spring or water supply, and connect as shown in sketch at "A."
- B. Conduct the water to an intermediate reservoir (barrel, box or stand-pipe) located the proper distance from the engine, connected as shown in sketch at "B."
- C. Sink the engine in a pit to necessary depth, and lay a drain-pipe from pit to lower point, as shown in sketch at "C."

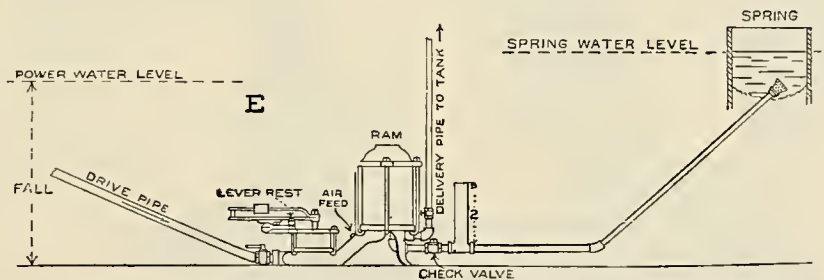


DIAGRAM SHOWING INSTALLATION OF A DOUBLE-ACTING ENGINE

To deliver pure water, using impure water as power, there must be at least eighteen to twenty-four inches fall from the spring stand-pipe to the engine, as is shown in sketch "E." If there is a greater natural fall "break" it as shown.

CORRESPONDENCE SOLICITED.

We are glad to answer any inquiries concerning the question of water supply, and to give all possible information which may aid in determining the adaptability of our apparatus, and to furnish estimates of cost.

TESTIMONIALS.

We will send upon application copies of a great number of testimonials from prominent individuals, corporations and town authorities, where our plants have been installed, more than 4000 of which are in successful operation.

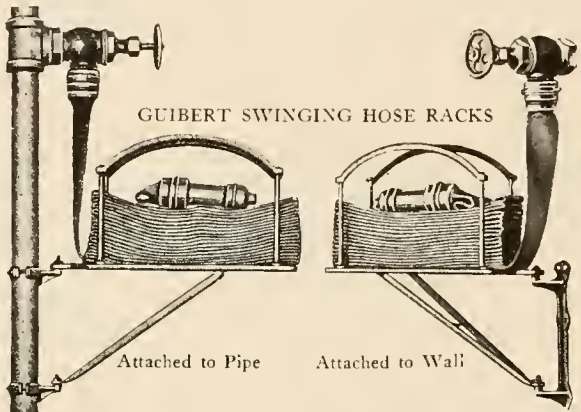
THE CLIFF & GUIBERT COMPANY

Hose Racks and Reels
198 West Broadway
NEW YORK CITY, N. Y.

TELEPHONE, 1962 FRANKLIN

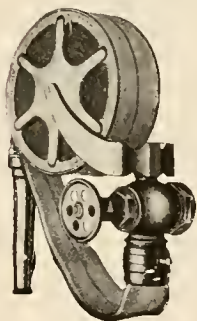
PRODUCTS. Sole manufacturers of the PATENTED HOSE RACKS and REELS shown below.

ORDERS. Orders will have prompt and careful attention. We use best materials, and our prices are as low as possible for reliable goods. Specify our devices and satisfy your clients. *Send for Catalogue.*

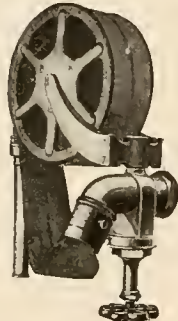


C. & G. COMBINED REEL AND VALVE

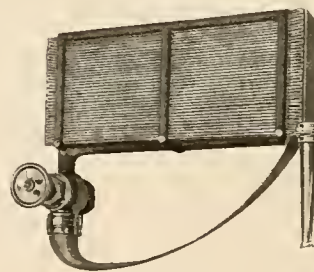
SIMPLEX SWINGING HOSE RACKS



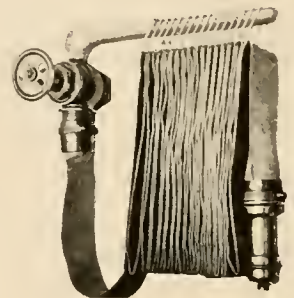
Angle Valve



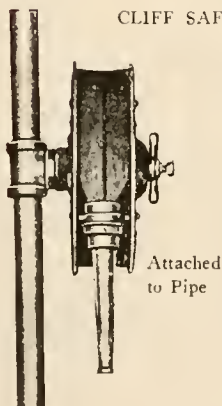
Gate Valve



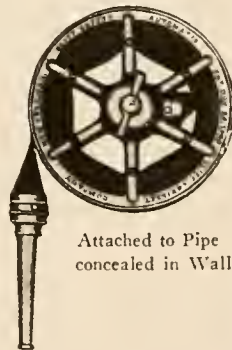
STYLE B



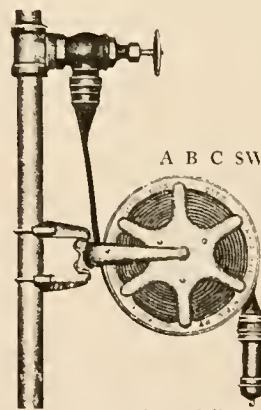
STYLE A



Attached to Pipe



Attached to Pipe concealed in Wall



Attached to Wall



Attached to Pipe

MUNICIPAL ENGINEERING AND CONTRACTING CO.

GENERAL OFFICES
607-9-11 Railway Exchange
CHICAGO, ILLINOIS

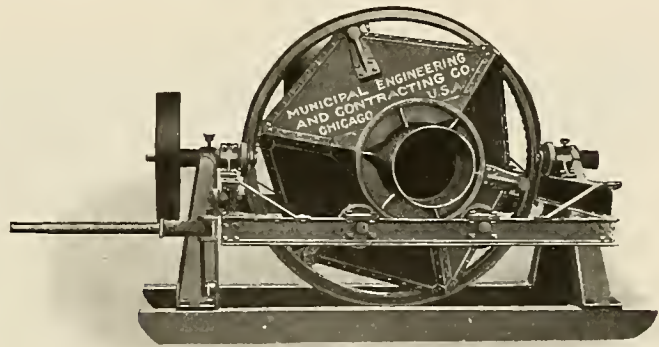
NEW YORK OFFICE
150 Nassau Street
NEW YORK CITY, N. Y.

PRODUCTS—CHICAGO IMPROVED CUBE CONCRETE MIXER.

USES—Mixing concrete and mortar. Also used for dry materials.

ADVANTAGES OF CUBICAL MIXERS—No insides to clog and wear, thus increasing cost and annoyance of cleansing and operating. Only scientific shape, producing much better concrete than mixers imitating a shovel action. Is self-cleansing and never has to be pounded or scraped. The favorite mixer of Government Engineers.

FEATURES OF CONSTRUCTION—The Chicago Improved Cube Concrete Mixer possesses all the advantages of the cubical type. It has in addition improved methods of loading and discharging without stopping or even lessening speed. Low first cost. Cheapest mixer to operate. It turns out the most concrete in the least time at the lowest cost and of the best quality.



CONCRETE MIXER

Nos. 11, 6 and Handy on Skids. Hand Dump
Nos. 64, 33, 22 and 17 have Automatic Power Dump

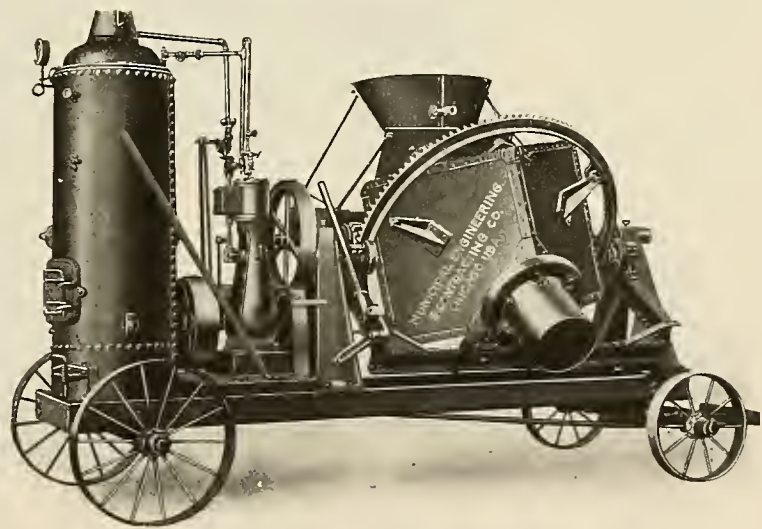
TABLE OF SIZES AND CAPACITIES—In the following table capacities are stated in cubic feet of loose mixed aggregates to bottom openings. One bag of cement is one cubic foot. Four bags to one barrel.

Number of Mixer	Horse Power, Steam	Horse Power, Gasoline	Size of Batch, cubic feet	Concrete in Place, cub. yds. (Approx.)	Cubic yds. per Hour	PROPORTIONS
64	20	*	64	2	71	2 bbls. cement with any proportion
33	12	15	33	1	36	1 bbl. " " " " " "
22	9	12	22	$\frac{2}{3}$	24	3 bags " " " " " "
17	6	8	17	$\frac{1}{2}$	19	2 " " " " " "
11	5	6	11	$\frac{1}{3}$	12	1 " " " " " "
6	3	4	6	$\frac{1}{5}$	7	
Handy	*	1½	2½	$\frac{1}{12}$	3	Will usually require cement to be measured Cement to be measured

QUALITY OF CONCRETE—An architect risks his reputation whenever he has charge of any concrete work. He must insist upon uniformity of product, and only the Cube produces absolutely uniform concrete.

SPECIAL INFORMATION—The manufacturers of this mixer have special printed matter prepared by scientific and practical men. This they send upon request.

PRICES—No regular price list is published, as the mixers are made in seven sizes and can be furnished in several combinations. Upon receipt of the following information, *Net* prices are quoted: Give capacity wanted in cubic yards per hour; skids or trucks; with or without power; kind of power.



CONCRETE MIXER, CENTER GEAR DRIVE TYPE
Nos. 4, 5 and 6 with Hand Dump

AMERICAN VENTILATING CO.

Engineers and Contractors

SALES DEPARTMENT
FLATIRON BUILDING, NEW YORK CITY, N. Y.

FACTORY
NEWARK, N. J.

PRODUCTS.

WINDOW VENTILATORS, RADIAL and UNI-VALVE VENTILATORS.

WINDOW VENTILATORS.

Window Ventilators (Inlet and Outlet) have an inlet and outlet ventilator placed in a window, and supply an adequate amount of fresh air to the occupants of the room without creation of draughts or the admission of dust, dirt and moisture. The air is constantly kept in circulation, the vitiated air being replaced by the fresh pure air.

They do not interfere with the movement of the window sash.

Sizes: 3", 5", 7", and 10".

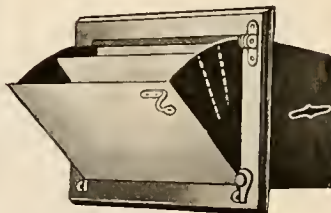
Made in any desired finish.

INSTALLATION.

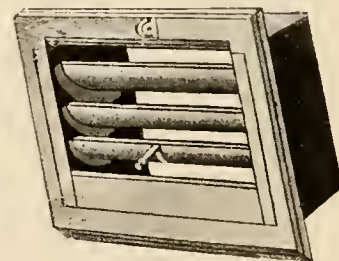
In old buildings these ventilators are installed in panel equipment, which requires no alteration. They can be easily removed when desired. In new buildings they are placed in extra deep sash, if so specified, thus making a permanent installation. They are skillfully and neatly made, adding to the appearance of any room.



WINDOW VENTILATORS
(Inlet and Outlet)



"RADIAL" VENTILATOR



"UNI-VALVE LOUVRE"
VENTILATOR

"RADIAL" AND "UNI-VALVE" VENTILATORS.

In ordinary rooms Radial Ventilators are placed about 15" from ceiling, acting as an inlet, the mid-feather controlling the currents. The Louvres are radiating.

The Uni-Valve Louvre is placed about 15" from the floor line, acting as an outlet. They are installed directly through the wall with grille work on the outside. They are made of sheet steel and in any desired finish. They are neat and effective. The Louvres are easily removed for cleansing. No draughts, dirt, dust or moisture in this system.

First cost the only one.

We also install Forced Draught Systems, in any part of the country, under expert supervision.

ANDREWS & JOHNSON CO.
 Heating, Ventilating and Drying Apparatus
 256-266 Washington Boulevard
 CHICAGO, ILL.

PRODUCTS.

We are manufacturers of the "A. & J." STEEL PLATE FANS and all types of HEATING, VENTILATING, MECHANICAL DRAUGHT and DRYING APPARATUS.

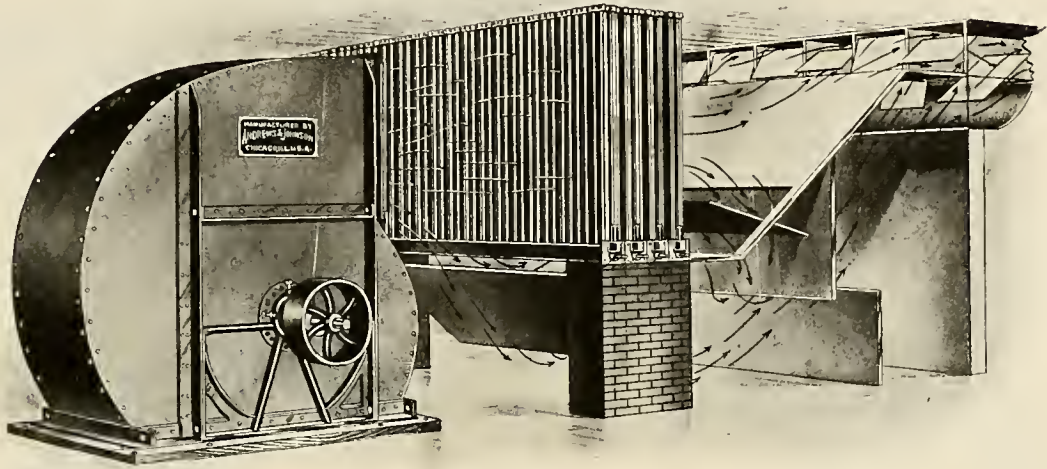


FIG. 1. CIRCULATING FAN AND AIR MIXING CHAMBER

HEATING.

The illustration herewith shown (Fig. 1) is our Patent Hot Room Arrangement for heating and ventilating by the Mechanical Blast System.

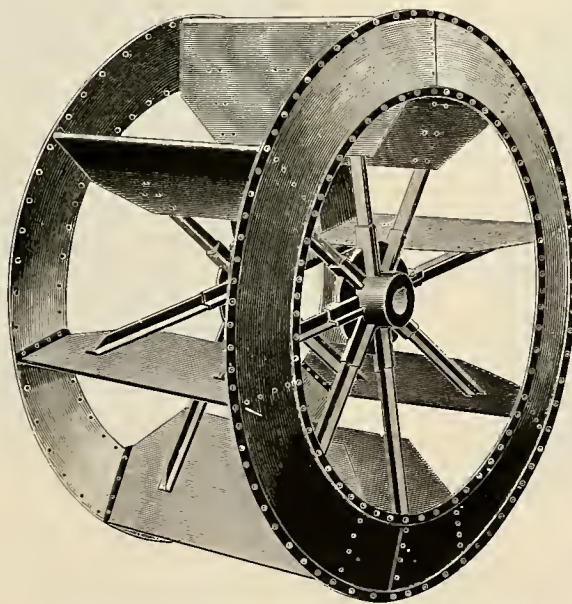


FIG. 3. FAN WHEEL WITH STRAIGHT BLADES

The apparatus consists of a blower or blowers (driven by engine or motor), heating coils, plenum chamber, and a system of galvanized iron ducts leading to the different portions of the building which are to be heated.

By this Hot Room Arrangement a uniform temperature is maintained at all times, and the

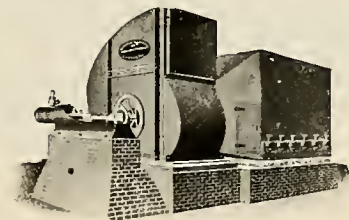


FIG. 2. DIRECT CONNECTED STEEL PLATE FAN, DRAWING THROUGH COILS

manner in which the heated air is introduced into the room causes a pressure which forces the foul air out through ducts leading to the outside atmosphere, which gives

a perfect system of ventilation as well as a model heating system. This arrangement (Fig. 1) is particularly adapted to schools, churches, theatres, libraries and all public buildings.

The arrangement shown in Fig. 2, is used to a great extent in factories, foundries and all classes of manufacturing plants where a system of heat regulation is unnecessary.

"A. & J." FAN
WHEEL.

The fan wheel which we illustrate herewith (Fig. 3), is primarily designed for

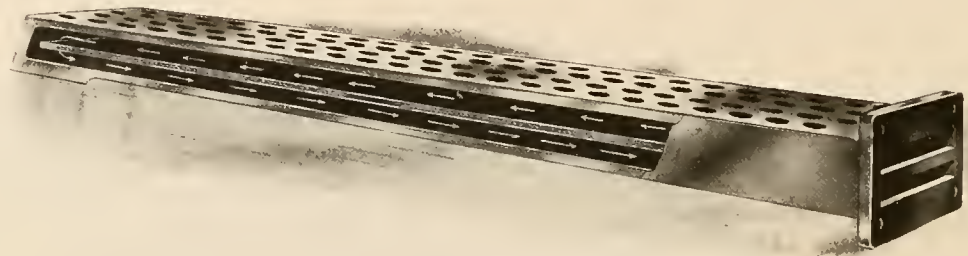


FIG. 4. THE A. & J. BASE.

handling large volumes of air at a moderate speed. This style of fan can be readily changed to suit conditions, such as moving a smaller volume of air at high pressure, in which case the wheel would be much smaller in width, or vice versa, when a large volume or low pressure is desired. The wheel is made of cast-iron, accurately bored

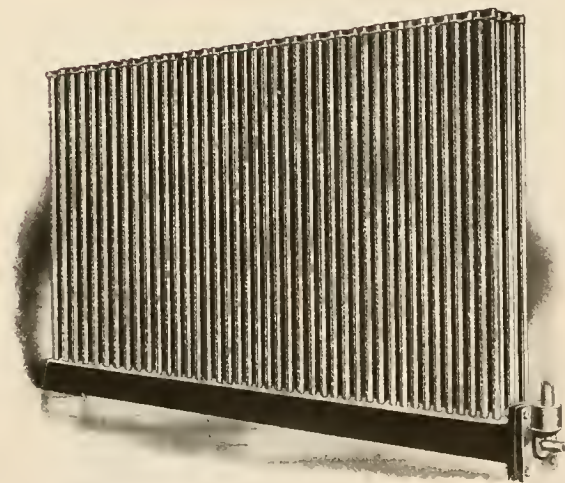


FIG. 5. THE A. & J. BASE AND COIL

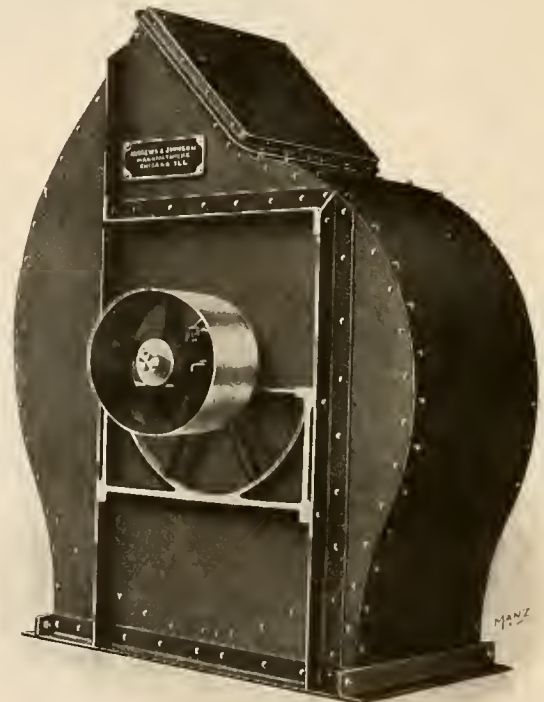


FIG. 6. FULL HOUSING 45° DISCHARGE BLOWER

to fit fan shaft, and is provided with steel T arms securely cast in place. To these arms, steel blade plates are attached, which in turn are bolted or riveted to the conical side plates. The shaft is supported in self-oiling bearings which ensures perfect lubrication at all times. Ordinarily the blades are made straight and radial, but they

may be curved to obviate any possibility of noise. The wheel is incased in a steel plate housing, strongly braced with heavy angles.

DISC FANS.

This type, which is commonly known as the disc fan or ventilating wheel, is entirely different in construction from steel plate fan-wheels, as it delivers air from the side of the blades and is non-positive in operation.

These fans are particularly adapted for ventilation of malt kilns, laundries, paper mills, drying lofts and other similar work, requiring the circulation of large volumes of air where there is no great amount of resistance to overcome.

These fans are constructed of sheet steel and cast-iron, having adjustable blades which can be set at any desired angle, thereby increasing or diminishing the power when necessary. If desired, the blades can be entirely reversed, converting it at once

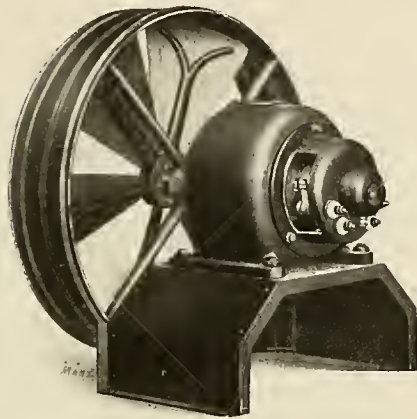


FIG. 7. DIRECT CONNECTED DISC FAN WITH MOTOR

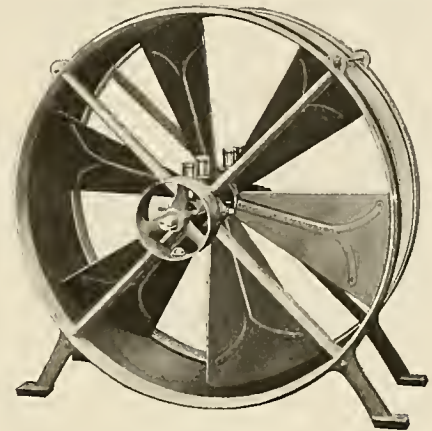


FIG. 8. THE A. & J. DISC VENTILATING FAN

from an exhaust to a blast fan. Our automatic grease cups and adjustable boxes also add to the points of construction which make repairs few and inexpensive.

PRICE LIST OF BELTED DISC FANS.

SIZE	PRICE	SIZE	PRICE
18 inches	\$ 40 00	60 inches	\$200 00
24 inches	50 00	72 inches	250 00
30 inches	65 00	84 inches	325 00
36 inches	85 00	96 inches	375 00
42 inches	105 00	108 inches	425 00
48 inches	125 00	120 inches	475 00
54 inches	140 00		

ESTIMATES AND INFORMATION.

The average buyer usually requires assistance in selecting the style and size of fan best suited to his requirements, and we are always ready to make estimates and submit plans, giving such information as will be of value to the purchaser.

SPECIFICATIONS.

For the convenience of architects who contemplate the use of heating and ventilating apparatus such as is illustrated in these pages, we suggest the following important points which should be taken into consideration and included in the specifications. This information is of a general nature, as follows:

1. Character of the building to be equipped.
2. Cubical contents of the building.
3. Glass surface and nature of exposed surfaces.
4. Where apparatus can be located.
5. Temperature required.
6. Change of air required.
7. Plans, floor and elevations.

THE H. W. COVERT COMPANY

Fireplace Appliances

266 Greenwich Street

NEW YORK CITY, N. Y.

TELEPHONE CONNECTION

PRODUCTS.

Manufacturers of COVERT'S PATENT IRON FIREPLACE THROAT AND DAMPER, ASH PIT DOORS, HEARTH DUMPS, etc.

COVERT FIREPLACE THROAT AND DAMPER.

Our Fireplace Throat is now specified by a large number of the leading architects of the country, who have found that it relieves them from the many annoyances caused by ill-working fireplaces.

ADVANTAGES AND ECONOMY.

It is difficult to make a proper and smooth throat formation in masonry, but our CAST IRON THROAT built into chimney construction completely overcomes this difficulty, while the cost is so small an item that the saving of time of the bricklayers will in most cases fully offset it. It forms a strong lintel, presents smooth surfaces at an easy angle, to lead the gases into the smoke chamber, and protects the wood-work of the mantel from extreme heat. It has a high dome and an easily adjusted damper, so simple in its construction that it cannot get out of order.

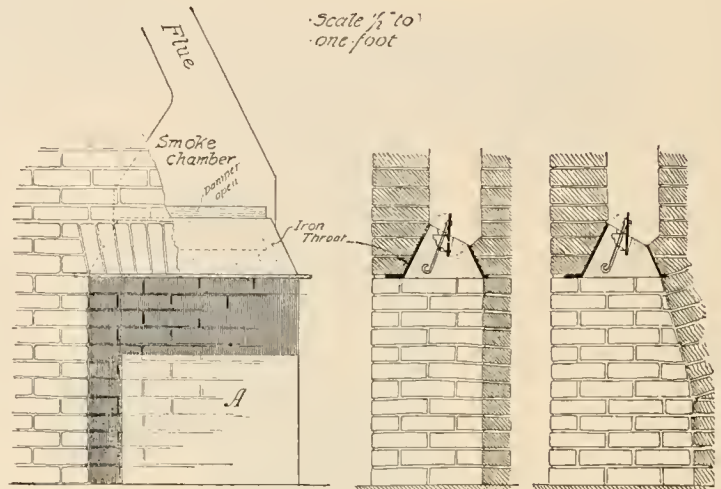


FIG. 1. COVERT FIREPLACE THROAT AND DAMPER
Front Elevation of Fireplace

FIG. 2. COVERT FIREPLACE THROAT AND DAMPER
As used with a Plumb Back and a Sloping Back Fireplace

SATISFIED CUSTOMERS.

Among the ever growing list of architects who now specify our products are:

McKIM, MEAD & WHITE
CLINTON & RUSSELL
WARREN & WETMORE
ROSSITER & WRIGHT

RUTAN & RUSSELL
BRAGDON & HILLMAN
COPE & STEWARDSON
FRANK MILES DAY & BRO.

WILSON EYRE
WILSON BROS. & CO.
J. FOSTER WARNER
WILLIAM WARREN SABIN

SPECIFICATIONS.

Specifications should read: "Each Fireplace to be covered with a Covert's Patent Iron Throat and Damper of proper size (made by the H. W. Covert Co., 266 Greenwich Street, New York City), built in when the chimney is constructed, same serving as an arch bar."

SIZES AND PRICES.

THE COVERT PATENTED IRON FIREPLACE THROAT AND DAMPER is made in three depths, and of various widths up to six feet.

SERIES A				SERIES B			
Number	Width of Fireplace	Depth of Fireplace	Price	Number	Width of Fireplace	Depth of Fireplace	Price
230	2' 6"	16"	\$3 75	36 ¹ / ₂	3' 0"	20"	\$6 50
236	3' 0"	16"	4 25	42 ¹ / ₂	3' 6"	20"	7 00
242	3' 6"	16"	5 00	48 ¹ / ₂	4' 0"	20"	8 00
248	4' 0"	16"	6 00	60 ¹ / ₂	5' 0"	20"	10 00
				72 ¹ / ₂	6' 0"	20"	15 00

For fireplaces between the above widths use next larger size - as, for fireplace 2 feet 8 inches wide use No. 236.

For fireplaces between the above widths use next larger size.

SERIES C							
Number	Width of Fireplace	Depth of Fireplace	Price	Number	Width of Fireplace	Depth of Fireplace	Price
30	2' 6"	12" or 14"	\$3 75	42	3' 6"	12" or 14"	\$5 00
36	3' 0"	12" or 14"	4 25	48	4' 0"	12" or 14"	6 00

All prices are F. O. B. cars or boat, Troy, N. Y., where we keep a large stock ready for immediate shipment.

EASTERN SHEET STEEL WORKS

Contracting Engineers

39-41 Cortlandt Street
NEW YORK CITY, N. Y.

TELEPHONE
2402 CORTLANDT

1239 LAND TITLE BUILDING
PHILADELPHIA, PA.

PRODUCTS.

STEEL PLATE BLOWERS and EXHAUSTERS, HEATERS, ENGINES, etc., HOT BLAST HEATING, VENTILATING and DRYING SYSTEMS for Mills, Shops and Factories of all kinds. "LYON" WASTE GAS SYSTEM of Heating, Ventilating and Drying (utilizing the Waste Gases from Boilers, etc.), for Mills, Shops, Factories, etc. DRYING SYSTEMS for Brick Yards, Terra Cotta Works and other Clay Products, using Live or Exhaust Steam, Burning Gases, or Cooling Gases or Direct Furnace Fires, or any combination of the above to suit individual conditions. EXHAUST SYSTEMS for removing Dust, Shavings and Sawdust from Wood-working Machinery, Dust from Tumbling Barrels, Emery and Polishing Wheels, also for removing Acid Fumes, Smoke, Gases, etc. MECHANICAL DRAFT APPARATUS (Forced or Induced) for Boiler Plants, etc., of any size, from a single Boiler to any number desired. EXHAUST FANS, DISC FANS, PROPELLER FANS, DUST COLLECTORS, BLAST GATES, etc. SHEET METAL WORK (Galvanized or Black). HOT AIR and VENTILATING PIPING for all classes of Buildings. SMOKE STACKS, BREECHINGS, etc.

CHARACTER- ISTICS.

All our goods are manufactured from the very latest designs, using the best grades of material and by skilled mechanics. They also conform to the rules and requirements of the Boards of Underwriters.

INSTALLATION.

We furnish complete setting plans so that any contractor or workman may install our goods.

We also take contracts for the complete installation of plants, as well as all material used throughout, guaranteeing the successful operation of same for the work intended.

TERRITORY.

We are in a position to execute orders for any of the above machinery, of any size, from every part of the world.

SIZES.

While some of our goods are of regular sizes, in a majority of cases they are sold to suit space and conditions as we find them, and as provided by the architect.

PRICES.

Our goods are usually sold upon inquiry from customers, who furnish us with the architect's plans and specifications to figure from, or a letter stating their wants, when we will immediately quote prices, and, when desired, make such recommendations as may be necessary.

WORK ACCOMPLISHED.

Examples of our work may be seen in the following buildings:

PRODUCE EXCHANGE BANK BUILDING, New York City.
PUBLIC SCHOOLS, Nos. 25, 80 and 147, New York City.
ST. GEORGE PULP & PAPER Co., Norwalk, Conn.
NEW HAVEN PULP & BOARD Co., New Haven, Conn.
GREAT EASTERN CLAY Co., South River, N. J.
RARITAN RIVER CLAY Co., Perth Amboy, N. J.

NEW JERSEY ZINC Co., New York City.
WESTINGHOUSE, CHURCH, KERR & Co., New York City.
EVANS ALMIRALL & Co., New York City.
THOMPSON-STARRETT Co., New York City.
DOWDESWELL BROS., Brooklyn, N. Y.

THE GEETZY COMPANY

211-213 Madison Street

CHICAGO, ILL.

TELEPHONE, MAIN 3541

PRODUCTS.

Manufacturers of THE GEETZY INDOOR AIR MOISTENER and FORMAZONE AIR PURIFIER.

FACILITIES.

We are prepared to furnish Geetzy Indoor Air Moisteners and Formazone Air Purifiers, of any style, upon architects' specifications, anywhere in the United States or Canada.

INSTRUCTIONS AS TO ORDERS.

There is a style of Geetzy Air Moistener for every style of heater. In ordering for radiators, give style, size, color, and number of coils, or if for side-wall register, give the dimensions; *i. e.*, Style A, size 1 (7½ in.), gilt, 10 coils, or wall register 12X12 inches. Special styles and sizes of moisteners made to order.

ADAPTABILITY.

The Geetzy Air Moistener is adapted to all kinds of buildings and in connection with any style of heating apparatus. It has the universal endorsement of the medical and lay public, as well as that of the Chicago Department of Health. The Formazone Air Purifier is adapted for all Public and Private Institutions.

INSTALLATIONS.

One fifteen-inch Geetzy Air Moistener should be installed for every 3000 cubic feet of air. Our Moisteners can easily be installed by anyone who will follow our directions.

Valuable pictures, books, musical instruments, plants and bric-a-brac are ruined by dry heat during the cold weather. *Furniture* and *indoor finish* are badly affected by the same cause. The Geetzy Indoor Air Moistener will absolutely prevent this serious trouble.

"Dry indoor air is the greatest cause of discomfort, the source of much ill-health, catarrhs, cold, pneumonia, influenza, and other diseases of the mucous membranes, etc."—*Chicago Health Department Bulletin*, Nov. 19, 1904.

"A room at a temperature of 65 degrees is more comfortable and healthful if there is 50 per cent. or more of moisture in the air than is one heated to 74 degrees with only 30 per cent. of moisture."—*Same authority*.

"About 25 per cent. of the cost of heating is expended in raising the temperature from 60 to 70 degrees; so if we keep comfortable at a temperature of 65 degrees we shall have saved at least 12½ per cent. of the total cost of heating."—*Prof. W. M. Wilson of the U. S. Weather Bureau*.

The Geetzy Indoor Air Moistener has been constructed to meet the foregoing conditions. It maintains from 50 to 60 per cent. of moisture in the air of the room in which it is operated according to instructions.

NOTE—No other practical device in the world can do this.

Put the two scientific facts together: Keep your room temperature at 65 to 68 degrees and the moisture at 50 to 60 per cent.

RESULTS—*Bodily Health and Comfort: Coal Bills reduced.*

PRICES.

Style A—For radiators, steam pipes or side wall registers. Colors, Gilt, Aluminum and Brown.

Size 1—7½ in. long by 8 in. deep by 2 in. wide, \$3.00. Capacity 2 quarts, capable of handling 1,500 cubic feet of air space; *i. e.*, a room 10x15x10 ft.

Size 2—15 in. long by 8 in. deep by 2 in. wide, \$3.50. Capacity 4 quarts, capable of handling 3,000 cubic feet of air space; *i. e.*, a room 20x15x10 ft.

Special colors, painted to order, 50c. extra, except in quantity.

The above prices include everything for use, prepaid to any part of the United States.

We have devices for stoves and registers. Send for illustrated pamphlet.

WILL PURIFY EVERY PLACE OR THING ITS VAPOR CAN REACH



CUT SHOWS MOISTENER ON RADIATOR
Can be attached to either front or back

THE JOSEPH McCREERY COMPANY

CAPITAL \$100,000

Works and Main Office
TOLEDO, OHIO

BRANCH OFFICES

NEW YORK CITY, N. Y.

CHICAGO, ILL.

CLEVELAND, O.

ST. LOUIS, MO.

SERVICES.

We are HEATING and VENTILATING CONTRACTING ENGINEERS, with twenty-five years' experience in handling large contracts in all portions of the country. We have made a specialty of difficult problems in building ventilation, and are equipped in experience and facilities to guarantee specified results under any conditions.

We are glad to submit figures in competition with other recognized concerns for the heating or ventilating, or both, of any large structure, no matter where located.

AIR WASHING AND COOLING.

We have installed the McCreery system of washing and cooling air in many of the most notable buildings in various parts of the country. By this system we are able to guarantee the temperature and humidity of the air in all parts of the building, and thoroughly eliminate all dust and dirt from the air distributed.

ADAPTABILITY.

The use of the McCreery Air Washing System is recognized as indispensable in churches, theaters, public halls, restaurants, hospitals, libraries, schools, art galleries, etc. An installation of this system has in a number of instances been the means of using what had been before undesirable space.

On receipt of plans of the building in which it is to be installed, we will gladly submit specifications for installation of air cooling and washing apparatus, covering guarantee of conditions which the apparatus will maintain, together with cost of installing the same complete.

EXPERIENCE.

Probably the most difficult work in ventilation is that installed in modern steamships; practically every passenger boat of the best type on the Great Lakes has its ventilation system either installed by us or we have been asked to remodel it.

The following are some of the recent more important installations of the Joseph McCreery Air Cooling, Cleansing and Humidity Regulating Apparatus:

Valentine Café	Toledo, Ohio
Second Church Christian Science	Kansas City, Mo.
White's Restaurant	Chicago, Ill.
City Hospital	Minneapolis, Minn.
Citizens Savings and Trust Co.	Cleveland, Ohio

DESCRIPTION.
AIR COOLING
AND CLEANSING
AND HUMIDITY
REGULATING
APPARATUS.

Outside air, taken in through a fan, is drawn through the cleanser, the water being sprayed over the various breaking up surfaces, and the air being brought intimately in contact with the thin sheets of water evaporates some of the water, lowering the temperature of both air and water. The air in passing from the cooler and cleanser rushes through the baffle plates of the separator, where all the suspended water is taken out and the air is delivered to the ventilator flues, washed of every par-

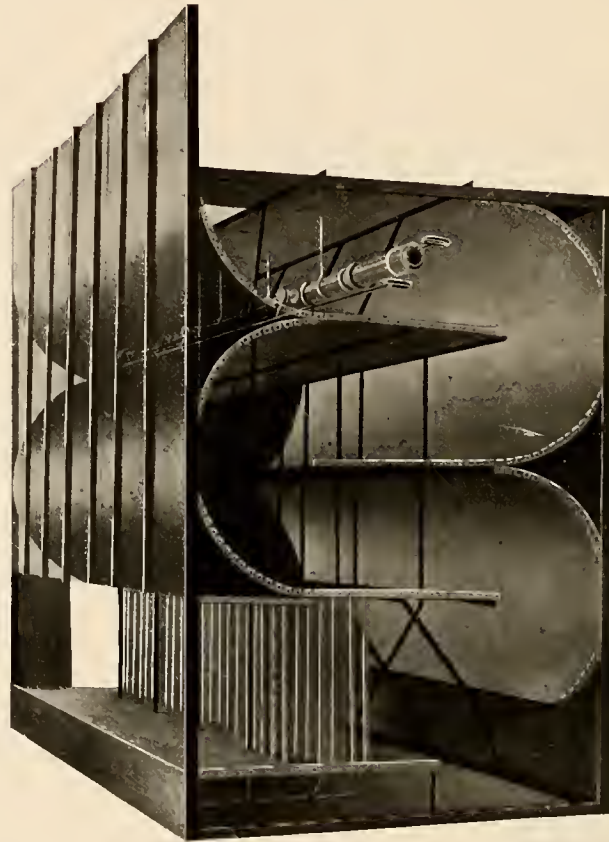


FIG. 1. THE JOSEPH McCREERY AIR COOLING AND CLEANSING AND HUMIDITY REGULATING APPARATUS

ticle of dirt and cooled to about the temperature of the water used in washing it. In using this system of cooling and cleansing, there is no leakage of ammonia. There are no chemicals used, as are necessary where artificial refrigeration is employed for cooling the air. All other systems of cooling the air rob it of its natural humidity, which is even more necessary in summer than in winter. The McCreery system automatically adjusts the humidity to ideal proportion. The distinct advantages gained by this system is longer life of all interior furnishings and finishes.

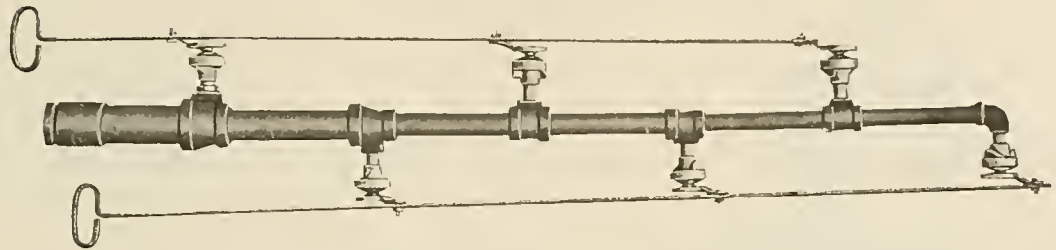


FIG. 2. McCREERY SELF-CLEANING SPRAY HEADS

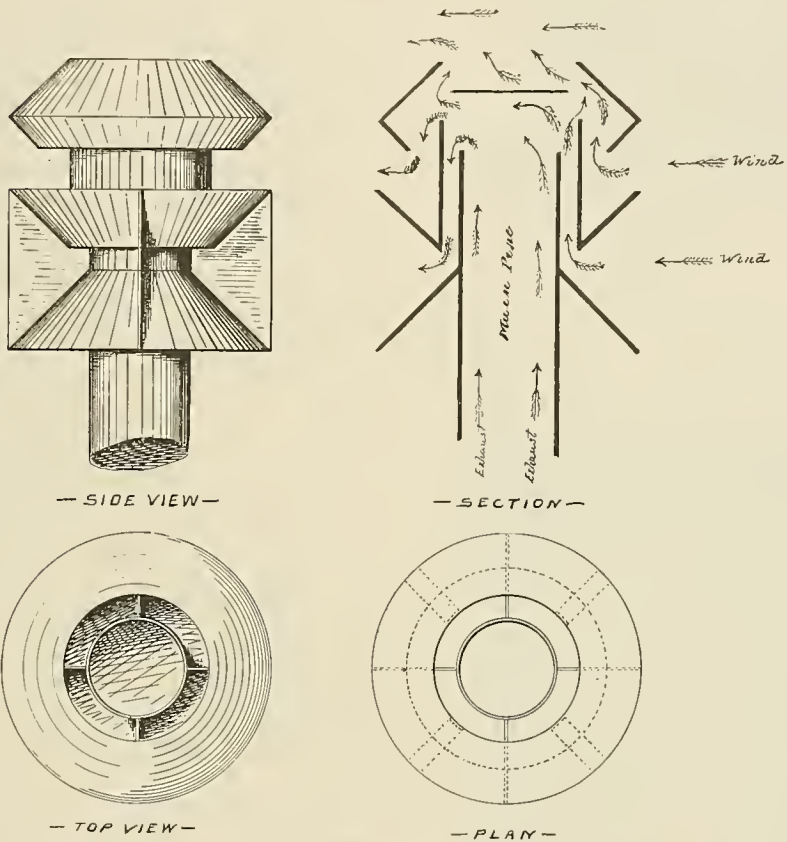
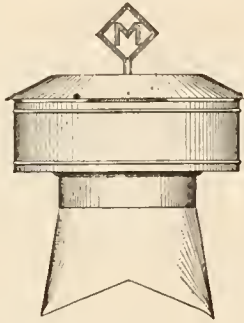


FIG. 3. VENTILATION CAPS

McCREERY
VENTILATING
TOP.

The accompanying cuts show the construction of the McCreery Ventilating Tops for use on foul air shafts, chimneys, factories, foundries, etc. They work equally well, no matter which way the wind blows, being funnel-shaped on four sides. The air is packed and pressed through with a force several times greater than the velocity of the wind, causing a much greater exhaust than any other ventilator. This ventilator is made in all sizes and is guaranteed. In specifying ventilators where positive suction is desired, use the words "Joseph McCreery Ventilator Top and Foul Air Escape, made by the Joseph McCreery Co., Toledo, O." These Ventilator Tops can be installed by any local contractor of sheet metal work.

MECHANICAL METAL MANUFACTURING CO.



"MECHANICAL" VENTILATOR PRODUCTS.

"MECHANICAL" VENTILATOR.

FEATURES OF CONSTRUCTION.

Lock Box 313
PHILADELPHIA, PA.

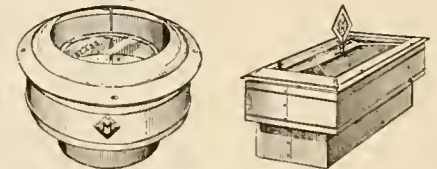


Manufacturers of the "MECHANICAL" VENTILATOR, "MECHANICAL" SKYLIGHT VENTILATOR, "MECHANICAL" RECTANGULAR VENTILATOR; also of the "MECHANICAL" BABBITT METALS and SOLDERS.

The "Mechanical" Ventilator is designed along better lines, and is therefore more efficient, considered from any standpoint of excellence, than any ventilator heretofore put on the market. In addition to being of superior excellence, it is manufactured with more regard to proportions and with more attention to superiority in detail than any other ventilator produced. It also has fewer parts, and is lighter in weight in proportion to size, than any other on the market; therefore it is worth more to the buyer.

The "Mechanical" Ventilator consists of 4 component parts, viz:

1. The Pipe or Collar which is fastened to the flue.
2. The Cap.
3. The Outside Band.
4. The Outside Cover Rim.



CONSTRUCTION OF THE "MECHANICAL" VENTILATOR

Considered first merely as a flue opening when outside air conditions are still, there is not a single opening in the "Mechanical" Ventilator which is not 25% in excess of the area of the flue itself, and this proportion is rigidly adhered to in every size that we make, viz: From 2 inches up to 10 feet.

There is very little deflection necessary for the air to pass out of the openings, and a wider range of openings and a greater number of openings are provided than in any other type on the market.

The "Mechanical" Ventilator will exhaust air from an interior when the outside air conditions are still; and the large capacity of the openings, their location and number, permit the air to get out of the flue and into the open with as much ease as though the ventilator were not on the flue.

As a mechanical "Injector," there is no possible direction from which outside air currents can strike the "Mechanical" Ventilator without becoming converted at once into an aid for exhausting the air in the building through the flue.

The "Mechanical" Ventilator is of the closed deflector type, and is absolutely storm-proof. There is no possible direction from which outside air currents can come, which will permit water, air, snow, or any outside element to go down into the flue, the perfection of design of the "Mechanical" Ventilator converting these into an aid toward producing an upward draught through the flue.

This effect is also accomplished with the maximum of efficiency, and the "Mechanical" Ventilator will exhaust more air with a given outside air movement than any other ventilator on the market.

PROTECTIVE VENTILATOR CO.

129, 131, 133 Fulton Street
NEW YORK CITY, N. Y.

TELEPHONE, 2496 JOHN

PRODUCTS. Producers of VENTILATION for all purposes.

FACILITIES. In an experience of over thirty-six years covering every conceivable want in the ventilating line, we have gathered practical knowledge that enables us to produce the most complete results in the simplest manner. We furnish and put up every mechanical appliance required in connection with the work, to make the same efficient, complete and finished.

GUARANTEE. We guarantee our work in every detail, both as to mechanical efficiency and finish.

REFERENCES. The following buildings in New York City are a few of the places in which we have installed Ventilation Systems:

Lincoln Safe Deposit Co. and Lincoln National Bank, New York Cotton Exchange, American Express Co. Building, Metropolitan Street Railway Co., Dun Building, Lion Brewery, Holland House, National Park Bank, New Grand Hotel, American Press Association, Germania Life Insurance Co., N. Y. Daily News Co., Hebrew Orphan Asylum, Hotel Victoria, Royal Insurance Co.'s Building, Potter Building, Merchants National Bank, U. S. Trust Co., Pilsner Brewing Co. (Bernheimer & Schwartz). Many other names can be furnished upon application.

WINDOW VENTILATION.

Our Window Ventilators (Fig. 2) of which there are over 100,000 in use, need very little argument for their use, over and above practical reasons given below.

ADVANTAGES.

They are constructed upon scientific principles.
They can be applied to all kinds of windows without interfering with their free use.
They may be used under all conditions of the weather as the air supply can be regulated as may be required.
They are the only ventilators that can be used, with safety, in a sick room, being used and recommended by many prominent physicians.
They are the only ventilators that furnish protection against draught, dust, insects and excessive dampness.
They supply from ten to twenty times as much air as some of the so-called automatic ventilators.
All the work is done by first-class, intelligent mechanics in the best workmanlike manner.
They are made of the choicest seasoned woods, to withstand all conditions of the atmosphere, and in the best cabinet finish to match any trim.
They are the cheapest, because they last from five to ten times as long as any imitation, and have outlived all competition.

REFERENCES.

The New York Athletic Club, and The Grand Central Depot, New York City, N. Y., and The New England Conservatory of Music of Boston, Mass., are all fitted with these Window Ventilators, besides hundreds of fine residences, office buildings, schools, banks, insurance companies, etc., etc.

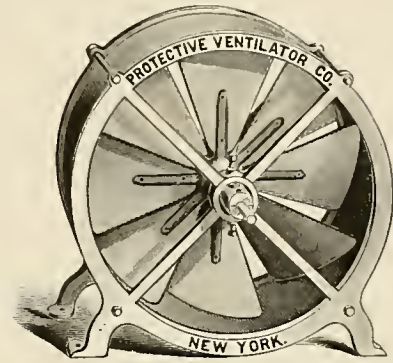


FIG. 1. VENTILATING FAN

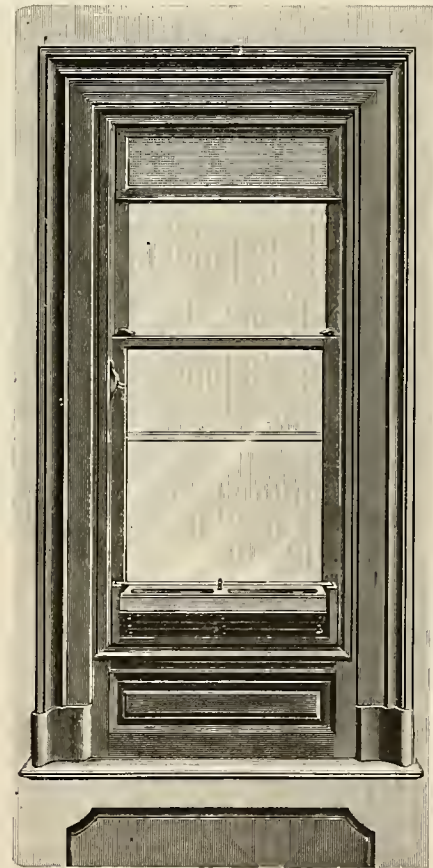


FIG. 2. WINDOW VENTILATOR

THOMAS & SMITH

Acme Air Cooling, Purifying and Humidity Regulating System Also Economy Hot Air Pumping Engines

17 and 19 South Carpenter Street
CHICAGO, ILL.

288 Hudson Street
NEW YORK CITY, N. Y.

PRODUCTS.

Manufacturers of the ACME SYSTEM of AIR COOLING, PURIFYING and HUMIDITY REGULATING APPARATUS; also manufacturers of ECONOMY HOT AIR PUMPING ENGINES.

INSTALLATION.

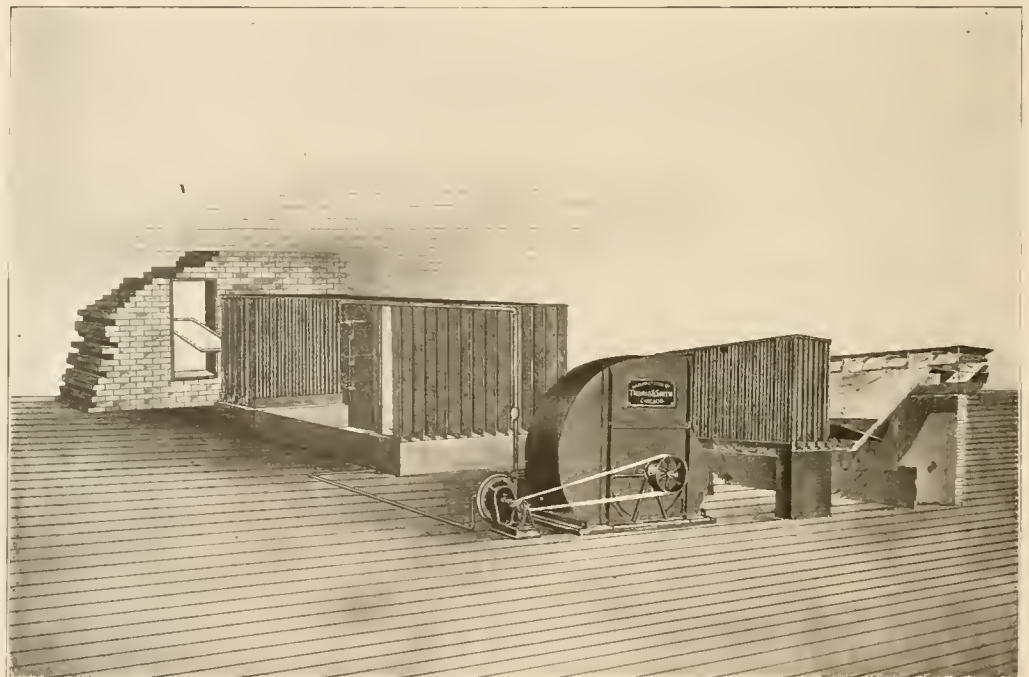
We design, manufacture and install the Acme System complete. The Acme System of air cooling is the only satisfactory and economical system now on the market, and is the only system of air purification by water by which the humidity in the buildings can be held at any desired percentage.

THE ACME SYSTEM.

There is also in favor of the Acme System a vast difference in cost of installation, reduced cost of maintenance and operation, but slight depreciation of so small a plant, and economy of valuable space.

AUTOMATIC HUMIDITY REGULATION.

We are the patentees of the only system which is guaranteed automatically to maintain any desired degree of humidity in the rooms supplied, irrespective of outside conditions.



THE ACME SYSTEM OF AIR COOLING

APPARATUS REQUIRED.

The above cut shows the arrangement of machinery required by the Acme System. The apparatus consists of a spray chamber, a storage and settling tank and eliminator, together with a pump and system of water circulating pipes. The action of the apparatus is self-evident from the illustration shown on this page. The outside air first passes through the spray chamber containing a number of specially designed nozzles that are placed in such relation to each other that no air can pass through without being washed.

COKE CLEANING.

Authorities recognize the fact that anything like thorough air cleaning with Coke, Cloth or Fibrous Screens, such as would rid it of microbic matter, is almost impossible in any building occupied by fifty or more persons; owing to large filtering surfaces demanded, a velocity or flow of air of more than fifteen feet per minute is no longer effective, either from a hygienic or economic standpoint.

HIGH VELOCITY.

The Acme System permits velocities as high as 600 feet per minute for practically perfect work. The patentee of the Acme probably was the originator of the sprayed Coke and Fibre methods of cleaning air, but found both hygienically wrong in principle. They soon become beds of filth, which increase as the fine particles embed themselves in the interstices and pores of Coke.

STANDARD
SPECIFICATION.

For the benefit of architects who desire to use the Acme System, we give herewith our standard specifications which may be used with or without modifications as occasion may demand.

"For cleaning the air introduced into the building through the heating system, there shall be installed a Thomas 'Acme' Purifier, Type . . . having a capacity of . . . cu. ft. of air per min., consisting of a horizontal air chute or passage opening directly into a spray chamber, arranged so that the air passes through the water curtains and spray chamber horizontally without making any swerves or turns, the water striking the air transversely. The series bar-lock circular spoon nozzles to be of the Thomas 'Acme' No. 6 set in such relation to each other that the velocity of the air through the several water curtains will be even and uniform, to the end that each cubic foot of air will come in contact with the required quantity of water to render the saturation as nearly complete as possible.

"In connection with the air purifier, there shall be included a humidity regulating apparatus comprising all necessary appliances for automatically maintaining the humidity at any desired percentage, irrespective of temperature or outdoor atmospheric conditions.

"The apparatus to consist of a storage and settling tank, a spray chamber or wash box, an eliminator designed as to currents, velocities, expansions, etc., consisting of vertical smooth surface, forward edge bent plates, set at oblique angles, a system of spray piping with the automatic heads, a suction strainer of a pattern ten times the area of the suction pipe, discharge and supply pipes, a flush-out pipe to sewer, and water supply pipe with automatic cut-off and all valves on the pipe connection, also pressure gauge, on the discharge. To arrest large pieces of paper, shavings, feathers and other kindred matter, a screen of $\frac{3}{4}$ -inch mesh shall be placed across the air intake.

"Contractor will provide and set on substantial foundation, a suitable Centrifugal circulating pump having the required capacity per minute driven from fan shaft or motor. All connections to be made with pump complete and the same tested and left in running order to the satisfaction of the engineers or their representatives.

"The general construction of the purifier as to the size and all details shall be in accordance with the detailed plans and specifications provided by the manufacturers, and must be built of iron or copper of such gauge as specified by the manufacturers; the eliminator, spray chamber, storage tank, etc., shall be built up on $1\frac{1}{2}$ inch angle and tee iron frames thoroughly riveted and seamed, soldered and made water tight, after which the contractor will paint the same, if required.

"The settling and storage tanks shall be set immediately below the spray chamber, and shall be of the full area in plan as said spray chamber, which will be supported from the top of same, bolted to an angle iron which edges the top of the tank; the eliminator will join the spray chamber at the rear side and be attached thereto by means of angles and tees bolted and packed to make tight joints. The eliminator shall be supported at the rear end by pipe columns.

"The work shall be left complete in every particular and in perfect working order.

"The apparatus must have a guaranteed air cleaning efficiency of 98 $\frac{1}{2}$ per cent, and be capable of reducing the temperature of the air at the face of the machine taken through the purifying system to within three degrees of the temperature of the water used, and maintain the normal state of humidity."

COOLING BY
REFRIGERATING
AUXILIARY

Where greater cooling is required than can be obtained by water at natural temperature, special apparatus under different specifications will be supplied.

HOT AIR
ENGINES.

It can be truly stated that no power has ever been devised which so economically solves the water supply problem in country houses and city flats as the installation of an Economy Hot Air Engine. No engineer is required and the action of this engine is entirely automatic. It is furnished complete with outfits, to burn either gas, gasoline, kerosene, wood or coal.

GUARANTEE.

We guarantee that nothing but the very best material for the purpose is used in the construction of these Engines, and the workmanship is thoroughly first-class. If, after ten days' trial, they do not prove as represented, Engines can be returned to us and the money will be cheerfully refunded.

ECONOMY HOT AIR
PUMPING ENGINE

We further agree to replace at our factory any parts giving out on account of natural wear, imperfections in workmanship or material which may occur within one year from date of purchase.

THE PULLMAN AUTOMATIC VENTILATOR COMPANY

GENERAL OFFICES AND FACTORY

YORK, PA.

BRANCH OFFICES

180 BROADWAY
NEW YORK CITY N. Y.
TELEPHONE, 4719 CORTLANOT

748-750 RAILWAY EXCHANGE
CHICAGO, ILL.
TELEPHONE, 3217 HARRISON

1120 LAND TITLE BLDG.
PHILADELPHIA, PA.
BELL TELEPHONE, 2633 SPRUCE

1217 HOUSE BUILDING
PITTSBURGH, PA.
BELL TELEPHONE, 1697 COURT

1115 AMERICAN BUILDING
BALTIMORE, MD.
C. & P. TELEPHONE, 3590 MT. VERNON

PRODUCTS.

Manufacturers of PULLMAN AUTOMATIC VENTILATORS for Public Buildings, Schools, Churches, Factories, Offices, Residences, Railway Cars (Steam and Electric), etc.

No bathroom is complete without them.

TERRITORY.

Our Ventilators can be shipped to any part of the United States and Canada, and may be installed by any competent workman; full instructions accompanying same.

DESCRIPTION.

The Pullman Automatic Ventilator is a simple and attractive device, usually placed in connection with windows at top or bottom or both, as conditions or circumstances may dictate. It consists of two parts; the Hood, with automatic arc-shaped valve, placed on the outside, and the Diffusion Box, placed inside.

Manufactured of sheet steel or copper and handsomely finished. Can be attached to window sash rail if sufficiently deep; otherwise they are furnished and attached to glazed and portable panels, finished to harmonize with interior and exterior of window frame.

OPERATION.

The Ventilators will both expel foul air and admit fresh air without draught summer or winter. The automatic valve prevents a direct blast of air when contending with strong winds, and keeps out 90% of dust and impurities. It requires no power other than atmospheric conditions to operate Pullman Automatic Ventilators.

REPRESENTATIVES.

We have representatives in every section of the United States who will cheerfully call upon those desiring information and submit plans and propositions for their consideration. A line addressed to any of our branch offices will receive prompt attention.

SPECIFICATIONS.

When architects desire to use Pullman Ventilators in connection with the bottom or top sash rail of window sashes, this provision should be made in specifications, as a wider sash rail than usual is required. Plans for same will be furnished by us if desired.

SAMPLES.

Free sample ventilator will be furnished any architect who may desire to have one for reference.

Descriptive catalogue mailed upon application.

JOHN WHITLEY
 Engineer and Contractor
 215 Fulton Street
 BROOKLYN, N. Y.

FREDRIC NELSON WHITLEY, C. E.
Associate

TELEPHONE, 1613 MAIN

PRODUCTS AND SERVICES.

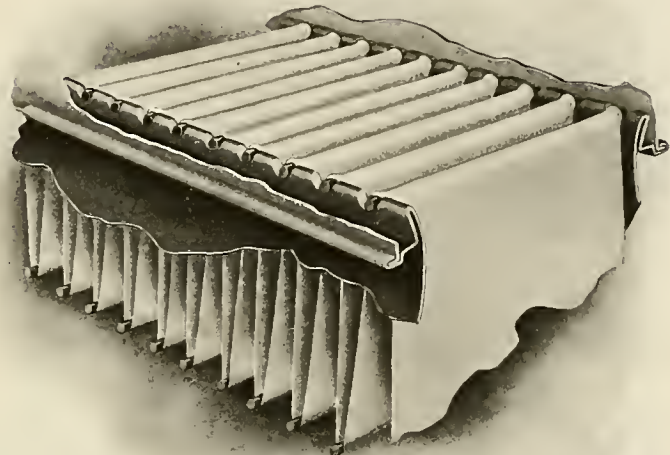
Contractor for the WHITLEY SYSTEM of KITCHEN VENTILATION, the WHITLEY SYSTEM of AIR FILTRATION and the WHITLEY REMOVABLE FIREPLACE DAMPER. Undertakes the RECTIFYING of FAULTY DRAFTS in OPEN FIREPLACES and other FLUES and guarantees to accomplish results. Consulting Engineer on FLUE PLANS.

TERRITORY.

I ordinarily confine my operations to within 500 miles of New York City, and make no charge for examinations or estimates.

WHITLEY AIR FILTERING SYSTEM.

The necessity of air filtration is very evident from a sanitary point of view, and, aside from this, in fine residences it is a great protection to hangings and paintings which so readily collect the dust and dirt conveyed to the rooms through the cold air supply inlets of heating systems.



[Patented]

FILTER SECTION OF WHITLEY AIR FILTERING SYSTEM

ADVANTAGES.

The advantages of the Whitley Air Filtering system over all others are, that it contains a much greater ratio (100 to 1) of filter surface to each square inch of inlet and needs attention but once per season, whereas the other systems in use require cleaning very frequently.

This system is especially advantageous where cellar room is limited.

THE WHITLEY REMOVABLE FIREPLACE DAMPER.

This consists of a steel plate frame, in which is placed a damper that can readily be removed for cleaning the chimneys. It is designed especially for my own use in connection with my fireplace business. It has met with general approval among architects and builders. Heretofore dampers have been made permanently hinged, so it has been impossible to remove the dirt accumulated behind them.

REFERENCES.

The following is a partial list of the installations of my systems in various residences:

KITCHEN VENTILATING INSTALLATIONS

EXECUTIVE MANSION, Washington, D. C.
 CADET QUARTERS BUILDING, U. S. Naval Academy
 CLARENCE H. MACKAY
 JOSEPH PULITZER, 5 and 7 E. 73d Street
 LEVI P. MORTON, 681 Fifth Avenue

AIR FILTRATION INSTALLATIONS

RIGHT REV. BISHOP POTTER
 JOHN D. ROCKEFELLER, JR.
 WHITELAW REID
 C. T. BARNEY
 CHAS. LANIER
 GROSVENOR ATTERBURY
 JAMES GAYLEY
 ADRIAN ISELIN, JR.
 AND NUMEROUS OTHERS

ARCHITECTS

McKIM, MEAD & WHITE
 CARRERE & HASTINGS
 HOWELLS & STOKES
 C. P. H. GILBERT
 ERNEST FLAGG
 JOHN M. CARRERE
 RICHARD HOWLAND HUNT
 AND MANY OTHERS

CHICAGO CLOTHES DRYER WORKS

136-138 West 24th Street

NEW YORK CITY, N. Y.

TELEPHONE CONNECTION

PRODUCT.

LAUNDRY DRYING MACHINERY for Residences, Apartments, Institutions, and miscellaneous purposes.

FACILITIES.

Twenty years' experience in manufacturing and installing Laundry Drying Machinery places us in a position where we can be of service when the question of artificial drying of fabrics is to be considered. All machines being built to order, to fit given spaces, and to best suit the various conditions and requirements, the assistance of our representatives to make suggestions in planning, examine premises, or figure cost of installing machines of this character can be obtained by letter, or telephone.

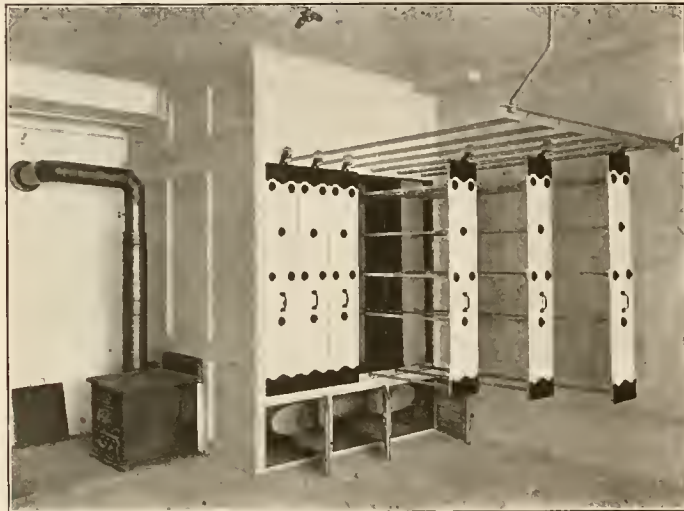


FIG. 1. COMBINED DRYER AND LAUNDRY STOVE. Showing Heating System and Paneling to Ceiling



FIG. 2. DRYER SHOWING RACK SYSTEM OPERATING ON FLOOR AND ELIMINATING THE OVERHEAD TRACK SYSTEM. Rack Faces in this Type Dryer measure 11" and 12" only.

CONSTRUCTION.

In formation and workmanship, our product is of the very highest character. Framework formed of a combination of heavy angle channel and tee iron enclosed with a double insulated casing of heavy galvanized sheet steel, producing a fire-proof cabinet.

HANGING RACK SYSTEM.

Formed of extra heavy galvanized iron front and back paneled faces. Front faces of varying widths (See Table), are double cased and filled with insulating material, making same rigid. Front and back faces joined with especially galvanized tubular guiding and patent ventilated hanging bars, fastened with inner and outer flanges. Rack system operates on overhead tubular tracks properly suspended from ceiling (as in Fig. 1), or in special cases, if desired, rolling on the floor and eliminating the overhead tracks (see Fig. 2).

ROLLER SYSTEM.

All rollers used are our improved anti-friction metal rollers with ball-bearing seats, insuring easy and practically noiseless operation of the rack system.

VENTILATING SYSTEM.

Great care is given to the ventilation of our dryers, as quick drying and thorough ventilation produces results equal to outdoor conditions, viz: white, pure, and fresh garments.

FLUE.

Provide, in using a dryer, for a clear flue not less than 8" x 8" in capacity, or its equivalent, one such being sufficient for both ventilation and smoke.

HEATING SYSTEMS. "HOT AIR."

Fig. 1 shows Hot Air system from special laundry stove which boils clothes, heats flat-irons, heats water (by water back system) and dries the clothes. This stove, if desired, can be arranged to use gas as fuel in place of coal.

HEATING SYSTEMS. GAS AND STEAM.



FIG. 3. DRYER HEATED BY GAS DIRECT So Arranged with Deflecting Pan, etc., that all Odors and Impurities do not come in Contact with Clothes

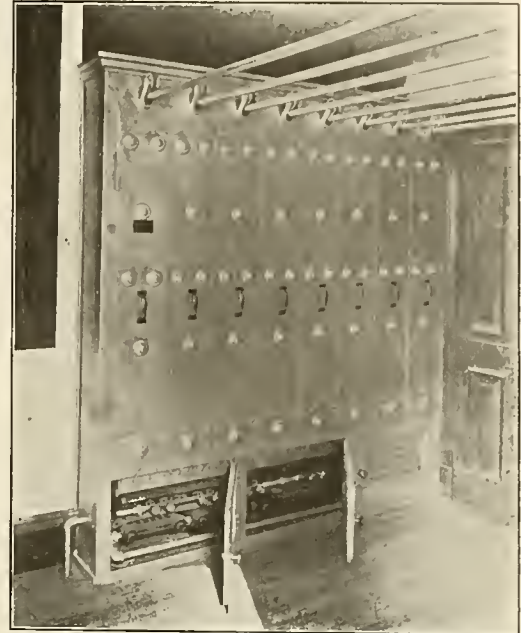


FIG. 4. DRYER HEATED BY STEAM. Coils being placed at Base of Dryer and Nipples left ready for Connection to the Steam Plant

NOTE

If desired, steam heating system can be installed in combination with gas or hot air. (Fig. 4.)

FINISH.

The casing of dryers can be finished in aluminum, silver, bronze, or white enamel paints, or to correspond with room as desired. Castings such as sheave-holders, flanges, handles, etc. (which are usually made of iron and finished same as casing), can be made of polished brass, plain or nicked, electro-plated, or dead black.

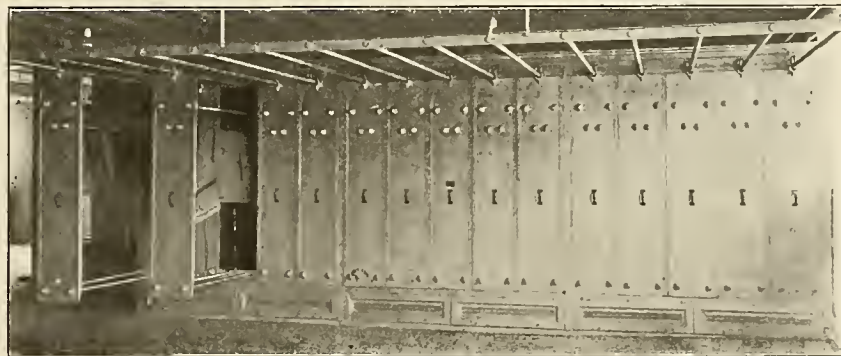


FIG. 5. HORSE BLANKET DRYER—RACK FACES—16" and 18", LENGTH AND HEIGHT 8' 6" TO 9'.

TABLE OF SIZES.

NUMBER OF RACKS	WIDTH FACES	DIMENSIONS	NUMBER OF RACKS	WIDTH FACES	DIMENSIONS	
4	7½"	2' 10" wide	7	7½"	4' 9" wide	
	10"	3' 9" wide		10"	6' 3" wide	
	12"	4' 5" wide		8	7½"	5' 4" wide
5	7½"	3' 6" wide	9	7½"	6' wide	
	10"	4' 7" wide		10	7½"	6' 8" wide
	12"	5' 5" wide		3	10"	2' 11" wide
7½"	4' 1" wide	12"	3' 5" wide			
10"	5' 5" wide					
6	12"	6' 5" wide				

7½" Rack Faces contain 4 available hanging bars.

10" and 12" Rack Faces contain 6 available hanging bars.

NOTE.

Above table governs Dryers heated by single laundry stove. Larger sizes require double stove. Dryers heated by gas or steam can be made in any number of racks desired.

MISCELLANEOUS DRYERS.

Under this head, we include extra large and heavily constructed dryers for the drying of horse blankets, robes, garments and rubber boots for use in stables, fire engine quarters and police patrol stations. We also manufacture special dryers for lace curtains, hats, etc.

BARNES & ERB CO.

Laundry Machinery

3846-56 Lancaster Avenue

PHILADELPHIA, PA.

BOTH TELEPHONES

BARNES & ERB CO.,
46 So. Clinton St., Chicago, Ill.

WESTERN LAUNDRY MACHY. CO.,
511 Mission St., San Francisco, Cal.

L. BOOTH & SON,
264 S. Los Angeles St., Los Angeles, Cal.

INTERNATIONAL LDY. MACHY. CO.,
258 Holloway Rd. No., London, Eng.

PRODUCTS.

Manufacturers of LAUNDRY MACHINERY, NEW MULTIPLE MANGLE, BALL-BEARING EXTRACTORS, DRYING MACHINES, PRESSING MACHINES for Shirts, DAMPENING MACHINES, etc.

ADVANTAGES.

We are in a position to fill all orders with despatch, consistent with good workmanship and material. Our products are shipped to any part of the world.

Our various Machines are built to comply with municipal regulations and the rules of the National Board of Fire Underwriters.

Most of our Machines are innovations and are covered by patents, putting us in a position to give you a most satisfactory and economical outfit in every way.

SPECIFICATION INSTALLATION.

We will be glad at any time to make out specifications for proposed plants, furnishing blue-prints showing location of proposed Machinery, and give full information necessary for the installation of our products.

We submit bids covering installation or not, as desired, for we furnish instructions that will enable any contractor or customer to make such installation.

MULTIPLE MANGLE.

Our new Multiple Mangle is a great money saving innovation. An ordinary Mangle, once the business has outgrown it, must be exchanged for a larger machine, or else disposed of at a sacrifice; in both cases entailing a lot of trouble and inconvenience in taking out the old, and installing the new. Our Multiple Mangle is built in sections, so that when a larger mangle is desired all that is needed is an additional section which can be added over night. The machine is made so that as many rolls can be added in sections as are practicable in one machine. All complicated parts have been avoided in this machine, there are no aprons; this alone does away with the endless number of rolls necessary to carry and guide the aprons. The machine stands low, doing away with any platform for the operator. All exposed heated surfaces are covered with asbestos, except where the linen comes in contact with the machine. An investigation made before placing an order for a mangle will result in the purchase of a Multiple.

BALL BEARING EXTRACTORS.

Our new Extractor combines strength, durability, self-balancing and easy running. All parts of this Extractor have been well proportioned and made of such dimensions as to make the machinery sufficiently strong to stand the hardest uses it may be put to. The outside curb is made of wrought-steel securely riveted. The basket is made of heavy spun copper and has a double bottom securely riveted to a large center flange. Five steel rings encircle the basket proper and make it exceedingly strong. The shaft is made of heavy steel, thus doing away with all danger of bending or breaking. Innumerable other good points exist in the Extractor which will not be found in any other. It will bear the strongest investigation.

THE MANNEN & ESTERLY CO.

"Manest" Clothes Dryer and "Manest" Natural Gas Furnace

811-813 St. Clair Street

CLEVELAND, O.

TELEPHONES: BELL, NORTH 450

CUY., CENTRAL 1788

PRODUCTS.

Manufacturers of THE "MANEST" FAMILY CLOTHES DRYER, THE "MANEST" NATURAL GAS FURNACE, and THE "MANEST" NATURAL GAS FURNACE ATTACHMENT.

SIZE OF DRYER.

The Standard size Dryer is 7 ft. high and 14 ft. long when racks are open. Widths are 24 inches to 61 inches. Top of stove 27x31 inches.

FUEL.

Coal, wood, or gas.

OPERATION.

One fire boils the clothes, dries the clothes and heats the irons.



"MANEST" FAMILY CLOTHES DRYER

PRICES.

Catalogue, sketches and prices upon application, free of charge.

SIZES OF GAS FURNACE.

This Furnace is made in two sizes, viz: Single Radiator with two burners and Double Radiator with four burners.

OPERATION.

The heat and fumes from burners pass through the flues of radiator from bottom to top, and then to chimney.



"MANEST" NATURAL GAS FURNACE

PRICES.

Catalogue and Prices furnished upon application.

SIZE OF ATTACHMENT.

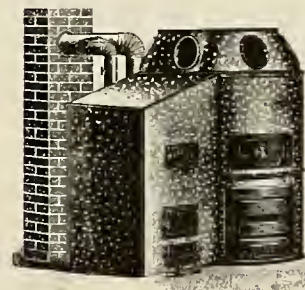
The Radiators of the attachment to coal furnace are the same as in Gas Furnace above.

CASING.

The Casing of the attachment can be made to fit any coal furnace.

OPERATION.

The operation of the attachment is the same as Gas Furnace above and can be used separately or in conjunction with coal furnace.



"MANEST" NATURAL GAS FURNACE ATTACHMENT

COLUMBIA HEATING COMPANY

40 Dearborn St., CHICAGO, ILL.

STEAM BOILERS.



WATER HEATERS

PRODUCTS.

Manufacturers of FLORENCE STEAM BOILERS, FLORENCE WATER HEATERS and FLORENCE HEATING MATERIALS.

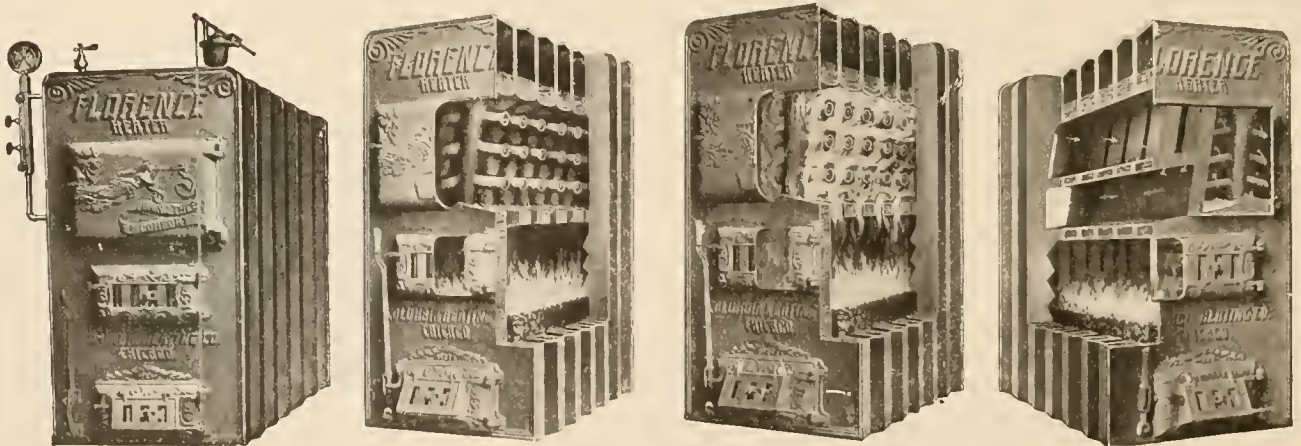
We are prepared to furnish boilers, especially and scientifically constructed, for all ordinary requirements. Each boiler or heater furnished by us is complete in itself, all necessary supplies being shipped with each order.

FIRE SURFACE VALUE.

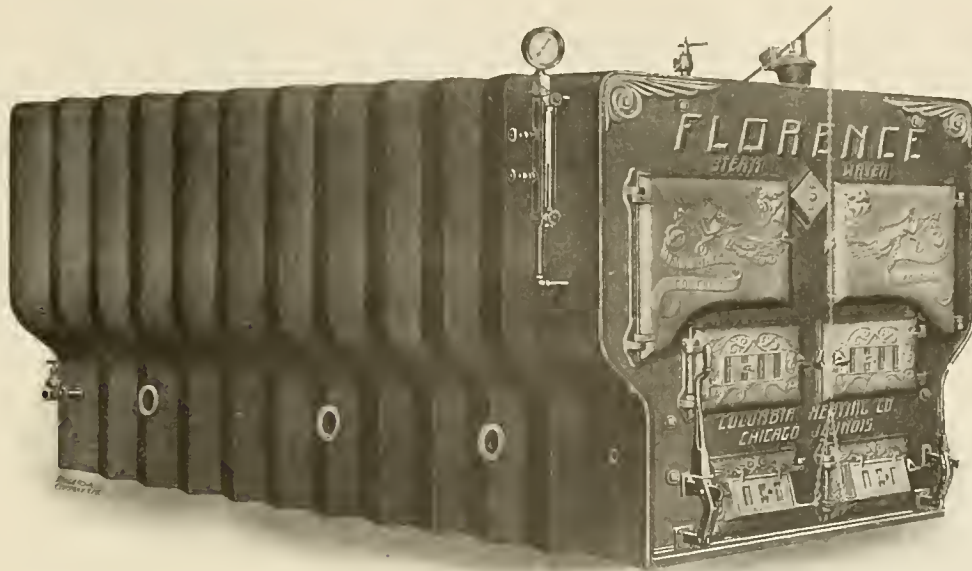
Architects, Heating Engineers and users of Steam and Water Heating apparatus will profit by a close examination of the Florence Heater. The arrangement of the fire-surface in the Florence Heater is worthy of careful consideration. The variety of values of fire-surface found in the many heaters now before the public, have caused a demand for heaters with the greatest amount of superior surface obtainable in practical construction. The fire-surface displayed in the most modern heaters, ranges in value as nearly as can be approximated, as follows:

Fire-arch or equivalent	1.00	Vertical surface within two feet of fire and subjected to direct ray from fire . . . . .	.65
Sides of fire-box . . . . .	.65	Flue surface of first flue entered (flue not to exceed four feet) . . . . .	.27
Horizontal surface within two feet of the fire (exposed to direct ray of heat) . . . . .	.80	The same (from four to seven feet) . . . . .	.22
Horizontal surface as above, but not exposed to direct ray from fire (surface which is under flame) when clean . . . . .	.10	Surface of second flues entered (not exceeding four feet in length) . . . . .	.10
SAME when not clean . . . . .	.00	The same (from four to seven feet) . . . . .	.60
		Surface below grate when perfectly clean . . . . .	.00½
		When covered with one-fourth inch of ashes . . . . .	.00

After an examination of the foregoing list it will be well understood why we, in the construction of the Florence Heater, have produced a heater provided with the greatest amount of direct surface that practical construction can procure; one which permits the gases to obtain temperatures insuring free combustion, keeps the surface clean, and reduces the temperature of the gases to a minimum before leaving the heater.

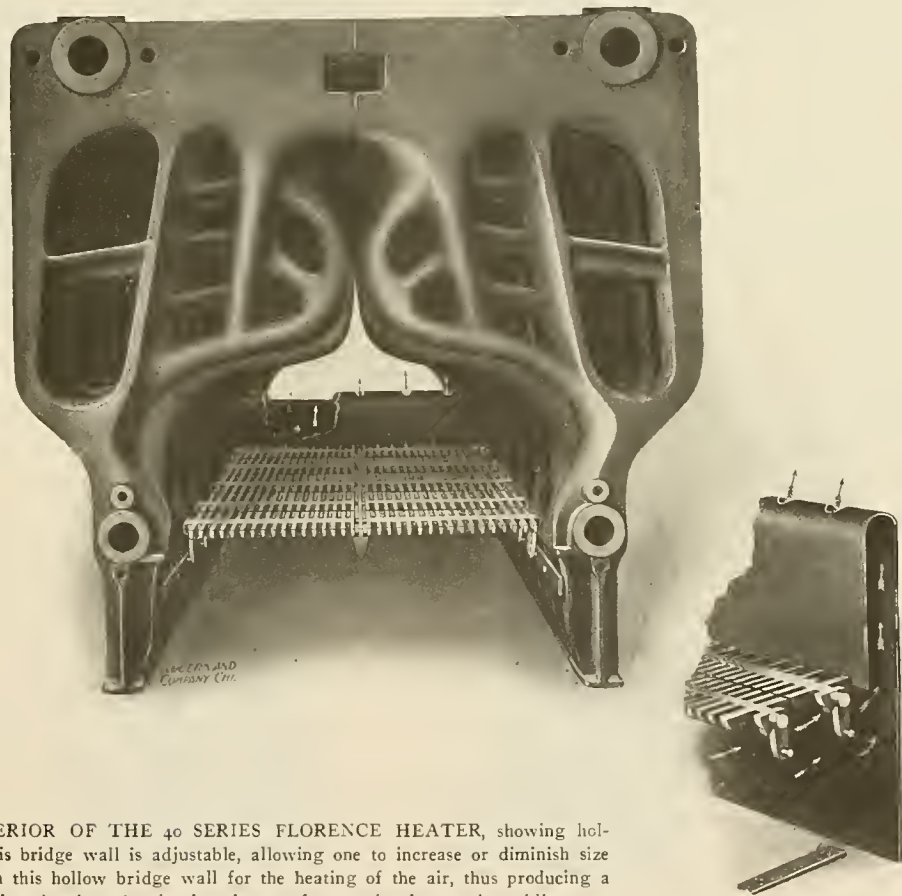


ILLUSTRATING FIRE TRAVEL OF 18 AND 23 SERIES FLORENCE HEATERS



FRONT VIEW OF OUR 40 SERIES FLORENCE HEATER

The large clean-out doors provided give the attendant free access to all parts of the fire-surface. The feed doors are of ample size to permit the placing of large pieces of wood on the fire. The two large ash-pit doors enable one to easily clean the large deep ash-pit with ease.



FRONT VIEW OF THE INTERIOR OF THE 40 SERIES FLORENCE HEATER, showing hollow bridge wall at back of grate. This bridge wall is adjustable, allowing one to increase or diminish size of grate. Allowance has been made in this hollow bridge wall for the heating of the air, thus producing a flow of heated oxygen into the combustion chamber, thereby insuring perfect combustion, and enabling one with a cheap grade of soft coal to obtain good results without the ordinary accompaniment of smoke.

DIMENSIONS AND CAPACITY OF BOILERS.

Number	Size of Grate	Total Fire Surface	Direct Fire Surface	Indirect Fire Surface	Total Rated Capacity for Water	Total Rated Capacity for Steam	Size of Base	Diameter of Smoke Pipe	Height	Top Outlets	Bottom Inlets	Approximate Shipping Weight
184	18x20	64	44	20	600	400	30x26	10	54	1 3 in.	2 3 in.	1700 lbs.
185	18x26	80	55	25	800	550	30x33	10	54	1 3 in.	2 3 in.	2000 lbs.
186	18x33	96	66	30	1000	700	30x39	10	54	2 3 in.	4 3 in.	2400 lbs.
187	18x40	112	77	35	1250	850	30x45	12	54	2 3 in.	4 3 in.	2800 lbs.
188	18x46	128	88	40	1500	975	30x51	12	54	3 3 in.	6 3 in.	3000 lbs.
235	23x27	108	76	32	1200	800	33x32	10	63	2 3 in.	4 3 in.	2900 lbs.
236	23x33	130	91	39	1600	1050	33x39	12	63	2 3 in.	4 3 in.	3400 lbs.
237	23x40	152	107	45	2050	1350	33x46	12	63	3 3 in.	6 3 in.	3800 lbs.
238	23x46	174	122	52	2500	1600	33x53	12	63	3 3 in.	6 3 in.	4200 lbs.
405	40x34	220	156	64	3500	2200	72x48	14	72	1 5 in.	2 4 in.	7500 lbs.
406	40x40	270	192	78	4500	2800	72x56	14	72	1 6 in.	2 4 in.	8800 lbs.
407	40x48	320	228	92	5500	3400	72x64	14	72	1 6 in.	2 4 in.	10300 lbs.
408	40x57	370	264	106	6500	4000	72x72	16	72	1 6 in.	2 4 in.	11600 lbs.
409	40x65	420	300	120	7500	4600	72x80	16	72	1 6 in.	2 4 in.	12900 lbs.
4010	40x65	470	336	134	8500	5200	72x88	18	72	2 6 in.	4 5 in.	14200 lbs.
4011	40x65	520	372	148	9500	5800	72x96	18	72	2 6 in.	4 5 in.	15500 lbs.
4012	40x65	570	408	162	10300	6300	72x104	20	72	2 6 in.	4 5 in.	16800 lbs.
4013	40x65	620	444	176	11150	6750	72x112	20	72	2 8 in.	4 5 in.	18100 lbs.
4014	40x65	670	480	190	12000	7200	72x120	20	72	2 8 in.	4 5 in.	19400 lbs.

FLORENCE LAUNDRY AND WATER HEATERS.

The demands for a Laundry Top Water Heater have constantly increased. To meet the requirements of those desiring the Laundry Top Water Heater, constructed in a manner enabling one to secure the very best results from a moderate fire, causes us to supply our line of Florence Laundry Heaters. These heaters are supplied with every convenience for proper operation, and are of construction insuring the best results from a small amount of fuel and attention.



FLORENCE LAUNDRY AND WATER HEATER No. 12 R.



FLORENCE LAUNDRY AND WATER HEATER No. 12 L.



FLORENCE LAUNDRY AND WATER HEATER No. 12 S.

Size	Grate	Code	Size Top Inches
12R	12	ACE	22
12L	12	AGI	20x20
12S	12	ACE	27x27

Height Inches	Capacity Gallons	Radiation	Price
29	110	125	\$46 00
29	120	135	48 00
29	130	150	50 00

FLORENCE WATER HEATERS.

Size	Grate	Height	Gallons Water	Radiation	Price
141	14	40	400	300	\$72 00
142	14	45	500	375	83 00
143	14	50	600	400	94 00





KELLOGG-MACKAY-CAMERON CO.

"K-M-C"



Boilers and Radiators, Heating and Plumbing Supplies

GENERAL OFFICES
CHICAGO, ILL.

MINNEAPOLIS, MINN.

BRANCHES
SEATTLE, WASH.

KANSAS CITY, MO.

PRODUCTS.

"K-M-C" BOILERS and RADIATORS for STEAM or HOT WATER HEATING have been used for fifty years in every kind of building in the United States. They can be supplied by any heating contractor, and as they are made in a LARGE VARIETY OF SHAPES AND SIZES, they are adapted for any requirements. They are easily transported and carried into any cellar or basement and erected there by sections, or increased or decreased in capacity, at will, at any time.

"K-M-C" Boilers are easy to manage, economical and durable, and suitable for local fuels.

"K-M-C" American Boilers—These Boilers are adapted for Steam or Hot Water heating, and are made for hard or soft coal, or wood.

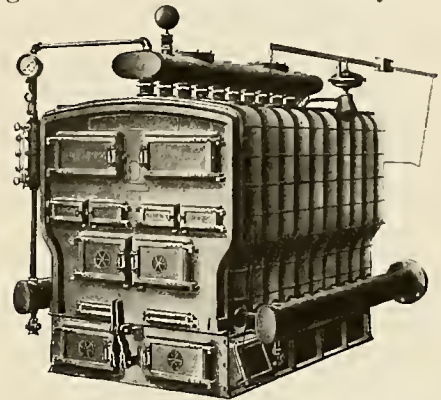


FIG. 1. "K-M-C" AMERICAN STEAM BOILER, 900 SERIES (ALSO MADE FOR WATER) DIMENSIONS, SIZES AND CAPACITIES.

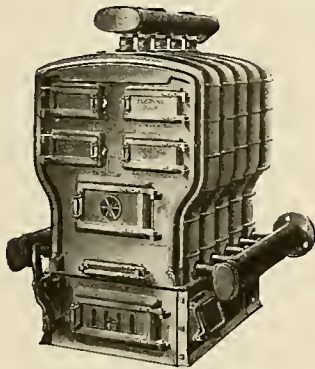


FIG. 2. "K-M-C" AMERICAN WATER HEATER, 500 SERIES



FIG. 3. "K-M-C" AMERICAN STEAM BOILER, 500 SERIES

STEAM BOILERS										WATER HEATERS										
Number	Sections	Size of Grate	Height Water Line	Height to Top of Header	Length with Smoke Box	Width with Return Manifolds	Diam. Smoke Pipe	Number and Size Steam Outlets	Number and Size Return Inlets	*Capacity, Direct Radiation	Number	Sections	Size of Grate	Height to Top of Header	Length with Smoke Box	Width with Return Manifolds	Diam. Smoke Pipe	Number and Size of Outlets	Number and Size Return Inlets	*Capacity, Direct Radiation
		ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	sq. ft.			ins.	ins.	ins.	ins.	ins.	ins.	ins.	sq. ft.
901	6	44x40	55	80	60	74	18	2-4	2-3	3000	902	6	44x40	80	60	74	18	2-5	2-5	4950
903	7	44x48	55	80	68	74	18	2-4	2-4	3600	904	7	44x48	80	68	74	18	2-6	2-6	5950
905	8	44x56	55	80	76	74	18	2-4	2-4	4200	906	8	44x56	80	76	74	18	2-6	2-6	6925
907	9	44x64	55	80	84	74	18	2-4	2-4	4800	908	9	44x64	80	84	74	18	2-6	2-6	7925
909	10	44x72	55	80	92	74	20	2-6	2-4	5400	910	10	44x72	80	92	74	20	2-8	2-8	8900
911	11	44x80	55	80	100	74	20	2-6	2-5	6000	912	11	44x80	80	100	74	20	2-8	2-8	9900
913	12	44x88	55	80	108	74	20	2-6	2-5	6600	914	12	44x88	80	108	74	20	2-8	2-8	10900
7-A	5	36x33	57	78	52	67	14	1-5	2-3	1600	8-A	5	36x33	78	52	67	14	1-6	2-5	2650
7-B	5	36x33	57	78	52	67	14	1-5	2-3	1800	A	5	36x33	78	52	67	14	1-6	2-5	2975
7-B	6	36x41	57	78	60	67	14	1-5	2-3	2050	8-B	6	36x41	78	60	67	14	1-6	2-5	3375
B	6	36x41	57	78	60	67	14	1-5	2-3	2250	B	6	36x41	78	60	67	14	1-6	2-5	3700
700	7	36x49	57	78	68	67	14	1-5	2-3	2700	800	7	36x49	78	68	67	14	2-5	2-5	4450
7-C	8	36x57	57	78	76	67	14	1-6	2-3	2900	8-C	8	36x57	78	76	67	14	2-5	2-5	4800
701	8	36x57	57	78	76	67	14	1-6	2-3	3150	801	8	36x57	78	76	67	14	2-5	2-5	5300
7-D	9	36x65	57	78	84	67	18	1-6	2-3	3350	8-D	9	36x65	78	84	67	18	2-5	2-5	5525
702	9	36x65	57	78	84	67	18	1-6	2-3	3600	802	9	36x65	78	84	67	18	2-5	2-5	5950
7-E	10	36x73	57	78	92	67	18	2-5	2-4	3800	8-E	10	36x73	78	92	67	18	2-6	2-6	6275
703	10	36x73	57	78	92	67	18	2-5	2-4	4050	803	10	36x73	78	92	67	18	2-6	2-6	6675
7-F	11	36x81	57	78	100	67	18	2-5	2-4	4250	8-F	11	36x81	78	100	67	18	2-6	2-6	7000
704	11	36x81	57	78	100	67	18	2-5	2-4	4500	804	11	36x81	78	100	67	18	2-6	2-6	7425
601	5	28x30	54	72	50	58	12	1-4	2-2	1300	600	5	28x30	72	50	58	12	1-5	2-4	2150
603	6	28x38	54	72	58	58	12	1-4	2-2	1625	602	6	28x38	72	58	58	12	1-5	2-4	2675
6-A	7	28x46	54	72	66	58	12	1-5	2-3	1775	6-A	7	28x46	72	66	58	12	1-5	2-4	2925
605	7	28x46	54	72	66	58	12	1-5	2-3	1950	604	7	28x46	72	66	58	12	1-5	2-4	3225
6-B	8	28x54	54	72	74	58	14	1-5	2-3	2100	6-B	8	28x54	72	74	58	14	1-6	2-5	3475
607	8	28x54	54	72	74	58	14	1-5	2-3	2275	606	8	28x54	72	74	58	14	1-6	2-5	3725
6-C	9	28x62	54	72	82	58	14	2-4	2-3	2425	6-C	9	28x62	72	82	58	14	1-6	2-5	4000
609	9	28x62	54	72	82	58	14	2-4	2-3	2600	608	9	28x62	72	82	58	14	1-6	2-5	4300
611	10	28x70	54	72	90	58	14	2-4	2-3	2925	610	10	28x70	72	90	58	14	2-5	2-5	4850
510	4	22x24	48	66	40	49	10	2-2	2-2	675	520	4	22x24	66	40	49	10	2-3	2-3	1100
512	5	22x32	48	66	48	49	10	2-2	2-2	900	522	5	22x32	66	48	49	10	2-3	2-3	1500
514	6	22x40	48	66	56	49	12	2-2	2-2	1125	524	6	22x40	66	56	49	12	2-3	2-3	1850
516	7	22x48	48	66	64	49	12	2-3	2-3	1350	526	7	22x48	66	64	49	12	2-4	2-4	2225
518	8	22x56	48	66	72	49	12	2-3	2-3	1575	528	8	22x56	66	72	49	12	2-4	2-4	2600
432	3	16x16	44	63	32	43	8	2-2	2-2	325	431	3	16x16	63	32	43	8	2-2	2-2	525
434	4	16x24	44	63	40	43	8	2-2	2-2	475	433	4	16x24	63	40	43	8	2-2	2-2	775
436	5	16x32	44	63	48	43	10	2-2	2-2	650	435	5	16x32	63	48	43	10	2-3	2-3	1075
438	6	16x40	44	63	56	43	10	2-2	2-2	825	437	6	16x40	63	56	43	10	2-3	2-3	1375

* Above ratings are for direct radiation and are based upon all piping being figured as radiating surface in case of steam, a pressure of two pounds of steam at the boiler, and, of a temperature of 180° F. in the water as it leaves the heater.

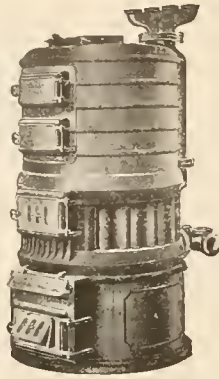


FIG. 4. "K-M-C" SPENCE HEATER (Style B) for Hot Water For Hard Coal or Coke

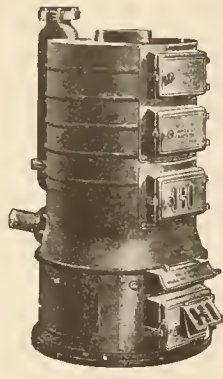


FIG. 5. "K-M-C" SPENCE HEATER (Style C) for Hot Water For Hard or Soft Coal or Coke

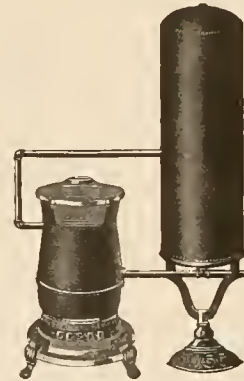


FIG. 6. "K-M-C" LITTLE GIANT LAUNDRY HEATERS Numbers 10 to 20B For Domestic Hot Water Supply



FIG. 7. LAUNDRY HEATER Numbers 1 and 2

NOTE—We make 34 other styles of boilers in a very large range of sizes. Send for our complete Catalogue.

"K-M-C" Radiators are made for steam or hot water heating. All "K-M-C" Radiators can be furnished in corner curved, round, stairway or any shape to fit any space, and with any amount of radiating surface.

We illustrate herewith two types, the "K-M-C" Kewanee Pattern, and "K-M-C" Federal Window Pattern.

SPENCE STYLE "B"
DIMENSIONS, SIZES AND CAPACITIES
"K-M-C" SPENCE BOILERS FOR HOT WATER

Number	Sections	Diam. of Grate ins.	Height of Boiler ins.	Outside Diameter ins.	Diam. Smoke Pipe ins.	Number and Size Branch Outlet	Single Outlet and Inlet Diam.	*Capacity Direct Radiation sq. ft.
10	5	16	47	20	5	2-1 1/2	1	300
20	5	19	51	23	5	2-2 1/4	1	400
30	5	20 1/2	54	25	6	4-2 3/4	3 1/2	550
40	5	23 1/4	57	26 1/2	6	4-3 3/8	4	800
50	5	27	64	33	10	6-3 3/8	5	1100
52	6	27	69	33	10	6-3 3/8	5	1200
50	5	30	65	36	11	6-3 3/8	5	1425
52	6	30	70	36	11	6-3 3/8	5	1550
70	5	34	67	40	12	8-2 1/2	6	1950
72	6	34	72	40	12	8-2 1/2	6	2150

SPENCE STYLE "C"

15	5	16	53	23	7	2-2	3	425
25	5	19	56	25	8	2-2	3	500
35	5	21	58	28	9	4-2	3 1/2	625
45	5	25	63	32	10	4-2	4	900
53	5	28	67	35	11	5-2	5	1250
55	6	28	72	35	11	5-2	5	1375
63	5	32	67	39	12	8-2 1/2	6	1675
65	6	32	75	39	12	8-2 1/2	6	1850
73	5	40	70	46	13	8-2 1/2	6	2450
75	6	40	76	46	13	8-2 1/2	6	2750

* See note on preceding page.

"K-M-C" KEWANEE RADIATORS FOR STEAM AND WATER
DIMENSION, SIZES AND CAPACITIES

	Height in inches	45	38	32	25	20	18
1 Col. width 4 7/8"	Heating Surface, sq. ft. per section	3 1/2	3	2 1/2	2	1 1/2	1 1/2
2 Col. width 8 3/16"	Heating Surface, sq. ft. per section	5	4	3 1/2	2 3/4	2	2
3 Col. width 9 7/8"	Heating Surface, sq. ft. per section	6	5	4 1/2	3 3/4	2 3/4	2 3/4
4 Col. width 13"	Heating Surface, sq. ft. per section	9	8	6 2/3	5 1/3	3 1/2	3 1/2



FIG. 9. "K-M-C" FEDERAL WINDOW RADIATOR

"K-M-C" FEDERAL WINDOW RADIATORS
Steam and Water

Height, each section in inches	20	18	16	14	13
Sq. ft. heating surface per section	6	5 1/4	4 3/8	4	4
Width of loop, 12 1/2 inches.					
Length in stack, 3 inches.					

"K-M-C" LITTLE GIANT LAUNDRY HEATERS

DIMENSIONS AND CAPACITIES

Number	Diameter of Grate ins.	Height ins.	Outside Diameter ins.	Diameter Smoke Pipe ins.	Size of Tapping ins.	*Capacity Direct Radiation sq. ft.	** Heating Capacity per Hour gallons
1	12	32		6	1 1/4		125
2	16	34		6	1 1/2		225

WITH FIRE POT SECTION ONLY

10	10	32	14	5	1 1/4	60	80
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WITH BRICK-LINED FIRE POT

12	12	35	16	5	1 1/4	115	150
16	16	38 1/2	19	6	1 1/2	200	300
20	20	40 1/2	24	6	2	300	450

WITH BRICK-LINED FIRE POT AND EXTRA 5-INCH WATER SECTION

12A	12	39	16	5	1 1/4	150	200
16A	16	42 1/2	19	6	1 1/2	250	350

WITH EXTRA 9-INCH WATER SECTION INSTEAD OF BRICK-LINED FIRE POT

12B	12	39	16	5	1 1/4	185	250
16B	16	42 1/2	19	6	1 1/2	285	400
20B	20	44 1/2	24	6	2	425	550

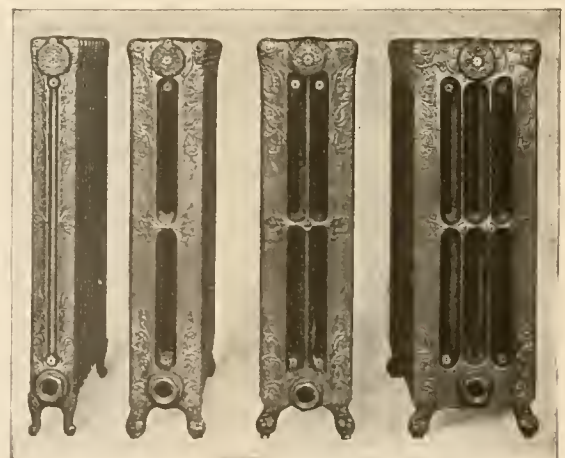


FIG. 8. "K-M-C" KEWANEE RADIATORS 1, 2, 3 and 4 Column for Steam and Hot Water Heating

THE "K-M-C" VACUUM SYSTEM (Morgan Patents).

Fully protected by the U. S. Patents as follows: March 3, 1903, Morgan & Co., Chicago; August 9, 1905, Morgan & Co., Chicago. Other applications pending. Infringements will be prosecuted to the full extent of the law.

The "K-M-C" Vacuum System (Morgan Patents) is a scientific and practical adaptation of the vacuum principle to any ordinary low-pressure steam heating plant, whether an *old or new* installation, and can be applied to it without any alteration whatever in piping or boiler.

The "K-M-C" System does not aim to compete with other systems which require mechanical means to create a vacuum. The "K-M-C" System is an automatic one, and there is no expense incurred in the piping and radiators. We create a vacuum *without the aid of mechanical means* and simply by the condensation of steam. This vacuum enables us to heat the radiators and keep them hot long before the water in the boiler reaches a temperature of 212 degrees. In fact, the water will not reach this high temperature because it will boil at a much lower temperature (170 degrees), due to the reduced pressure resulting from the vacuum in the steam piping. Right at this point is where the economy in the use of fuel comes in. It is not necessary to heat water to such a *high* temperature to evolve steam at a *sufficient* temperature to successfully heat the building. The system is automatic and requires no machinery whatever. Its operation results in the saving of fuel of from 20 to 25 per cent.

The "K-M-C" vacuum appliances may be used with equal facility *on any style of boiler*. Old heating plants may be remodeled and made effective and successful by its use, and the result will be as economical as though the appliances were used on a system to be newly installed. The "K-M-C" appliances are simple and easily installed by any steamfitter. The operation, control, and regulation of the apparatus is remarkably easy, and the marvelous saving in fuel will soon repay the first cost many times over. Complete instructions for installing, covering all points, with full explanations and many illustrations, may be had of the above company.

The Vacuum System, by enabling the circulation of steam at lower temperature than the boiling point of water under normal conditions, results in a continuous supply of heat with the same fire, which, without the system, would cease to impart any heat to the radiators.

It is installed in two ways:

- (1) The Floating-check construction.
- (2) The Loop construction.

The specialties * furnished for either system consist of:

Retarder † for each of the Radiators.

A Retarder for each Steam Return, except the one to which the Regulator is attached.

Mercury Column, Mercury and Bracket.

A Damper Regulator, complete with Wall Brackets, Lever, Sliding Weight, 4 Pulleys and 12 yards of Chain.

A Vacuum Gauge.

A Thermometer.

A Swinging-Check Valve.

In addition to the above, an *Accumulating Tank* of proper size is furnished with either system, except the Loop construction, for a plant of twelve radiators or less.

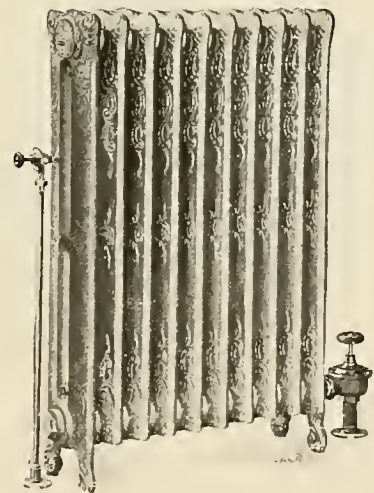
A Floating Check Valve is furnished for the Floating-check construction only.

NOTE. Do not use the ordinary steam damper-regulator, with its diaphragm, water bottle, weight and lever, or tri-cocks and safety valve ‡ usually furnished with a low-pressure boiler. These appliances are unnecessary and should be discarded unless an ordinance requires the use of a safety valve; then a good valve, one not likely to leak, should be used on the boiler.

* Prices on application.

† Open retarders are furnished.

‡ A special safety valve for use on the floating-check construction may be had. Prices on application.



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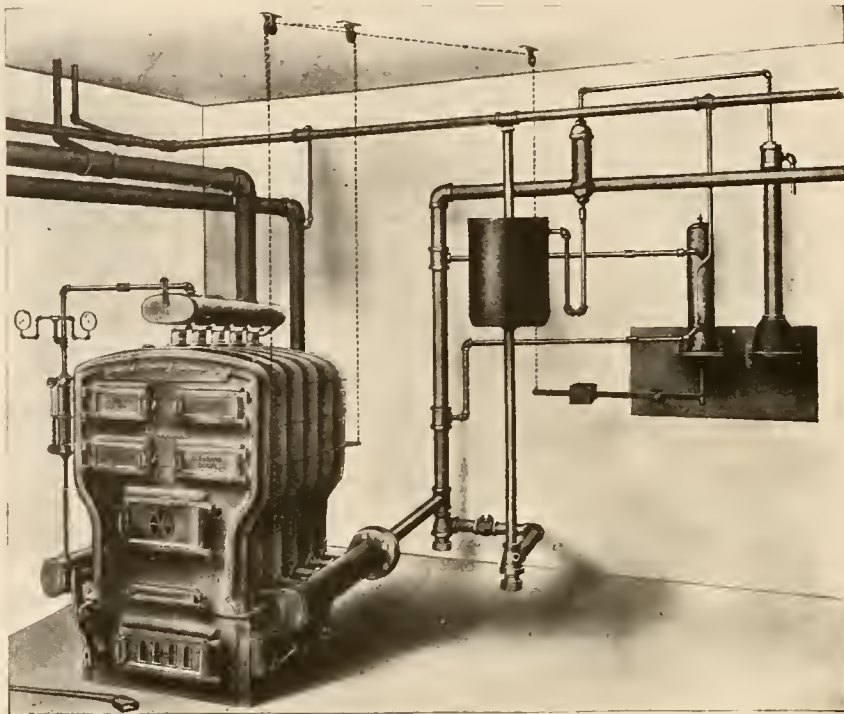
"K-M-C" KEWANEE RADIATOR

Equipped with "K-M-C" Packless Diaphragm Radiator Valve and Manual Retarder and showing method of reducing air pipe by a reducing coupling, after passing through floor.

THE "K-M-C" VACUUM SYSTEM (Morgan Patents).

The Floating Check Construction—The accompanying engraving is intended to convey some helpful suggestions to the steam-fitter by showing the various appliances in their proper positions. Their arrangement can be changed to suit the conditions existing in different buildings.

The Air Main, composed of two 1-inch sections, is the highest pipe shown in cut; it pitches downward from the extremity of each section, about 1 inch in 15 feet, to the tee directly above the accumulating tank. The air return, of 1-inch pipe, continues from the bottom of tank through a swing check valve to the boiler.



Copyright 1905, by Kellogg-Mackay-Cameron Co.

THE ATTACHMENT OF THE "K-M-C" VACUUM APPLIANCES on the Floating-check construction is here shown with one of our "American" Steam Boilers. Any other style of Boiler may be used.

The Swing Check Valve is placed in a position to prevent the water from leaving the boiler, and is protected by traps.

The Floating-Check is connected to the end of the long leg of the trap and a $\frac{1}{2}$ -inch pipe is run upward from its upper opening, thence downward to the mercury column attached to the wall, the side opening of which is well above the water line of the boiler.

An Air Vent Pipe is shown connecting the lower opening of the regulator to the air main. An air vent pipe is also shown connecting the vertical drop of the return from the shortest steam circuit to the air main above it.

The Regulator and chains are shown attached.

The Thermometer is placed in the top or front of the boiler, so its bulb is surrounded by steam.

The Steam and Vacuum Gauges are so piped as to be protected by traps from contact with the steam.

A Safety Valve is essential on this system. We can furnish one specially made. Prices on application.

The ordinary steam regulator and tri-cocks, usually furnished with the low-pressure boiler, have been discarded.

The Loop Construction—(Not Shown). In this construction, a loop between 30 and 50 feet high of one inch pipe up, and $\frac{1}{2}$ inch pipe down, is erected in a wall or an unused smoke flue. It replaces the floating-check. It is connected to the air main at its lowest point in its return to the boiler. It will prevent the escape of water and to a considerable extent will resist the efforts of steam to escape. The specialties furnished with the loop construction are given on previous page.

SPECIFICATIONS—In specifying these appliances, the following form may be used in connection with the regular steam heating specifications:

"The heating Apparatus to be equipped with "K-M-C" Vacuum appliances (Morgan Patents), each radiator to be properly connected up with retarder (state whether open, manual or automatic)."

"Also, each radiator to be properly connected with the air lines, mercury column and damper regulator, all to be connected as per manufacturers' instructions." Copies may be had on application.

Specify "K-M-C" Packless Diaphragm Radiator Valves; they are specially adapted for vacuum systems, but are good for use on any heating apparatus. Note the valve in illustration of equipped Radiator on previous page.

MAY & FIEBEGER

Furnaces and Boilers

AKRON, O.

CAPACITY 5,000 PER YEAR

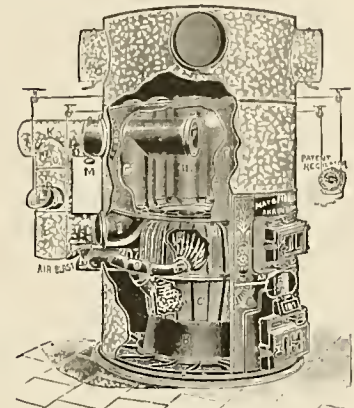
ESTABLISHED 1880

PRODUCTS.

Manufacturers of THE AKRON AIR BLAST FURNACE and THE PRUDENTIAL HOT WATER and STEAM BOILERS.

THE AKRON AIR BLAST FURNACE.

The Akron Air Blast Furnace is the simplest and the most easily operated, as well as the cleanest and most economical warm air furnace on the market. It burns any kind of fuel and utilizes the gas, which saves the heat. The fire port grate and large tubular radiator are the strong points of this furnace.



AKRON AIR BLAST FURNACE

Estimated capacity under proper conditions and constructions can only be given. Real capacity is governed by latitude, also surrounding conditions in which the furnace is placed. These conditions must be considered when deciding size of furnace to use or Guarantee is void.

PORTABLE FURNACES.

No. of Furnace	151	251	351	451	511	551	651	751	851
Diameter of Base in Inches	32	37	41	45	48	51	55	55	55
Diameter of Casing in Inches	29	33	38	42	46	48	53	53	53
Height of Furnace in Inches	61	62	62	62	62	63	67	72	79
*Height of Casing in Inches	72	72	78	78	78	79	84	90	96
Diameter of Fire Pot	18	19	21	23	26	28	32	32	32

*Casing carried within 2 inches of the joist on a 7-foot cellar. A person can walk upright under the pipes.

LOW FURNACES FOR LOW CELLARS

No. of Furnace	351	451	511	551	651
Height of Furnace in Inches	56	56	56	57	61
Height of Casing in Inches	72	72	72	73	78

No. of Furnace	351	451	511	551	651	751	851
Heating Capacity of houses with ordinary size rooms	5-7	7-9	9-11	11-12	12-15	15-18	18-20
Estimated capacity by inside circulation for stores and churches only	15000 to 18000	18000 to 25000	25000 to 30000	30000 to 40000	40000 to 60000	60000 to 90000	90000 to 100000
Size of Cold Air Box by inside circulation or equivalent	16x28	18x32	18x38	20x42	24x42	24x46	24x48
Size of Cold Air Box for outside, with a slide, or equivalent	14x26	16x36	16x36	18x40	20x40	22x44	22x46

PRUDENTIAL BOILERS.

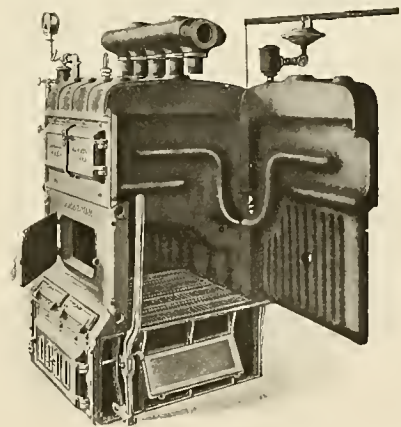
The Prudential Boilers are the most efficient and up-to-date steam generators and hot water heaters on the market. They are made in fifteen sizes for steam or water, and with 22", 30" and 40" grates, which are adapted for hard or soft coal, coke or wood.

Address all boiler correspondence to The Prudential Heating Co., Akron, O.

PRICES, SIZES AND CAPACITIES.

22-INCH GRATES

Number	Sections	Capacity Direct Radiation	Price Complete	Size of Grate		Height of Water Line	Length with Smoke Box	Width Water Frt. Connections	Height to Top of Header	Flows	Returns	Size of Smoke Pipe
				ins.	ins.							
224	4	500	\$250.00	22x21	53	44	34	72	2-3	2-3	10	
225	5	675	302.50	22x23	53	44	41	72	2-3	2-3	12	
226	6	850	355.00	22x35	53	44	48	72	2-3	2-3	14	
227	7	1100	435.00	22x42	53	44	55	72	2-3	2-3	15	



PRUDENTIAL BOILER

30-INCH GRATES

Number	Sections	Capacity Direct Radiation	Price Complete	Size of Grate		Height of Water Line	Length with Smoke Box	Width with Water Front Connections	Height to Top of Header	Flows	Returns	Size of Smoke Pipe
				ins.	ins.							
304	4	750	\$325.00	30x21	53	54	34	72	2-3	2-3	10	
305	5	1025	407.50	30x28	53	54	41	72	2-3	2-3	12	
306	6	1300	490.00	30x35	53	54	48	72	2-3	2-3	14	
307	7	1550	572.50	30x42	53	54	55	72	2-3	2-3	15	

40-INCH GRATES

Number	Sections	Capacity Direct Radiation	Price Complete	Size of Grate		Height of Water Line	Length with Smoke Box	Width With Water Front Connections	Height to Top of Header	Flows	Returns	Size of Smoke Pipe
				ins.	ins.							
400	6	1800	\$640.00	40x35	53	60	48	72	2-4	2-4	14	
407	7	2200	757.00	40x42	53	60	55	73	2-4	2-4	15	
408	8	2600	859.00	40x49	53	60	62	72	2-4	2-4	16	
409	9	3000	945.00	40x56	53	60	69	72	2-4	2-4	17	
4010	10	3400	1024.00	40x63	53	60	76	72	2-4	2-4	1-18	
4011	11	3950	1134.00	40x70	53	60	83	72	2-4	2-4	1-18	
4012	12	4500	1244.00	40x77	53	60	90	72	2-4	2-4	1-18	

THE READING STOVE WORKS

(ORR, PAINTER & CO.)

FOUNDRY AND MAIN OFFICE,

READING, PA.

BRANCH OFFICES.

NEW YORK CITY, N. Y.

CHICAGO, ILL.

BOSTON, MASS.

PHILADELPHIA, PA.

BUFFALO, N. Y.

PRODUCTS.

"SUNSHINE" STEAM AND HOT WATER HEATERS, "SUNSHINE" HOT AIR AND COMBINATION FURNACES, "SUNSHINE" SET RANGES, "SUNSHINE" HEATING AND COOKING STOVES; GOVERNMENT, CORPORATION AND PRIVATE LETTER BOXES.

FACILITIES.

Our foundry at Reading, Pa., being in the heart of the Coal and Iron Fields, and in possession of unsurpassed shipping facilities, gives us the distinction of being leaders in quantity, quality and price of our products, as well as insuring promptness in filling orders for single articles or car loads.

Our Heaters conform to all the rules and regulations of the National Board of Fire Underwriters and similar bodies. Architects specifying them for their clients are guaranteed this.

INSTALLATION.

We sell our Heaters to the Heating Trade only. We do not install Heating Plants nor are we in any way connected with or financially interested in any constructing firm. We will, upon request, name the nearest dealer who supplies our goods.

GUARANTEE.

Every "Sunshine" Heater is guaranteed upon the proviso that sufficient radiation be supplied, that the apparatus is correctly installed, that the flue is ample, that the Heater is large enough and shall receive proper management. All our heaters are tested to 80 lbs., water pressure.

SELECTION OF HEATERS.

Architects when selecting a Heater, should choose one having a surplus capacity to meet possible contingencies, and if soft coal is to be used, one size larger than for hard coal should be ordered.

When a pipe coil or water-back is placed within the fireplace, or a steam coil is placed in a tank for heating water for domestic use, additional capacity should be provided at the rate of $1\frac{1}{2}$ square feet of steam rating or 2 square feet of water rating for each gallon of water to be heated per hour.

RATINGS.

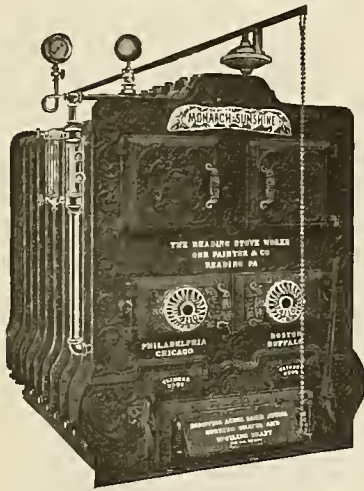
The Ratings of all "Sunshine" Heaters are conservative; they provide that all piping shall be figured in as radiating surface in addition to the amount of cast-iron radiation (or its equivalent) to be used.

CAPACITY OF "SUNSHINE" HEATERS.

The "Sunshine" Heaters are made and listed in capacities for steam from 175 square feet of radiation to 4200 square feet, and for water from 300 square feet to 6800 square feet, yet this is not the limit of capacities for which we can furnish them. In the Monarch and Imperial lines their construction permits of any increase in size desirable with proportionate increase of capacity.



VESTAL SUNSHINE HEATER
Full Reversible Flue Pattern



MONARCH SUNSHINE HEATER
41 Series



IMPERIAL SUNSHINE HEATER

VESTAL SUNSHINE HEATER
Full-Reversible Flue Pattern

STEAM

No. of Heater	115	117	119	121	123
Rating, sq. ft.	200	250	300	375	450
Price	\$104.00	122.00	140.00	166.00	192.50

VESTAL SUNSHINE HEATER
Half-Reversible Flue Pattern

STEAM

No. of Heater	15	17	19	21	23
Rating, sq. ft.	175	225	275	325	400
Price	\$96.00	114.00	130.00	149.00	175.00

VESTAL SUNSHINE HEATER
Full-Reversible Flue Pattern

WATER

No. of Heater	115	117	119	121	123
Rating, sq. ft.	325	400	500	625	750
Price	\$94.00	112.00	130.00	156.00	182.50

VESTAL SUNSHINE HEATER
Half-Reversible Flue Pattern

WATER

No. of Heater	15	17	19	21	23
Rating, sq. ft.	300	375	450	525	650
Price	\$85.00	104.00	120.00	139.00	165.00
Diameter of Grate, inches	15	17	19	21	23
Area of Fire Space, sq. in.	177	227	284	347	416

° Ratings are conservative. Note area of fire space in comparing capacities and net cost.

† We furnish trimmings as shown in the illustrations for Steam Heaters, also fire tools for all heaters.

Arranged for pipe coil for heating water for domestic use, when so ordered.

25 SERIES

MONARCH SUNSHINE HEATER

STEAM

‡ No. of Heater	25-4	25-5	25-6	25-7	25-8	25-9
Rating, sq. ft.	500	650	800	1000	1200	1450
Price	\$230.00	290.00	340.00	400.00	460.00	535.00

25 SERIES

MONARCH SUNSHINE HEATER

WATER

‡ No. of Heater	25-4	25-5	25-6	25-7	25-8	25-9
Rating, sq. ft.	825	1075	1325	1650	2000	2400
Price	\$220.00	280.00	330.00	390.00	450.00	525.00
Size of Grate, inches (see below)	25x18	25x24	25x30	25x36	25x42	25x48
Area of Fire Space, sq. in.	486	648	810	972	1134	1296

41 SERIES

MONARCH SUNSHINE HEATER

STEAM

‡ No. of Heater	41-6	41-7	41-8	41-9	41-10	41-11	41-12
Rating, sq. ft.	1600	1950	2300	2700	3150	3650	4200
Price	\$550.00	685.00	780.00	860.00	950.00	1040.00	1130.00

41 SERIES

MONARCH SUNSHINE HEATER

WATER

‡ No. of Heater	41-6	41-7	41-8	41-9	41-10	41-11	41-12
Rating, sq. ft.	2650	3225	3800	4450	5200	6000	6800
Price	\$570.00	675.00	760.00	840.00	930.00	1020.00	1110.00
Size of Grate, inches	41x30	41x36	41x42	41x48	41x54	41x60	41x66
Area of Fire Space, sq. inches	1290	1548	1806	2064	2322	2580	2838

° Ratings are conservative. Note area of fire space in comparing capacities and net cost.

‡ Larger sizes can be made to order.

* Grate can be reduced to any length desired by bridge wall.

Arranged for Water Back or Pipe Coil for heating water for domestic use.

† We furnish sufficient Asbestos Cement to provide an inch covering for the heater, also trimmings, as shown in the illustrations for Steam Heaters, also fire tools for all heaters.

IMPERIAL SUNSHINE HEATER

STEAM

‡ No. of Heater	20-4	20-5	20-6	20-7	20-8	20-9
Rating, sq. ft.	400	550	700	900	1100	1300
Price	\$195.00	250.00	310.00	370.00	430.00	490.00

IMPERIAL SUNSHINE HEATER

WATER

‡ No. of Heater	20-4	20-5	20-6	20-7	20-8	20-9
Rating, sq. ft.	650	900	1150	1500	1825	2150
Price	\$185.00	240.00	300.00	360.00	420.00	480.00
Size of Grate, inches	20x18	20x24	20x30	20x36	20x42	20x48
Area of Fire Space, sq. in.	396	528	660	792	924	1056

‡ Larger sizes can be made to order.

° Ratings are conservative. Note area of fire space in comparing capacities and net cost.

† We furnish sufficient Asbestos Cement to provide an inch covering for the heater, also trimmings, as shown in the illustrations for Steam Heaters, also fire tools for all heaters.

Arranged for Pipe Coil for heating water for domestic use.

UTICA HEATER COMPANY

UTICA, N. Y.

PRODUCTS.

STEAM and HOT WATER BOILERS, including: "IMPERIAL" SECTIONAL STEAM and HOT WATER BOILERS, "IMPERIAL ROUND" STEAM and WATER BOILERS, "IMPERIAL JUNIOR" HOT WATER BOILERS, "AUBURN" STEAM and HOT WATER BOILERS. We also manufacture a complete line of PORTABLE and BRICK-SET HOT AIR FURNACES under the name of "SUPERIOR."

SHIPMENTS.

We carry a large stock of Imperial Boilers—both sectional and round—and pride ourselves on prompt shipments. We have so increased our output that our agents and customers can be assured of prompt attention to all orders.

GUARANTEE AND RATINGS.

Great care is taken to thoroughly test all our boiler castings, and we will cheerfully replace any found defective in manufacture. Our ratings are conservatively made, and are based on the workings of the large number of Imperial Boilers in actual use.

IMPERIAL SECTIONAL STEAM AND HOT WATER BOILERS.

The prominent and most practical feature in the Imperial Boiler is the very large amount of fire surface contained in each section. As can be seen by the cut, this fire surface is so placed that it hangs over the top of the fire, and the live flame and heated gases are compelled to pass over this overhanging surface before reaching the flues.

The advantage of this construction is that the use of so much surface allows steam to be generated quickly and a very large amount of water is evaporated for the coal consumed.

We make the broad claim that width for width there is more fire surface per section in our Imperial Boilers than in that of any other Boiler manufactured. And as a square foot of fire surface will do the work of from four to six square feet of flue surface, one can readily understand how economical and powerful the Imperial Boilers are for either making Steam or circulating Hot Water.

It is largely on account of the immense amount of direct and overhanging fire surfaces that Imperial Sectional Boilers stand so high, as regards efficiency. Of the thousands of boilers we have sold in all parts of the country, we have never had a complaint that Imperial Boilers have not carried their rating when properly set up and piped.



IMPERIAL SECTIONAL STEAM BOILER.

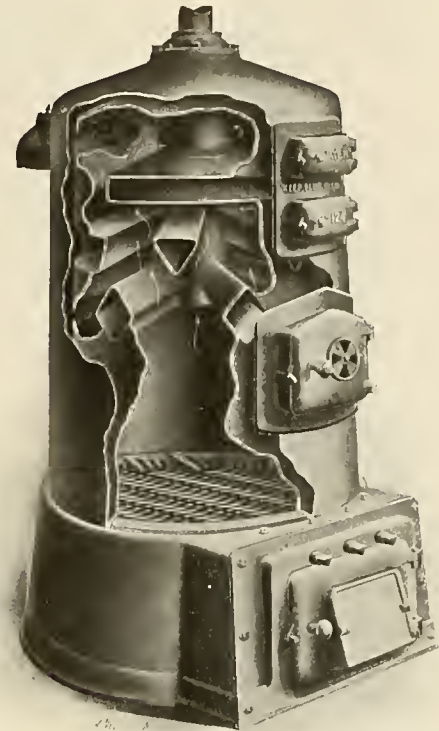
Imperial Sectional Boilers are composed of sections and can be taken through any ordinary-sized door, stairway or window. The sections are connected with push nipples, iron to iron, perfectly true and tight, and secured by a straight bolt passing from front to rear on the top of the heater, and on each side at the bottom.

The low-down construction of Imperial Boilers and the absence of headers admit of their use in low cellars without the necessity of a pit.

IMPERIAL
ROUND STEAM
AND WATER
BOILERS.

The "Imperial" Round Boilers are designed for comparatively small heating plants in residences, green-houses, etc., and for heating water for swimming pools, bath rooms, laundries, etc., where sectional boilers would be too large and expensive. We claim that this boiler is all direct fire surface, and every particle of this fire surface is water surface. Imperial Round Boilers are cast in one piece above the ash-pit, thereby saving labor and expense in assembling and mounting, which is an item of considerable economy to the fitter.

The Round Boilers are also furnished with two clean-out doors, whereby every portion of the flues may be readily reached and cleaned; in fact, this boiler is practically self-cleaning.



IMPERIAL ROUND HOT WATER BOILER

IMPERIAL
JUNIOR HOT
WATER
BOILER.

These boilers are made in three sizes, and are designed to heat small residences, conservatories, poultry plants, brooder houses, and other buildings where our large Round Boilers would be too large to heat.

They are constructed similar to our larger round boilers, with the omission of the arms. Their being cast in one piece eliminates any danger of leaky joints. All fire and flue surfaces are surrounded by water, making it impossible for any part to warp or burn out. The fire pots are unusually deep, affording ample storage for coal. These boilers are fitted with triangular grates.

HOT AIR
FURNACES.

Our line of Hot Air Furnaces is the most complete line in the world, manufactured under one name—"SUPERIOR." It embraces furnaces for heating schools, churches, residences and buildings of every description, and for all fuels and climates. All our furnaces are strictly up-to-date, nothing antique or obsolete entering into their construction.

SUPERIOR
HORIZONTAL
FURNACE AND
SANITARY
AIR WARMER.

Our superior Horizontal Furnace and Sanitary Air Warmer is especially designed for heating school-houses, churches, theatres, libraries, court-houses, and large public buildings of every description. It supplies the demand for a furnace capable of furnishing the largest public building with a uniform quantity of air, warmed to a proper temperature, and containing all the properties necessary for health and comfort.

FINALLY:

When in the market for good goods at right prices, remember the Utica Heater Co., Utica, N. Y.

S. WILKS MANFG. CO.

Water Heaters, Steam Generators and Storage Tanks
CHICAGO, ILL.

TELEPHONE CONNECTIONS

PRODUCTS.

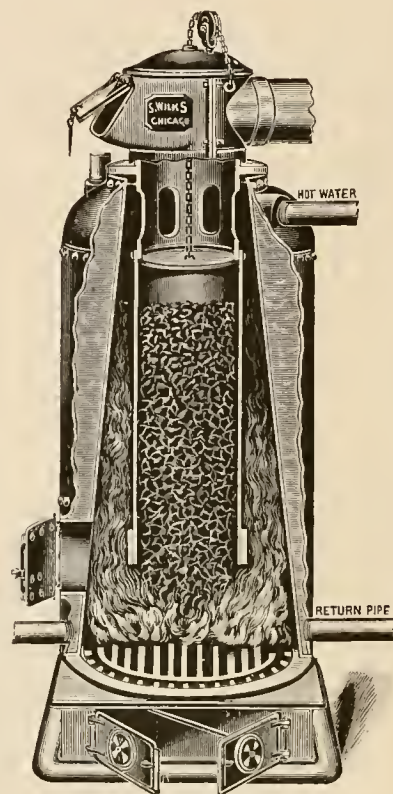
Manufacturers of WILKS WATER HEATERS, WILKS IMPROVED STEAM GENERATORS and STEEL STORAGE TANKS.

THE WILKS WATER HEATERS

The Wilks Heaters are constructed of the best quality of steel, strongly riveted and calked, with no cast-iron cylinders or sections to crack, no bolts or packing to be kept tight, and no flues to fill up and leak. By using steel we are able to give greater efficiency than is obtainable in any cast-iron heater, as much less metal is used between fire and water. The steel also allows us to make Wilks Heaters much stronger as well as lighter. Each Heater is tested to one hundred pounds pressure before leaving the shop. The fire being entirely surrounded by water, great economy is obtained with any fuel. The coal magazine makes it possible to keep a steady fire burning twelve hours without the least attention.



WILKS WATER HEATER



SECTIONAL VIEW WILKS WATER HEATER

CIRCULATION.

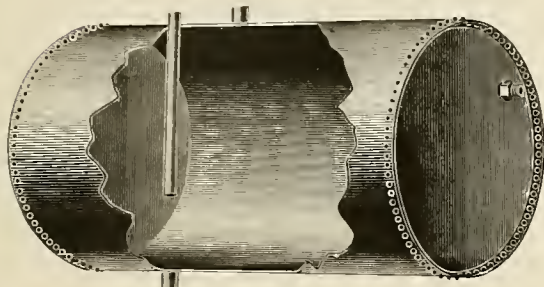
All the surfaces being vertical, our heaters insure perfect circulation.

SIZES, CAPACITIES AND LIST PRICES.

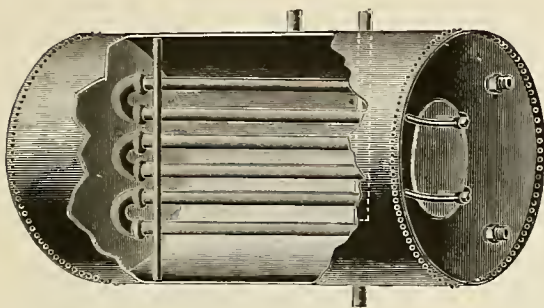
Size of Boiler, Inches.	Heating Capacity, Gals. per Hour.	Price.	Size of Openings, Inches.	Approximate Heating Power 4-inch Pipe, Feet.	Height from Floor to Top, Inches.	Approximate Weight Pounds.	Square Feet Radiator.
10x18	40	\$21 00	1 1/4	50	25 1/2	75	
12x24	65	25 00	1	60	32 1/2	120	
12x30	75	26 50	1	75	38 1/2	130	
14x30	100	30 00	1 1/4	90	49 1/2	180	
14x36	125	32 00	1 1/4	100	46 1/2	190	
16x30	140	57 50	1 1/2	250	57	340	150 to 250
16x36	150	60 00	1 1/2	300	63	380	200 to 300
20x30	200	72 00	2	425	65	445	250 to 350
20x36	250	75 00	2	450	64	500	300 to 400
20x42	275	80 00	2	500	70	530	350 to 450
24x36	325	105 00	2	700	66	700	400 to 500
24x42	350	110 00	2	900	72	740	450 to 600
30x42	600	130 00	3	1200	75	1230	600 to 700
30x48	700	135 00	3	1250	81	1280	650 to 750
36x42	900	185 00	3	1450	75	1950	700 to 900
36x48	1000	195 00	3	1550	81	2000	750 to 1000
42x42	1200	215 00	3	2000	76	2600	1000 to 1350
42x48	1300	225 00	3	2400	82	2700	1200 to 1600

For Carving Tables, etc., 10x18.
For Private Residences, etc., 12x24 and 12x30.
Small Conservatories, Laundries, etc., 14x30 and 14x36.
Sizes smaller than 16x30 without fire door unless specially ordered.

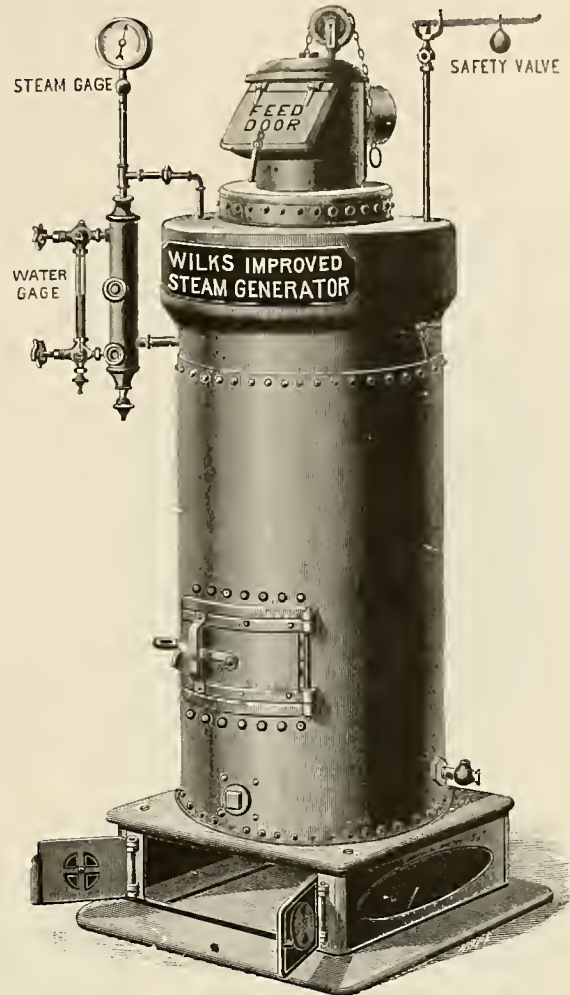
THE WILKS IMPROVED GENERATOR—This generator is of the same inner construction as the Wilks Water Heater and is adapted for hard or soft coal or natural gas. In the heating of large buildings, churches, halls, etc., we have found it a good arrangement to use two or more medium size Heaters yoked together, in place of one very large Heater, as in moderate weather one small Heater will warm sufficiently, saving a large percentage in fuel and in extreme weather having fire in both is but very little more trouble.



WILKS STEEL TANK



WILKS STEEL TANK WITH COIL AND MANHOLE



WILKS IMPROVED STEAM GENERATOR

Size of Boiler and Steam Oome	Horse Power	Radiation	Cubic Feet Space	List Price
No. 160, 16 in. diameter x 46 in. high	About 2	150-200 sq. ft.	6500	\$ 90 00
No. 200, 20 in. diameter x 48 in. high	" 3-1/2	200-300 "	12000	110 00
No. 240, 24 in. diameter x 50 in. high	" 3 1/2-4 1/2	300-400 "	14000	150 00
No. 300, 30 in. diameter x 55 in. high	" 6	400-500 "	18000	175 00

Including Steam Gauge, Water Glass, Try Cocks and Safety Valve

PRICES.

Gallons	Length Feet	Diameter in inches	Weight	List Prices	Size of Coil	Plain Pipe List	Galvanized Pipe List
66	4	20	200	\$ 36 00	4 Pipes 1 inch	\$ 8 00	\$ 9 00
85	5	20	225	38 00	4 Pipes 1 inch	8 00	9 00
100	4	24	275	42 00	4 Pipes 1 1/2 inch	8 00	9 00
120	5	24	300	44 00	4 Pipes 1 1/2 inch	11 00	13 00
145	6	24	400	46 00	4 Pipes 1 1/2 inch	11 00	13 00
150	4	30	425	48 00	4 Pipes 1 1/2 inch	11 00	13 00
180	5	30	460	54 00	4 Pipes 1 1/2 inch	11 00	13 00
220	6	30	525	58 00	4 Pipes 1 1/2 inch	11 00	13 00
250	7	30	540	64 00	4 Pipes 1 1/2 inch	12 00	14 00
265	5	36	560	65 00	4 Pipes 1 1/2 inch	12 00	14 00
300	8	30	600	70 00	4 Pipes 1 1/2 inch	14 00	17 00
320	6	36	725	80 00	4 Pipes 1 1/2 inch	16 00	19 00
365	7	36	800	85 00	4 Pipes 1 1/2 inch	16 00	20 00
425	8	36	900	95 00	4 Pipes 1 1/2 inch	16 00	20 00
430	6	42	920	97 00	4 Pipes 1 1/2 inch	17 00	21 00
480	9	36	1000	105 00	4 Pipes 1 1/2 inch	17 00	21 00
575	8	42	1300	115 00	4 Pipes 1 1/2 inch	20 00	24 00
650	9	42	1500	125 00	4 Pipes 1 1/2 inch	20 00	24 00
750	10	42	1700	135 00	4 Pipes 1 1/2 inch	20 00	24 00
875	12	42	1900	145 00	4 Pipes 1 1/2 inch	22 00	27 00
1010	14	42	2300	165 00	4 Pipes 1 1/2 inch	24 00	32 00

INSTALLATION—In specifying Hot Water Tanks where the water supply is connected with an automatic pump (worked by the water pressure) or force pumps for increasing the water pressure; or where check or other valves are put in the "supply pipe" from the street main (thus cutting off this outlet for expansion—particularly at night when the water is heated and all faucets are closed) there must be a suitable "pop valve" or stand pipe, put on the tank to relieve the excessive pressure caused by the expansion of the water in heating in addition to the increased pressure from the pump, etc.

We cannot be responsible for tanks leaking where such relief valves are not put in.

Manhole Extra

Handhole Extra

Flanges Extra

Galvanizing Extra

CENTRAL RADIATOR COMPANY

116 Nassau Street

NEW YORK CITY, N. Y.

TELEPHONE, 5450 JOHN

PLANT
LANSDALE, PENNA.
(Near Philadelphia)

PRODUCTS—Manufacturers of high grade RADIATORS for steam and hot water, including the CENTRAL WALL RADIATOR (Story's Patent).

GENERAL INFORMATION—Our Radiators are designed to give large, free and open air space area in and between each and every section, thus assuring a positive and free dissemination of heat.

ORDERING—In ordering, the following information should be given: Give the number of sections, and heights of same desired in each Radiator. State whether for steam, one pipe or two pipes, or for hot water heating.

"CENTRAL" RADIATORS—Are manufactured in all standard heights, 18, 20, 22, 26, 32, 38 and 44 inches, and in 1, 2, 3 and 4 column widths, plain or ornamented. "CENTRAL" RADIATORS can be installed for use with direct steam or hot water.

DIMENSIONS AND LIST PRICE—From the following condensed table can be obtained the dimensions and list prices of all styles and sizes of "CENTRAL RADIATORS."

STYLE	HEATING SURFACE SQUARE FEET PER SECTION							WIDTH	
								At Top (Inches)	Of Legs (Inches)
Height (in inches).....	44	38	32	26	22	20	18		
Single Column.....	3 ¹ / ₂	3	2 ¹ / ₂	2	1 ⁵ / ₈			5	5 ¹ / ₂
Two Column Narrow.....		4	3 ¹ / ₃	2 ² / ₃				5	5 ¹ / ₂
Two Column.....	5	4	3 ¹ / ₃	2 ² / ₃	2 ¹ / ₃	2	1 ³ / ₄	7 ³ / ₄	8 ¹ / ₄
Three Column.....	7	6	5	4	3 ¹ / ₂	3 ¹ / ₄	3	9 ¹ / ₄	10 ¹ / ₄
Four Column.....	9	8	6 ² / ₃	5 ¹ / ₃	4 ² / ₃	4	3 ¹ / ₃	12	12 ⁵ / ₈
Price per foot.....	.41	.42	.46	.50	.53	.57	.58		

To determine the length, multiply number of loops by 2¹/₂ inches. Radiators are furnished in any length desired.

PRICES—To determine the price, multiply the number of sq. ft. per section by the number of loops desired, and by the price per ft. under the desired height. Prices on curved, round or corner Radiators will be furnished on application.

"CENTRAL" WALL RADIATORS, (Story's Patent). Any number of sections of the "CENTRAL" WALL RADIATOR can be put together, giving the appearance of one Radiator. They take up less space, are far more artistic and more easily installed than any other Wall Radiator on the market.

SIZES AND PRICES—"CENTRAL" WALL RADIATORS are made in three sizes, all 15 inches wide.

NC	HEIGHT	HEATING SURFACE	PRICE
1	15"	6 ft.	\$0.42 per ft.
2	18"	7 "	0.42 "
4	24"	9 "	0.42 "

Wall Radiators assembled and shipped complete for installing in any number of loops in length desired.



FIG. 1
"CENTRAL" RADIATOR
Two Column Plain

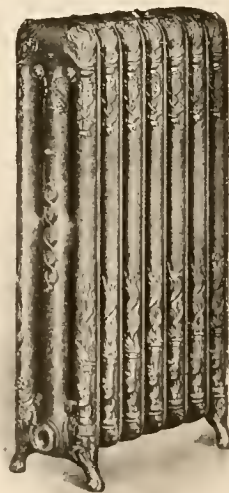


FIG. 2
"CENTRAL" RADIATOR
Three Column Ornamented



FIG. 3
"CENTRAL" WALL RADIATOR

HOLLAND RADIATOR COMPANY

38 Dearborn Street
CHICAGO, ILL.

WORKS
BREMEN, INDIANA

PRODUCTS.

Manufacturers of THE "ECLIPSE," THE "RELIANCE," THE "BREMEN," and THE "UNIQUE WINDOW DIRECT," and THE "BREMEN DIRECT-INDIRECT" and THE "BREMEN PIN INDIRECT" RADIATORS.

GENERAL INFORMATION.

The architectural profession will find our line of Radiators thoroughly reliable as to rating and excellence of workmanship, inside as well as outside.

DIRECT RADIATION.

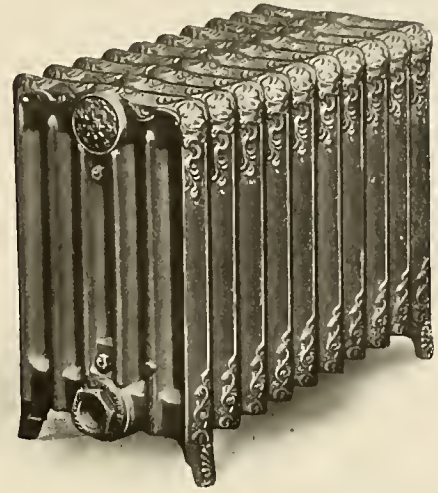
The accompanying illustrations show the four different types for direct radiation. These Radiators are made in all the standard sizes and are finished in either plain or ornamental designs.

INDIRECT RADIATION.

The Bremen Direct-Indirect Radiators made in all heights of Bremen pattern only. Ratings are the same as regular Bremen Direct Radiators. The Bremen Pin Radiator is made in two sizes, one containing 12 square feet, and an extra wide one containing 15 square feet of heating surface.

PRICES.

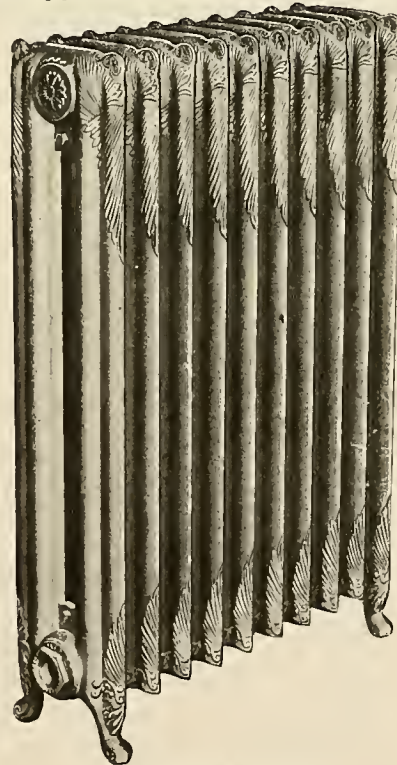
Price lists and table of sizes will be sent promptly upon application.



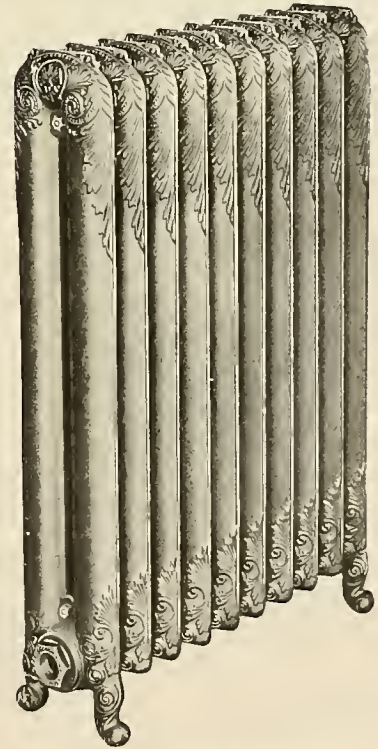
THE UNIQUE WINDOW RADIATOR



THE ECLIPSE RADIATOR



THE BREMEN RADIATOR



THE RELIANCE RADIATOR

KINNEAR PRESSED RADIATOR CO.

Bailey-Farrell Building

PITTSBURGH, PA.

BRANCH OFFICES

FLATIRON BUILDING
NEW YORK CITY, N. Y.
435 STATE LIFE BUILDING
INDIANAPOLIS, IND.

FIRST NATIONAL BANK BUILDING
CHICAGO, ILL.
LONDON
19-20-21 TOWER STREET
Upper St. Martins Lane

PRODUCTS.

Manufacturers of PRESSED METAL RADIATORS and GAS STEAM RADIATORS.

FACILITIES.

The factories of this Company are exceptionally large, and are equipped with the most modern machinery. The Company is, therefore, in a position to accept and promptly execute orders of any size.

INSTALLATION.

Our products are standard in size, being built in types for any system of Steam or Hot Water Heating, and can be installed by any heating contractor.

FINISH.

Our Radiators can be furnished in any desirable electric finish, or in plain colors which can be decorated or bronzed after installation to harmonize with the color-scheme of the room.

KINNEAR PRESSED METAL RADIATORS.

These Radiators mark a step in advanced engineering by displacing sometimes treacherous cast metal and using in its place the strongest form of metal which permits greater strength with less weight. The initial cost of our Radiators is about the same as other makes. They occupy only one-half the space and are only one-fourth the weight of the cast-iron types of radiators.

MODEL "K" KINNEAR RADIATORS.

This type of Radiator has a section length of 1 $\frac{1}{4}$ ", and the heating surface ranges $4\frac{1}{3}$, 3 and 2 $\frac{1}{2}$ square feet per section.

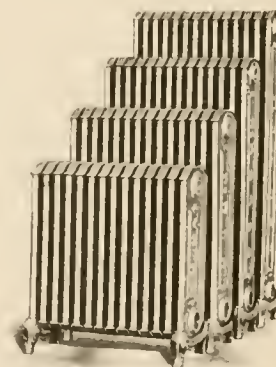
**MODEL K
6 $\frac{1}{2}$ INCH SINGLE TUBE RADIATOR**

Leg Spread, 8 Inches
List of Heating Surfaces

SIZES AND HEATING CAPACITY.

No. of Section	*Length 1 $\frac{1}{4}$ Inches per Section	38 In. High	32 In. High	26 In. High	20 In. High	13 $\frac{1}{4}$ In. High
		4 Sq. Ft. per Section	3 $\frac{1}{2}$ Sq. Ft. per Section	2 $\frac{1}{2}$ Sq. Ft. per Section	2 Sq. Ft. per Section	1 $\frac{1}{2}$ Sq. Ft. per Section
2	2 $\frac{1}{2}$	8	6 $\frac{2}{3}$	5	4	2 $\frac{2}{3}$
3	3 $\frac{3}{4}$	12	10	7 $\frac{1}{2}$	6	4
4	5	16	13 $\frac{1}{3}$	10	8	5 $\frac{1}{3}$
5	6 $\frac{1}{4}$	20	16 $\frac{2}{3}$	12 $\frac{1}{2}$	10	6 $\frac{2}{3}$
6	7 $\frac{1}{2}$	24	20	15	12	8
7	8 $\frac{3}{4}$	28	23 $\frac{1}{3}$	17 $\frac{1}{2}$	14	9 $\frac{1}{3}$
8	10	32	26 $\frac{2}{3}$	20	16	10 $\frac{2}{3}$
9	11 $\frac{1}{4}$	36	30	22 $\frac{1}{2}$	18	12
10	12 $\frac{1}{2}$	40	33 $\frac{1}{3}$	25	20	13 $\frac{1}{3}$
11	13 $\frac{3}{4}$	44	36 $\frac{2}{3}$	27 $\frac{1}{2}$	22	14 $\frac{2}{3}$
12	15	48	40	30	24	16
13	16 $\frac{1}{4}$	52	43 $\frac{1}{3}$	32 $\frac{1}{2}$	26	17 $\frac{1}{3}$
14	17 $\frac{1}{2}$	56	46 $\frac{2}{3}$	35	28	18 $\frac{2}{3}$
15	18 $\frac{3}{4}$	60	50	37 $\frac{1}{2}$	30	20
16	20	64	53 $\frac{1}{3}$	40	32	21 $\frac{1}{3}$
17	21 $\frac{1}{4}$	68	56 $\frac{2}{3}$	42 $\frac{1}{2}$	34	22 $\frac{2}{3}$
18	22 $\frac{1}{2}$	72	60	45	36	24
19	23 $\frac{3}{4}$	76	63 $\frac{1}{3}$	47 $\frac{1}{2}$	38	25 $\frac{1}{3}$
20	25	80	66 $\frac{2}{3}$	50	40	26 $\frac{2}{3}$

Allow $\frac{1}{2}$ -inch for each bushing



MODEL "K" RADIATOR
Section Depth 6 $\frac{1}{2}$ "

MODEL "P"
KINNEAR
RADIATORS.

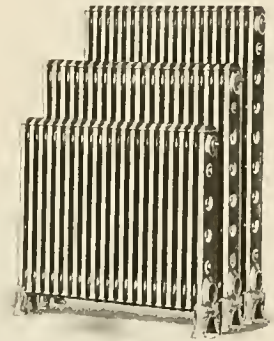
Model "P" Radiators run 1" center to center of section, and the heating surface is 2.15, 1.75, and 1.4 square feet for the 32", 26" and 20" sizes respectively.

SIZES AND
HEATING
CAPACITY.

MODEL P
3 1/2 INCH SINGLE TUBE RADIATOR
Leg Spread, 5 Inches
List of Heating Surfaces

No. of Sections	*Length 1 inch per Section	32 Inches High	26 Inches High	20 Inches High
		2.15 Square Feet per Section	1 3/4 Square Feet per Section	1.4 Square Feet per Section
2	2	4.3	3 1/2	2.8
3	3	6.45	5 1/4	4.2
4	4	8.6	7	5.6
5	5	10.75	8 3/4	7.
6	6	12.9	10 1/2	8.4
7	7	15.05	12 1/4	9.8
8	8	17.2	14	11.2
9	9	19.35	15 3/4	12.6
10	10	21.5	17 1/2	14.
11	11	23.65	19 1/4	15.4
12	12	25.8	21	16.8
13	13	27.95	22 3/4	18.2
14	14	30.1	24 1/2	19.6
15	15	32.25	26 1/4	21.
16	16	34.4	28	22.4
17	17	36.55	29 1/4	23.8
18	18	38.7	31 1/2	25.2
19	19	40.85	33 1/4	26.6
20	20	43.	35	28.

* Allow 1/2-inch for each bushing



MODEL "P" RADIATOR
Section Depth 3 1/2"

MODEL "S"
KINNEAR WALL
RADIATORS.

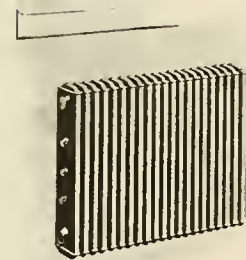
The Model "S" Radiators are very low and can be placed under windows or in other limited space. The sections are 1" center to center, and the heating surface per section is 1 square foot for the 16 1/2" high Radiator, and .75 square foot for a section of the 13" Radiator.

SIZES AND
HEATING
CAPACITY.

MODEL S
2 3/4 INCH WALL RADIATOR
Wall Brackets Furnished with Radiators
List of Heating Surfaces

No. of Sections	*Length 1 Inch per Section	16 1/2 Inches High	13 Inches High
		1 Square Foot per Section	3/4 Square Foot per Section
2	2	2	1.5
3	3	3	2.25
4	4	4	3.
5	5	5	3.75
6	6	6	4.5
7	7	7	5.25
8	8	8	6.
9	9	9	6.75
10	10	10	7.5
11	11	11	8.25
12	12	12	9.
13	13	13	9.75
14	14	14	10.5
15	15	15	11.25
16	16	16	12.
17	17	17	12.75
18	18	18	13.5
19	19	19	14.25
20	20	20	15.

* Allow 1/2-inch for each bushing



MODEL "S" WALL RADIATOR
Section Depth 6 3/4"

SHIRLEY RADIATOR & FOUNDRY COMPANY

Manufacturers of Radiators for Steam and Hot Water
INDIANAPOLIS, IND.

GENERAL OFFICES
INDIANA TRUST BUILDING

FACTORY
SHIRLEY, IND.

PRODUCTS.

RADIATORS for STEAM and HOT WATER, plain and ornamental.

LIST OF SIZES.

The following tables give sizes and other necessary statistical information regarding the Two Column and the Three Column Shirley Radiators:

THE SHIRLEY TWO COLUMN
LIST OF SIZES

Number of Sections	Length Inches	HEATING SURFACE					
		45 inches high	38 inches high	32 inches high	26 inches high	21 inches high	20 inches high
		5 sq. feet per sect.	4 sq. feet per sect.	3½ sq. feet per sect.	2¾ sq. feet per sect.	2¼ sq. feet per sect.	2 sq. feet per sect.
2	5	10	8	6¾	5½	4¾	4
3	7½	15	12	10	8	7	6
4	10	20	16	13½	10¾	9½	8
5	12½	25	20	17	13½	11¾	10
6	15	30	24	20	16	14	12
7	17½	35	28	23½	18¾	16¾	14
8	20	40	32	27	21¾	18¾	16
9	22½	45	36	30	24	21	18
10	25	50	40	33½	26¾	23½	20
11	27½	55	44	37	29¾	25¾	22
12	30	60	48	40	32	28	24
13	32½	65	52	43½	34¾	30¾	26
14	35	70	56	47	37¾	32¾	28
15	37½	75	60	50	40	35	30
16	40	80	64	53½	42¾	37¾	32
17	42½	85	68	57	45¾	39¾	34
18	45	90	72	60	48	42	36
19	47½	95	76	63½	50¾	44¾	38
20	50	100	80	67	53¾	46¾	40
21	52½	105	84	70	56	49	42
22	55	110	88	73½	58¾	51¾	44
23	57½	115	92	77	61¾	53¾	46
24	60	120	96	80	64	56	48
25	62½	125	100	83½	66¾	58¾	50
26	65	130	104	87	69¾	60¾	52
27	67½	135	108	90	72	63	54
28	70	140	112	93½	74¾	65¾	56
29	72½	145	116	97	77¾	67¾	58
30	75	150	120	100	80	70	60
31	77½	155	124	103½	82¾	72¾	62
32	80	160	128	107	85¾	74¾	64

THE SHIRLEY THREE COLUMN
LIST OF SIZES

Number of Sections	Length Inches	HEATING SURFACE				
		44 inches high	38 inches high	32 inches high	26 inches high	20 inches high
		6½ sq. feet per sect.	5½ sq. feet per sect.	4½ sq. feet per sect.	3½ sq. feet per sect.	2½ sq. feet per sect.
2	5	13	11	9	7½	5½
3	7½	19½	16½	13½	11½	8½
4	10	26	22	18	15	11
5	12½	32½	27½	22½	18½	13½
6	15	39	33	27	22½	16½
7	17½	45½	38½	31½	26½	19½
8	20	52	44	36	30	22
9	22½	58½	49½	40½	33½	24½
10	25	65	55	45	37½	27½
11	27½	71½	60½	49½	41½	30½
12	30	78	66	54	45	33
13	32½	84½	71½	58½	48½	35½
14	35	91	77	63	52½	38½
15	37½	97½	82½	67½	56½	41½
16	40	104	88	72	60	44
17	42½	110½	93½	76½	63½	46½
18	45	117	99	81	67½	49½
19	47½	123½	104½	85½	71½	52½
20	50	130	110	90	75	55
21	52½	136½	115½	94½	78½	57½
22	55	143	121	99	82½	60½
23	57½	149½	126½	103½	86½	63½
24	60	156	132	108	90	66
25	62½	162½	137½	112½	93½	68½
26	65	169	143	117	97½	71½
27	67½	175½	148½	121½	101½	74½
28	70	182	154	126	105	77
29	72½	188½	159½	130½	108½	79½
30	75	195	165	135	112½	82½
31	77½	201½	170½	139½	116½	85½
32	80	208	176	144	120	88

In estimating length of radiator allow ½ inch for each bushing.

In estimating length of radiator allow ½ inch for each bushing.

Unless otherwise specified, all raditors will be tapped as follows:

Unless otherwise specified, all raditors will be tapped as follows:

DETAILS.

STEAM—ONE PIPE

24 square feet and under.....1 in.
 Above 24 but not exceeding 60.....1½ in.
 Above 60 but not exceeding 100.....1½ in.
 Above 100 square feet.....2 in.

TWO PIPE

48 square feet and under.....1 x ¾ in.
 Above 48 but not exceeding 96.....1½ x 1 in.
 Above 96 square feet.....1½ x 1½ in.

WATER

TAPPED FOR SUPPLY AND RETURN

40 square feet and under.....1 in.
 Above 40 but not exceeding 72.....1 in.
 Above 72 square feet.....1½ in.

Width of section 7½ inches. Width of legs, 8½ inches.

Distance from floor to center of opening, 4½ inches.

Made with 2 inch heavy tapered zinc coated nipples and tested 80 pounds cold water pressure.

Send for Catalogue illustrating full line of Shirley Radiators. 1, 2, 3, 4 Column. Window and Wall Direct-Indirect.

STEAM—ONE PIPE

27½ square feet and under.....1 in.
 Above 27½ but not exceeding 60½.....1½ in.
 Above 60½ but not exceeding 99.....1½ in.
 Above 99 square feet.....2 in.

TWO PIPE

49½ square feet and under.....1 x ¾ in.
 Above 49½ but not exceeding 99.....1½ x 1 in.
 Above 99 square feet.....1½ x 1½ in.

WATER

TAPPED FOR SUPPLY AND RETURN

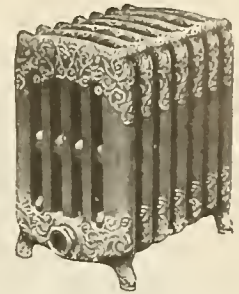
40 square feet and under.....1 in.
 Above 38½ but not exceeding 71½.....1½ in.
 Above 71½ square feet.....1½ in.

Width of section, 9½ inches. Width of legs, 9½ inches.

Distance from floor to center of opening, 4½ inches.

Made with 2 inch heavy tapered zinc coated nipples and tested 80 pounds cold water pressure.

1, 2, 3, 4 Column. Window and Wall Direct-Indirect.

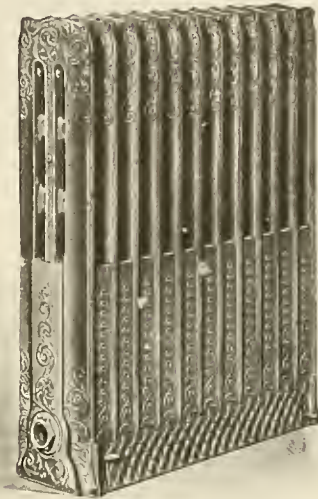


THE SHIRLEY WINDOW RADIATOR

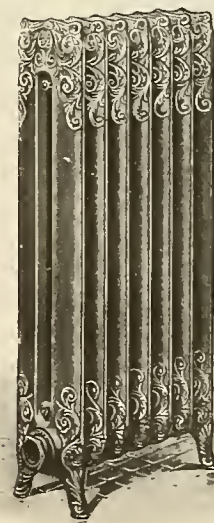
THE SHIRLEY THREE COLUMN RADIATOR

SHIRLEY WINDOW RADIATOR
LIST OF SIZES

No. Sections	Length Inches	20 inches high 5 sq. feet per section	18 inches high 4½ sq. feet per section	16 inches high 4 sq. feet per section	14 inches high 3½ sq. feet per section
2	6	10	9	8	7
3	9	15	13½	12	10½
4	12	20	18	16	14
5	15	25	22½	20	17½
6	18	30	27	24	21
7	21	35	31½	28	24½
8	24	40	36	32	28
9	27	45	40½	36	31½
10	30	50	45	40	35
11	33	55	49½	44	38½
12	36	60	54	48	42
13	39	65	58½	52	45½
14	42	70	63	56	49
15	45	75	67½	60	52½
16	48	80	72	64	56
17	51	85	76½	68	59½
18	54	90	81	72	63
19	57	95	85½	76	66½
20	60	100	90	80	70
21	63	105	94½	84	73½
22	66	110	99	88	77
23	69	115	103½	92	80½
24	72	120	108	96	84
25	75	125	112½	100	87½
26	78	130	117	104	91
27	81	135	121½	108	94½
28	84	140	126	112	98
29	87	145	130½	116	101½
30	90	150	135	120	105
31	93	155	139½	124	108½
32	96	160	144	128	112



THE SHIRLEY THREE COLUMN DIRECT-INDIRECT RADIATOR



THE SHIRLEY TWO COLUMN RADIATOR

Width of section is 12½ inches.

Width of Legs 13 inches.

Unless otherwise specified, all radiators will be tapped as follows:

STEAM—ONE PIPE

- Up to and including 25 feet..... 1 in.
- From 25 to 60 feet..... 1½ in.
- From 60 to 100 feet..... 1½ in.

HOT WATER—TWO PIPE

- Up to and including 40 feet..... 1 in.
- From 40 to 75 feet..... 1½ in.
- Above 75 feet..... 1½ in.

STEAM—TWO PIPE

- Up to and including 50 feet..... 1 x ½ in.
- From 50 to 95 feet..... 1½ x 1 in.
- Above 95 feet..... 1½ x 1½ in.

Distance from floor to center of opening is 3 inches.

In estimating length of Radiator allow ½ inch for each bushing.

UNITED STATES RADIATOR CO.

Dunkirk, N. Y.

BRANCH OFFICES

NEW YORK CITY, N. Y.
MINNEAPOLIS, MINN.
WASHINGTON, D. C.

BRANCH WAREHOUSES

MINNEAPOLIS, MINN.
JERSEY CITY, N. J.

PRODUCTS.

Manufacturers of TRITON one, two, three, four and five column WALL and FLUE RADIATORS; also CHAUTAUQUA RADIATORS, Plain and Ornamental, DIRECT-INDIRECT RADIATORS, PERFECT PIN INDIRECT RADIATORS, PLAIN TRITON RADIATORS, any of which can be made in special shape to suit all requirements, for steam or hot water.

POLICY FOLLOWED.

For the past fifteen years we have been manufacturing Radiators exclusively, devoting our entire time and energy to a production that could not be excelled in general appearance, smooth castings, efficiency and excellence of construction. Therefore it goes without saying that our factory is fully equipped with the best modern machinery to enable us to maintain the high grade we have established for our product.

TRITON RADIATORS.

Our principal lines are Triton and Chautauqua Radiators, and we wish to call attention particularly to the Triton pattern, which is made in one, two, three, four and five column, and Wall Radiators; all bearing the same design and decoration. The Triton Flue Radiator is just being placed on the market, and we will be pleased to send, upon request, full data concerning this new form of Radiator. We will also send such other information regarding our other patterns as may be needed for special instructions.



FIG. 1.
TRITON ONE-COLUMN

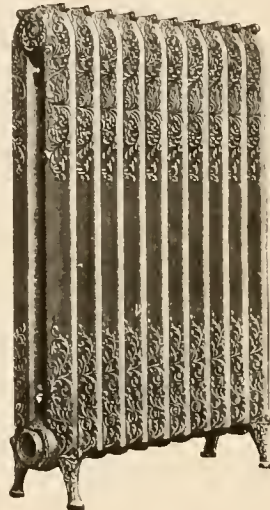


FIG. 2.
TRITON TWO-COLUMN

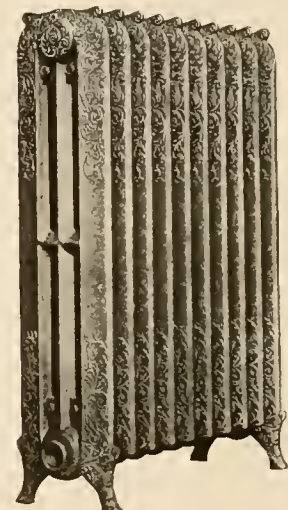


FIG. 3.
TRITON THREE-COLUMN

LIST OF SIZES, ONE COLUMN

No. Sections	Length In.	Inches			
		38 High	32 High	26 High	20 High
1	2½	3	2½	2	1½
2	5	6	5	4	3
3	7½	9	7½	6	4½
4	10	12	10	8	6
5	12½	15	12½	10	7½
6	15	18	15	12	9
7	17½	21	17½	14	10½
8	20	24	20	16	12
9	22½	27	22½	18	13½
10	25	30	25	20	15

Each section is 4½ inches wide.
Width of legs, 5¼ inches.
Allow ½ inch in length of radiator for each bushing.
Height from floor to center of tapping 4¼ inches for push nipple connection and 4¾ inches for screw nipple connection.

LIST OF SIZES, TWO COLUMN

No. Sections	Length In.	Inches									
		44 High	38 High	32 High	26 High	23 High	20 High	18 High	16 High	14 High	12 High
1	2½	5	4	3½	2½	2½	2	1¾			
2	5	10	8	6¾	5½	4½	4	3½			
3	7½	15	12	10	8	7	6	5½			
4	10	20	16	13½	10½	9½	8	7			
5	12½	25	20	16¾	13½	11½	10	8¾			
6	15	30	24	20	16	14	12	10½			
7	17½	35	28	23½	18½	16½	14	12½			
8	20	40	32	26½	21½	18½	16	14			
9	22½	45	36	30	24	21	18	15½			
10	25	50	40	33½	26½	23½	20	17½			

Each section is 7½ inches wide.
Width of legs, 8¼ inches.
Allow ½ inch in length of radiator for each bushing.
Height from floor to center of tapping 4½ inches for push nipple connection and 4¾ inches for screw nipple connection.

LIST OF SIZES, THREE COLUMN

No. Sections	Length In.	Inches									
		44 High	38 High	32 High	26 High	23 High	20 High	18 High	16 High	14 High	12 High
1	2½	6	5	4½	3¾	3	2½	2¼			
2	5	12	10	9	7½	6	5½	4½			
3	7½	18	15	13½	11½	9	8¼	6¾			
4	10	24	20	18	15	12	11	9			
5	12½	30	25	22½	18½	15	13¾	11½			
6	15	36	30	27	22½	18	16½	13½			
7	17½	42	35	31½	26½	21	19½	15½			
8	20	48	40	36	30	24	22	18			
9	22½	54	45	40½	33¾	27	24¾	20½			
10	25	60	50	45	37½	30	27½	22½			

Each section is 9½ inches wide.
Width of legs, 10½ inches.
Allow ½ inch in length of radiator for each bushing.
Height from floor to center of tapping 4½ inches for push nipple connection and 4¾ inches for screw nipple connection.

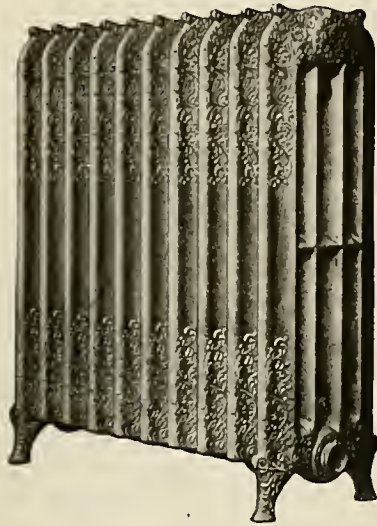


FIG. 4. TRITON FOUR-COLUMN

Each section of the Triton Four-Column is 12 $\frac{3}{4}$ " wide. Width of legs, 13 $\frac{3}{4}$ inches. Height from floor to center of opening, 41" for push nipple connection and 4 $\frac{7}{8}$ " for screw nipple.

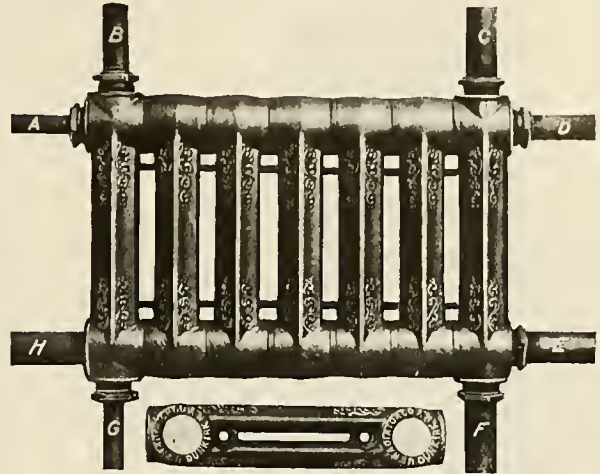


FIG. 6. TRITON WALL

This radiator (Fig. 6) is arranged for either steam or hot water. Each section is 14 $\frac{1}{4}$ " high, 3" wide and 3" long, and contains one square foot of heating surface. It can be assembled in units of any size, and units may be connected either vertically or horizontally by means of hexagon center right and left screw nipples.

Openings A, D, E and H are tapped 1 $\frac{1}{2}$ " and bushed or plugged as desired; B, C, F and G are tapped to order.

LIST OF SIZES

No. Section	Length	44 In. High	38 In. High	32 In. High	26 In. High	23 In. High	20 In. High	18 In. High
	In.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	3	9 $\frac{1}{2}$	8	7	5 $\frac{7}{8}$	4 $\frac{1}{2}$	4	3 $\frac{1}{2}$
2	6	18 $\frac{1}{2}$	16	14	11 $\frac{1}{3}$	9	8	7
3	9	27 $\frac{1}{2}$	24	21	17	13 $\frac{1}{2}$	12	10 $\frac{1}{2}$
4	12	37	32	28	22 $\frac{2}{3}$	18	16	14
5	15	46 $\frac{1}{2}$	40	35	28 $\frac{1}{3}$	22 $\frac{1}{2}$	20	17 $\frac{1}{2}$
6	18	55 $\frac{1}{2}$	48	42	34	27	24	21
7	21	64 $\frac{1}{2}$	56	49	39 $\frac{2}{3}$	31 $\frac{1}{2}$	28	24 $\frac{1}{2}$
8	24	74	64	56	45 $\frac{1}{3}$	36	32	28
9	27	83 $\frac{1}{2}$	72	63	51	40 $\frac{1}{2}$	36	31 $\frac{1}{2}$
10	30	92 $\frac{1}{2}$	80	70	56 $\frac{2}{3}$	45	40	35

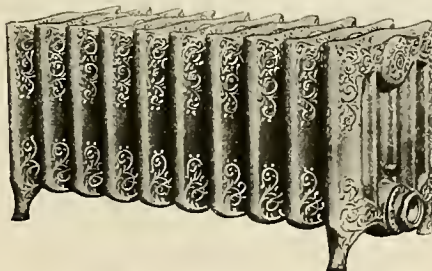


FIG. 5. TRITON FIVE-COLUMN

LIST OF SIZES

No. Section	Length	20 $\frac{1}{2}$ Inches High	16 $\frac{1}{2}$ Inches High	14 $\frac{1}{2}$ Inches High	12 $\frac{1}{2}$ Inches High
	Inches	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	3	5	4	3 $\frac{1}{2}$	3
2	6	10	8	7	6
3	9	15	12	10 $\frac{1}{2}$	9
4	12	20	16	14	12
5	15	25	20	17 $\frac{1}{2}$	15
6	18	30	24	21	18
7	21	35	28	24 $\frac{1}{2}$	21
8	24	40	32	28	24
9	27	45	36	31 $\frac{1}{2}$	27
10	30	50	40	35	30

Each section is 12 $\frac{3}{4}$ inches wide. Width of legs, 12 $\frac{3}{4}$ inches.

Allow $\frac{1}{2}$ inch in length of radiator for each bushing.

Height from floor to center of tapping for push nipple or screw nipple radiators, 3 inches.

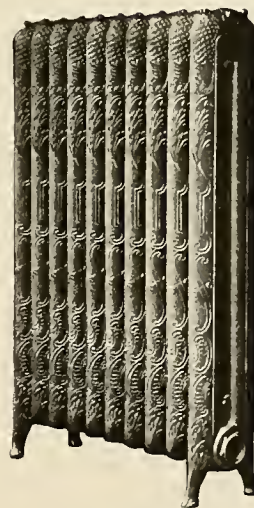


FIG. 7. CHAUTAUQUA ORNAMENTAL

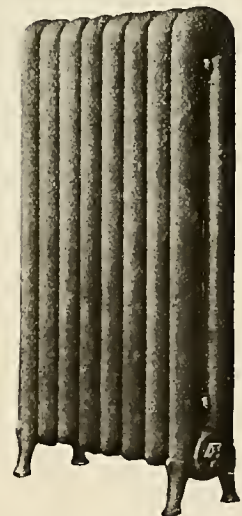


FIG. 8. CHAUTAUQUA PLAIN

Chautauqua Radiators (Figs. 7 and 8) are made 45, 38, 32, 26 and 20 inches high, all dimensions are the same as Triton Two Column Radiators.

For heating surface, use Triton Two Column table of corresponding heights.

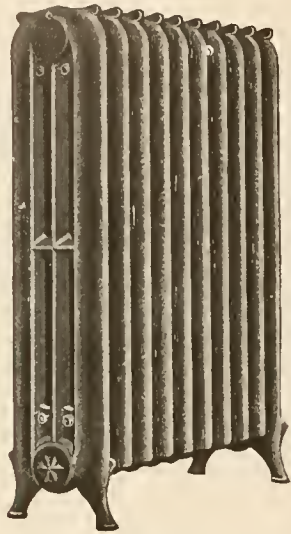


FIG. 9. TRITON THREE-COLUMN PLAIN

We also make Triton One column Plain. For tables and dimensions see Figs. 3 and 1.

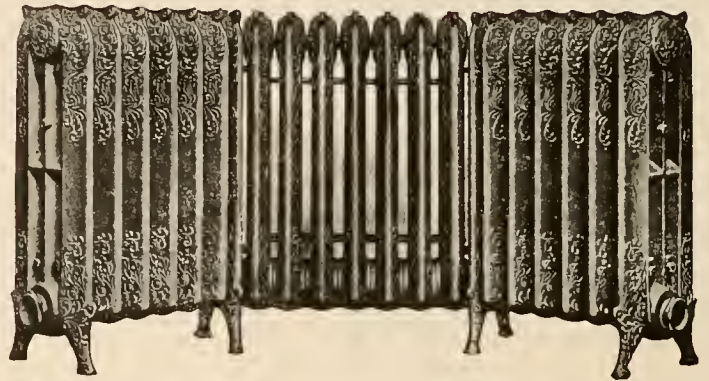


FIG. 10. TRITON BAY WINDOW RADIATOR

Fig. 10 represents but one of the various odd shapes in which any and all of our radiators may be constructed.

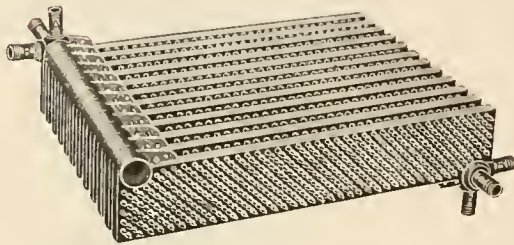


FIG. 11. PERFECT PIN INDIRECT

DIMENSIONS OF PERFECT PIN INDIRECT

Heating Surface per section	Length	Width of Body	Width at Hubs	Centers
20 feet	41 ³ / ₄ in.	12 in.	14 in.	3 ³ / ₄ in.
12 feet	41 ³ / ₄ in.	7 ¹ / ₂ in.	10 ³ / ₄ in.	2 ³ / ₄ in.

TAPPING LIST

All openings will have right-hand threads, unless otherwise ordered.

Unless otherwise specified, all radiators will be tapped as follows:

Steam	One Pipe	Steam	Double Pipe
24 ft. and under	1 in.	48 ft. and under	1 x 3/4 in.
From 24 to 60 ft.	1 1/4 in.	From 48 to 96 ft.	1 1/4 x 1 in.
From 60 to 100 ft.	1 1/2 in.	Above 96 ft.	1 1/2 x 1 1/4 in.
Hot Water			Double Pipe
40 feet and under			1 in.
From 40 to 72 feet			1 1/4 in.
Above 72 feet			1 1/2 in.

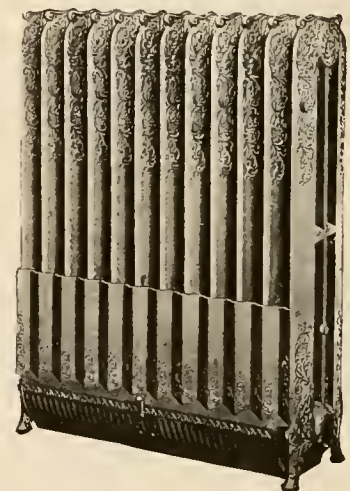


FIG. 12. TRITON DIRECT-INDIRECT RADIATOR Applied to Triton Three-Column only

MEASUREMENTS ON BOX BASE

Opening at back for fresh air inlet to wall box 3 5/16 inches wide, 1 inch above floor

LENGTH

12 sections, 25 1/2 inches	7 sections, 12 1/2 inches
11 sections, 22 1/2 inches	6 sections, 10 1/2 inches
10 sections, 20 1/2 inches	5 sections, 7 1/2 inches
9 sections, 17 1/2 inches	4 sections, 5 1/2 inches
8 sections, 15 1/2 inches	

All the above are outside measurements.

The damper arrangement is such that when cold air is brought through the floor, separate floor dampers are not required. Make floor openings same size as for wall openings.

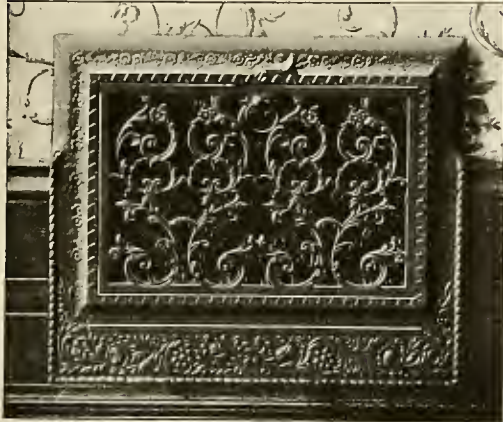
In writing specifications, ask for a bid on Triton Radiators, made by United States Radiator Company, Dunkirk, N. Y.

IDEAL REGISTER AND METALLIC FURNITURE CO.

Fourteenth and Kirby Avenues
DETROIT, MICH.

PRODUCTS.

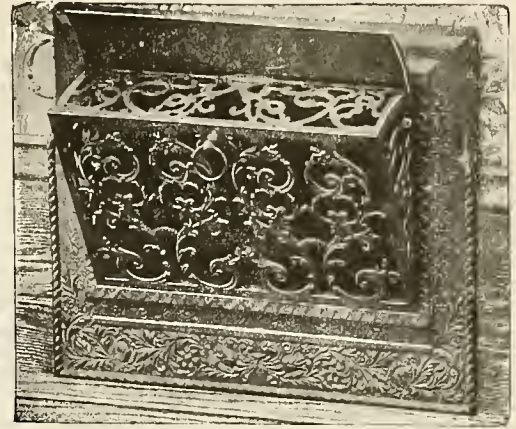
Manufacturers of the IDEAL SIDE-WALL REGISTERS and COLD AIR GRILLES.



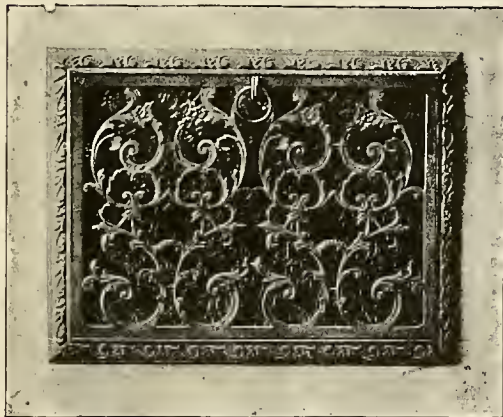
IDEAL WALL REGISTER FOR THE FIRST FLOOR, CLOSED

ADVANTAGES.

The Ideal Wall Register is not a receptacle for the accumulation of dirt. It avoids the necessity of cutting carpets. It is absolutely fireproof. It protects the wall from discoloration. The base-board abuts the wall frames. No extra work for carpenters. The Register can be placed after the carpenter work is finished—no waiting for other workmen. The working parts are made of cold rolled steel, stamped and are unbreakable. When fully open the grille surface admits of a large increase of warm air; the Register fully protects your wall from discoloration by providing an ornamental shield which deflects the current of air out into the room. The valve is adjustable and the Register can be used in any ordinary width partition.



IDEAL WALL REGISTER FOR THE FIRST FLOOR, OPEN
Showing the Deflector



IDEAL WALL REGISTER FOR THE SECOND FLOOR, CLOSED

SECOND FLOOR REGISTERS.

Convenient when taking cold air from the halls to be returned to furnace. Harmonious in design. To be used on the base-board or wall only.

This Register has the same general advantages as the First Floor Register, shown in preceding cuts. This Register can also be used on the first floor when a less expensive Register is required. Its simplicity will astonish you. Open, the tilted frame protects your wall. It can be placed in the ordinary manner to the usual pipe fittings and fastened with the tin cleats commonly used for that purpose.



IDEAL WALL REGISTER FOR THE SECOND FLOOR, OPEN

PRICES.

FIRST FLOOR REGISTERS

	Japanned Black or White	ELECTRO-PLATED		Size of opening	Capacity of Register
		Nickel or Ox. Copper	Antique Brass		
No. 9	\$5 00	\$7 00	\$8 00	8 x 10 across	63 in.
No. 10	6 50	8 50	9 00	8 x 12 across	78 in.
No. 12	8 50	10 50	11 50	9 x 14 across	112 in.

SECOND FLOOR REGISTERS

PLATES VII. to IX.	Japanned Black or White	ELECTRO-PLATED		PLATES VII. to IX.	Japanned Black or White	ELECTRO-PLATED	
		Nickel or Ox. Copper	Antique Brass			Nickel or Ox. Copper	Antique Brass
8 x 10 upright	\$2 40	\$3 90	\$4 90	9 x 12 across	\$3 00	\$4 90	\$5 90
8 x 10 across	2 40	3 90	4 90	9 x 14 across	3 90	6 10	7 10
8 x 12 across	2 70	4 45	5 45	10 x 12 across	3 75	5 75	6 75

COLD AIR GRILLES FOR SIDE WALL

SIZE	Japanned Black or White	ELECTRO-PLATED		SIZE	Japanned Black or White	ELECTRO-PLATED	
		Nickel or Ox. Copper	Antique Brass			Nickel or Ox. Copper	Antique Brass
7 x 11	\$1 20	\$2 40	\$3 40	8 x 13	\$1 50	\$2 50	\$3 50
7 x 22	3 40	4 50	5 50	8 x 26	4 40	5 50	6 50

TUTTLE & BAILEY MANUFACTURING CO.

Special Design Registers

83 Beekman Street

NEW YORK CITY, N. Y.

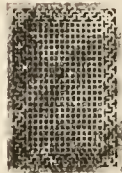
BRANCH OFFICES

CHICAGO, ILL., BOSTON, MASS.

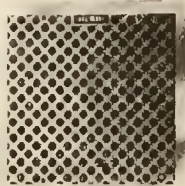
MADE TO ORDER ONLY

Illustrations of some of our Special Design Registers. They are not stock goods and in all cases there will be additional charges for modeling. We make Registers or Faces in any shape or design required, also make them curved concave or convex.

If Architects will send us original design sketches for any order of decoration, estimates for either Registers or Faces will be promptly submitted.



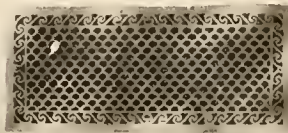
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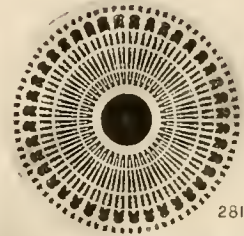
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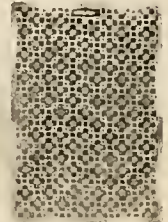
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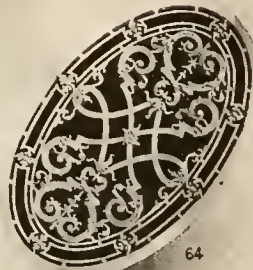
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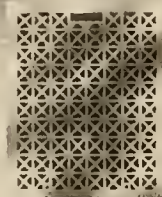
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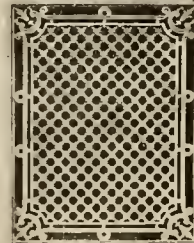
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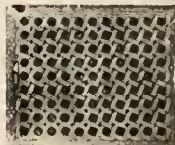
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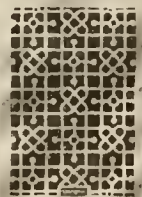
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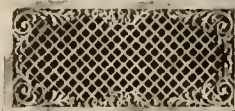
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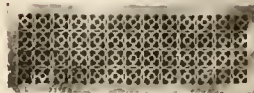
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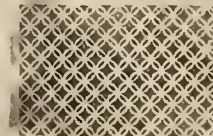
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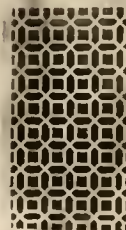
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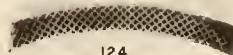
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184

THE GRAFF FURNACE COMPANY

MANUFACTURERS OF FURNACES AND RANGES IN GREAT VARIETY

No. 208 Water Street
NEW YORK CITY, N. Y.

PRODUCTS.

HOT AIR FURNACES, of all grades and capacities, for burning anthracite or bituminous coal, or wood. SINGLE OVEN and DOUBLE OVEN RANGES, in various styles, for domestic use.

FACILITIES.

All accepted orders promptly executed.

ADAPTABILITY.

The adaptability of our products is measured only by the requirements of the building to be heated.

INSTALLATION.

This may be effected easily by any local contractor, or by our own experienced workmen.

INFORMATION.

The products of the Graff Furnace Company are all tested as to material and workmanship, and every improvement of sufficient merit to be valuable is embodied in them. Their high reputation for effectiveness, durability and economy is thoroughly established.

HEATING SPECIALTIES.

FAULTLESS EXTRA HEAVY ALL-CAST FURNACES.—
The highest grade made. Suitable for the best work, including churches and schools.

HERO FURNACES, in two styles; adapted for good work at moderate cost. Many years in use, and increasingly successful.

LACKAWANNA FURNACES for low cellars. Powerful and Practical.

COMFORT and RIVAL FURNACES, for cottages and all work requiring low cost heating.

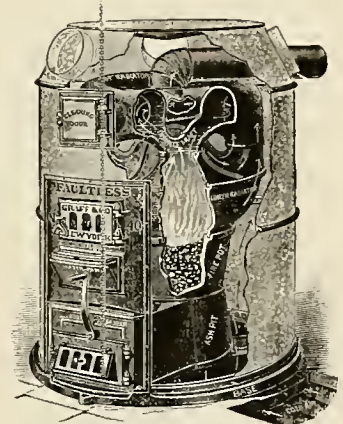
COOKING SPECIALTIES.

FAULTLESS double-oven ranges—portable and brick set. Best grade, for first-class residences.

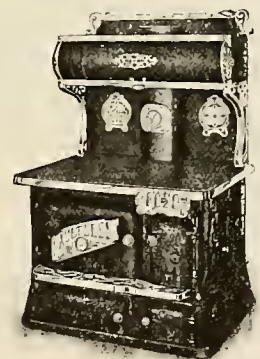
FAULTLESS extra large single-oven ranges for country houses and cottages. Nothing superior made.

FAULTLESS single-oven ranges for cottages and apartments. High class and with a long established reputation. Several sizes and styles.

HERO Ranges in various sizes and styles, for apartments and flats.



"Faultless" Portable Furnace



"Faultless" Range No. 80

THE EXCELSIOR STEEL FURNACE CO.

38 to 44 West Monroe Street

CHICAGO, ILL.

PRODUCTS.

EXCELSIOR HEATING SPECIALTIES, EXCELSIOR FURNACES, EXCELSIOR DOUBLE SAFETY FURNACE PIPE, WARM AIR REGISTERS, STOVE PIPES and ELBOWS, FURNACE SUPPLIES, etc.

FACILITIES.

We carry an immense stock of our products on hand at all times, and, necessitated by our ever increasing business, we are constantly adding to our many facilities.

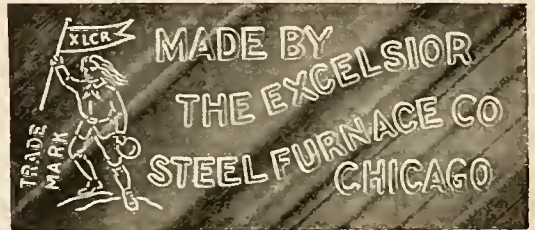
TRADE MARK.

The popularity of our products has naturally brought forth many imitations, worthless mostly, but substitution can be easily avoided if care is taken to see that our Trade Mark (Fig. 1) is stamped on all our Furnace Pipe and fittings.

EXCELSIOR FURNACES.

The Excelsior Furnace "F" Pattern (Fig. 1) for hard coal, is the latest addition to our line. It is built low, thus allowing its adoption for use in low basements. Its equipment consists of the choice of three styles of grates, of three different heights of Radiators, Damper Regulator, Clinker Ways and Dust Flue. The Excelsior Adjustable Base Ring is used in this as in all our furnaces. This base ring insures a perfect fit of casings made to fit Casing Rings. The Cast Dome is roomy and wide, it is corrugated, it has a large capacity and is provided with a boss at the back so that it can be easily tapped for water connections. The Feed Door is extra large, being 8½x14" in size. The Door Frame is so arranged that the Furnace can be converted into a Combination Heater, by the use of any of the various makes of boilers made for the purpose, without any change or disturbance of the Furnace, by simply removing the plugs shown to the left of the Feed Door (Fig. 2), which disclose openings for connecting up the pipes attached to the water heater. A similar opening is placed at the right of the Feed Door at the bottom. This device enables a boiler being placed in the Furnace without cutting or drilling any of the castings or cutting the casings. Further particulars concerning this style of Furnace will be furnished on request.

The Excelsior Furnace Style F for soft coal (Fig. 3) is so constructed that a sufficient supply of heated oxygen is introduced into the combustion chamber, thus insuring the combustion of the soft coal, smoke, gases and other products. This result is accomplished by the Gas Ring, which will be noticed in the cut. The Ring projects into the Air Chamber of the Furnace immedi-



TRADE MARK

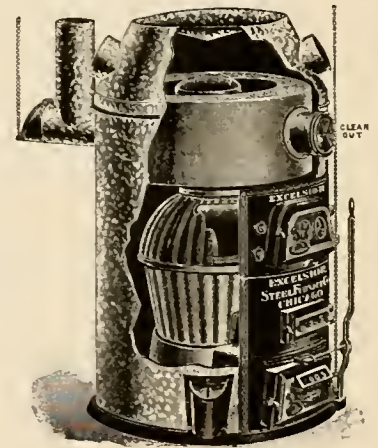


FIG. 1. EXCELSIOR FURNACE "F" PATTERN For Hard Coal

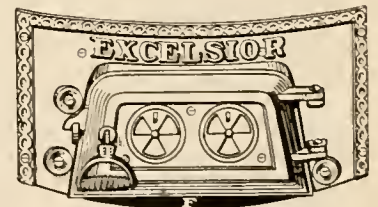


FIG. 2. FURNACE DOOR AND FRAME Showing Plugs for Water Pipes

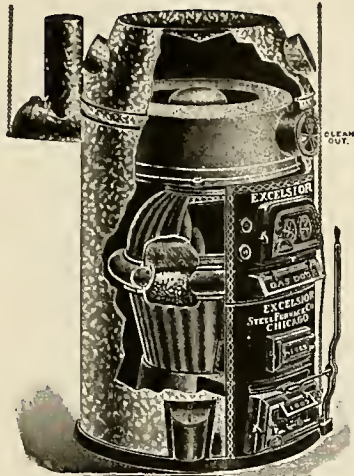


FIG. 3. EXCELSIOR FURNACE
"F" PATTERN
For Soft Coal

EXCELSIOR DOUBLE SAFETY FURNACE PIPE.

The superiority of the Excelsior Double Safety Furnace Pipe is so great that no other pipe on the market will bear any comparison with it. It is the only sanitary wall pipe manufactured.

There is no communication between the space between the inner and outer pipes and the registers or living rooms, so that no odors or noxious gases can pass from the basement to the apartments above as is the case with other Wall Pipes. A basement which is wholly or partly under ground and consequently shut out from the sunshine, and is used for the storage of vegetables and odds and ends is not a healthful place from which to take air to be breathed by young or old, and therefore from a sanitary standpoint if for no other reason the Excelsior Wall Pipe should be used in preference to all others.

The Excelsior Wall Pipe is made in the following lengths: 2 in.; 4 in.; 6 in.; 9 in.; 12 $\frac{1}{2}$ in.; 18 $\frac{1}{2}$ in.; 24 in.; 38 in. and 8 feet. Each section is furnished with slip and socket ends, and by using the eight foot sections in connection with the shorter lengths and with adjustable joints, combinations of any desired lengths can be made with less labor than with any other pipe and with less cost for installation, the number of joints being less than is the case with other forms of pipe.

The ventilation is not by means of a small collar attached to one or more sides of a Boot or Foot Piece from which the air can be cut off by the juxtaposition of a stud, but is supplied by numerous perforations around the bottom of the Boot, and the total area of the openings and their position at the bottom of the Foot Piece and near the point where the warm air pipe from the furnace enters the stack insure ample and absolute ventilation at all times.

The slip on the Excelsior Double Wall Pipe is longer than that of any other Wall Pipe and is made so that it fits tightly into the socket end prepared to receive it.

Excelsior Double Wall Pipe is not only better than any other line in the market, but is cheaper. The lists are the same as on the other pipes, but the dimensions of some of the pipes are larger and many of the Fittings, such as Stack Heads, are longer than in other lines, though listed at the same price.

The Excelsior is the only line of Double Pipe adapted for old houses and thin partitions.

ately over the fire pot, and is thus heated quickly to a high temperature. The draft door on the Furnace is connected with the door covering the opening into the Gas Ring, and as the same chain controls both, an increase in draft from below results alike in a corresponding increase in the supply of heated oxygen. The holes in the Ring are so arranged as to be self cleaning and thus cannot be stopped up. The Furnace works equally well with a low or heavy fire. The Cast Dome of this Furnace is low and the Cast Radiator brings the height to but little over 50 inches to the top, thus enabling its use in very low basements.

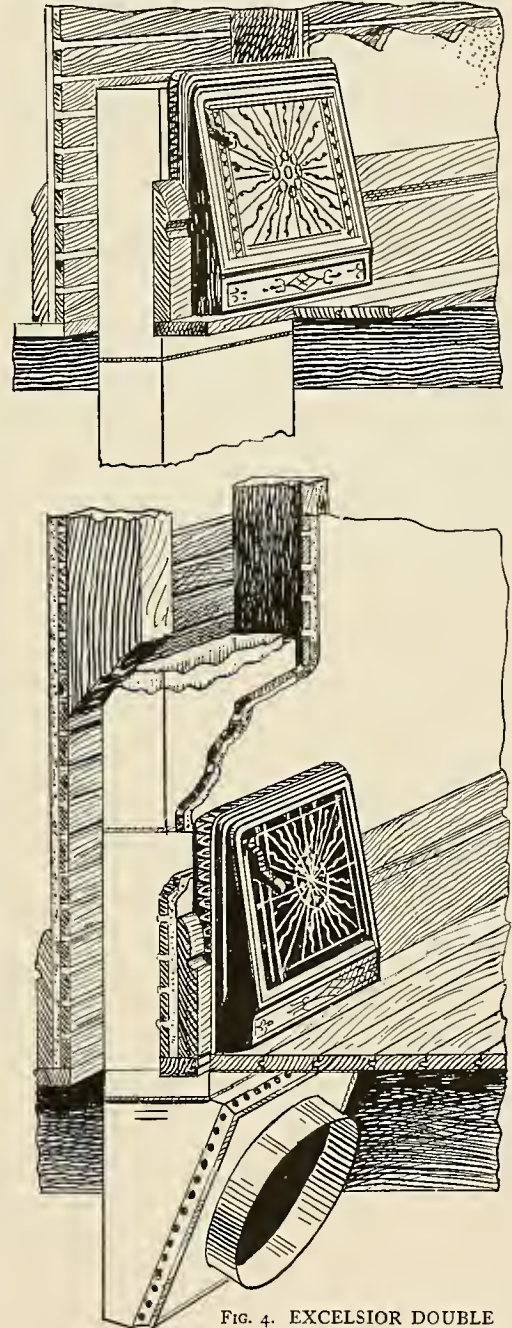


FIG. 4. EXCELSIOR DOUBLE
SAFETY FURNACE PIPE

KELSEY HEATING COMPANY

SYRACUSE, N. Y.

NEW YORK CITY, N. Y.
156 Fifth Avenue
Telephone, 4141 Gramercy

CHICAGO, ILL.
Cook & VanEvera Co.,
38 Lake St.

CANADA,
James Smart Mfg. Co., Ltd.
Brockville, Ont.

PRODUCT.

Manufacturers of the KELSEY WARM-AIR GENERATOR for Home, Church and School Heating.

The claims for the Efficiency, Healthfulness and Economy of the Kelsey Generator are based:

(1) On its superior construction and method of warming and distributing air; (2) its great heating surface and weight; (3) the utilization of all the heat generated.

METHOD OF WARMING AIR.

The Kelsey Generator warms fresh air by bringing great volumes into actual contact with extensive and properly heated surfaces. This is accomplished by sending the air in separate currents through Corrugated Cast-Iron Sections or flues which surround the fire and form the fire cylinder and combustion chamber.

HEATING SURFACES AND WEIGHT.

Attention is urged to the table showing the heating surfaces and weight of each size Generator. Comparisons are difficult, for the reason that details of this kind are not published about other heaters.

The average size Kelsey Generator, however, has 61 square feet of heating surface to each square foot of grate surface, and weighs over 2,000 pounds, while the ordinary furnace, with the same grate area, has less than half this heating surface, and weighs about one-third as much.

UTILIZATION OF HEAT.

The flues, through which the air passes in being heated, are in direct contact with and overhang the fire, and are heated by conduction, by radiation from the fire, as well as by the burning gases.

All the heat is further utilized, as shown by the passage of the products of combustion out through the openings between the flues at the top into the draft chamber, and thence down around the baffle plate to the Indirect Draft. An additional volume of warm air is supplied by the passage of air up through the space between the Inner and Outer Casings, which is open to the heat conducting pipes above.

AUTOMATIC ACTION OF THE AIR.

The "Kelsey Method" means warm air with any fire, and because of the automatic quicker action or movement of the air with increased heat, it rises with greater velocity, so that the quantity of warm air increases in proportion to the heat and is never scorched or overheated, and there is no waste of heat in the cellars or loss of same up the chimney.

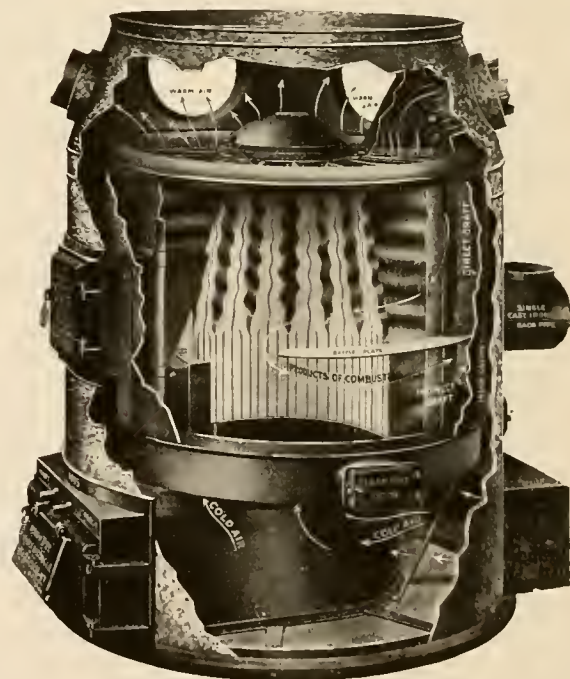
UNIFORM TEMPERATURE, DISTANT ROOMS HEATED.

Each one of the corrugated flues is an independent heat generator in itself and contributes its proportionate amount of warm air, which readily takes the nearest heat conducting pipe.

By capping over two or more of the flues with the patented Positive Cap Attachment, and extending a heat conducting pipe therefrom, the warm air which comes through these particular flues is forced through long pipes or "against the wind" to distant or exposed rooms, and an even, uniform temperature is easily maintained all through the house.

WATER FRONT.

The heater is also provided with a water-front, at a slight additional cost, for the heating of water in range boilers.



SECTIONAL VIEW, KELSEY HEATER
Showing Flue Construction, Inside and Outside Casings, Direct and Indirect Draft and Positive Cap Attachment over the Flues, through which warm air is forced to distant rooms.

The flow of warm air to the rooms so connected can be shut off at any time by means of the damper in the Positive Cap and the heat is then diverted to the general supply of the Generator.

COMBINATION,
WITH HOT
WATER HEATER.

With the "Champion Hot Water Heater," a powerful Combination Heating System is insured, and is especially adapted for heating Conservatories, and for residences where it may be difficult to extend the warm air pipes to all the rooms.

ADAPTABILITY.

The Kelsey is adapted for all new Houses, Churches, Schools, etc., and to buildings in which the ordinary hot-air system has been used.

THE BATTERY
SYSTEM FOR
LARGE
BUILDINGS.

The battery form of placing two or more Generators under one dome casing has been demonstrated to be a most efficient System for heating and ventilating large residences. The advantages of this System are that the required quantity of warm air is supplied as it may be needed, and there is no waste of fuel.

SCHOOL
HEATING
BY THE
MECHANICAL
SYSTEM.

This means a forced circulation of large quantities of air with a fan or blower propelled by electric or other power. The Kelsey is the only heater properly designed to heat air traveling at a high velocity.

By actual test, as published in the "Metal Worker" of April 8th, 1905, the Kelsey has warmed 4,500 cubic feet of air, traveling at a velocity of 1,000 feet per minute, through 130 degrees of temperature.

WOOD BURNING
AND BRICK SET
CONSTRUCTION.

Besides the regular style with single feed door, the Kelsey is made with double feed door for admitting large chunks of wood, and is also made with Cast-Iron Front and in Brick Set form.

SIZES,
HEATING
SURFACES,
WEIGHTS AND
CAPACITIES.

The following table gives the heating surfaces, capacities, etc., of the different sizes. It must be kept in mind that the extreme capacities given are based upon conditions where but one or two heat conducting pipes are required. When using an increased number of such pipes, there is a consequent loss of heat from radiation, for which due allowance must be made in selecting a heater of proper size. The weights given are for refined Sheet Iron Inner Casings. With Cast Iron Inner Casings the weights are from 100 to 300 pounds more.

Size of Generator	Diameter of Grate and Fire Cylinder	Grate Area Square Inches	Number of Corrugated Flues or Sections	Square Feet of Heating Surface	Square Feet of Heating Surface to Each Square Foot of Grate Surface	Height of Generator Cased Complete	Weight of Generators Complete in Pounds	Estimated Heating Capacity in Cubic Feet Under Various Conditions	Size of Cold Air Duct in Inches	Size of Cold Air Face or Register if Used, in Inches
14	14 in.	154	9	91	5	61 in.	1008	6 to 9,000	12 x 24	18 x 24
16	16 "	201	9	114	8	63 "	1168	8 to 15,000	12 x 30	20 x 26
18	18 "	254	11	135	7	68 "	1635	14 to 22,000	12 x 36	21 x 29
21	21 "	346	13	146	6	69 "	2033	22 to 45,000	14 x 40	24 x 32
24	24 "	452	15	161	5	69 "	2300	38 to 60,000	14 x 48	24 x 32
27	27 "	571	15	176	4	72 "	2600	40 to 70,000	14 x 56	28 x 40
30	30 "	707	17	211	4	76 "	3124	60 to 100,000	14 x ⁶⁰ / _{or 72}	30 x 48

AGENCIES.
ESTIMATES
AND PLANS.

28,000 Kelsey Generators have been sold and 750 dealers are selling and will promptly furnish estimates of cost and heating plans, or estimates and plans will be furnished by the makers on application.

The book "What the Users Say" will be sent on request.

RICHARDSON & BOYNTON CO.

Steam and Water Boilers, Furnaces and Ranges

232, 234, 236 Water Street

NEW YORK CITY, N. Y.

CHICAGO, ILL.

84 Lake Street

BOSTON, MASS.

51 Portland Street

PRODUCTS.

"PERFECT" HEATING FURNACES, "PERFECT" COOKING RANGES, "RICHARDSON" BOILERS, "RICHARDSON" TANK HEATERS, etc.

ADVANTAGES.

We take special care in manufacturing our goods, which bespeaks for them an ever-increasing sale. Every article we handle is practically tested before being offered by us to consumers, which insures satisfaction, as we are able to guarantee our goods to meet all requirements. Shipments are made from New York, Chicago or Boston, and as a full stock is kept at these places, our customers are not subject to the exasperating delays so often met with.

"PERFECT" REVOLVING ASH AND CLINKER-FREEING GRATES.

A glance at Fig. 1 will show the superiority of our "Perfect" Revolving Ash and Clinker-Freeing Grate over any other device now on the market. It is the most durable and the best grate ever made; it is easy to operate, and it frees the fire chamber from all ashes and clinkers.

All our coal furnaces are furnished with these popular grates.

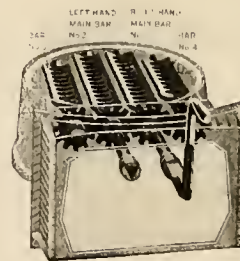


FIG. 1. "PERFECT" REVOLVING ASH AND CLINKER-FREEING GRATE

"PERFECT" GAS-TIGHT HEATING FURNACES.

Our "Perfect" Heating Furnaces (Fig. 2) are strong and durable, and they will heat large volumes of air. They are perfectly gas-tight, and the high gas mixing combustion chamber allows all gases generated to be exposed to the flame and light of the fire, providing the greatest possible percentage of live, active flame, with an economical use of fuel. These furnaces are "low-down," adapted to any cellar. Hundreds of thousands of these successful heating furnaces are in use all over the United States, and to anyone desiring information as to what is required to heat any building, would respectfully solicit correspondence.

THE SEVEN SIZES OF "PERFECT" GAS-TIGHT HEATING FURNACES.

Size	Diameter Casing Inches	Diameter Pot In.	Diameter Radiator Inches	Height Less Case Inches
131	31	16	25	53
134	34	18½	28	53
139	39	21	32	54
143	43	24	36	54½
147	47	26	42	55
155	55	29	48	55
162	60	33	52	55

"PERFECT" GAS-TIGHT CAST-IRON HEATING FURNACE.

Our "Perfect" Gas-Tight Cast-Iron Heating Furnace (Fig. 3) is cast on one solid piece, which compels the products of combustion, after leaving the body of the furnace, to travel from 15 to 25 feet before entering the smoke pipe (other manufacturers' furnaces carry the smoke from 2 to 4 feet only before entering the smoke pipes), thus increasing the radiation in, this particular alone some four times over ordinary furnaces sold by the trade. Our "Perfect" Gas-Tight Furnaces will be found substantial, durable, gas-tight and perfect in operation, combined with an immense heating power.

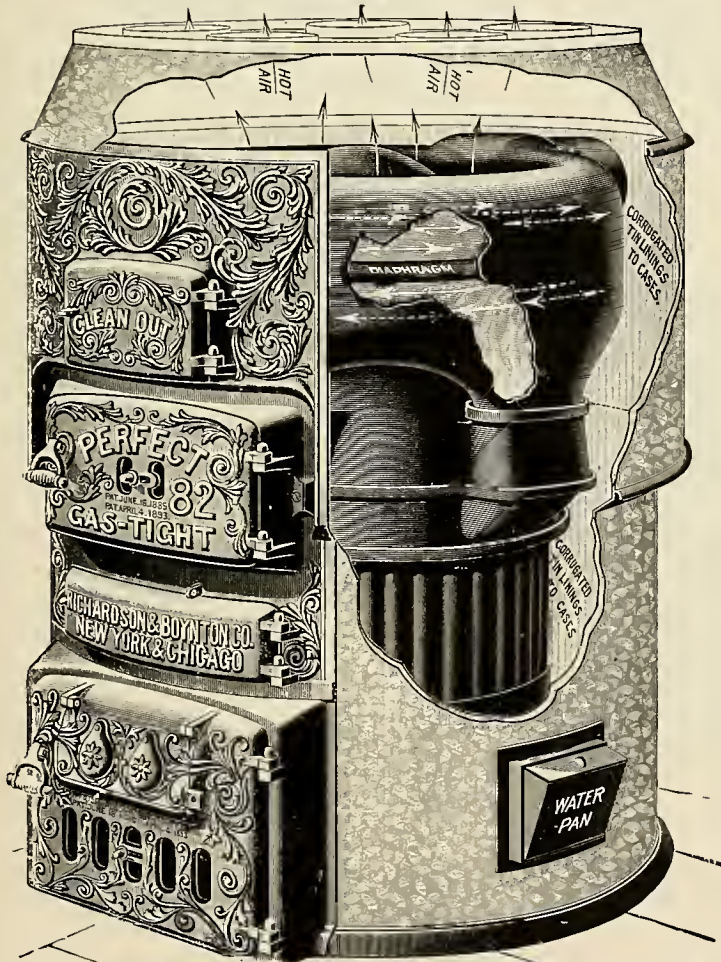


FIG. 3. "PERFECT" GAS-TIGHT, CAST-IRON HEATING FURNACE.

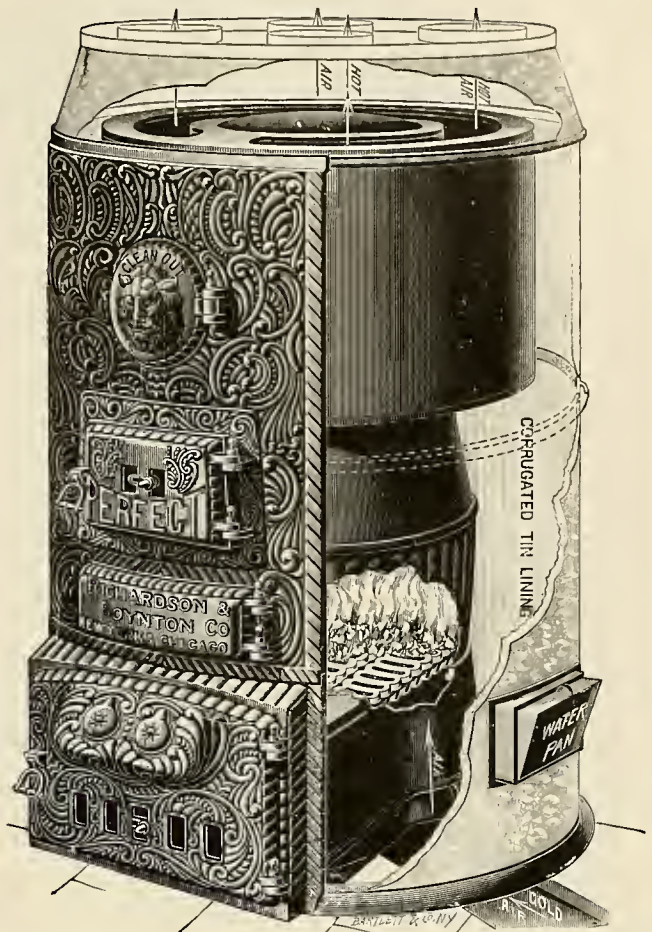


FIG. 2. "PERFECT" GAS-TIGHT, HEATING FURNACE Portable Style

The "Perfect" has been subjected to severe tests since 1882. It has been found efficient even under long and trying soft coal tests, and we are satisfied, after our fifty-two years of furnace experience, that the "Perfect" is the most powerful heating furnace ever constructed. They have all the modern improvements, among other features being the new solid double Upward Return Flue Radiator. The furnaces are low in height, adapted for any cellar, and they can be taken through any door.

Sizes	Diameter Upper Cases	Diameter Double Radiator	Diameter Fire Pot
82	43 inches	36 inches	24 inches
83	47 "	39 "	26 "
84	51½ "	42 "	29 "
86	62 "	51 "	33 "

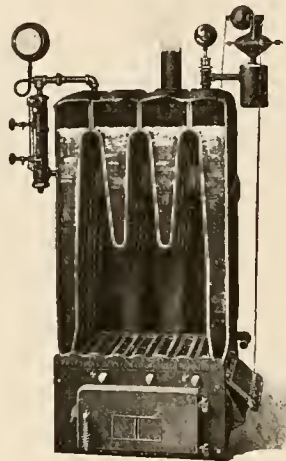


FIG. 4. "RICHARDSON" SECTIONAL TUBULAR STEAM BOILER

Sectional view, showing end section, front water section and ash pit with grates. The fire has no waste surface to heat; all surfaces utilized. Seventy-five per cent. of surface is fire surface; it has a large steam chamber.

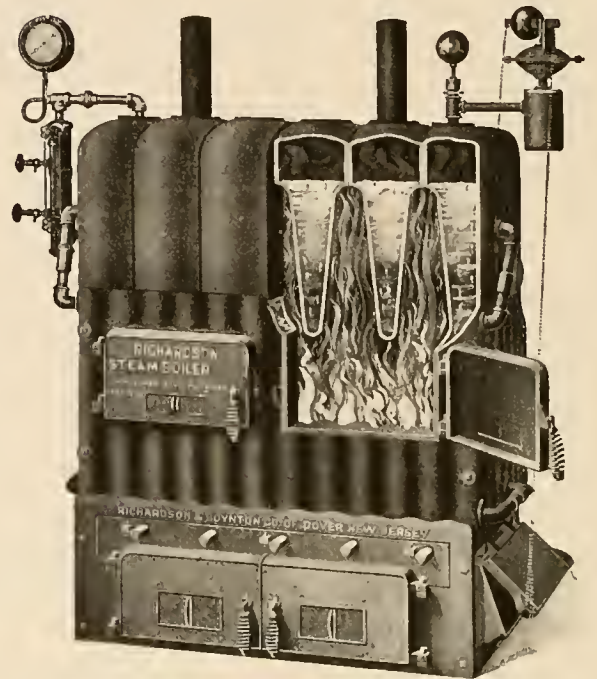


FIG. 5. "RICHARDSON" SECTIONAL TUBULAR STEAM BOILER

Showing a 6-section Steam Boiler complete, with double large feed doors, making feeding of coal very easy. All of the fire is accessible. Has large double ash doors, allowing for easy removal of ashes. Boiler produces steam quickly and economically and is low in height, suitable for any cellar.

"RICHARDSON" SAFETY SECTIONAL TUBULAR BOILER.

It will readily be seen that the "Richardson" Boiler (Fig. 4) contains the greatest improvements in steam heater construction of modern times, when we state that 75 per cent. of the entire boiler surface of the boiler is fire surface (as compared to 25 per cent. of fire surface in almost every other make of boilers now in the market). Fire surface is what does the heating with economy of coal. Our boilers have 200 per cent. more fire surface than other makes. The "Richardson" boilers have the best internal circulation, because the water leg contains a greater quantity of water than any other, while the water in the part of the sections over the fire is in thin bodies. "Richardson" Boilers have the steadiest water line when the boiler is loaded to its full capacity, they have the largest steam dome or reservoir, considering their size and they will produce more steam per pound of fuel used than any other make. They are easy to clean, easy to manage and of the most perfect construction. They will hold steam splendidly, without requiring the usual attention, which proves the superiority of construction, economy of fuel and the power of the boiler. These boilers are fitted with the best grate bars ever made. By removing the front plate, each grate bar can be put in position in a minute—an improvement that is greatly appreciated.

SIZES OF THE "RICHARDSON" SAFETY SECTIONAL TUBULAR BOILER.

No. of Heater	Square Feet Direct Rad. Heater will Supply Including Mains and Returns	Cubic Feet of Air Space Heated will Heat with Direct Rad. and Proper Piping	Square Feet Direct Rad. Heater Including Mains and Returns	Dimensions of Grate Inches	Height of Boiler to Top of Outlet Inches	Width of Boiler Including Water Front Connections Inches	Depth of Boiler Including Smoke Box Inches
318	275	13,750	450	18x14	54	26	37½
322	325	16,250	525	22x14	56	26	41½
418	400	20,000	650	18x21	54	32	36½
422	500	25,000	825	22x21	56	32	40½
518	525	26,500	875	18x28	54	39	36½
618	650	32,500	1075	18x35	54	46	39
522	675	33,750	1100	22x28	56	39	40½
430	750	37,500	1250	30x21	61	32	51½
622	850	42,500	1400	22x35	56	46	42½
530	1025	51,250	1700	30x28	61	39	52½
630	1300	65,000	2150	30x35	61	46	52½
730	1575	78,750	2600	30x42	61	53	52½
830	1800	90,000	2850	30x49	61	60	52½
540	2400	100,000	3800	40x29	71	54	52½
640	2900	125,000	4600	40x36	71	61	52½
740	3400	150,000	5400	40x43	71	68½	52½
840	3900	175,000	6200	40x50	71	75½	52½
940	4400	200,000	7000	40x57	71	83	52½
1040	4900	225,000	7800	40x64	71	90	52½
1140	5400	250,000	8600	40x71	71	97	52½

"RICHARDSON" TANK HEATER.

The average cooking range will not heat sufficient water in a modern dwelling, where the laundry demands and requirements for several bathrooms need a Special Hot Water Heater to do the work. Our line of Hot Water Heaters are suitable for dwellings having several hathrooms, as well as a laundry; they are also adapted for hotels, bath houses, boarding schools, stables, etc. They will heat an abundance of water, also more flat irons for laundrying work than any heater ever made.

**"PERFECT"
DOUBLE OVEN
RANGE.**

Nothing gives greater comfort and ease of mind to the housewife than a reliable Cooking Range; they please the cook with quick meals and splendid operation. The "Perfect" Double Oven Ranges (Fig. 6) are certain to please and satisfy the most exacting. They are all fitted with front boiler attachment, automatic oven shelves, triangular clinker-freeing grates, and have the celebrated wrought iron French roasting and pastry ventilated ovens; they are quick roasters or bakers, and, for the more delicate foods, like game, fowl and pastry, they are a revelation.

All first class hotels and restaurants are compelled to use wrought iron ovens in their ranges in order to do the delicate cooking required. In the "Perfect" ranges, we give private families the same facilities.



FIG. 6. "PERFECT" WROUGHT IRON FRENCH ROASTING AND PASTRY VENTILATED DOUBLE OVEN RANGE, PORTABLE FORM, SHOWING PLATE RACK AND CANOPY

**SIZES OF
"PERFECT"
DOUBLE OVEN
RANGE.**

Size	Width	Depth	Ovens	Boiler Holes
11	49 $\frac{3}{4}$ "	26"	20" x 12"	8"
12	53"	26"	20" x 13"	8"
13	53"	26"	20" x 13"	9"
14	60"	26"	20" x 16"	9"

**"PERFECT"
FRENCH STEEL
OVEN RANGE.**

Our "Perfect" French Steel Oven Ranges (Figs. 6 and 7) are constructed of extra heavy iron top plates, with square covers so formed and braced as to stand severe use; the oven door fittings are made of malleable iron. The end flues and front and back walls are lined with asbestos. The fire-chamber has extra heavy fire-brick tiles. The ranges are fitted with revolving triangular bar or duplex grates, which cut off the ashes from the under side of the fire, thereby keeping the body of coal fresh and clear. The ovens in family ranges are made of heavy wrought plates with a new construction of ridged bottoms, making warping impossible.



FIG. 7. "PERFECT" STEEL DOUBLE OVEN FRENCH RANGE With Double Wrought Iron Dish Shelf, also Broiler

**SIZES OF
"PERFECT"
FRENCH STEEL
OVEN RANGES.**

Size	Top Surface	With Two Ovens, Each
4 feet long.....	48 x 33 Inches	24 x 12 $\frac{1}{4}$ x 14 $\frac{1}{4}$ Inches
4 $\frac{1}{2}$ feet long.....	54 x 33 "	24 x 14 $\frac{1}{4}$ x 14 $\frac{1}{4}$ "
5 feet long.....	60 x 33 "	24 x 17 x 14 $\frac{1}{4}$ "
5 feet 2 inches long.....	62 x 39 "	28 x 18 x 16 "
6 feet long.....	72 x 39 "	28 x 22 $\frac{3}{4}$ x 16 "

THATCHER FURNACE COMPANY

110-112-114-116 Beekman Street
NEW YORK CITY, N. Y.

TELEPHONE, 187 JOHN

PRODUCTS.

Manufacturers of high grade HEATING APPARATUS, WARM AIR FURNACES, STEAM HEATERS, HOT WATER HEATERS, TANK HEATERS, LAUNDRY HEATERS and COOKING RANGES.

INSTALLATION.

All our goods can be installed by any responsible workman. We do no installation work ourselves.

THE "TUBULAR" FURNACE.

Thatcher Tubular Furnace (all Cast Iron)—The Thatcher Tubular Furnace is made in eight sizes, either Portable or Brick set. This Furnace is practically self-cleaning, and owing to its tubular construction, which creates a rapid circulation, it carries away the heat as fast as made, not allowing the air to become burnt or overheated.

The following are the numbers, with heating capacity:

No...	32	36	40	44
Heating Capacity Cubic Feet	8000-12000	10000-16000	16000-22000	20000-30000
No...	48	52	56	60
Heating Capacity Cubic Feet	30000-40000	40000-50000	60000-80000	65000-85000



"THATCHER TUBULAR" FURNACE

These Furnaces can also be furnished in Battery Form.

THE "WINNER" FURNACE.

The "Winner" Furnace has large heating capacity. It is very durable, being all Cast Iron. It is low in height, and suitable for low cellars. Capacities 10,000 to 40,000 cubic feet. Nos. 436, 440, 444, 448.

THE "PRIZE" FURNACE.

The "Prize" Furnace is one of our latest productions. It is of improved construction, made with a very deep, heavy steel radiator, giving a large heating capacity. A most powerful and effective Heater, possessing all modern features. Handsome and ornamental. Seven sizes; portable. Heating capacity, 10,000 to 85,000 cubic feet. Nos. 536, 540, 544, 548, 552, 556, 560.



THATCHER "PRIZE" FURNACE

THE "METEOR" FURNACE.

The "Meteor" Furnace has a large and effective heating surface, is moderate in price, and very satisfactory in operation. Has return flue steel radiator, corrugated fire pot, and all modern improvements. Is made with high or low front. Six sizes, capacity 6,000 to 40,000 cubic feet.

Nos. 208, 302, 306, 400, 404, and 408.

Nos. 208 and 302 are made with low front only.

THATCHER SECTIONAL STEAM BOILER AND HOT WATER HEATERS.

Made with the following numbers and capacities.

		STEAM											
No.		15	16	17	18	19	106	107	108	109	110	111	112
Cap.	1	800	1000	1200	1400	1600	1800	2175	2550	2925	3300	3675	4050
Rad.	1												
		HOT WATER											
No.		25	26	27	28	29	206	207	208	209	210	211	212
Cap.	1	1375	1650	2000	2325	2650	2975	3575	4200	4900	5450	6075	6700
Rad.	1												



THATCHER SECTIONAL BOILER

EMPIRE STEAM BOILER AND HOT WATER HEATERS.

We also manufacture the "Empire" Steam Boiler and Hot Water Heaters in eight sizes.

		STEAM							
No.		32	33	42	43	52	53	62	63
Cap.	1	275	325	375	425	475	525	575	625
Rad.	1								
		HOT WATER							
No.		320	330	420	430	520	530	620	630
Cap.	1	425	525	625	700	775	875	950	1025
Rad.	1								



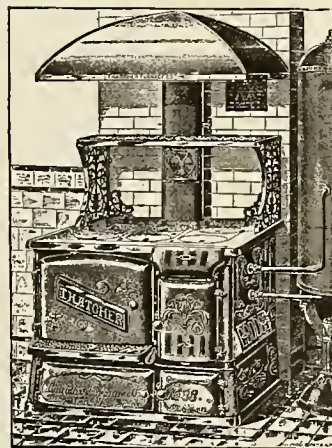
EMPIRE STEAM BOILER

ROSSMORE STEAM BOILERS AND HOT WATER HEATERS.

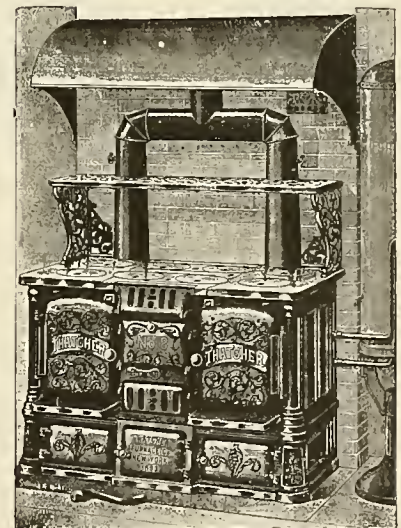


ROSSMORE HOT WATER HEATER

		STEAM											
No.		17-3A	17-4A	17-5A	21-3A	21-4A	21-5A	26-3A	26-4A	26-5A	32-3A	32-3A	32-4A
Cap.	1	200	250	300	350	400	450	525	600	675	1000	1100	1200
Rad.	1												
		HOT WATER											
No.		17-3B	17-4B	17-5B	21-3B	21-4B	21-5B	26-3B	26-4B	26-5B	32-3B	32-4B	32-5B
Cap.	1	325	400	475	550	650	750	875	1000	1100	1500	1700	1900
Rad.	1												



THATCHER SINGLE OVEN PORTABLE RANGE With Low Warming Closet



THATCHER DOUBLE OVEN PORTABLE RANGE With Low Warming Closet, Shelf and Canopy

THATCHER RANGES. PORTABLE OR BRICK SET.

The Thatcher Ranges are perfectly constructed and fitted in the most improved manner, having large, well-ventilated ovens, allowing the air to thoroughly circulate around them, making an equal amount of heat on all sides; also sifting grates, ash pan and water-back of ample capacity, patent oven door opener, and patent triangular revolving grate, which can be removed through the fire-door opening without disturbing fire lining or water-back.

They are perfect in operation, excellent cookers and quick bakers.

THOMAS, ROBERTS, STEVENSON CO.

Stove Founders

Third and Mifflin Streets

PHILADELPHIA, PA.

PRODUCTS.

We make FORTUNE GAS RANGES, WATER HEATERS and GAS HEATERS, ACTIVE and GEM FORTUNE RANGES, SPECIALTY, ACTIVE FORTUNE and FORTUNE B FURNACES.

FACILITIES.

An abundance of these goods are carried constantly in stock, and our shipping facilities being of the very best assures a prompt delivery.

INSTALLATION.

Any competent plumber or furnace and range man can install our products.

GAS RANGES.

With 16, 18 and 20-inch ovens.
 For artificial or natural gas.
 Sheet steel or cast-iron bodies.
 Equipped with one or two ovens.
 Swing or drop doors.
 The square range has five top burners, three single and one double capacity, and one independent simmering.
 We supply a two-burner top extension, making seven top burners.
 Our side boiler gives additional oven capacity.
 We have a water coil attachment with brass or iron coils.



FORTUNE GAS RANGE

WATER HEATER.

With brass or iron disks.
 Has a powerful star burner.
 Is very light in weight.
 So constructed that it cannot clog.

GAS HEATERS.

A variety of sizes for natural gas.
 Very effective, solid, drilled burner.
 Body heavy planished sheet steel.
 No odor or condensation when connected with flue.

BUILDERS' RANGES.

Made with 14, 16, 18 and 20-inch ovens.
 For horizontal or vertical boiler, or can be used without waterback.
 Equipped with five or six-hole tops.
 Plain, sliding door, or low closet and sifter base.
 Use flat, triplex or rocking grate.
 Made with single or double oven.

FURNACES.

Sizes range from 25 to 60-inch casings.
 Steel or cast-iron radiators.
 Triplex, Ransom Duplex, and Draw-center grates.
 Carefully fitted cup joints between all inside castings.
 Grate, fire pot, crab, and radiator castings made extra heavy.
 Will burn hard coal, soft coal, coke or wood.
 "Oxygen conduit" insures the burning of all gases.



SPECIALTY FURNACE

HAYES MANUFACTURING CO.

Copper Range Boilers

PATERSON, N. J.

PRODUCTS.

Manufacturers of THE WILHELMI SAFETY and THE "MODERN" COPPER RANGE BOILERS.

INSTRUCTIONS AS TO ORDERS.

In ordering, give correct name of the boiler wanted and its test, size of couplings wanted and state whether for lead, iron, or brass pipe. When ordering odd, special sizes, or horizontal boilers, always send sketch, showing all connections required, and thereby avoid a fruitful source of delay and error. All products are carried in stock by the leading plumbers and jobbers of plumbers' supplies.

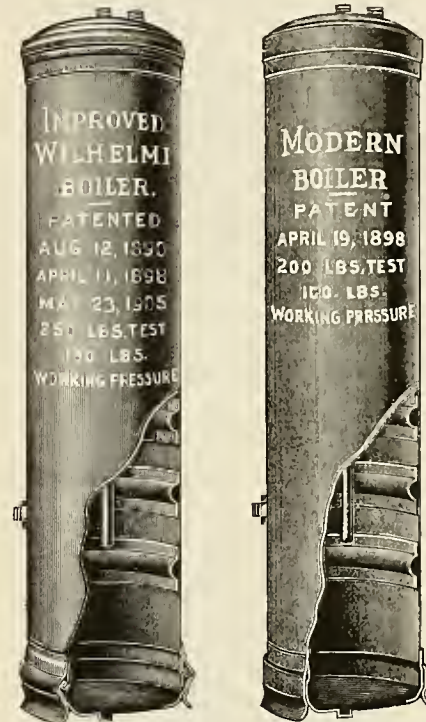
THE WILHELMI SAFETY COPPER RANGE BOILER.

The material used in The Wilhelmi boiler is the best Lake copper exclusively, which in the process of rolling acquires a density and hardness akin to that of steel. Every boiler is reinforced internally with six corrugated rings or ribs of brass which add enormously to its strength and render collapse an absolute impossibility.

The point of connection of the head and shell in most boilers is conceded to be the seat of weakness, whereas in the Wilhelmi it is distinctly the strongest. The Wilhelmi boiler is heavily tinned on the inside, while the outside is so beautifully polished as to render it a distinctly ornamental addition to any kitchen or laundry. The 250-lb. test is our highest grade boiler, and is the best article of its class in the market.

"MODERN" COPPER RANGE BOILER.

Where the pressure does not exceed 100 lbs., the "Modern" boiler has no equal. We test it to 200 lbs., and guarantee it—"our kind of guarantee," we mean—against collapse and to stand a working pressure of 100 lbs. The accompanying illustration clearly explains its construction. This boiler is equal in every particular to the "High Grade Boiler" (so called).



WILHELMI COPPER RANGE BOILER

MODERN COPPER RANGE BOILER

PRICES, SIZES AND CAPACITIES.

WILHELMI BOILER					MODERN BOILER				
Capacity Gallons	Height Inches	Diameter Inches	Price	Boxing Net	Capacity Gallons	Height Inches	Diameter Inches	Price	
30	60	12	\$ 30	\$1.00	30	60	12	\$ 30	
35	60	13	35	1.00	35	60	13	35	
40	60	14	40	1.00	40	60	14	40	
50	60	16	50	1.00	50	60	16	50	
60	60	18	60	2.00	60	60	18	60	
80	60	20	80	2.00	80	60	20	80	
90	54	22	90	2.00	90	54	22	90	
100	60	22	100	2.00	100	60	22	100	
120	73	22	120	3.00	120	73	22	120	
125	76	22	125	3.00	125	76	22	125	
125	69	24	135	3.00	125	69	24	130	
150	78½	24	165	3.00	150	78½	24	165	
200	87½	26	220	4.00	200	87½	26	220	
225	98	26	255	4.00	225	98	26	255	
225	74	30	255	5.00	225	74	30	255	
250	108	26	280	5.00	250	108	26	280	
250	82	30	280	5.00	250	82	30	280	
300	98	30	335	5.00	300	98	30	335	

HUMPHREY COMPANY

Automatic Water Heaters

KALAMAZOO, MICH.

PRODUCTS.

We manufacture every approved type of INSTANTANEOUS and AUTOMATIC WATER HEATERS.

INSTANTANEOUS HEATERS.

These heaters are made of very heavy copper, nickel-plated, with brass valves, large and powerful steel burners and steel shelf. The heaters are practically indestructible, and are fitted with duplex safety valves to prevent the gas being turned on without the water.

These heaters, connected to water and gas in the bathroom or kitchen, produce hot water instantly in any quantity. They are not reservoirs—the water is heated instantly as it passes over the heated surfaces, and in such quantities that storage is unnecessary.

CAPACITY.

These heaters produce hot water instantly at the rate of two to three gallons per minute, and the expense ends the moment the gas is turned off.

DEPOSITS.

There is no deposit of lime on the heating surfaces, as the temperature required for baths rarely exceeds 110 to 120 degrees, at which temperatures lime is not precipitated. For this reason these heaters can be used with alkaline waters, that would soon render other devices useless.

Fig. 1 represents, in section the construction and operation of our Nos. 1, 2 and 10 instantaneous heaters, which may be used with either coal, water, natural gas or gasoline-gas made by a gas-machine.

GAS SUPPLY.

The gas supply is an essential point to be considered when connecting these heaters. Gas supply pipes must be of sufficient size, small pipes will not sustain the pressure necessary for perfect combustion. The supply pipe should be 3/4" in diameter and connected direct to a ten-light meter.

These heaters are guaranteed to be as represented: the most complete and efficient Instantaneous Water Heaters ever offered to the public.

There is no limit to the quantity of hot water, as by the construction, the water heats while it is passing through the heater and it will be readily seen that by spreading a 1/4" stream of water over 11 square feet of heated surface (the amount contained in our No. 2) the water must be quickly heated. The special and powerful burners make perfect combustion and prevent the explosive noise which many other heaters make.

HEATERS No. 2 AND No. 1.

Our No. 2 Crescent Instantaneous Water Heater differs only from No. 10 in not having a shower attachment and not standing any water pressure. No. 1 is the same as the No. 2, except smaller and without a water glass.

Every heater must be connected to a vent pipe.

VENT PIPE.

PRICE LIST OF INSTANTANEOUS HEATERS

No Heater	Price	Gas Supply from Meter	Heats gals. per min. 50° in Temperature	Height	Dia-meter	Ship-ping Weight
10	\$45.00	3/4 inch	3	34 in.	12 in.	90 lbs.
2	35.00	3/4 inch	2 1/2	34 5/8 in.	12 in.	70 lbs.
1	30.00	3/4 inch	2	31 in.	10 1/4 in.	62 lbs.

These prices include Safety Valves and Unions, one Bent Outlet Spout.

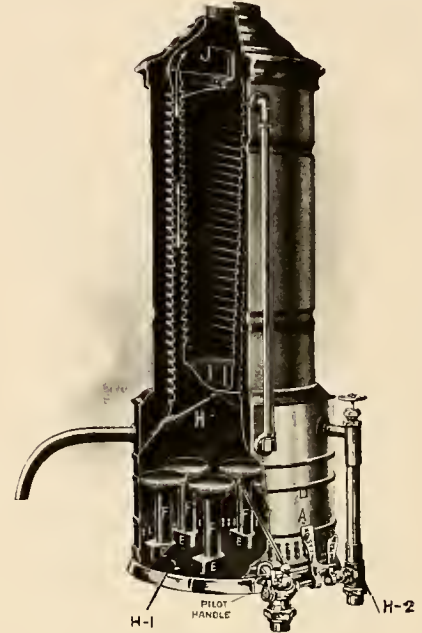


FIG. 1. INSTANTANEOUS HEATER No. 2 Showing Construction

Explanatory: A, Gas Valve; B, Water Valve; C, Water Regulator; D, Pilot; E and E, Air Shields; F and F, Burner Pipes; G, Water Glass; H1 and H2, Bolts to hold Water Parts to Shelf; H and I, Corrugated Copper Tubes; J, Cold Water Supply

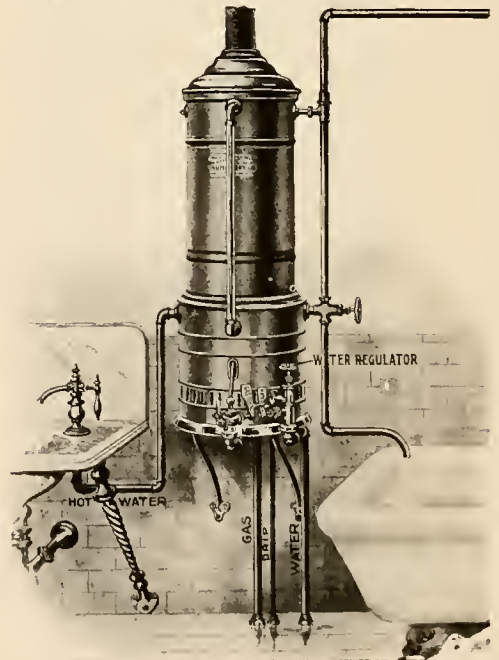


FIG. 2. INSTANTANEOUS HEATER No. 10

HEATERS FOR BATHS

Nos. 6 and 8 Crescent Instantaneous Water Heaters for Baths (Fig. 3) differ only in size, and they both will produce a continuous stream of hot water instantly, whenever required, and will utilize ninety per cent. of the heat units of the gas. These, like our other heaters, are handsome in design and made of copper, nickel-plated and highly polished. The sectional illustration (Fig. 4) shows the arrangement of the several parts of the heater, and enables a clear understanding of its operation to be obtained.

OPERATION.

The water passes through the center to the revolving distributor, where it is showered on to the perforated discs in a thin film, falling through the perforations as shown by the arrows, then passes over the conical heating tube I, and out of the heater.

The upward arrows show the passing of the heat, the downward arrows show the passage of the water. By the water being subdivided into thousands of particles in passing through the perforations, it becomes heated in a most remarkable manner and utilizes practically every unit of heat.

CAUTION.

In order to obtain the great economy shown in heaters Nos. 6 and 8, the flame and water is brought into such intimate contact that the water is not good for drinking. Use either Nos. 1 or 2 Crescent Instantaneous Heaters when the hot water is to be used internally. Specify Nos. 6 or 8, only as Bath Heaters.

INSTRUCTIONS.

A printed card of instructions is sent with every heater. It should be kept attached to the heater for ready reference, and the instruction for installing and operating should be carefully followed.

GAS SUPPLY.

The gas supply must be by a 3/4" pipe, running direct from the heater to a ten-light meter, and not from a regular house pipe.

VENT CONNECTION.

The vent pipe can end in a chimney, attic, or out of doors. When ending out of doors it must be carried up above the highest point of the roof and a vent hood or cap used, so that there will be no down draft.

PRICE LIST.

The prices given below are for heaters complete as shown by sectional cut (Fig. 4), but include no extra fittings. For nickel-plated brass instead of nickel-plated iron add \$1.50 to the list price of each heater.

No. Heater	Price	Gas Supply from Meter	Heats gals. per min. 50° in Temperature	Height	Dia-meter	Ship-ping Weight
6	\$25.00	3/4 inch	3	29 1/2 in.	12 in.	60 lbs.
8	20.00	1/2 inch	2 1/2	28 1/2 in.	10 1/4 in.	48 lbs.

These prices include Safety Valves and Unions, one Bent Outlet Spout.

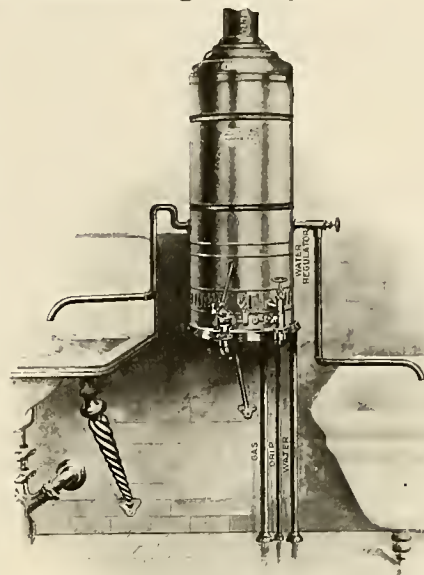


Fig. 3. INSTANTANEOUS HEATER No. 6

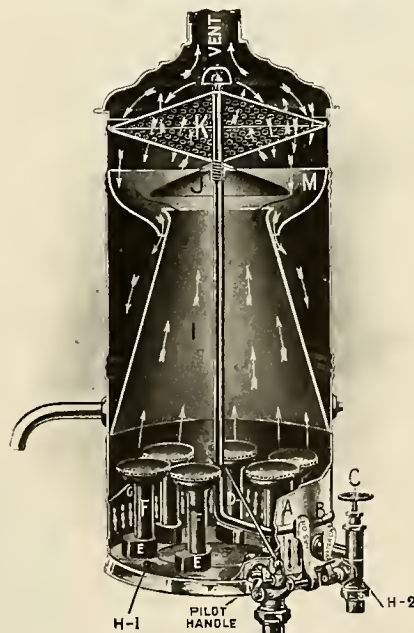


Fig. 4. INSTANTANEOUS HEATER No. 6 Showing Construction

Explanatory: C, Water Regulator; D, Pilot Pipe; E, Air Shields, F and F, Burner Pipes; G, Drip Ring; H1 and H2, Bolts to hold Water Parts to Shelf; I, Conical Heating Tube; J, Disk to retard and spread passing heat; K, Perforated Copper Screen; L, Revolving Water Distributor; M, Disk to carry falling water to Tube I

HUMPHREY
CRESCENT
AUTOMATIC
WATER
HEATERS No. 12.

Our Automatic water heaters (Fig. 5) are placed in the basement or any other convenient place, and are connected direct with the entire hot-water supply of the building. There is no gas burned and no expense for fuel (other than the very small pilot flame) except when a hot-water faucet is opened, in any portion of the building.

OPERATION.

The instant a hot-water faucet is opened, the automatic valve operates, opening the gas supply, and hot water is delivered at once. The shutting off of the hot-water faucet at once shuts off the gas supply to the heater, the fuel expense stops, and you pay only for the hot water used.

CAPACITY.

This heater (No. 12) is the proper size for heating water for two bathrooms, a kitchen and laundry. We recommend a No. 14 heater where only a medium supply of hot water is needed, say for one bathroom with kitchen and laundry, or for doctors, dentists, barbers, etc. It will supply hot water for a number of rooms.



FIG. 5. AUTOMATIC WATER HEATER No. 12

PRICE.

PRICE LIST OF No. 14 and No. 12 HEATERS

No. Heater	Price	Gas Supply from Meter	Heats gals. per min. 50° in Temperature	Height	Dia-meter	Ship-ping Weight	Net Weight	Gas Consumed Per Minute
12	\$85.00	1 inch	4½	45 in.	16 in.	300 lbs.	245 lbs.	4½ feet
14	70.00	¾ inch	3	40 in.	13½ in.	225 lbs.	175 lbs.	3 feet

CONSTRUCTION.

Our Water Heater is so constructed that any part of it or jacket is of cast iron with a heavy inside sheeting of tively finished, with doors that make the burner and heating surfaces easily accessible.

HEATING COILS.

The heating coils are made of seamless copper, and are guaranteed to stand a working pressure of 300 pounds. The coils are so wound that the heat strikes every portion of them, using all the heat from the burners during the passage to the vent pipe.

BURNERS.

The burners (Fig. 7) consume the gas with a blue Bunsen Flame, assuring the highest possible economy. These burners are so made that they cannot "fire back" or light back at the mixing chamber. Most burners do fire back, making a deposit of soot on the copper coils, thereby making the heater wasteful in operation.

can be taken apart quickly, or inspected at will. The casing asbestos to prevent radiation, (Fig. 6). The outside is attrac-

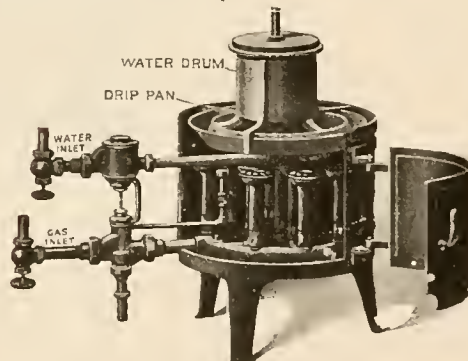


FIG. 7. BUNSEN BURNERS

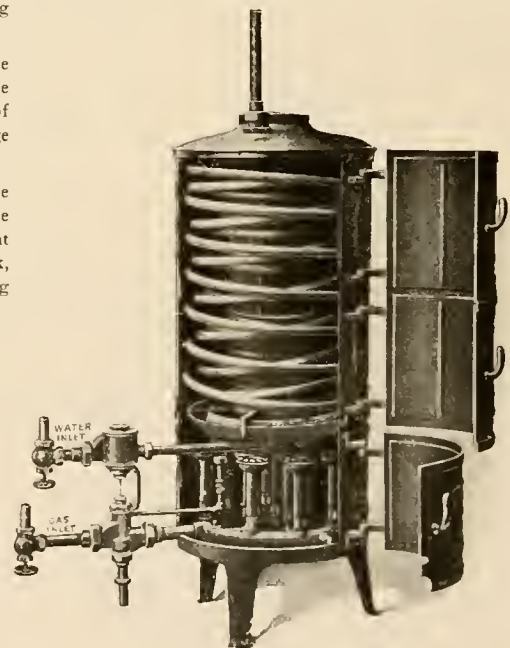


FIG. 6. AUTOMATIC WATER HEATER No. 12
Showing Construction

PILOT LIGHT.

The economy and success of an Automatic Heater depends on this little light. The Humphrey Pilot Light (Fig. 8) is the only one the size of whose flame is not determined by the construction of the heater. The light can be made to burn high or low as desired. It can be reduced to the merest spark if necessary and is so arranged that it will never blow out by the in-rush of gas to the burner, because when the water faucet is turned on, the first movement of the valve supplies gas by means of a special by-pass to the pilot which then flames up. Immediately after this, the gas flows to the burners.

AUTOMATIC VALVE.

The automatic valve (Fig. 9) governs the supply of gas in accordance with the amount of water being drawn, thus delivering the water at any faucet always at a temperature of about 140 degrees Fahrenheit.

DETAILS OF AUTOMATIC VALVE, FIG. 10

A, Water Valve Body; Ar, Equalizing Orifice; B, Removable Piston Chamber; C, Piston Head; D, Piston Rod, in water end; E, Water Valve Cap; F, Yoke, connecting water and gas valve; G and G1, Nuts to hold valve to yoke; H and H1, Glands; I and I1, Nuts for tightening the glands and packing; J, Gas Valve Body; K, Gas Valve Seat; L and L1, Inner and Outer Gas Regulating Sleeves; M and M1, Compression Spring Adjustment and Gas Valve Cap; N, Collar and Pivot for Compression Spring; O, Compression Spring; P, Pilot Valve; Q, By-pass to Pilot; R, Adjustment for By-pass; S, Pilot Light to Heater; T, Gas Valve Stem; U, Nut for holding Gas Valve on Stem.

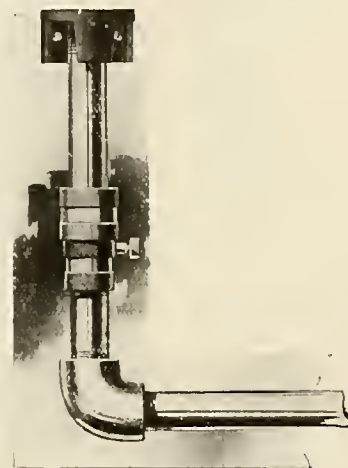


FIG. 8. PILOT LIGHT

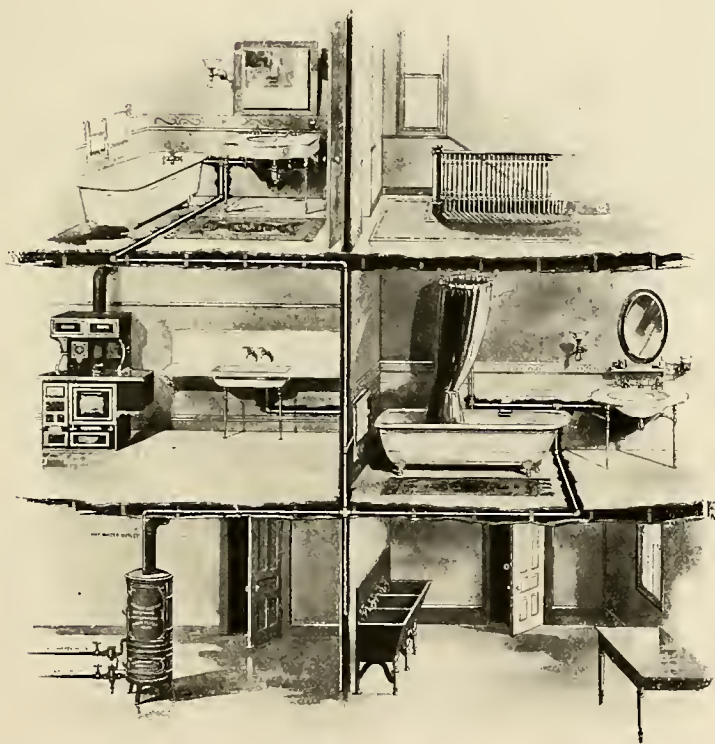


Fig. 9. WOOD SECTION OF A HOUSE SHOWING THE CRESCENT AUTOMATIC HEATER CONNECTED

The points of superiority in this valve are: Simplicity; the impossibility of getting out of line; no binding of piston stem; the entire gas valve or water-valve can be removed without disturbing anything else; the entire working parts of the water-valve chamber and the gas-valve chamber can be separately removed; the automatic control of the by-pass; the independent control of gas supply to the by-pass; regulating the gas to correspond with the flow of water; instant adjustment of pressure spring by hand; the complete removal of the automatic valve from the heater by unscrewing four union nuts; the piston stems are so arranged that two short stems bear against each other and no amount of twisting or wrenching can cause them to bind.

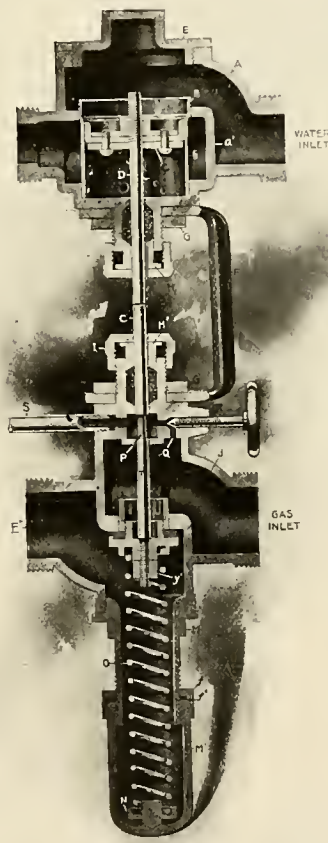


FIG. 10. AUTOMATIC VALVE

THE INSTANTANEOUS WATER HEATING COMPANY

153-159 South Jefferson Street

CHICAGO, ILL.

PRODUCTS.

We are the pioneer manufacturers and introducers of INSTANTANEOUS WATER-HEATERS in America, and makers of THE "DOUGLAS," "ACME," and "FLUSH" INSTANTANEOUS WATER-HEATERS.

ADAPTATION.

In 1886 we placed our first Heaters before the public. That our Heater "filled a long felt want" is evidenced by the fact that there are to-day seventy-five thousand of them in use, which should satisfy the most skeptical that a further investigation is warranted.

The old method of supplying the house with hot water from the kitchen boiler, heated by the stove, using coal or wood, answered the purpose, but at the present time, when gas and gasoline are almost universally used as fuel, our Heaters are indispensable.

GUARANTEE.

Every Heater is guaranteed to be as represented when instructions for connecting and using are followed.

These Heaters are constructed on scientific and simple principles, and will heat water instantly in unlimited quantities.

A standard temperature for bathing is 100 degrees Fahrenheit, and every Gas Heater, according to size, will furnish from $1\frac{1}{2}$ to 4 gallons of water a minute at this temperature.

A larger supply can be obtained at a lower temperature, or vice versa, by turning the water wheel regulator one way or the other.

GENERAL DESCRIPTION.

Copper only is used for the body of the Heater, being the best of all known metals for quickly taking and retaining heat and for its lasting qualities. The simplicity of the arrangements of all parts of the Heater, both of the exterior and interior, insures durability.

The predominant features that give efficiency are the large smooth heating surfaces over which the water flows in thin layers, there being no corrugations or projecting edges in any of the cylinders, nor numerous small tubes through which the water flows, it being a well-known fact that nearly all water contains lime, and when flowing over corrugated surfaces, or through any considerable number of small tubes that come in contact with heat, the lime will be deposited on such surfaces and in the tubes, and gradually accumulate to such an extent as to prevent the heat from penetrating and heating the water.

Economy is attained by so forming the cylinders that the heat will impinge upon and cover the entire large heating surface, thereby utilizing almost all the heat of the gas. Furthermore, the gas only burns while the water is passing through the heater. From 20 to 25 gallons is sufficient for a bath, and as the Heaters furnish from $1\frac{1}{2}$ to 4 gallons a minute, according to size, it is easily computed how inexpensive the operation really is.

SUPERIORITY.

Many new and exclusive appliances are used in the construction of the "Douglas," "Acme" and "Flush" Instantaneous Water-Heaters. They are equipped with cast-iron burners and shelf combined, and with automatic safety gas lock valves.

THE
BURNER.

The Burner (Fig. 1) is constructed on the Bunsen principle without the use of wire gauze or screens at the air mixers, as same fills up in a limited period with rust, lint and dust, thus preventing the air from mixing with the gas, resulting in imperfect combustion. The burner is not bolted to the heater; it is detached, the heater being simply placed over the burner, enabling it to be removed like an ordinary lamp chimney.

As shown by the illustration, the air enters the mixing chambers D, D, through the opening from the bottom of the shelf, directly under the air shields A, A. The burner cannot clog or light back by down draft.

A Gas regulator attached to each burner tube B B assures not only perfect combustion, but absolutely the highest efficiency of combustion; naturally, the hottest flame and the largest quantity of hot water is obtained thereby.

Gas pressure varies in different cities and often in one thoroughfare from another. With our gas regulators, every burner can be adjusted so that all conditions and emergencies are met; it matters not what the gas pressure is or the process of making, or changes that take place from time to time.

The best results are obtained instantly without the service of a mechanic. Anywhere—any time.

No dirty water is discharged from the heater, caused by the formation of carbon or soot through imperfect gas combustion, making it unfit for bathing or other purposes.

No cleaning of heater or burner, or renewing of parts periodically is required at an expense and annoyance which is displeasing to the owner or user.

The Safety Gas and Water Valves (Fig. 2) are combined with Duplex Valves and Safety Gas Lock. The Safety Gas Lock prevents the turning on of the gas valve before the pilot light is lit, thus avoiding accidents and explosions by inexperienced or careless users.

All parts are easily accessible, and the testing, disconnecting, examination, or overhauling of any part of our heater can be accomplished in a few minutes without undue inconvenience or labor.

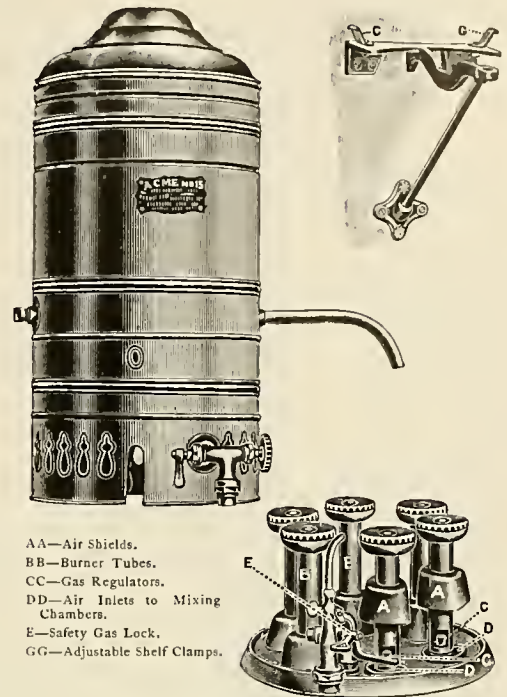


FIG. 1. INSTANTANEOUS WATER HEATER BURNER

SAFETY
GAS AND
WATER
VALVES.

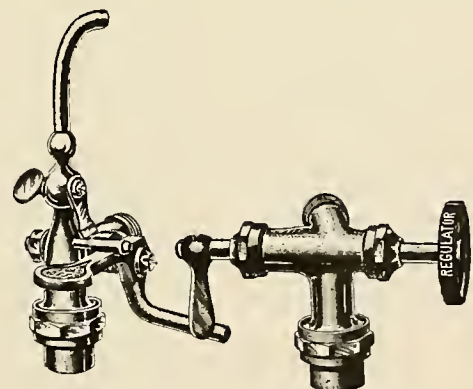


FIG. 2. GAS AND WATER VALVES

PRICES.

Gas and Pilot Valve, complete \$2.50
Water Valve, complete 2.50

DOUGLAS
NO. 2.

This style of Heater is adapted for baths and domestic purposes. Its construction is the most simple and practical of any instantaneous water heater in the world. Referring to the interior view (Fig. 3), the method of operation can easily be understood by referring to the explanatory letters:

- A—Gas Valve.
- B—Water Valve and Regulator.
- C—Pilot Light.
- D—Automatic Gas Lock.
- E—Inside Water Supply Pipe.
- F—Double Boiler Flange.
- G—Bent Water Supply Pipe.
- H—Water Discharge Pipe from boiler to cylinder.
- I—Boiler.
- J—Boiler Bottom.
- K—Cylinder.
- L—Double Water Spray.
- M—Outside Copper Cylinder.
- N—Cover.
- O—Bunsen Burner Ring.
- P—Bunsen Burner Tubes.
- Q—Hot Water Discharge Spout.
- R—Perforated Base.

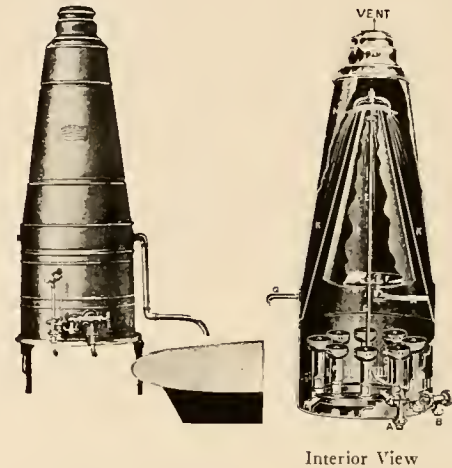


FIG. 3. INSTANTANEOUS WATER HEATER.
DOUGLAS NO. 2

OPERATION.

The operation is as follows: After lighting Pilot C, the gas supplying burner Ring O is turned on at Gas Cock A, which automatically turns on Supply Cock B, allowing the water to pass upward through Pipes G and E and into Double Spray L, then discharging in spray form on the outside of Cylinder K on the inside of Boiler I, the water from Boiler I discharging through Pipe H, and mixing with the water flowing over Cylinder K, and passing out at Spout Q.

The flame from burner Tubes P passes upward through the angular space between Copper Cylinders K and Boiler I, and in doing so, comes in direct contact with every part of the heating surface. The water can be regulated to any temperature by turning Water Wheel Regulator one way or the other.

Great care has been exercised in the construction, and we have been enabled to overcome all objections in using water containing lime, magnesia, etc. Should Spray L become clogged at any time, it can be removed by unscrewing, and thoroughly cleaned and replaced in a few moments. This is the only section of the heater that can become clogged, and with ordinary care in using, the heater will last an average lifetime without any repairs.

THE "FLUSH"
NO. 14.

A Heater in which the highest efficiency is attained by allowing the water and products of combustion to come in direct contact.

Recommended for the bath only. Material, workmanship and finish guaranteed of the same high standard as "Douglas" and "Acme" Heaters.

Will heat 3½ to 4 gallons per minute to a temperature of 100 degrees Fahrenheit.

The sectional view (Fig. 4) and the following directions will fully explain its operation:

- A—Water Valve and Regulator.
- B—Bent Water Supply Pipe.
- C—Water Spray.
- D—Pin Wheels.
- E—Cover.
- F—Umbrella.
- G—Cylinder Collar.
- H—Outside Copper Body.
- I—Hot Water Discharge Spout.
- K—Top Copper Pan.
- L—Gas Valve.
- M—Bunsen Gas Burner Ring.
- N—Bunsen Gas Burner Tubes.
- O—Pilot Light.
- P—Coupling.
- Q—Cylinder.
- R—Straight Water Supply Pipe.
- S—Perforated Base.

Ascending arrows indicate direction of heat. Descending arrows indicate direction of hot water.

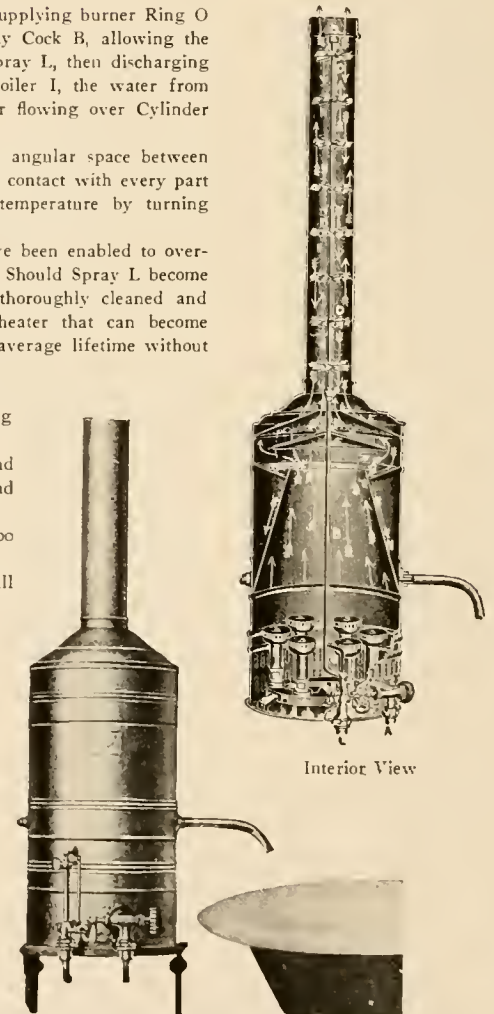


FIG. 4. INSTANTANEOUS WATER HEATER. THE
"FLUSH" NO. 14

After lighting pilot O, the gas supplying burner tubes N is turned on at valve L, which automatically turns on water valve A, allowing the water to pass upward through water supply pipes B and R to water spray C, then passing down upon pin wheels D and vent pipe. At the same time, a supply of water sprays upon umbrella F through a brass nipple tubing just above said umbrella.

The downward flow of water is equally distributed in thin layers and passes over every particle of surface of top copper pan K, umbrella F, cylinder collar G, and conical-shape cylinder Q, terminating through hot water spout I.

ACME
NO. 15.

The Acme No. 15 is recommended for bath and lavatory. It is operated the same as No. 14 and is constructed in the same manner, but without the additional heating surface of vent pipe and pin wheel appliances.

Water Spray, self-adjustable for high or low pressure, non-clogging, used on Nos. 14, 15, 18.

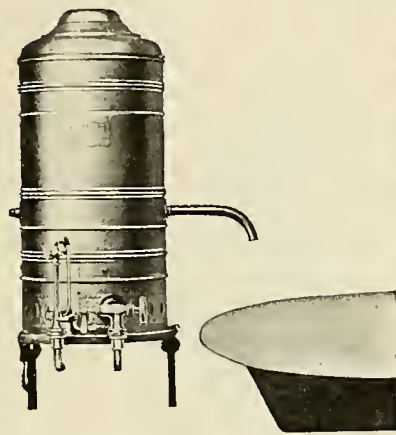
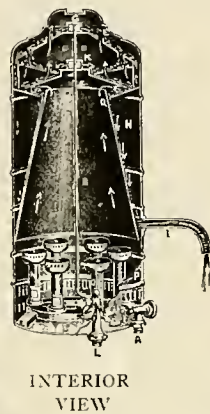


FIG. 5. INSTANTANEOUS WATER HEATER. ACME No. 15



INTERIOR VIEW

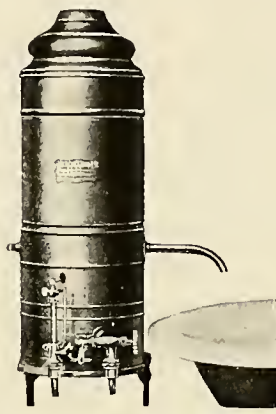


FIG. 6. INSTANTANEOUS WATER HEATER. ACME No. 12
For Bath and Domestic Purposes

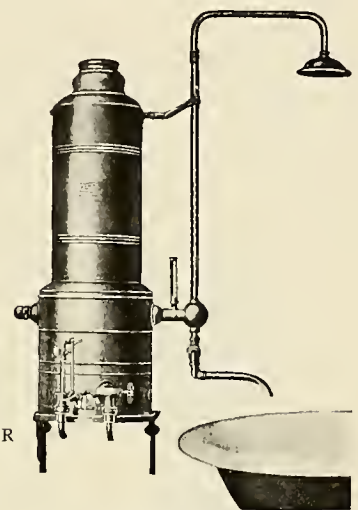


FIG. 7. INSTANTANEOUS WATER HEATER. ACME No. 9 D
For Supplying the Bath with Shower attachment

PRICES.

LIST PRICE F.O.B. CHICAGO

Every Heater includes cast-iron Combination Gas Burner, with nickel-plated Shelf and Brackets, Safety Valves, Unions, and one Bent Discharge Spout.

NAME	No.	Finish	Price	Gas supply from Meter	Heats 50° in	Gals. per. min. in Temperature	Height	Diameter	Construction	Shipping Weight	Remarks
Douglas	1	Nickel	\$24 50	1/2 inch		1 1/2 to 2	28 ins.	10 ins.	non-cont't	56 lbs.	
"	2	"	44 00	3/4 "		3 to 3 1/2	42 "	15 "	" "	108 "	
"	3	"	56 00	3/4 "		3 to 3 1/2	42 "	15 "	" "	118 "	15 gals. storage capacity
Acme	4	"	36 50	3/4 "		2 1/2 to 3	38 "	12 "	" "	78 "	
"	8	"	34 50	1/2 "		2 1/2 to 3	30 "	10 "	" "	75 "	
"	8C	"	39 50	1/2 "		2 1/2 to 3	30 "	10 "	" "	80 "	With Shower
"	9	"	51 50	3/4 "		3 to 3 1/2	38 "	12 "	" "	105 "	
"	9D	"	56 50	3/4 "		3 to 3 1/2	38 "	12 "	" "	110 "	With Shower
"	12	"	29 50	3/4 "		2 1/2 to 3	30 "	12 "	" "	70 "	
Flush	14	"	25 00	3/4 "		3 1/2 to 4	28 "	12 "	Contact	70 "	
Acme	15	"	21 50	3/4 "		3 to 3 1/2	28 "	12 "	" "	68 "	
"	18	"	20 00	1/2 "		2 1/2 to 3	28 "	11 "	" "	63 "	

It is absolutely necessary that each Heater should be connected with Vent Pipe terminating outside of the Bath Room in which the Heater is connected.

LAWSON MANUFACTURING COMPANY

Gas Water-Heaters, etc.

219-223 East Ninth Avenue

HOMESTEAD, PA.

TELEPHONES { P. & A. 166
 { BELL 153

PRODUCTS.

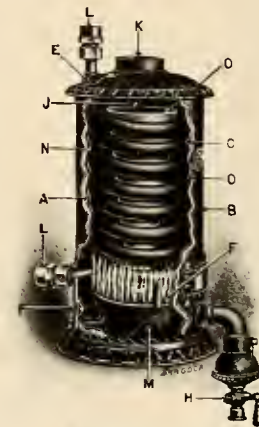
Manufacturers of THE LAWSON IMPROVED GAS WATER-HEATERS.

INSTRUCTIONS AS TO ORDERS.

In specifying heaters, state whether for natural or manufactured gas. Heaters will be furnished with Russia iron jacket unless otherwise ordered.

THE LAWSON GAS WATER HEATER.

This improved heater is constructed of a coil of best seamless drawn copper tubing; it provides ample heating surface and possesses many advantages over cast-iron devices, iron pipes, etc., being not only a better heat conductor, but reducing the number of water joints to a minimum. It can be connected readily to any Range Boiler without using special connections or fittings. Each heater is fitted with ground joint brass unions. The conical deflector compels the flame and heated air to circulate close to the coil and precludes down-draft. The jacket is lined with asbestos, which prevents the escape of heat into the surrounding air. Either Russia iron or polished brass jackets can be supplied. Our burners have drilled perforations and are extremely powerful. They are cast with coil supports which prevent coil from sagging.



LAWSON IMPROVED GAS WATER-HEATER

SIZES AND PRICES.

- No. 0. 8-inch diameter, 12½ inches high, ¾-inch tube. Usually connected to 30-gallon boiler.
Price with Russia Iron Jacket.....\$10.00
Price with Brass Jacket..... 12.00
- No. 1. 8-inch diameter, 15 inches high, ¾-inch tube. Usually connected to 30 or 32-gallon boiler.
Price with Russia Iron Jacket.....\$12.50
Price with Brass Jacket..... 15.00
- No. 1½. 8-inch diameter, 18 inches high, ¾-inch tube. Usually connected to 30 or 40-gallon boiler.
Price with Russia Iron Jacket.....\$15.00
Price with Brass Jacket..... 18.00

- No. 2. 8-inch diameter—
20 inches high, ¾-inch tube, for manufactured gas.
20 inches high, 1-inch tube, for natural gas.
Usually connected to 40 or 50-gallon boiler.
Price with Russia Iron Jacket.....\$20.00
Price with Brass Jacket..... 24.00
- No. 3. 8-inch diameter—
24 inches high, ¾-inch tube, for manufactured gas.
30 inches high, 1-inch tube, for natural gas.
Usually connected to 50 to 100 gallon boiler.
Price with Russia Iron Jacket.....\$30.00
Price with Brass Jacket..... 35.00



METHOD OF ATTACHING HEATER TO BOILER

FORM OF SPECIFICATION.

Architects who wish to guard themselves and clients, and to insure that no substitution can be made for the "Lawson" products, should incorporate the following words in their specifications: "Furnish and connect to ——— gallon boiler: one No. — Lawson Improved Gas Water-Heater."

MONARCH WATER HEATER COMPANY

PITTSBURGH, PA.

BRANCH OFFICES

PRODUCTS—Manufacturers of WATER HEATERS for furnishing HOT water for domestic supply, adapted for all sizes and kinds of buildings and using natural, artificial or gasoline gas, coal, coke or gasoline as fuel.

GENERAL INFORMATION—Our products naturally come under the head of “plumbing,” and wherever they are included in the plumbing specifications we co-operate with the plumber in every way to see that they are properly installed. We have a separate department devoted exclusively to the preparation of plans and specifications and co-operate with the architect to give him the best possible service for his clients.

GUARANTEE—All of our goods are guaranteed absolutely for a period of one year; and have our name upon them, cast in a prominent place. The “Lion’s head” is a guarantee of quality.

MONARCH AUTOMATIC INSTANTANEOUS HEATERS—These Heaters, for artificial, natural or gasoline gas, are designed to connect directly to house piping and to supply every faucet; the gas in Heater being automatically lighted and extinguished by the opening and closing of the faucet.

Monarch No. 3—Capacity 3 gallons per minute; suitable for a house with one bath, lavatory and kitchen service.

Artificial and Gasoline Gas\$75.00
Natural Gas 68.00

Monarch No. 4—Capacity 4 gallons per minute; suitable for a house with bath, lavatory, kitchen and laundry service.

Artificial and Gasoline Gas\$90.00
Natural Gas 85.00

Monarch No. 6—Capacity 6 gallons per minute; suitable for a house with two baths, two lavatories, kitchen and laundry.

Artificial and Gasoline Gas\$120.00
Natural Gas 115.00

Monarch No. 8—Capacity 8 gallons per minute; suitable for house with three baths, lavatories, kitchen and laundry, and pantry service.

Artificial and Gasoline Gas\$150.00
Natural Gas 140.00

Monarch No. 12—Capacity 12 gallons per minute; suitable for a very large residence, small hotel, apartment house, etc.

Natural Gas only\$200.00

Monarch Junior Instantaneous Heater designed to stand on a shelf to supply one or two fixtures only; suitable for bathroom, kitchen, barber shop, office, etc.

Three sizes, 1½, 2 and 3 gallons per minute.....\$20.00, \$25.00 and \$35.00

The Monarch Automatic Storage System for natural gas only, 80 to 500 gallons capacity, for large hotels, apartment houses, bathrooms, etc.

Prices on application

The Lion Storage Tank Heater for artificial gas; double copper coil, cast-iron jacket.

30 to 60 gallon tanks\$20.00

The Peerless Gasoline Tank Heater, copper coil, complete with gasoline burner and reservoir.

For 30 gallon range boiler\$20.00

The Economy Tank Heater for natural gas, copper coil, Russia iron jacket, in five sizes.

No. 0 For 20-30 gallon tank, very small family.....\$10.00

No. 1 For 30 gallon tank, average family..... 12.00

No. 1½ For 30-40 gallon tank, large family..... 15.00

No. 2 For 40-50 gallon tank, large family..... 20.00

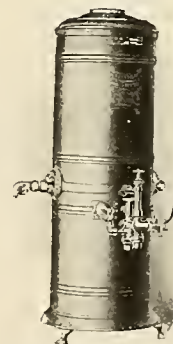
No. 3 For 50-60 gallon tank, very large family..... 30.00

The Moncoal Tank Heaters for coal or coke, with or without laundry top, for tanks from 40 to 1000 gallons capacity.

Prices on application



MONARCH
AUTOMATIC
INSTANTANEOUS
HEATER



MONARCH JUNIOR
INSTANTANEOUS HEATER
FOR BATHROOMS

THE PEERLESS KITCHEN BOILER COMPANY

35-37 Randolph Street,
CHICAGO, ILLINOIS

LONG DISTANCE TELEPHONE
CENTRAL, 1840

CABLE ADDRESS
"PEERLESS"

BRANCH OFFICES

5-11 BROADWAY
NEW YORK CITY, N. Y.

314 POST STREET
SAN FRANCISCO, CAL.

PRODUCTS. THE PEERLESS.

Manufacturers of the PEERLESS KITCHEN BOILER and HOT WATER HEATER. The Peerless Kitchen Boiler represents many exclusive features in the art of heating water, and is the result of ten years of experimenting devoted exclusively to water-heating apparatus. The simplicity and price of the Peerless Kitchen Boiler brings it within the reach of all. In outward appearance, size, pipe connections, etc., the Peerless Kitchen Boiler is not different from the common kitchen boiler exposed or closeted in every kitchen, with the exception that a single small gas pipe is connected to it, as is common to the gas shelf on the range.

The Peerless Kitchen Boiler is the only kitchen boiler using gas, gasoline, or oil fuel that can take the place of the ordinary boiler, and that will operate with or without the existing coal-stove or range.

The Peerless Kitchen Boiler, independent of all other means, is always ready at any time, day or night. When the water back or other means are too slow, sufficient water for a hot bath, or other purpose, can be heated in ten minutes.

ADAPTABILITY.

The Peerless can be used wherever hot water is wanted in houses, restaurants, clubs, saloons, hospitals, operating rooms, barber shops, factories, office buildings, etc.

ADVANTAGES.

As there are no complicated parts, there is nothing to get out of order. 98% of the heat goes into the water, which means no waste of radiation. There is no odor, dirt, soot, or noise. The water is clean enough to drink. No stove or water back is necessary, and hot water can be obtained throughout the house. The combustion being perfect no vent is necessary. It is strong enough to withstand any pressure of water up to 200 lbs. The Peerless is absolutely the only heater without dead water. The circulation of the water and heat is evenly proportioned and unobstructed.

GUARANTEE.

Every Peerless Boiler is fully guaranteed against faulty material and workmanship, and to be exactly as represented.

SIZES AND CAPACITIES.

We carry the following sizes in stock ready for immediate delivery to any part of the United States.

	Capacity	Length	Diameter	Weight.
No. 1,	18 Gal.	3 Ft.	12"	90 lbs.
No. 2,	30 "	5 "	12 "	125 "
No. 3,	40 "	5 "	14 "	140 "

INSTALLATION.

Boilers up to a capacity of 300 Gallons can be made to order. Our boilers can be installed by any contractor or local plumber as easily as the ordinary boiler. Full instructions and blue prints are sent with every order. If preferred, our local agents will look after the installation. A $\frac{3}{4}$ inch gas pipe is large enough for our boilers.

SPECIFICATIONS.

The words "One PEERLESS KITCHEN BOILER as made by The Peerless Kitchen Boiler Company of Chicago, Ill.," should be incorporated in all specifications, so as to prevent any possible substitution.

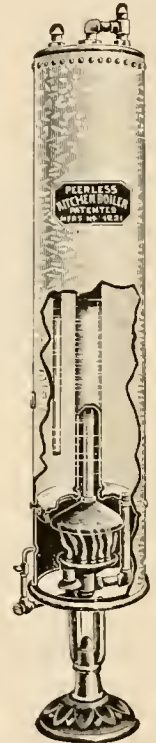


FIG. 1. THE PEERLESS
BOILER
Sectional View

PRESSED STEEL TANK COMPANY

CABLE ADDRESS, "SEAMLESS"
A. I. AND LIEBER CODES

MILWAUKEE, WIS.

PRODUCTS.

Manufacturers of SEAMLESS STEEL RANGE BOILERS and PRESSED and SEAMLESS DRAWN STEEL SPECIALTIES.

RANGE BOILERS.

"Ask the Architect," said a house-builder, "to specify hot-water range tanks which will not rust out in two years, leak in one year, or burst the first time a fire is built in the range!"

The Architect finds it very easy to meet the above requirements by specifying pressed steel range boilers, which are entirely free from every one of these objections.

SEAMLESS STEEL.

The advantage of seamless pressed steel lies in the absence of seams or joints, both longitudinal and curvilinear—the former being usually only above 56% to 74% of the strength of the unpunched plate. The pressed steel vessel has a strength of 100% of the plate owing to the fact that no metal has been removed by punching holes for rivets.

RANGE TANKS.

The particular advantage of cold pressed steel for range tanks lies not alone in the increase of strength, but in the longer life of the seamless tank, owing to the absence of corrosion which frequently takes place in the laps where sediment first collects, or where expansion and contraction find a weak place.

CONSTRUCTION.

In our tanks all the spuds and bottoms are inserted as shown in Fig. 2, and are hard-brazed in place. We test all boilers and tanks at 30 lbs. hydrostatic pressure and with air at 150 lbs. pressure. Test other boilers with 150 lbs. air pressure and watch for results.

SPECIFICATION.

To obtain the strongest, most durable and most attractive boiler or tank on the market, specify the "Seamless Steel Range Boiler" in accordance with the capacities, diameters and lengths given below.

PRICES.

Furnished on application.

SIZES.

Capacity in Gallons	Diameter in Inches	Length in Feet	Capacity in Gallons	Diameter in Inches	Length in Feet	Capacity in Gallons	Diameter in Inches	Length in Feet
18	12	3	30	12	5	40	14	5
21	12	3½	32	14	4	42	16	4
24	12	4	35			47	16	4½
24	14	3	36			52	16	5
27	12	4½	36	14	4½	66	18	5
28	14	3½				82	20	5

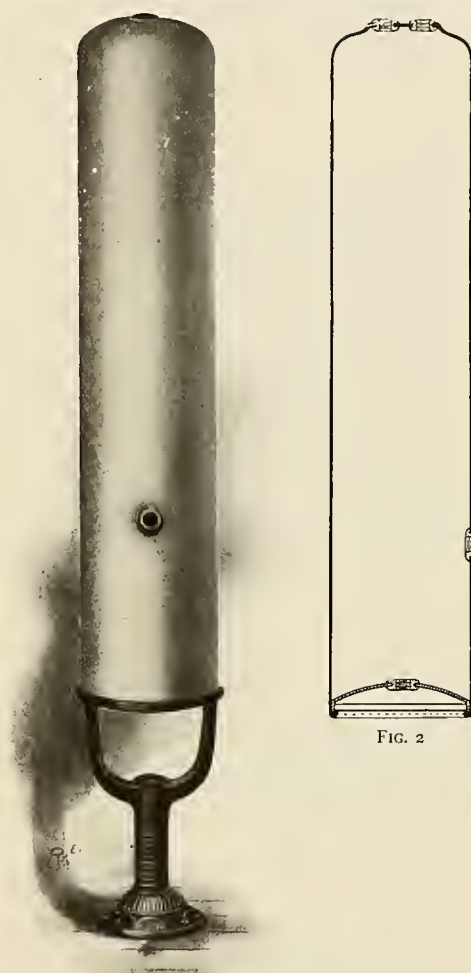


FIG. 1
SEAMLESS STEEL RANGE BOILER

FIG. 2

RAPID HEATER COMPANY

GRAND RAPIDS, MICH.

PRODUCTS—Manufacturers of "RAPID" HEATERS for HOT WATER and STEAM.

The "Rapid" Heater for Hot Water (Fig. 1)—A heater especially suited for heating homes, embodying every up-to-date principle in heating construction.

Special Features—No excess Cast Iron. Quickly assembled. Easily cared for. Fuel economizers.

GENERAL DESCRIPTION

Base and Grates—The base forms a spacious ash pit which contains our improved double shake grate entirely surrounded by fingered ring, same as a coal stove. The Clinker Door is placed at front of firepot, even with the grate.

The Firepot is constructed with thin waterways completely surrounding the fire, and a round grate burns all the fuel. The large corrugations at sides increase the fire surface, permitting the fuel to ignite at all points.

Intermediate Sections—We have two separate and distinct types of Intermediate Sections, interchangeable, water tube and cast iron. Each type embraces the most modern features of heater construction fully described as follows:

Water Tube Section—This is the most important section of our entire heater. It is composed of extra heavy strictly wrought iron pipe or center column into which are screwed the wrought iron water tubes by use of which we obtain the greatest efficiency of our heater. The water tubes and center column are both automatically threaded and tapped by special machinery, insuring uniform and positive joints. The connection between the center column, top and firepot sections of our heater is made with milled joints, and special made asbestos gaskets between, drawn together with one long iron bolt, practically making the center column a long nipple between the two cast iron sections. This feature alone will recommend our heaters to all practical heating engineers, ample provision being made for contraction and expansion, each water tube being fastened at *one end only*, and connecting bolt is *completely* surrounded by water. (See cut.)

Cast Section—In this section we have vertical and inclined thin waterways insuring *positive, easy, and "Rapid"* circulation, natural upward fire travel impinging against curved heating surfaces, giving the greatest amount of prime heating surfaces possible. The connection between top and firepot is made same as our water tube section, which is the simplest, most positive and durable connection known.

Correctly Proportioned—Every "Rapid" Heater is proportioned relative to its grate surface and also to its capacity. The waterways are increased in proportion to the increase of grate surface and its capacity, which cannot fail to give perfect circulation, insuring a maximum heat from a minimum amount of fuel.



FIG. 1. RAPID HOT WATER HEATER



FIG. 2. RAPID HOT WATER HEATER Showing Fire Travel



FIG. 3. RAPID HOT WATER HEATER Showing Water Circulation

The Rapid for Steam—In the Rapid Steam Heater we have a specially constructed heater for steam only, using a firepot having over double the water way capacity of our water heater, a large steam dome connected to firepot with large outside circulators, positively insures the easiest and most economical steam heater extant, and have no equal for fuel economy.

In General—The heavy sheet steel jacket lined with thick asbestos fire felt forms perfectly tight joints, preventing the escape of gases without use of cement or the radiating of heat in the cellar.

A clean-out door in the smoke bonnet, large doors in front and back of jacket, permit the thorough cleaning of every part of the heater without removing the fire or soiling the clothes.

Ease of Handling and Assembling—Rapid Heaters are shipped in four sections, allowing the largest heater to be handled by two persons through any door or stairway 26 inches wide, and may be assembled in 30 minutes by a fitter and helper.

Comparison of Prices—In comparing our prices note should be made of our conservative ratings. Many heaters having ratings 25 to 40 per cent. higher, will not do their work as easily or as economically as a "Rapid" Heater.

* *Rating*—In placing the ratings and capacities upon all Rapid Heaters, we have been very conservative and guarantee that each heater will carry the ratings specified, under normal conditions. These ratings are based upon all piping, mains, risers and returns, being figured as direct radiation in addition to the cast-iron radiation. In rating boilers as above, hot water heaters are based on the main temperature of water at 180° Fahrenheit and steam heaters of 2 pounds pressure at the heaters.

Guarantee—The Rapid Heaters are conservatively rated according to accepted standards and what actual use has proven to be correct, but on account of the varying conditions surrounding their installation over which we have no knowledge or control, we guarantee our heaters only to the extent of furnishing new parts for any found defective in manufacture.

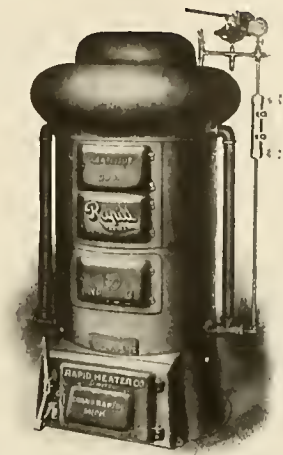


FIG. 4. RAPID STEAM HEATER

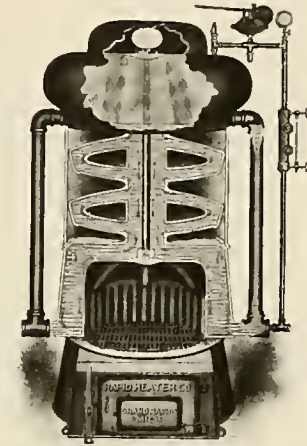


FIG. 5. RAPID STEAM HEATER
Cast Section Showing Waterways



FIG. 6. RAPID STEAM HEATER
Cast-Iron Section



FIG. 7. RAPID STEAM HEATER
Intermediate Cast Section Showing
Curved Heating Surfaces

DIMENSIONS, CAPACITIES AND LIST PRICES

Hot Water	With Water Tube Section				With Cast Iron Section			
	No. 1	No. 3	No. 5	No. 7	No. 9	No. 11	No. 13	No. 15
Outside diameter of heater.....	27"	31"	35"	39"	27"	31"	35"	39"
Diameter of grate.....	19"	23"	27"	31"	19"	23"	27"	31"
Diameter of smoke pipe.....	7"	8"	9"	10"	7"	8"	9"	10"
Number and size of outlets.....	3-2"	3-3"	3-3"	3-4"	3-2"	3-3"	3-3"	3-4"
Height to top of outlet bosses.....	3-2"	3-3"	3-3"	3-4"	3-2"	3-3"	3-3"	3-4"
Height to bottom smoke pipe.....	58"	59"	60"	62"	58"	59"	60"	62"
*Capacity direct radiation, sq. ft.....	53"	59"	60"	62"	53"	59"	60"	62"
Approximate shipping weights, lbs.....	550	800	1150	1600	550	800	1150	1600
List prices.....	800	1100	1300	1600	900	1250	1500	1800
	\$160	\$210	\$270	\$350	\$160	\$210	\$270	\$350
Steam	No. 2	No. 4	No. 6	No. 8	No. 10	No. 12	No. 14	No. 16
Outside diameter of heater.....	30"	34"	38"	42"	30"	34"	38"	42"
Diameter of grate.....	19"	23"	27"	31"	19"	23"	27"	31"
Diameter of smoke pipe.....	7"	8"	9"	10"	7"	8"	9"	10"
Number and size of outlets.....	2-2"	2-3"	2-3"	2-4"	2-2"	2-3"	2-3"	2-4"
Number and size of inlets.....	2-2"	1-3"	2-3"	1-4"	2-2"	1-3"	2-3"	1-4"
Height to water line.....	56"	58"	59"	60"	56"	58"	59"	60"
Height to top of outlet bosses.....	64"	65"	66"	68"	64"	65"	66"	68"
Height to bottom smoke pipe.....	64"	65"	66"	68"	64"	65"	66"	68"
*Capacity direct radiation, sq. ft.....	350	500	700	1000	350	500	700	1000
Approximate shipping weights, lbs.....	400	1250	1450	1750	1000	1350	1600	2000
List prices.....	\$175	\$230	\$290	\$370	\$175	\$230	\$290	\$370

* See "Ratings."

“Rapid” Bath Heater—Our *“Rapid”* Bath Heater is superseding all other methods of heating water for use in the bathroom; it is unquestionably the finest and most satisfactory heater upon the market to-day.

Fig. 8 shows its simplicity; there are only five parts, which are easy to take apart and which are easily put together. No trouble is experienced in reaching any part of the heater.

The burner used in this heater is the only one which is aerated, both inside and outside the flame, thus giving perfect combustion. It has no screens or sieves which clog up and cause endless trouble sooner or later. It requires no *“Vent Pipe”* because we use an entirely new principle.

The water is sprayed upward (Fig. 9) through spray 11, thus creating a forced draft and up-lifting all air pressure from the burner, at the same time atomizing the water and absorbing the escaping gases, which would otherwise be wasted. A Vent Pipe is subject to several objections, such as downdrafts and outside atmospheric conditions.

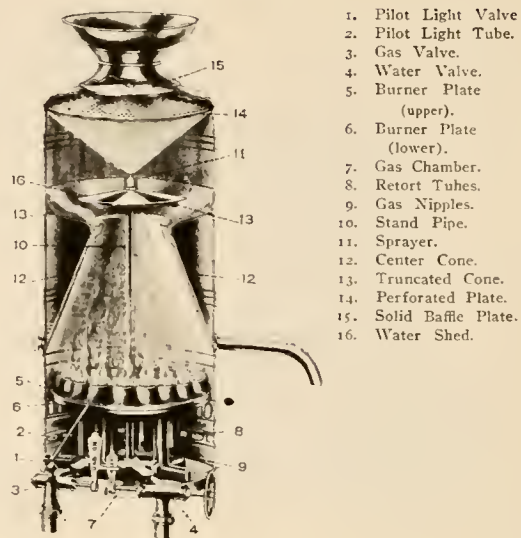


FIG. 9. RAPID BATH HEATER
Sectional View Showing Operation

1. Pilot Light Valve
2. Pilot Light Tube.
3. Gas Valve.
4. Water Valve.
5. Burner Plate (upper).
6. Burner Plate (lower).
7. Gas Chamber.
8. Retort Tubes.
9. Gas Nipples.
10. Stand Pipe.
11. Sprayer.
12. Center Cone.
13. Truncated Cone.
14. Perforated Plate.
15. Solid Baffle Plate.
16. Water Shed.

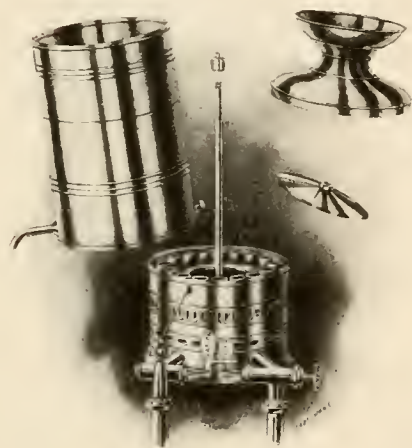


FIG. 8. RAPID BATH HEATER
Five parts only

The Rapid Bath Heater utilizes 92 heat units out of a possible 100, a feat never before accomplished in heater construction.

It will heat more water in less time and at a lower cost than any other heater will at any cost. Its reasonable first cost, simplicity in operation, small consumption of gas and general usefulness commend it for use in the well appointed bathroom, as the acme of comfort and luxury.

Rapid Bath Heater, Model C—Our Model *“C”* Heater represents the very latest construction in Instantaneous Heaters, having a capacity of three gallons of water per minute, raising the temperature 65 degrees. All parts are readily accessible and the heater can be installed with great rapidity. It is equipped with rapid self-cleaning sprayer, high pressure double stuffing box, water valve, new gas valves and one-piece water shed; it is so constructed otherwise to be almost indestructible. LIST PRICE, COMPLETE, \$27.50

Rapid Bath Heater Model B—Our Model *“B”* Heater is intended to be used where the water pressure is less than 10 lbs. to the square inch; or in other words where water is furnished from a tank under a low pressure. Special provision has been made by having a large central water way, thus insuring an ample flow of water under low pressure. In general appearance it does not differ from our Model *“C.”* We believe that this is the only heater on the market which will work satisfactorily under low or tank pressure. LIST PRICE, COMPLETE, \$30.00.

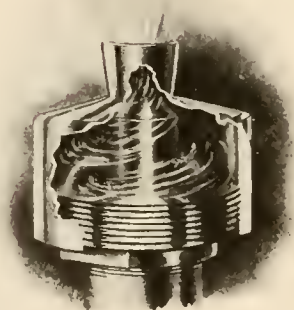


FIG. 10. RAPID BATH HEATER
The New Rapid Self Cleaning Spray

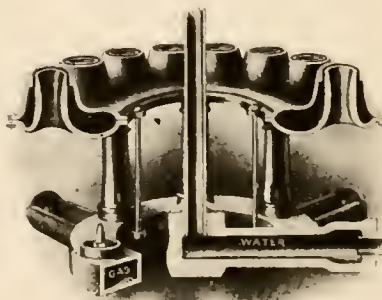


FIG. 11. RAPID BATH HEATER
Section of New Rapid Burner

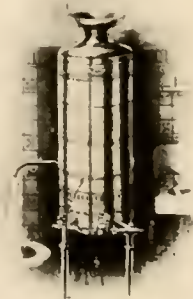


FIG. 12. RAPID BATH HEATER
Complete.

POWER SPECIALTY COMPANY

Foster Superheaters
Trinity Building
NEW YORK CITY, N. Y.

BRANCH OFFICES
BOSTON, MASS.
10 Post Office Square.
ST. LOUIS, MO.
1012 Chemical Bldg.

SAN FRANCISCO, CAL.
Cor. Fremont and Mission Streets.
DENVER, COLO.
244 Equitable Bldg.

CHICAGO, ILL.

The Rookery.

MILWAUKEE, WIS.

Railway Exchange Bldg.

THE FOSTER SUPERHEATER.

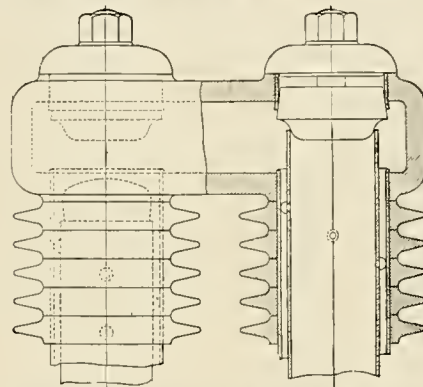
The advantages of *superheating* are numerous, among them being the production of higher temperature and greater volume, the decrease of friction, the saving of fuel, absence of moisture, saving in steam, less steam to condense, better vacuum, smaller piping, more heat units, properties of perfect gas, greater efficiency in engines and boilers, increased duty of pumping engines and the absence of drips from joints or stuffing boxes. SUPERHEATERS have various uses, but are particularly adapted to steam engines, steam turbines, evaporating tanks, drying rooms, heating systems, wood preserving, chemical works, glycerine making, industrial plants, cooking, asphalt reduction, long steam lines, etc.

THE FOSTER SUPERHEATER embodies the best results of years of study and experiment, devoted to the development of a superheater which would be free from the objections usually found in superheater construction.

DETAILS.

Reference to the accompanying illustration will show that the construction is simple and follows the most approved boiler construction for high pressure work, containing nothing but expanded joints and steel pressure parts while exposing only cast-iron to the hot gases.

The severity of the conditions to which the superheater tubes are exposed is much greater than that of the boiler tubes, since the latter, always full of water, never reach a temperature higher than that due to the pressure carried, whereas the superheater tubes have the benefit of no such cooling effect, even after steam is raised in the boiler and begins to circulate through the superheater. Much study has been given to this feature in order to protect the superheater from burning out, especially while steam is being raised. Some superheaters are flooded during this period. This is objectionable since it complicates the construction with numerous valves and provides possibility for scale forming in the superheater tubes and for the attendant to throw water directly into the steam main. As superheaters are generally made of "U" shaped tubes of small diameter, they cannot be cleaned and are liable to burn out.



DETAIL OF THE FOSTER SUPERHEATER

SPECIFICATIONS.

If the following specifications are adopted the purchaser may be sure of securing the best possible construction; at the same time these specifications do not restrict competition, as no patented features are included:

Each boiler shall be provided with a superheater of approved construction to be contained within the boiler setting, or a separately fired superheater, as the conditions may warrant. The superheater shall be entirely separate from the boiler tubes proper. The superheater shall be so designed as to add \quad fahr. to all of the steam generated by the boiler when operating at rated capacity. All material entering into the construction of the pressure parts of the superheater shall be of steel. The design of the superheater shall be such as to insure a uniform velocity of the steam through each superheater tube of not less than 4000 feet per minute when the boiler is operating at rating.

No flanged or threaded joints in the superheater or its connections inside the setting shall be allowed. It must be possible to readily examine and clean the interior of the superheating tubes throughout their entire length.

All headers and boxes shall be tested and made tight under hydrostatic pressure of 500 pounds before leaving the shop and after erection the entire superheater and connections shall be tested and made tight under a cold water pressure of 400 lbs.

The superheater tubes shall be of the best cold drawn seamless steel. A hand hole shall be provided opposite each end of each tube and closed by a cap of approved form.

Steam connections from boilers to superheaters shall be made from above the water line in the boilers and there shall be no connections from below the water line to the superheater. No valves shall be allowed in the connections between boilers and superheaters.

The superheater tubes shall be of such construction as to materially modify the effect on the steam temperature of the sudden fluctuations in the temperature of the gases.

The construction must provide an external protection to the superheating tubes by means of a covering of some material which does not readily become overheated or damaged by a high temperature. This covering material must successfully resist the action of the sulphur and other injurious constituents of the hot gases.

The attached type of the Foster Superheater can be used on all types of boilers; we also furnish them to be erected in independent setting, to be fired by coal, gas, oil or any other fuel.

ESTIMATES.

Preliminary or exact drawings and estimates will be gladly furnished upon request.

HEINE SAFETY BOILER COMPANY

421 Olive Street
ST. LOUIS, MO.

BRANCH OFFICES

WELD BUILDING
Boston, Mass.
PARK BUILDING
Pittsburgh, Pa.

11 BROADWAY
New York City
MONADNOCK BUILDING
Chicago, Ill.

PENNSYLVANIA BUILDING
Philadelphia, Pa.
GODCHAUX BUILDING
New Orleans, La.

REPRESENTATIVES

STEARNS-ROGERS MFG. CO.
Denver, Col.

H. W. GRABER MACH'Y CO.
Dallas, Texas

ALEXANDER & GARSED
Charlotte, N. C.

VAN VOORHIS & SANFORD
Monterey, Mexico

RISDON IRON & LOCOMOTIVE WORKS
San Francisco, Cal.

FRANK R. PERROT
Perth, W. Australia

CANADIAN HEINE SAFETY BOILER CO.
Toronto, Ontario

SHOPS

PHOENIXVILLE, Pennsylvania

ST. LOUIS, Missouri

PRODUCTS. Exclusive manufacturers of THE HEINE WATER TUBE BOILERS.

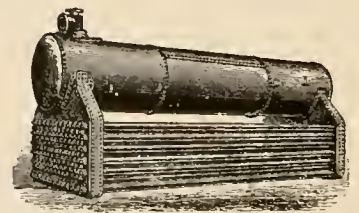
FACILITIES. Two large shops, one at St. Louis and the other at Phoenixville, Pa., enable us to expeditiously execute large and small orders.

ADAPTABILITY. Heine boilers are adapted for all purposes requiring high pressure steam, and are designed to meet the inspection requirements in every part of the country.

INSTRUCTIONS AS TO ORDERS. Boilers of all sizes are carried in stock, which enables us to fill orders of from 75 to 1,000 H. P. in four to six weeks.

THE HEINE WATER TUBE BOILERS.

These are built entirely of flange steel plates and the best of tubes, no cast-iron whatever being used for any parts under pressure. Pressed steel flanges, hand-hole and man-hole plates, etc., are used. The general construction is shown by the illustration. This design, together with the method of setting, gives a boiler which is economical in the use of fuel, safe and durable, economical in space occupied, and accessible for both exterior and interior cleaning.



HEINE WATER TUBE BOILER

SIZES, CAPACITIES AND PRICES.

Sizes run from 75 to 500 H. P., and require a minimum head room when set of from 11 to 17 feet. The same capacity of boiler can be furnished in several different sizes to suit conditions.

The widely varying conditions under which boilers have to be installed make it impossible to publish a price list, or dimensions, but full information on all questions will be cheerfully furnished on application.

HERBERT BOILER COMPANY

240-252 Root Street
(Corner La Salle Street)
CHICAGO, ILL.

TELEPHONE 734 YARDS.

PRODUCTS.

Manufacturers of BOILERS of every description, among them being HERBERT MAGAZINE and DROP TUBE BOILERS, HERBERT SMOKELESS BOILERS, HERBERT DETACHABLE FIRE BOX BOILER, and HERBERT GARBAGE BURNER and HOT WATER HEATER.

ORDERS AND GUARANTEES.

Orders are shipped direct from the factory in Chicago. We manufacture all boilers in our own factory, and use nothing but the best material and workmanship, and we are responsible to the purchaser of any of our large line of boilers, for defects in workmanship and material.

ADVANTAGES.

The ease by which the Herbert Detached Fire Box Boiler can be handled and set in place, as the two parts are shipped separately, and occupy a much less space, to accomplish the same work, besides passing through a much smaller opening.

The Herbert Patent Smokeless Boiler entirely consumes all smoke and gases driven off from the top of the green fire (see Fig. 2).

The Herbert Patent Garbage Burner and Hot Water Heater entirely destroys (with the exception of glass and metal) all refuse, at the same time cutting the cost of fuel for water heating purposes in half. (See Fig. 3.)

Herbert's Patent Base Burning Magazine Boiler is the only one that will not burn out; the magazine being entirely surrounded by water. (See Fig. 4.)

HERBERT DETACHABLE FIRE BOX BOILER.

This boiler with detachable fire box has all the advantages of the tubular boiler and of the locomotive fire box, obviating the weak points of each.

It dispenses with the fire brick of the tubular boiler and increases its circulation and capacity. The flues are easily and thoroughly cleaned; which is impossible with the ordinary fire box boiler.

SPECIAL SIZES.

Estimates on special sizes of boilers will be submitted on request.

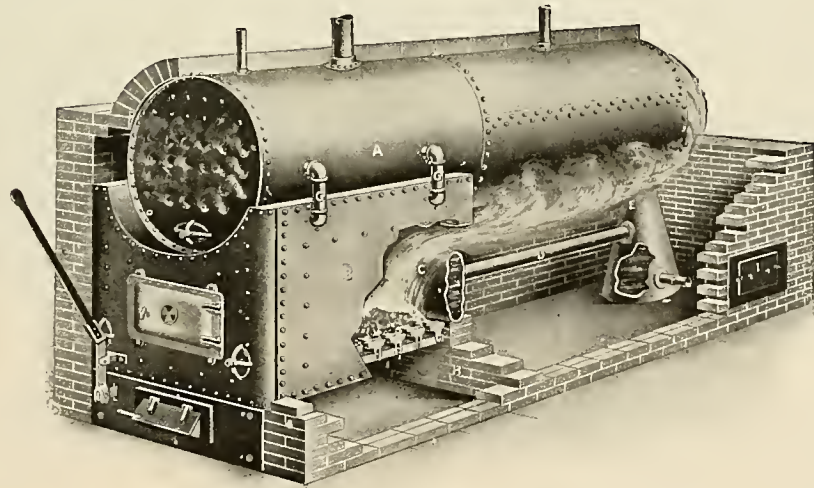


FIG. 1. HERBERT DETACHABLE FIRE BOX BOILER

SPECIFICATIONS.

When specifying Herbert Patent Boilers, care should be taken to state number, size and capacity. Detail blue-prints showing construction and setting, furnished on request.

The fire travels the entire length of the underside and back head of the boiler before entering the flues, whereas in the ordinary fire box boiler, the gases and smoke enter the small flues before they are entirely consumed and all further combustion ceases.

As the detached fire box and tubular boiler are shipped separately, it is possible to erect this boiler without cutting expensive openings in walls, or, in case of repairs to the fire box, it is cheaper and easier to obtain an entire new fire box, than to patch the old one on the spot, as is necessary in the ordinary type of fire box boiler.

SIZES AND PRICES.

Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Diameter, in.	30	30	36	36	36	42	42	42	48	48	54	54	60	60
Length, ft.	8	10	10	12	14	12	14	16	14	16	14	16	14	16
Size of fire box, in.	30x24	30x30	36x36	36x42	36x48	42x36	42x42	42x48	48x48	48x54	54x48	54x54	60x48	60x54
Size of flues, in.	2½	2½	3	3	3½	3½	3½	3½	3½	3½	3½	3½	4	4
Number of flues	19	19	26	26	22	26	26	26	32	32	48	48	48	48
Tapping	3-2½	3½-2½	4-3	4-3	5-4	5-4	6-5	6-5	6-5	7-6	7-6	7-6	7-6	7-6
Rating, steam, sq. ft.	1300	1800	2300	2800	3200	3500	3800	4300	4500	5000	5600	6300	6800	7300
Size of smoke pipe, in.	14	16	16	16	16	18	18	18	22	22	24	24	24	24
Price complete	\$350	\$400	\$450	\$500	\$550	\$600	\$650	\$700	\$750	\$850	\$900	\$1000	\$1100	\$1200
Height brick work, in.	65	65	72	72	72	79	79	79	85	85	93	93	101	101
" to top of boiler, in.	57	57	64	64	64	71	71	71	77	77	85	85	91	91
" water line, in.	51	51	56	56	56	61	61	61	66	66	68	68	72	72
Depth ash pit, in.	14	14	16	16	16	16	16	17	17	17	17	17	17	17
Length brick work, ft.	10' 2"	12' 2"	12' 4"	14' 4"	16' 4"	14' 6"	16' 6"	18' 6"	17'	19'	17'	19'	17'	19'

These prices include full set of trimmings and castings, as follows:

One steam gauge; one water column with three gauge-cocks; one pop safety-valve; one automatic draft regulator. One hoe and poker furnished with each boiler.

Every boiler fitted with safety fusible plug in front head.

Ash pit front provided with special lift door for automatic regulator.

Castings consist of ash pit front, fire door and frame, cast-iron front with double doors over flues, one large soot door and frame, and shaking grates.

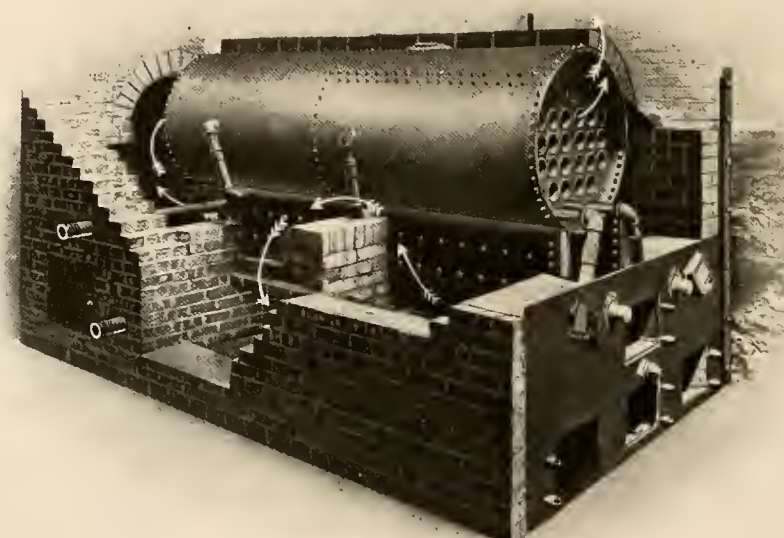


FIG. 2. HERBERT PATENT SMOKELESS BOILER

All smoke and gases passing off from the top of the green fire have to pass up through the center grate, which is hottest part of the fire, and are entirely consumed. This enables us to give our guarantee of entire absence of smoke with the resultant great economy of fuel. Blue prints will be submitted to interested engineers and architects.

HERBERT PATENT SMOKELESS BOILER. SIZES AND PRICES.

Length of boiler, feet	10	12	12	14	12	14	14	16
Diam. of boiler, inches	36	42	48	48	54	54	60	60
Height of boiler, inches	78	82	88	88	94	94	100	100
Size of flues, inches	3½	3½	3½	3½	4	4	4	4
Number of flues	20	30	38	38	38	38	46	46
Radiation, square feet	3,000	3,500	4,000	5,000	6,000	7,000	8,000	10,000
Price	\$700	\$800	\$900	\$1,000	\$1,100	\$1,200	\$1,300	\$1,400

We furnish all sizes of Tubular Boilers with this attachment. For boilers of larger size, prices will be quoted on application.

HERBERT GARBAGE BURNER AND WATER HEATER.

The garbage burner entirely destroys the refuse from flat buildings, hotels, hospitals, etc., without odor; burning everything wet or dry. The fuel value of the garbage and waste destroyed cuts fuel bills of water heater in half in addition to its sanitary value. The garbage is thrown in the upper door on to the hollow cast-iron water tube grate suspended over the coal fire. The heat of the fire first dries and then burns the garbage; nothing but tin cans and bottles being left to be raked out of the door.

Nos. 1 to 4 are portable.
Nos. 5 to 8 brick set.

SIZES AND PRICES.

No.	Floor Space Inches	Total Height Inches	Capacity Flats	Size Grate Inches	Size of Openings Inches	Capacity Gallons Per Hour	Price
1	20x30	41	4 to 8	18x24	2	400 to 600	\$155.00
2	20x36	41	8 to 12	18x24	2	600 to 800	275.00
3	26x30	51	12 to 18	24x24	2½	800 to 1000	335.00
4	26x36	51	18 to 24	24x24	2½	1000 to 1200	375.00
5	42x66	54	24 to 35	24x30	3	1500 to 1800	425.00
6	42x72	54	35 to 50	24x30	3	1800 to 2500	460.00
7	48x84	54	50 to 75	30x30	4	2500 to 3200	535.00
8	48x90	54	75 to 110	30x30	4	3200 to 4000	575.00

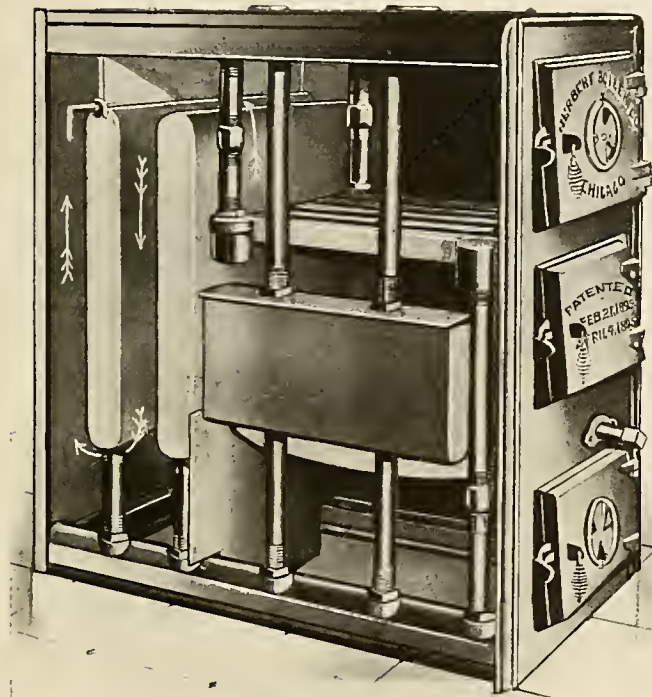


FIG. 3.

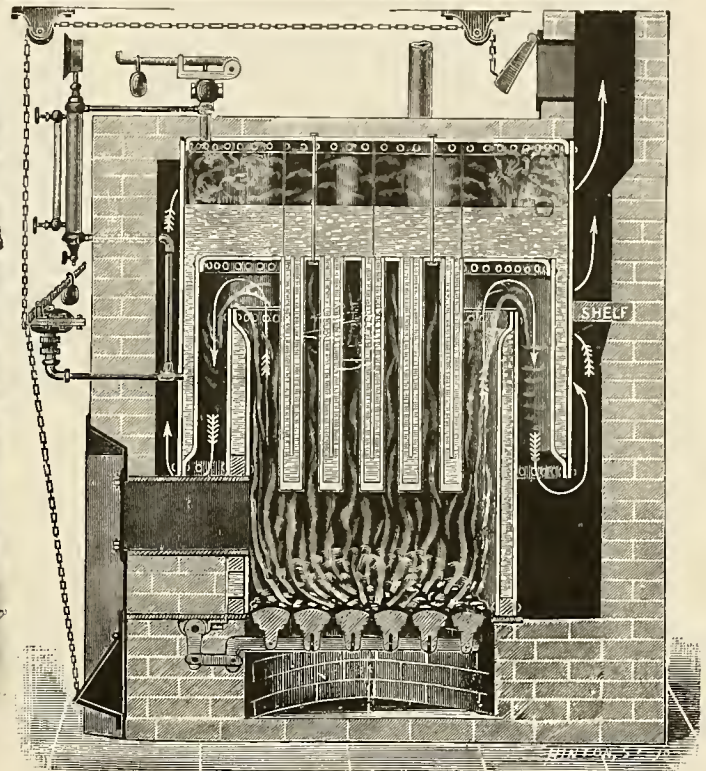


FIG. 4.

HERBERT GARBAGE BURNER AND HOT WATER HEATER

SECTIONAL VIEW OF HERBERT PATENT BASE-BURNING BOILER

HERBERT PATENT BASE-BURNING MAGAZINE BOILER.

HERBERT PATENT BASE-BURNING MAGAZINE BOILERS for Steam or Water; Hard or Soft Coal—This boiler is in use in all of the Middle and Western States since 1884. It is as popular to-day as when first introduced. For economy and efficiency it has no equal. We have hundreds of testimonials certifying to all we claim for it.

SIZES AND PRICES.

Number of Boilers	Diameter of Shell In.	Height of Boiler In.	Diameter Fire Pot In.	Depth of Ash Pit In.	Heating Surface Ft.	Radiating Surface Boiler will Supply Ft.	Shipping Weight of Boiler Lbs.	Total Height of Brick Work In.	Number of Brick	Size of Flue In.	Price with all Castings Necessary for Masonry
1	34	50	20	14	90	400	1,400	65	1,200	9x12	\$200.00
2	38	50	24	14	106	700	1,700	65	1,500	9x12	250.00
3	44	50	30	14	145	1,000	2,300	65	1,800	9x12	350.00
4	52	60	36	17	175	1,200	2,800	78	2,000	12x16	450.00
5	58	65	44	17	230	1,800	3,800	78	2,500	12x16	500.00
6	62	65	48	17	260	2,500	4,000	78	3,000	12x16	550.00

All our Boilers are based on actual radiation

KEWANEE BOILER COMPANY

MAIN OFFICE AND FACTORY
KEWANEE, ILLINOIS

BRANCHES

CHICAGO, ILL.

ST. LOUIS, MO.

PRODUCTS—Manufacturers of Wrought Iron and Steel Boilers including the “HAXTUN,” “KEWANEE” and “CENTURY”; also TANKS for all purposes and Cast Iron RADIATORS for Steam and Water Heating.

FACILITIES—Our factory covers fifteen acres and is equipped with every modern appliance.

THE “HAXTUN” BOILER—The Haxtun Boiler (Figs. 1 and 2) is made of “Old-Fashioned Charcoal Iron,” and is adapted for either steam or hot water heating. We make “Hard Coal Boilers” and “Soft Coal Boilers.” The former will burn successfully anthracite, semi-anthracite, anthracite pea coal or screenings, and the best qualities of bituminous coal, such as Pocahontas or Indian block. They are not intended for common bituminous coal. The “Soft Coal Boilers” will burn successfully any kind of coal, even soft coal screenings, but are not as economical with hard coal as the “Hard Coal Boilers”

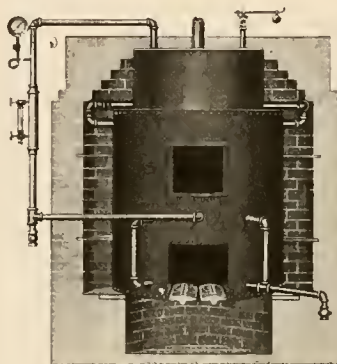


FIG. 1. “HAXTUN” BOILER
Exterior Construction

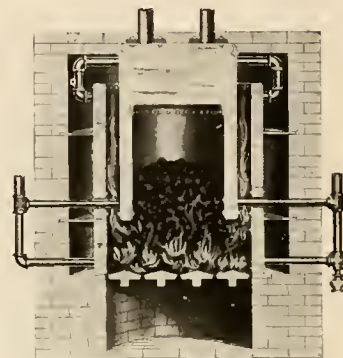


FIG. 2. “HAXTUN” BOILER
Interior Construction

Fig. 2 shows the interior construction of the “Haxtun” Boiler; Fig. 1, the exterior with connections and trimmings for steam; all vertical self-cleaning fire-surface, no small tubes, no narrow down-draft flues or packed joints. It is very economical in the use of hard or soft coal, and can be used as a magazine or surface burner.

DIMENSIONS, SIZES AND CAPACITIES OF THE “HAXTUN” BOILER

Number.....	Steam Boiler for Soft Coal.								Steam Boiler for Hard Coal.							
	4	5	6	9	9 1/2	10	12	13	4 1/2	5 1/2	6 1/2	9 1/2	9 1/2	10 1/2	12 1/2	13 1/2
Diameter of Firepot..... inches	22	26	30	39	44	48	58	58	22	26	30	39	44	48	58	58
Outside Diameter..... inches	27	31	35	44	49	53	61	63	27	31	35	44	49	53	61	63
Height Water Line from Floor..... inches	63	63	63	63	58	58	58	64	63	63	63	63	58	58	58	64
Height Brickwork..... inches	74	74	74	74	74	74	74	80	74	74	74	74	74	74	74	80
Outside Size Brickwork..... inches	58 x 53	62 x 57	66 x 61	73 x 68	80 x 76	85 x 80	94 x 87	94 x 87	58 x 53	62 x 57	66 x 61	73 x 68	80 x 76	85 x 80	94 x 87	94 x 87
Size Chimney..... inches	8 x 10	8 x 10	8 x 12	9 x 12	10 x 12	10 x 12	12 x 12	12 x 12	8 x 10	8 x 10	8 x 12	9 x 12	10 x 12	10 x 12	12 x 12	12 x 12
Number Brick Required.....	2000	2300	2500	3000	3500	4000	5000	5500	2000	2300	2500	3000	3500	4000	5000	5500
Capacity, square feet, direct radiation.....	425	650	850	1350	1700	2200	2800	3200	650	850	1050	1500	1900	2500	3100	3500

Number..	Hot Water Boiler for Soft Coal.								Hot Water Boiler for Hard Coal.							
	4	5	6	9	9 1/2	10	12	13	4 1/2	5 1/2	6 1/2	9 1/2	9 1/2	10 1/2	12 1/2	13 1/2
Diameter of Firepot..... inches	22	26	30	39	44	48	58	58	22	26	30	39	44	48	58	58
Outside Diameter..... inches	27	31	35	44	49	53	61	63	27	31	35	44	49	53	61	63
Height Brickwork..... inches	70	70	70	70	72	72	72	78	70	70	70	70	72	72	72	78
Outside Size Brickwork..... inches	58 x 53	62 x 57	66 x 61	73 x 68	80 x 76	85 x 80	94 x 87	94 x 87	58 x 53	62 x 57	66 x 61	73 x 68	80 x 76	85 x 80	94 x 87	94 x 87
Size Chimney..... inches	8 x 10	8 x 10	8 x 12	9 x 12	10 x 12	10 x 12	12 x 12	12 x 12	8 x 10	8 x 10	8 x 12	9 x 12	10 x 12	10 x 12	12 x 12	12 x 12
Number Brick Required.....	2000	2300	2500	3000	3500	4000	5000	5500	2000	2300	2500	3000	3500	4000	5000	5500
Capacity, square feet, direct radiation.....	700	1075	1400	2200	2800	3600	4600	5300	1075	1400	1750	2500	3150	4100	5100	5800

THE "KEWANEE" FIRE-BOX BOILER (Fig. 3.)—This is one of the best Boilers for steam or hot water heating. The complete Boiler includes fire door and frame, ash pit front, with large ash door and small special lift draft door for automatic draft regulator, large soot door and frame, and Century rocking grate-bars. For fine pea coal, the Aetna pattern grate-bars are preferably recommended, and will be provided instead of the Century grate-bars when specified. A full set of steam trimmings are furnished with each steam boiler.

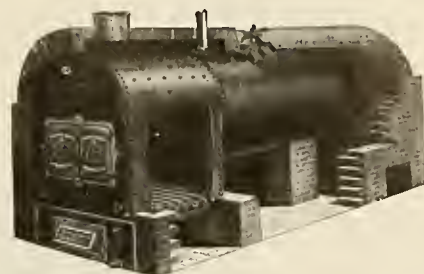


FIG. 3. "KEWANEE" FIRE BOX BOILER

The "Kewanee" Fire-Box Boilers are built for brick setting, without domes. All boilers over thirty inches in diameter are equipped with manholes and double fire doors.

DIMENSIONS, SIZES AND NET CAPACITIES, "KEWANEE" FIRE-BOX BOILER

Number.....	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Diameter of Shell..Inches	30	30	30	36	36	36	42	42	42	48	48	48	54	54
Length over all.....Feet	6½	7½	8½	7½	9	10½	8½	10	11½	10½	12	13½	14	16½
Size of Grate.....Inches	24 x 26	24 x 32	24 x 38	30 x 32	30 x 38	30 x 44	36 x 38	36 x 44	36 x 50	42 x 44	42 x 50	42 x 56	48 x 56	48 x 62
Size of Smoke Pipe.. "	16	16	16	18	18	18	20	20	20	22	22	22	24	24
Capacity Steam Direct Sq.ft	900	1000	1200	1400	1700	2100	2200	2500	2900	3200	3800	4400	4900	5800
Capacity Water Direct "	1400	1600	1900	2200	2700	3400	3500	4000	4600	5100	6100	7000	7800	9300

THE "CENTURY" PORTABLE RETURN TUBULAR BOILER (Fig. 4.)—These Boilers are for steam or hot water heating, equipped for either hard or soft coal use. They are made of the best flange steel and tested to 100 lbs. per square inch. All parts are hydraulic riveted with beaded and expanded tubes and fusible plug. The fire-box is made of cast iron lined with one inch of asbestos cement and one course of fire brick. They are arranged with the Century rocking grates and extra heavy rear cast iron head.

DIMENSIONS, SIZES AND CAPACITIES, "CENTURY" PORTABLE RETURN TUBULAR BOILER

Number	Diameter Boiler, Inches	Total Height, Inches	Length, Inches	Dimensions, Grate	Smoke Opening	Number Fire Brick	Steam Capacity, Radiation Sq. Ft.	Water Capacity, Radiation Sq. Ft.
12	37	74½	102	30 x 30	10 x 16	160	1200	2000
15	37	74½	114	30 x 36	10 x 16	175	1500	2500
18	37	74½	126	30 x 42	10 x 16	190	1800	3000
22	48	79½	114	42 x 36	10 x 21	235	2200	3600
26	48	79½	132	42 x 42	10 x 21	265	2600	4300
30	48	79½	150	42 x 48	10 x 21	295	3000	5000
36	48	79½	168	42 x 54	10 x 21	325	3600	6000
45	48	79½	192	42 x 60	12 x 21	355	4500	7500



FIG. 4. "CENTURY" RETURN TUBULAR BOILER

"TABASCO" WATER HEATERS AND TANKS (Fig. 5)—These are used for Flats, Laundries, Residences, Hotels, Conservatories, Greenhouses, Bathhouses, Baptisteries; in short, wherever hot water supply is needed.

DIMENSIONS, SIZES AND CAPACITIES, "TABASCO" WATER HEATERS AND TANKS



FIG. 5. "TABASCO" WATER HEATER

Heating Capacity, Gallons per Hour	Total Height, Inches	Heater Number
130	52	17
150	57	18
200	52	21
250	59	22
300	65	23
350	71	24
300	59	25
350	65	26
400	71	27
500	65	30
600	75	31
700	81	32

"EXTRA HEAVY" TABASCO HEATERS

Number	150	200	300
Capacity, gallons per hour	150	200	300
Total Height	5' 3"	4' 10"	5' 4"
Diameter Fire Pot	12"	16"	20"

STEEL STORAGE TANKS

Capacity, Gallons	Diameter, Inches	Length, Feet
66	18	5
85	20	5
100	22	5
120	24	5
145	24	6
170	24	7
180	30	5
215	30	6
250	30	7
290	30	8
315	36	6
365	36	7
420	36	8
525	36	10
430	42	6
575	42	8
720	42	10
865	42	12
1000	42	14

HIGH PRESSURE HORIZONTAL TUBULAR BOILERS (Fig. 6)—These are regularly made for 125 lbs. working pressure. They are constructed of the best open hearth Firebox Steel. We also make Tubular Boilers to specifications.



FIG. 6. HIGH PRESSURE HORIZONTAL TUBULAR BOILER

"EXTRA HEAVY"

265	36	5
360	42	5
470	48	5

DIMENSIONS, SIZES AND CAPACITIES, HIGH PRESSURE HORIZONTAL TUBULAR BOILERS

Diameter	inches	48	48	54	54	60	60	60	66	66	72	72
Length of Tubes	feet	14	16	14	16	14	16	15	16	18	16	18
Thickness of shell	inch	3/16	3/16	3/16	3/16	3/8	3/8	3/8	3/8	3/8	7/16	7/16
Thickness of Heads	inch	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Diameter of Stack	inches	24	24	26	26	28	28	28	32	32	36	36
Number 3 1/2 inch Tubes		28	28	44	44	54	54	66	66	66	86	86
Nominal H. P. 3 1/2 inch Tubes		45	50	55	65	70	85	100	100	100	125	125
Capacity, square feet, Radiation		4500	5000	5600	6400	6400	7200	9000	9000	9000	11500	11500
Number 4 inch Tubes		24	24	36	36	44	44	54	54	54	70	70
Nominal H. P. 4 inch Tubes		50	55	60	70	70	85	100	100	115	125	150
Capacity, square feet, Radiation		4000	4700	5000	5600	6400	7200	8000	8500	9600	10500	12000

THE MURRAY IRON WORKS COMPANY

INCORPORATED FEBRUARY 1, 1870

BURLINGTON, IOWA.

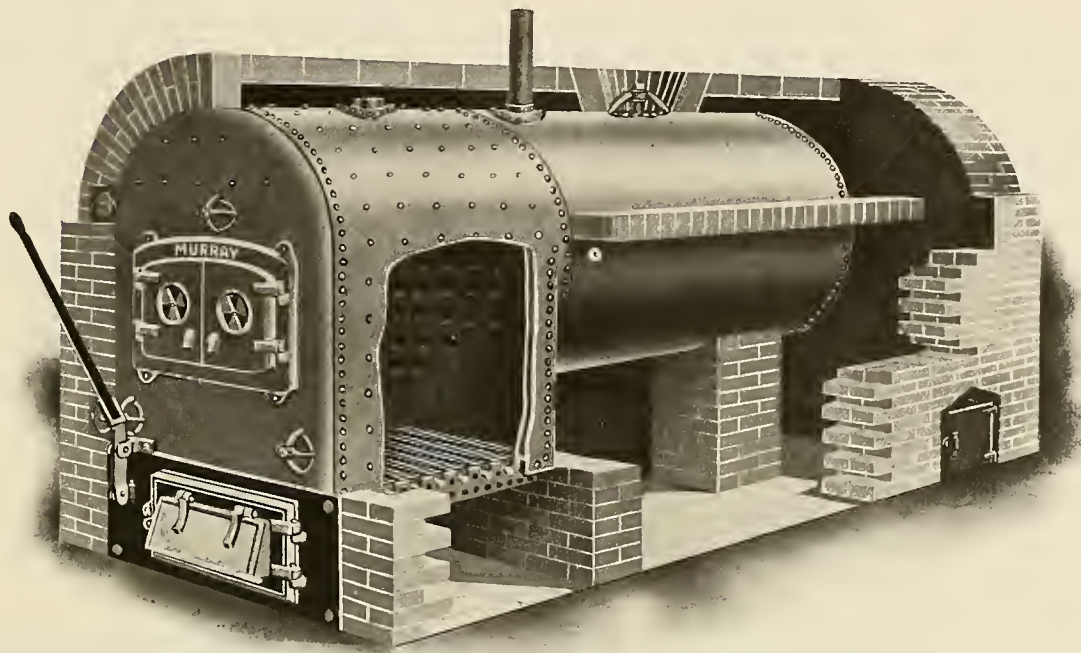
PRODUCTS.

The MURRAY IMPROVED FIRE BOX BOILERS for Steam Heating.

FACILITIES AND TERRITORY.

Our location in the middle of the United States enables us to ship promptly to the North, South, East and West. We always carry a full line in stock which obviates all unnecessary delays in filling orders.

THE MURRAY IMPROVED FIRE BOX BOILER.



THE MURRAY IMPROVED FIRE BOX BOILER

These Boilers are for brick settings and are made without Domes. Manholes and double fire doors are supplied in all boilers over 30 inches in diameter.

SUPERIORITY.

The Murray Improved Fire Box Boilers for steam heating, are the standard article for houses, flats and shops. They are recognized everywhere as being the best.

NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Extreme Height of Brick-work.....	65"	65"	65"	72"	72"	72"	79"	79"	79"	85"	85"	85"	93"	93"
Height to Top of Boiler.....	57"	57"	57"	64"	64"	64"	71"	71"	71"	77"	77"	77"	85"	85"
" Water Line.....	51"	51"	51"	56"	56"	56"	61"	61"	61"	66"	66"	66"	68"	68"
" of Ash Pit Front.....	17"	17"	17"	17"	17"	17"	17"	17"	17"	17"	17"	17"	17"	17"
Extreme Length of Brick-work.....	8'8"	9'8"	10'8"	9'8"	11'2"	12'8"	10'8"	12'2"	13'8"	13'4"	14'10"	16'4"	16'10"	19'4"
" Width " ".....	54"	54"	54"	60"	60"	60"	66"	66"	66"	80"	80"	80"	86"	86"
Radiation Will Carry, Direct.....	850	950	1100	1200	1500	1800	1800	2200	2600	2800	3300	3800	4500	5800
Price of Boiler and Castings as Above..	\$220 00	\$233 00	\$243 00	\$277 00	\$310 00	\$344 00	\$364 00	\$401 00	\$449 00	\$498 00	\$540 00	\$579 00	\$689 00	\$739 00

DISCOUNT.

The prices quoted above are subject to a trade discount, which will be furnished on application.

MURPHY IRON WORKS

Murphy Automatic Smokeless Furnace

OFFICE AND WORKS

DETROIT, MICH.

SALES AGENCIES

NEW YORK CITY, N. Y.
CHICAGO, ILL.
PHILADELPHIA, PA.

PITTSBURGH, PA.
CLEVELAND, O.
CINCINNATI, O.

ST. PAUL, MINN.
BOSTON, MASS.
LONDON, ENG.

CANADIAN OFFICE, TORONTO, CANADA

CANADIAN WORKS, WALKERVILLE, ONTARIO

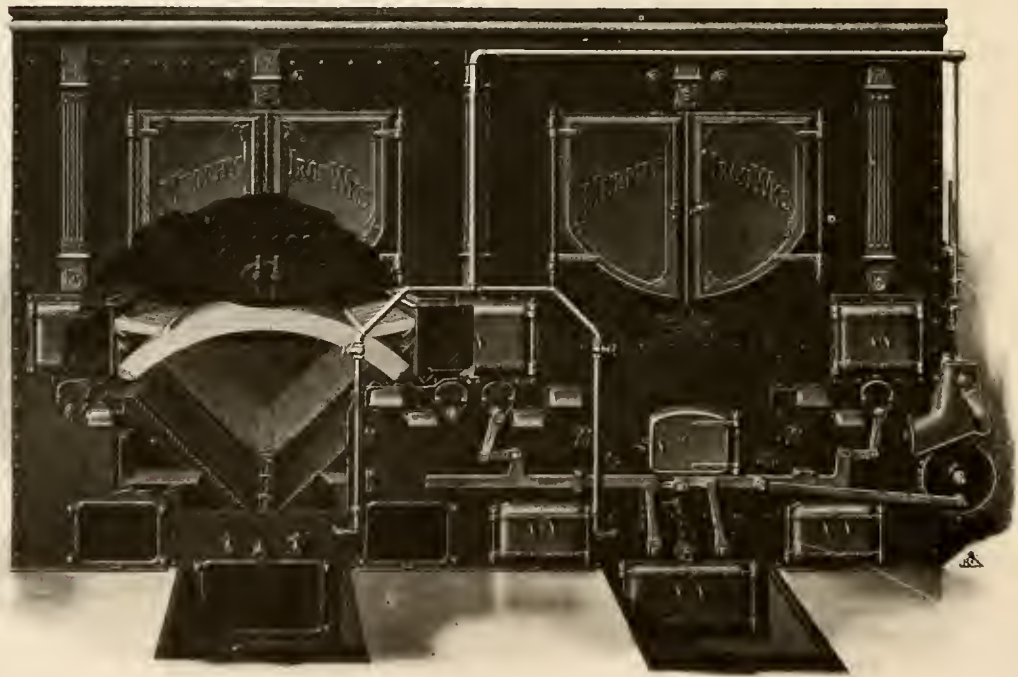
ECONOMY,
CAPACITY,
SMOKE
PREVENTION.
AUTOMATIC
FURNACE.
DURABILITY.

Progressive engineers have long been aware that economy, both in coal and labor, demands the use of automatic furnaces. Their use is justified not only by economy but also by increased capacity and the elimination of smoke.

The Murphy is automatic in all its functions. Not only does it automatically feed and distribute the coal but it also removes the ash and refuse.

Owing to the construction of mechanical stokers, prospective users fear large repair bills. This fear is justified where insufficient protection and cheapness of construction are allowed. In the Murphy Furnace, the magazines and fronts are protected by fire brick, the coking plate by the air passing under it, and the clinker grinder, grate bearer and grates, by exhaust steam and air. The construction of the grate-bars is peculiar to the Murphy Furnace in that to every half inch of exposed surface there are nine inches of cooling or radiating surface. The actuating mechanism is entirely outside of the furnace. All the iron parts are of ample strength. The arrangement for lubrication (where it is necessary) is complete; all bearing surfaces are liberal and no moving parts are subject to undue wear.

The weight of iron in the Murphy Furnaces is greater than in any other furnace. Murphy Furnaces have been in operation twenty-one years with practically no repairs; we certainly cannot say more than that for their durability.



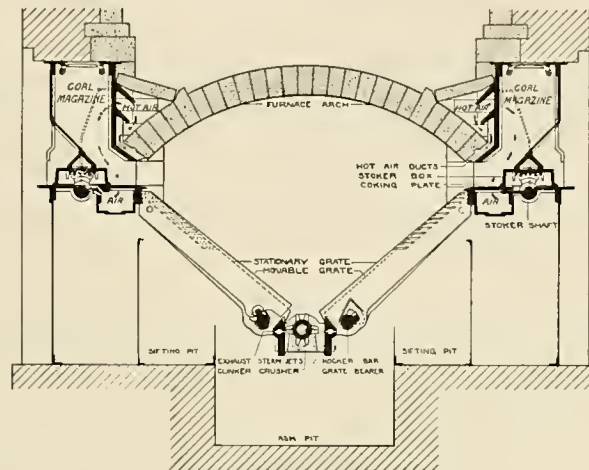
DIRECT FRONT VIEW SHOWING SECTION OF TUBULAR BOILER SETTING, AND FULL FRONT

DESCRIPTION.

At either side of the furnace, extending from front to rear, is a coal magazine into which the coal may be introduced either mechanically from conveyors, or by hand. At the bottom of this magazine is the coking plate against which the inclined grates rest at their upper ends. The stoker boxes, operated by segment gear shaft and racks, push the coal out over the coking plate and on to the grates.

GRATES.

The grates are made in pairs—one fixed, the other movable. The movable grates, pinioned at their upper ends, are moved by a rocker bar at their lower ends, alternately above and below the surface of the stationary grates. Down these the coal

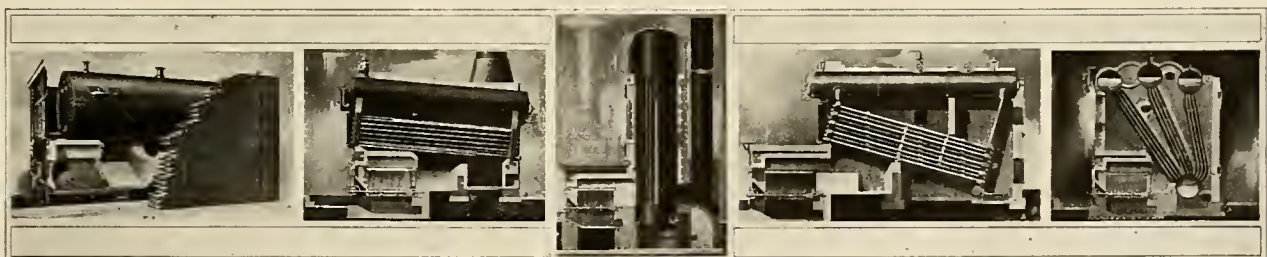


TRANSVERSE SECTION

slowly travels during the process of combustion, the refuse passing through the clinker grinder at the bottom. Provision is made to carry the exhaust steam from the stoker engine through the grate bearer to soften the clinker and assist the cleaning process.

FURNACES OPERATED BY SMALL ENGINE.

The furnaces are operated by a small automatic engine which may be located on either side of the battery, as desired, geared to a reciprocating bar across the entire front. To this bar all working parts are attached by links which may be removed at will by the operator. Thus any furnace may be thrown into commission or disconnected without stopping the engine or interfering with the operation of the remainder of the plant, and can be successfully operated by hand, the fuel fed and ash removed in the same manner as when controlled by the engine. This prevents any possibility of the furnace or boiler being thrown out of commission by the breaking of any portion of the actuating mechanism.



MURPHY AUTOMATIC SMOKELESS FURNACE APPLIED TO BOILERS OF VARIOUS TYPES

USES.

It is adaptable to any type of boiler and to units of any size. It may also be used wherever high temperatures are required, as in brick drying, salt evaporating, calcining of soda ash, etc.

JOHNSON TEMPERATURE REGULATING CO.,

240 Fourth Avenue,

NEW YORK CITY

PRODUCTS.

We manufacture TEMPERATURE REGULATORS, HUMIDITY REGULATORS, STEAM PRESSURE GOVERNORS, DRAFT REGULATORS, BOILER FEED GOVERNORS, REDUCING VALVES, WATER-LEVEL GOVERNORS, etc. Also TOWER CLOCKS (pneumatic operation), and AUTOMOBILES.

JOHNSON SYSTEM OF TEMPERATURE REGULATION.

FOR RESIDENCES—Temperature in any house may be so regulated that it will not vary more than two degrees.

FOR SCHOOLS—The evil of overheated rooms is entirely removed. There are no windows opened on account of overheating. The room remains for weeks at 70° F. The teacher is relieved from all attention to the heating and all distraction from legitimate duty.

FOR OFFICES—A business man's time is worth more for attending to his work than for opening and shutting radiator valves (which he will not do in most cases until long after the temperature has materially changed). He need think nothing of the matter if the Johnson Temperature Regulating System is installed.

FOR HOSPITALS—However faithful nurses and attendants may be, watching of the thermometer is likely to be deferred in the press of other routine duties. Fatalities are unfortunately known to have been due to faulty temperature regulation at critical times. There is no need for neglect of other work where the Johnson system is used.

OPERATION BY COMPRESSED AIR.

We are the first manufacturers to supply apparatus for the complete control of fluids, liquid and gaseous, whatever the control may be, compressed air being our source of power. The result is that we get perfect operation in the beginning and there are no complications of rust, dirt, oil, or heat to interfere with perfect working.

The compressor which we furnish is simply connected to the water supply of the building. In cases of large buildings we furnish steam or electrical compressors.

THE JOHNSON HUMIDOSTAT.

To maintain air moisture in living rooms at a normal point during cold weather is a problem that is solved in the use of our Humidostat.

REDUCING VALVES.

The Johnson Regulating or Reducing Valves are made in all styles, for water, steam, air, carbonic acid, etc.

TOWER CLOCKS.

Among our specialties are Tower Clocks. We have put up the largest of these in the world.

AUTOMOBILES.

Auto-Carriages and Business Wagons. The latest developments in the automobile line.

LAWLER REGULATOR COMPANY

158 Wooster Street
NEW YORK CITY, N. Y.

TELEPHONE, 811 SPRING

PRODUCTS—Manufacturers of LAWLER'S SELF-ACTING THERMOSTATIC STEAM and HOT-WATER TEMPERATURE REGULATING DEVICES, which consist of LAWLER'S THERMOSTAT REGULATORS for HOT-WATER TANKS, LAWLER'S HOT-WATER THERMOSTAT for DAMPER REGULATION, LAWLER'S THERMOSTATIC STEAM TRAPS, LAWLER'S AUTOMATIC WATER FEEDERS.

ADAPTABILITY—Our products can be adapted to any of the various hot-water or steam-heating systems.

LAWLER'S THERMOSTATIC REGULATORS FOR HOT-WATER TANKS—(Fig. 1). These are the only self-operating device in the world for regulating the temperature of water heated by steam to any degree desired without the use of diaphragms or auxiliary power of any kind. Thousands in use and not a single complaint. They never get out of order.

LIST PRICES AND SIZES—

Size of Valve, inches	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	4	5	6
Price, Each	\$60.00	65.00	70.00	75.00	85.00	95.00	125.00	150.00	175.00	200.00

LAWLER'S HOT WATER THERMOSTAT FOR DAMPER REGULATION—(Fig. 2.) The accompanying cut shows how this Regulator is applied to any house heating hot-water boiler for automatically controlling the draft doors, and thus maintaining the water in the heating apparatus at any degree of temperature desired. It saves fuel, time and labor. It is also a protection against overheating or generating steam and will last as long as the boiler without requiring repairs. This same Regulator is the best device made to control the draft doors of low pressure house heating, steam boiler, vapor or vacuum systems, because it operates at any change of temperature regardless of pressure.

It controls the cold air supply to indirect steam or hot-water radiation and is used for many other special purposes.

LIST PRICES AND SIZES—No. 1 for ordinary size boilers, \$30.00 each; No. 2 for large size boilers, \$40.00 each.

LAWLER'S THERMOSTATIC STEAM TRAPS—This is the only expansion Steam Trap in the world that gives the full opening of its valves and operates under any pressure.

LIST PRICES AND SIZES—

Size of Valve	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	1 $\frac{1}{4}$ "
Price, each	\$24.00	\$28.00	\$35.00	\$45.00

LAWLER'S AUTOMATIC WATER FEEDERS—(Fig. 4). For low pressure steam boilers and hot-water heating plants. We can guarantee these feeders to operate on any style or make of boiler.

Ten to twelve sizes and styles are constantly kept in stock ready for immediate shipment.

PRICES—Prices, discounts, and other information furnished upon application.

REFERENCES—Our devices have been installed in many of the most prominent public buildings, recent installations being The New Trinity Building, St. Vincent's Hospital, Johnson Building, Cotton Exchange in New York City, N. Y., Bellevue Stratford Hotel, Philadelphia, Pa., Vesper County Club, Lowell, Mass., Profile House, Franconia, N. H., Garrison Hall, Boston, Mass., etc.

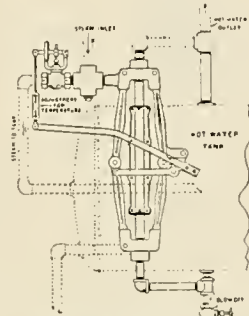


FIG. 1. LAWLER'S THERMOSTATIC REGULATORS For Hot Water Tanks

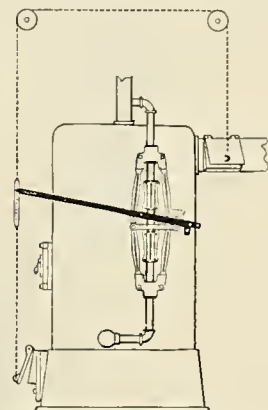


FIG. 2. LAWLER'S THERMOSTAT FOR DAMPER REGULATION (Connected)

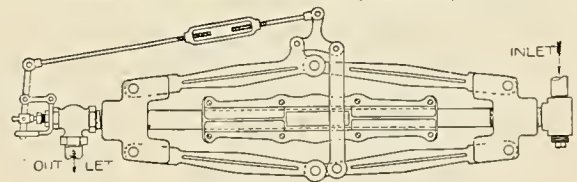


FIG. 3. THE LAWLER THERMOSTATIC STEAM TRAP

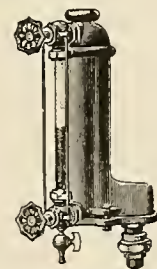


FIG. 4. LAWLER'S AUTOMATIC WATER FEEDER

THE POWERS REGULATOR COMPANY

MANUFACTURERS OF

Automatic Heat Regulators

CHICAGO OFFICE

40 DEARBORN STREET

TELEPHONE CENTRAL 271

NEW YORK OFFICE

111 FIFTH AVENUE

TELEPHONE 3228 GRAMERCY

PRODUCTS—Manufacturers of AUTOMATIC HEAT REGULATORS for HOUSE HEATING BOILERS and FURNACES, REGULATORS for HOT WATER TANKS and HEATERS, HEAT REGULATING SYSTEMS for SCHOOLS, PUBLIC INSTITUTIONS, OFFICE BUILDINGS, ETC.

REGULATORS FOR HOUSE HEATING BOILERS AND FURNACES—The thermostat (Fig. 1), centrally located in one of the principal living rooms, connects by means of a small lead tube with the diaphragm motor (Fig. 2), located at the heater. The adjusting plate at the end of the lever is connected by chains to the draft and check dampers of the heater, so that they close or open as the temperature at the thermostat varies. By means of the adjusting plate the regulator may be set to maintain any desired temperature.

This is a simple, self-contained heat regulator, absolutely automatic, easily installed, and very durable. It affords a general control of the heating plant, regulating it more closely than can be done by hand; is a great fuel saver and a comfort giver; applicable to residences of moderate size heated by hot air, steam or hot water.

Price put up complete from \$40 to \$50. Sold to the heating trade.

Special catalogue forwarded upon application.



FIG. 1. THERMOSTAT

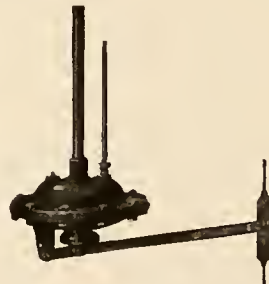


FIG. 2. DIAPHRAGM MOTOR



FIG. 3. NATURAL GAS VALVE

Specifications—To specify, write as follows: "Furnish and install in connection with this heating apparatus a POWERS REGULATOR complete with thermostat and special check damper for smoke-pipe."

NOTE: By means of our special natural gas valve (Fig. 3), this regulator is excellently adapted to the control of heaters using natural gas for fuel.

Special catalogue of these regulators sent on application.

THE POWERS REGULATOR, No. 6—A very high class accurate regulator for heating plants in the larger and better class of residences.

Adjustable at the thermostat by means of a key.

The vapor disc, pneumatic type, thermostat here shown, requires for its operation compressed air or gas. This is furnished, either by a small hydraulic air compressor connected with the city water supply, or a drum of compressed gas may be used. Such drum requires refilling at a slight expense once a year. Small lead tubing delivers the air or gas to the thermostat, and from it to a diaphragm motor, at the heater, which is connected to the draft and check dampers. This tubing is easily put in place, and is, of course, concealed from view.

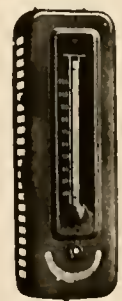


FIG. 4. PNEUMATIC THERMOSTAT

This regulator is very accurate and powerful in its operation. It is applicable to any kind of a residence heating apparatus and is the best temperature controlling apparatus to be had, unless a system of individual room control be used.

REGULATOR No. 6 may also be used for the control of steam or hot water when the building is heated by a street system, a diaphragm valve (Fig. 5), operated by the thermostat, controlling the admission of steam or hot water to the building.

Price of No. 6 Regulator, installed complete, about \$100. Special catalogue sent on application.

Specifications—To specify, write as follows: "Furnish and install a complete No. 6 Powers Regulator with all attachments necessary to the control of the heating plant."

NOTE: By means of our special natural gas valve (Fig. 3), this regulator is equally adapted to the control of heaters using natural gas for fuel.

INDIVIDUAL ROOM CONTROL (DIRECT RADIATION)—To secure the most perfect results in temperature regulation the system of individual room control should be used.

The thermostat and diaphragm valve (Fig. 6) are the essential elements of this system.

Each room is supplied with a thermostat and each radiator is equipped with a diaphragm valve. A hydraulic, electric or steam air compressor in basement furnishes the air for the operation of the system and each room is controlled individually. Thermostats are, of course, adjustable, and open or



FIG. 5. DIAPHRAGM VALVE

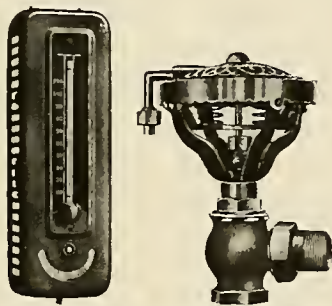


FIG. 6. THERMOSTAT AND DIAPHRAGM VALVE FOR RADIATORS



FIG. 7. THE No. 1 POWERS REGULATOR

close the radiator valves precisely as may be required to maintain automatically the desired temperature in each room.

The "individual room control" system of regulation is applied to buildings of every description when heated wholly or in part by direct radiation. We have installations all over the country, varying in size from the residence of a few rooms to the largest office buildings and public institutions. These installations are invariably made by our own workmen, we having a large force of construction men operating all over the United States and Canada for this purpose. The price varies greatly, depending upon the nature of the building and heating plant. Heating plans should be sent us for estimates. Special catalogue of this system sent on application.

Specifications—To specify, write as follows: "Furnish and install complete the Powers System of Heat Regulation installed and guaranteed by the manufacturers and controlling the following rooms."

REGULATION FOR HOT WATER TANKS AND HEATERS—The No. 1 POWERS REGULATOR (Fig. 7) for the coal or gas burning tank heaters is easily applied and very efficient; automatically controls the temperature of the hot water supply; prevents overheating and consequent damage to plumbing.

Price, put up complete, about \$40. Sold to the trade.

Specifications—To specify, write as follows: "Furnish and install a No. 1 Powers Tank Regulator."

REGULATION OF STEAM HEATED, HOT WATER TANKS—The No. 9 Powers Tank Regulator (Fig. 8), is a reliable and efficient machine; automatically governs the steam supply to hot water tanks so as keep water at temperature desired. Easily installed. Made with valves of all sizes. Price, installed complete, \$70 and upwards. Sold to the trade.

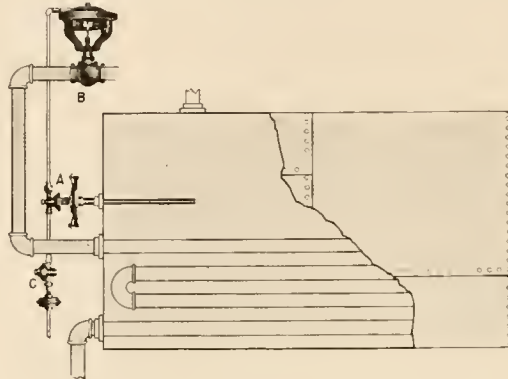


FIG. 8. THE No. 9 POWERS TANK REGULATOR

Specifications—To specify, write as follows: "Furnish and install a No. 9 Powers Tank Regulator complete with steam valve."

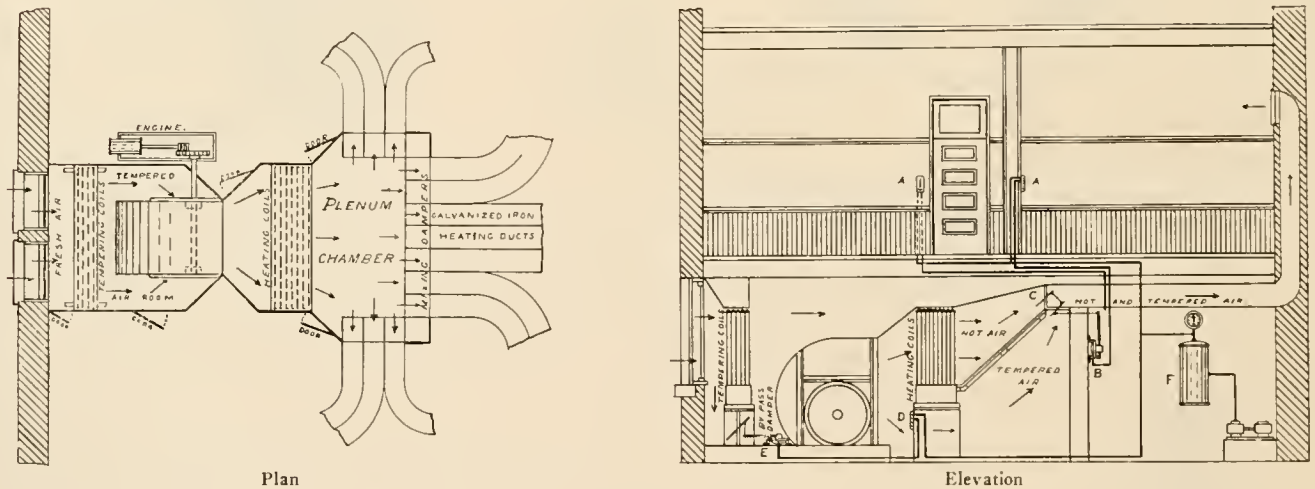
Special catalogue of tank regulators sent upon application.

THE POWERS SYSTEM OF HEAT REGULATION FOR SCHOOLS AND PUBLIC INSTITUTIONS HEATED BY THE FAN SYSTEM

Automatic control is a positive necessity in buildings heated by the fan or blower system. Air is drawn into the building and forced through heating coils or furnaces and into the rooms in such quantities that hand control is an impossibility.

Each room should be supplied with a thermostat which controls mixing dampers so arranged as to mix properly the hot and cold air before it enters the room.

Here is shown a typical arrangement of plenum chamber and regulating apparatus in a system of this kind.



FIGS. 9 and 10. THE POWERS SYSTEM OF HEAT REGULATION FOR SCHOOLS AND PUBLIC INSTITUTIONS HEATED BY THE FAN SYSTEM

A is the thermostat which controls the compressed air generated at F and operating the diaphragm motor B; this being connected to the mixing dampers C, holds them in such a position as will properly mix the hot and tempered air before it enters the room. It will be noted in this plan that the cold air from out of doors is first drawn through tempering or pre-heating coils and by them warmed to a temperature not higher than 60 degrees, the thermostat D in the tempered air chamber operating the by-pass damper beneath the tempering coil so as to prevent the overheating of this air.

(Very frequently an arrangement is used which dispenses with this pre-heating coil, dampers being placed in the platform between hot and tempered air chambers and thermostatically operated so as to direct a certain proportion of the heated air through the platform into the tempered air chamber, where a temperature of 60 degrees is maintained.)

The arrangement of the thermostat, diaphragm and mixing dampers, shown in drawing, is repeated for as many rooms as there are under control, each room having its own thermostat, mixing dampers and heating duct, the compressed air from the reservoir F being supplied to all thermostats through a suitable arrangement of piping.

It is obvious that heating systems may differ very much in their construction. The heating surface, for instance, may be divided and heating coils located at the base of each flue. The automatic regulation may be applied to any of the various heating systems in use, the only requirement being an arrangement that will permit the placing of dampers or valves so that they will control individually the heat supply of the rooms.

SUPERIORITY—The Powers system stands pre-eminent in this field by reason of its simplicity and the fact that our thermostat affords the true gradual control of mixing dampers so necessary in controlling accurately the temperature of the fresh air with an absolute avoidance of the hot and cold draughts so common with other systems.

INSTALLATION—Hundreds of schools, colleges and similar buildings all over the country are equipped with our system of heat regulation, and in all cases with the most gratifying results. The apparatus is invariably installed by our own employes, a large force being employed for that purpose with construction headquarters at various points in the country.

COST—The cost varies greatly, depending upon the character of the building and heating apparatus. Plans should be sent us for estimates.

Special catalogue of this system forwarded upon application.

SPECIFICATIONS—*To specify, write as follows: "Furnish complete the Powers System of Heat Regulation with graduate action thermostats, balanced mixing dampers and all appurtenances. The system to be installed and guaranteed by the manufacturers and to control the following rooms."*

A WORD TO ARCHITECTS AND ENGINEERS

A system of heat regulation to be effective and desirable should be installed by workmen specially skilled in the art and operating under an organization of superintendents and inspectors trained in the work. The business is unique and unlike all other trades. No two buildings or heating systems are exactly alike, and the application of the temperature controlling apparatus must be varied in almost every case to suit special conditions. The organization back of this work must be so large and varied in its resources as to be able to give special attention to every contract and must be of such permanency as to insure the apparatus having such prompt and expert attention as it may need in the years following its installation.

While the appliances we manufacture are simple and durable in the extreme, the necessity for repairs at some time is inevitable and should be considered. A system out of order, with its promoters out of business, is most undesirable.

In addition to our large organization of skilled mechanics, we have an engineering force especially skilled in planning and drafting specifications for work of this kind, and this force is always at the service of architects and engineers desirous of applying heat regulation to their work.

We have special catalogues of all our appliances and are glad to send them out upon application.

Address THE POWERS REGULATOR CO., 40 Dearborn St., Chicago; 111 Fifth Ave., New York.

THERMOGRADE VALVE COMPANY

BOSTON, MASS.

MAIN OFFICE
294 WASHINGTON STREET, BOSTON

BALTIMORE OFFICE
206 NO. LIBERTY STREET

PRODUCTS. Manufacturers of THERMOGRADE HEAT CONTROLLING VALVES, THERMOGRADE STEAM TRAPS and APPLIANCES for the THERMOGRADE SYSTEM OF STEAM HEATING.

INSTALLATION. This Company furnishes the Thermograde radiator valves and appliances to the heating contractor, and adjusts its own apparatus upon completion of the installation. It does not undertake contracts or to install work.

THE THERMOGRADE SYSTEM. The Thermograde is a two-pipe system of heating for use in connection with either live or exhaust steam. No additional radiation or piping is required, but the return risers or mains (usually run dry) must be opened to the atmosphere at one or more points. The hot water type of radiator should be used in preference to the steam type.

ADVANTAGES. The Thermograde system offers the following advantages: It affords a perfect method of semi-automatic heat regulation; it enables a radiator to be heated fractionally, $\frac{1}{4}$ hot— $\frac{3}{4}$ cold; $\frac{1}{2}$ hot— $1\frac{1}{2}$ cold; wholly hot or wholly cold, or partially as may be desired.

But one valve—the supply has to be operated in connection with each radiator.

No air valves are used on the radiators—there is absolutely no way in which the foul radiator gases can escape into the room.

It is impossible for water hammer or air binding to occur in either the radiators or piping of this system.

It does away with the danger of flooded or frozen radiators.

It assures a positive circulation through every part of the apparatus at a decidedly lower pressure on the supply side than is possible in any ordinary system.

It effects an economy in the use of steam, and therefore of fuel, ranging from 10% to 40% and even more.

Furthermore, it is not necessary to employ auxiliary apparatus or accessories of any kind, such as ejectors, vacuum pumps, etc., in connection with the Thermograde system.

SPECIFICATIONS. Architects should incorporate in their specifications: "All heating apparatus is to be installed in accordance with the requirements of the 'Thermograde System of Steam Heating' and subject to the approval of the 'Thermograde Valve Co., Boston, Mass.'"

ESTIMATES. This Company is prepared at all times to advise as to the proper and most advantageous design of heating installations, and will cheerfully furnish estimates upon receipt of information concerning any specific work.

WHERE INSTALLED. The Thermograde System of Steam Heating has been in operation since 1898 and has been installed in the following buildings, among others:

BUILDING	ARCHITECTS
BOSTON	
HARVARD UNIVERSITY DORMITORIES	
RANDOLPH HALL.....	COOLIDGE & CARLSON
RANDOLPH HALL EXTENSION.....	COOLIDGE & CARLSON
APTHORPE HALL.....	COOLIDGE & CARLSON
HAMPDEN HALL.....	COOLIDGE & CARLSON
TENNIS & RACQUET CLUB.....	PARKER & THOMAS
COMMONWEALTH HOTEL.....	J. CLINTON WARREN
STATE MUTUAL BUILDING.....	ANDREWS, JACQUES & RANTOUL
INDIA BUILDING.....	PEABODY & STEARNS
COMPTON BUILDING.....	WINSLOW & BIGELOW
OLD SOUTH BUILDING.....	SHEPLEY, RUTAN & COOLIDGE (Consulting Architects)
BOYLSTON CHAMBERS BUILDING.....	J. CLINTON WARREN
NEW YORK CITY	
TELEPHONE BUILDING, Cortlandt Street.....	C. L. W. EIDLITZ
TELEPHONE BUILDING, Dey Street.....	C. L. W. EIDLITZ
JAMES HENRY SMITH STABLE.....	WARREN & WETMORE
PHILADELPHIA	
LOMBARD TELEPHONE EXCHANGE.....	RANKINE & KELLOGG
BELMONT TELEPHONE EXCHANGE.....	JAMES H. WINDRAM
UNIVERSITY OF PENNSYLVANIA	
EDGAR W. SMITH DORMITORY.....	COPE & STEWARDSON
HOUSE No. 22—SPRUCE STREET DORMITORIES.....	COPE & STEWARDSON
BALTIMORE	
WOLFE STREET TELEPHONE EXCHANGE.....	C. L. W. EIDLITZ
SINGER BUILDING.....	WYATT & NOLTING
GILMORE TELEPHONE EXCHANGE.....	
NORFOLK, VA.	
COMMERCIAL REALTY BUILDING.....	PARKER & THOMAS

THE FRANK C. McLAIN COMPANY

Garwood Steam Heaters Using Gas for Fuel

GENERAL OFFICE AND FACTORY

CANTON, OHIO

AGENCIES

BOSTON, Geo. E. Crawley Son, 3 Somerset Street
 PHILADELPHIA, Haney-White Co., 2730 N. Broad Street
 BUFFALO, Walbridge Co., 392-394 Main Street
 CHICAGO, Lott-Burton Co., 86 Lake Street
 SAN FRANCISCO, Pendleton & Moore, 413 California Street

BRANCHES

NEW YORK, 242 Fourth Avenue
 CLEVELAND, 215 Bond Street

PRODUCTS.

We manufacture the GARWOOD STEAM HEATER, using gas for fuel, and GARWOOD GAS LOGS.

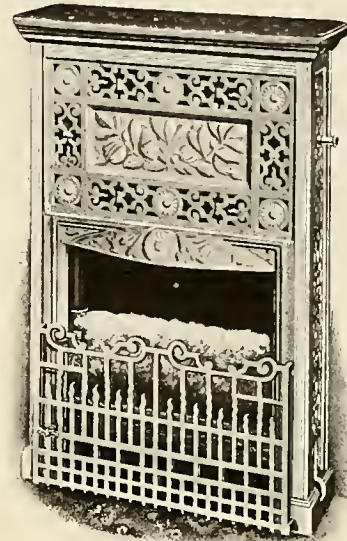
INTRODUCTION.

This age has been marked by wonderful strides towards securing personal comfort. Especially prominent is the progress in domestic architecture. Yet even here, there is evidence of arrested development; we refer to the heating and ventilating devices. While the present-day plumbing and lighting practice leaves very little to be desired in comfort, beauty, and healthfulness, heating and ventilation have made but slow progress.

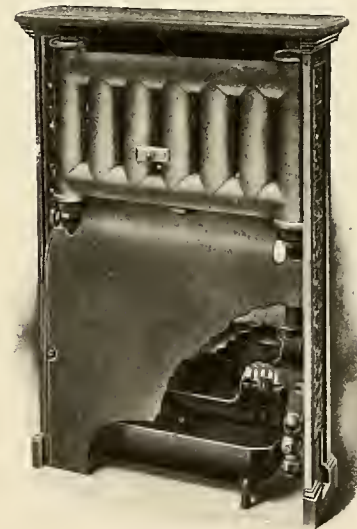
Of course, steam and hot water are much more economical in the consumption of fuel than a furnace, just as a furnace will show fuel saving over stoves; but even on the score of economy, a very large part of the heat produced in the cellar finds no better use than the thorough warming of—the chimney.

Until recently, nothing has been invented which would add more to the attractiveness of a home and furnish more pleasant, more perfect ventilation than the old-fashioned fireplace. The open fire, with its dust, ashes, and the constant attention necessary to keep it replenished, is a well nigh intolerable nuisance. Crude and inartistic gas logs had so many inherent defects of their own, that the compensating advantage of cleanliness was ignored because it did not get anything like the possible number of heat units out of a given quantity of gas. The gas which was burned, was not fully consumed, and a very disagreeable odor resulted. Then again, there was no radiating surface from which the heat might be advantageously discharged into the room.

In short, there was a general desire to have heat, to make it add to the comfort and attractiveness of the room. And this is just what we have to offer.



GARWOOD STEAM HEATER
Front View



GARWOOD STEAM HEATER
Back View

- Nos. 1, 2, 3, 4 and 5—22" wide, 32" high, 7" deep.
 Burns 12 ft. of gas per hour and will heat a room 12x10x10 ft.
- | | |
|----------------------------|---------------|
| No. 1 Ebony and Gold..... | Price \$18.00 |
| No. 2 Gold Bronze | Price 18.00 |
| No. 3 White and Gold | Price 20.00 |
| No. 4 Oak | Price 20.00 |
| No. 5 Mahogany | Price 20.00 |

DESCRIPTION
OF THE
GARWOOD
HEATER.

Each Garwood is a complete steam plant in itself, besides being an artistic open fireplace. The log which the gas flames play upon is really a boiler, the water it contains being rapidly converted into steam. Behind the logs is a skillfully concealed steam radiator, and the steam circulates through this. As it reaches the top of the radiator, it condenses and returns as water to the boiler. In this manner no water need be added except to make up for the loss by evaporation. Practice has demonstrated that the water need not be renewed oftener than twice a year, and a quart of water is all that the boiler holds. The bottom log in the Garwood Heater contains a waterpan and an iron leaf, which is suspended from the burner and partly immersed in the water; the result is a constant and gentle evaporation.

This vapor maintains the normal moisture in the room and prevents that dry, parched air so noticeable in a room heated by ordinary gas logs, or a steam radiator. This waterpan needs filling about once a fortnight.

The Garwood is arranged so that the air is drawn in at the bottom of the grate and passed up and over the radiator and out at the top into the room. This radiator acts exactly as does the best and most indirect steam heating system, the air passing over a concealed radiator, through a register into the room.

PRACTICAL
ADVANTAGES.

The Garwood Steam Heater, using gas for fuel, insures health, comfort, economy and safety. It eliminates odor, coal shoveling, unheated rooms, dust, ashes, dirt and danger. No boiler or pipes are necessary, and furthermore, the fire is there only when and where it is wanted.

In the Garwood Heater we get the advantage of direct heat of the fire, exactly as though it were an ordinary hearth, and also the heat from the steam radiator, which forms an essential part of every heater.

All dust and foul gases in the air in a room are destroyed.



GARWOOD STEAM HEATER

- Nos. 40, 41, 42, 43, 44—32" wide, 31" high. Projection from tile 8". Requires an opening in mantel 29½" wide, 28½" high, 5½" deep. Burns 15 ft. gas per hour and will heat a room 15x15x10 ft.
- | | |
|------------------------------|---------------|
| No. 40 Ebony and Gold..... | Price \$35.00 |
| No. 41 Gold Bronze | Price 35.00 |
| No. 42 Oxidized Brass | Price 40.00 |
| No. 43 Oxidized Copper | Price 40.00 |
| No. 44 Brush Brass | Price 45.00 |



GARWOOD STEAM HEATER

- Nos. 30, 31, 32, 33, 34—31" wide, 31" high. Projection from tile, 8". Requires an opening in mantel, 27½" wide, 29½" high, 3½" deep. Burns 15 ft. gas per hour and will heat a room 15x15x10 ft.
- | | |
|------------------------------|---------------|
| No. 30 Ebony and Gold..... | Price \$30.00 |
| No. 31 Gold Bronze | Price 30.00 |
| No. 32 Oxidized Brass | Price 35.00 |
| No. 33 Oxidized Copper | Price 35.00 |
| No. 34 Brush Brass | Price 40.00 |

ARTISTIC
ADVANTAGES.

On the score of beauty, there is much to be said in behalf of the Garwood Heater. Everyone recognizes that the most beautiful feature a room can possess is an open fire. The Garwood Heater, while supplying warmth to the home, serves not only its utilitarian purpose, but also adds very materially to the apartment's beauty.

DETAILS OF
CONSTRUCTION.

The burners used in the Garwood Heater are of the Bunsen type, and the air taken in with the gas increases its heating capacity about sixteen times, and insures absolutely perfect combustion, so that no flue is required to keep the air of the room pure and sweet, and there is absolutely no unpleasant odor.

We earnestly advise that even where there is a flue, it be stopped, because fully 60% of the heat from a fire under a flue finds its way up the chimney. As the Garwood consumes its gas absolutely, the necessity for this waste, which is an essential part of every other system of heating, is obviated. The fact that a large quantity of air is consumed adds materially to the perfect ventilation of the room in which the Garwood Heater is installed.

GARWOOD
GAS LOGS.

For those who are already supplied with heat—as apartment dwellers—we have made the Garwood Gas Logs. The pleasure of an open fire without dust, dirt and ashes is thus assured. The Garwood should not for an instant be compared with the old-style logs, which, because of the imperfect combustion, collect great quantities of soot. This soot becomes so permeated with the odor of gas as to be exceedingly offensive after a few weeks.

The Garwood Logs are equipped with exactly the same burner with which all our heaters are supplied.



GARWOOD GAS LOGS

- No. 17—17" wide, 17" high, 6" deep; burns 12 ft. gas per hour Price \$12.00
 - No. 22—22" wide, 17" high, 6" deep; burns 15 ft. gas per hour Price \$12.00
 - No. 24—24" wide, 17" high, 6" deep; burns 18 ft. gas per hour Price \$15.00
 - No. 36—36" wide, 19" high, 6" deep; burns 22 ft. gas per hour Price \$22.50
 - No. 42—42" wide, 22" high, 8" deep; burns 30 ft. gas per hour Price \$37.50
- Above prices include Andirons as shown.

ACETYLENE APPARATUS MANUFACTURING CO.

MANUFACTURERS OF

Pilot Automatic Acetylene Generators

CHICAGO, ILL.

GENERAL OFFICES
157 MICHIGAN AVENUE

FACTORY
556 EAST 25TH STREET

- PRODUCT.** Manufacturers of PILOT AUTOMATIC ACETYLENE GENERATORS for supplying gas for light and fuel, for country homes, clubs, hotels, and public and private institutions of all kinds located where satisfactory light cannot be had from public systems.
- FACILITIES.** Our factory is the largest and best equipped in the world, devoted exclusively to the manufacture of ACETYLENE apparatus. Machines listed are kept in stock and shipment can be made promptly to any part of the United States or elsewhere. We have a staff of competent engineers, and upon receipt of a request shall be pleased to furnish plans for any installation. We have representatives in nearly all parts of the United States, and at any time can arrange to have them inspect plans and make recommendations as to the size and type of apparatus best suited to the location and requirements.
- DELIVERIES.** Our Generators are furnished f. o. b. factory, or we will contract to install them, as the purchaser elects.
- ACETYLENE.** ACETYLENE is made by uniting calcium carbide and water. It is a fixed gas unaffected by temperatures within atmospheric limits, is odorless when burning and has no dangerous qualities that are not possessed by other illuminating gases.
The ACETYLENE flame is of unsurpassed intensity, yet its light is agreeably soft. It burns with a steady, clear white flame requiring no mantle, yet giving a pleasing glow, throwing off very little heat, and absolutely no carbon or soot of any kind.
- CARBIDE.** CARBIDE, packed in one hundred pound, air and water tight, screw-top metal cans, can be had anywhere in the open market.
- PIPING AND FIXTURES.** GAS PIPING and FIXTURES for ACETYLENE are the same as for ordinary city gas, except the burner tip, which is simple and inexpensive.
- COST OF OPERATION.** The cost of ACETYLENE for lighting is the equivalent of the best city gas at 80c per thousand cubic feet.
ACETYLENE ranges suitable for all purposes may be had, and while the gas for fuel is not as cheap as city gas, yet its cost is by no means prohibitive, and thousands of country places are using it for cooking and are entirely satisfied with the results.
- INSURANCE.** PILOT GENERATORS are on the list of permitted apparatus issued by the National Board of Fire Underwriters. *They may be installed inside the buildings* or in separate houses outside if desired, without increasing insurance rates or affecting the risk in any manner.

PILOT
CARBIDE FEED
GENERATOR.

This Generator is desirable for all installations where a convenient supply of running water can be had and connection with drain to cess pool or sewer made, to carry off the residuum when recharging. It requires one gallon of water for each pound of carbide used.

Only the highest grade material and workmanship enter into the construction of this Generator. Its design is the result of extensive experience and observation of the operation of all makes of generators, covering a period of years, by the best engineers connected with the Acetylene industry. It is generally acknowledged to be the standard for this type of generator.

Especial attention has been given to simplicity. It is not liable to get out of order, and its operation is readily understood by the user.

All parts of the machine are accessible, no compartments are permanently closed, a feature found in no other generator.

Each Generator is also fitted with a filter of superior construction, which further insures the delivery of pure, cool and dry gas to the pipes. This prevents clogging of burners.

SAFETY—Perfect interference devices prevent the machine from operating until all parts are properly closed after recharging.

FEEDING MECHANISM—The vital part of a carbide-feed generator is the mechanism which feeds the carbide into the water. It has been the aim of all manufacturers to make a machine which would successfully handle lump carbide, which yields more and better gas than the fine crush such as is generally used in this type of generator. Carbide is fed in the *Pilot* by the use of a strong motor operated by weights which drives a rotary disc. Small quantities at a time are forced off the disc and descend into the water, producing ideal generation.

Gas pressure is always uniform, as no power is taken from the holder as it descends; the motor does the work.

A powerful rotary agitator prevents residuum from accumulating in generating chamber.



PILOT CARBIDE FEED GENERATOR
For an Unlimited Lighting Capacity

71102 1/4 8 1/2 1/2 Co.
(10)

PRICE LIST.

Light Capacity	Pounds Carbide Charge	Space Required for Installing			Width of Opening Required for Getting in Building Inches	Size of Opening for Service Pipe Inches	Size of Opening for Blow-Off Pipe Inches	Shipping Weight	Price
		Width	Length	Height					
35	35	30	53	72	25	3/4	1	500	\$150 00
50	50	32	55	76	27	3/4	1	550	200 00
100	100	36	62	90	30	1	1	650	300 00
200	200	48	81	106	41	1 1/4	1	1400	700 00
300	300	58	92	106	51	1 1/4	1	1600	850 00

GENERATORS LARGER THAN 300-LIGHT CAPACITY WILL BE BUILT TO ORDER.

PILOT WATER FEED GENERATOR.

Especially designed for small country places requiring less than fifty burners where there is no supply of running water or proper drainage facilities necessary for the convenient operation of all Carbide-feed Generators.

This machine is simple, well constructed and compact, requires 1/8 the quantity of water for producing cool, dry gas that is necessary with other types.

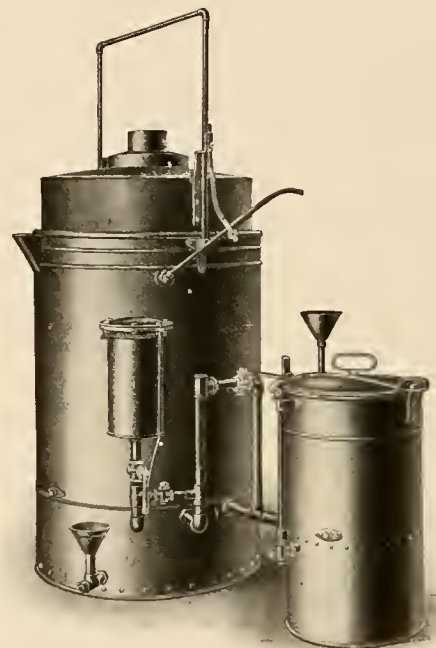
Residuum is left in containers in compact form and can be easily carried out and emptied.

All machines are furnished with duplicate carbide containers.

The gas is thoroughly filtered through water chamber and dry box packed with wool felt.

Equipped with interference devices which prevent mistakes in operation.

It uses lump carbide, prevents all waste of gas, and requires slight attention.



PILOT WATER FEED GENERATOR
For less than fifty Burners

PRICE LIST.

No.	Capacity in 25-Candle Power Lights	Carbide Charge			Space Required for installing			Width of Opening Required for Getting in Building Inches	Size of Opening for Service Pipe Inches	Size of Opening for Blow-Off Pipe Inches	Shipping Weight	Price
		No. of Carbide Holders	No. of Pans in each Holder	Total Lbs. Carbide Charge	Width	Lgth	Hght					
7	15	1	2	12	30	56	68	28	3/4	1	350	\$ 90 00
8	20	1	2	16	34	64	74	32	3/4	1	400	115 00
9	30	1	3	24	34	64	74	32	3/4	1	450	140 00
10	40	2	2	32	52	64	78	32	3/4	1	550	175 00
11	60	2	3	48	52	66	78	32	3/4	1	625	200 00

SPECIFICATIONS.

Architects anxious to guard themselves and their clients from all substitution of other generators than those made by us, should be careful to specify "Pilot" Generators made by the Acetylene Apparatus Manufacturing Company, designating the number and style of the machine required.

J. B. COLT COMPANY

21 Barclay Street
NEW YORK CITY, N. Y.



PRODUCTS. ACETYLENE.

Manufacturers of COLT ACETYLENE GENERATORS.

Acetylene is the result of the decomposition of calcium carbide and water. The gas is non-poisonous and the light purer in quality than any other artificial illuminant. The cost of Acetylene is $\frac{1}{2}$ cent per hour for each 25 c.p. burner.

"COLT" GENERATORS.

Colt Generators are the result of years of experience in the manufacture of Acetylene apparatus and are simple, safe and reliable.

SIZES.

Generators for permanent installation from ten lights to ten thousand.

PRICES.

Prices will be quoted on application.

INSTALLATION AND OPERATION.

Every "Colt" Generator is accompanied by full and complete instructions, so that their installation and operation is easily comprehended by anyone, even though without mechanical knowledge or previous familiarity with Acetylene apparatus.

Excepting for the occasional filling with carbide and water required, the Generator is entirely automatic in its operation and can be properly handled by anyone of average intelligence.

PIPES, FIXTURES, ETC.

Piping and fixtures for Acetylene should be the same as for coal or water gas. Acetylene burners, which we sell, are required for the fixtures.

"COLT" INSTALLA- TIONS.

The practicability of "Colt" Acetylene is best attested by its thousands of users, among whom are the following:

Mr. H. J. Hardenbergh,
Mr. Trenor L. Park,
Judge Morgan J. O'Brien,
Col. F. N. Dow,
Mr. Henry Fairfax,
Mr. Herman Oelrichs,
Grand Union Hotel,
Rangeley Lake Hotel,
Palm Beach Hotel,

Bernardsville, N. J.
White Plains, N. Y.
Good Ground, L. I.
Portland Me.
Richmond, Va.
Ross Station, Cal.
Saratoga Springs, N. Y.
Rangeley, Me.
Palm Beach, Fla.

A few of the prominent architects who have specified "Colt" Generators:

Geo. B. Post,
H. J. Hardenbergh,
Howels & Stokes,
Charles Alling Gifford,
Lord, Hewlett & Hull,
C. P. H. Gilbert,
Grosvenor Atterbury,
Charles C. Haight,

33 East 17th St., New York.
1 West 34th St., " "
100 William St., " "
18 East 17th St., " "
16 East 23d St., " "
25th St. & Bway, " "
20 West 43d St., " "
452 Fifth Ave., " "

SPECIALTIES.

In addition to its Standard line of Acetylene Generators, the J. B. Colt Company manufacture many special types of apparatus to meet special circumstances.

The Colt Villa Generator, which is non-freezing, is especially suited for lighting country estates.

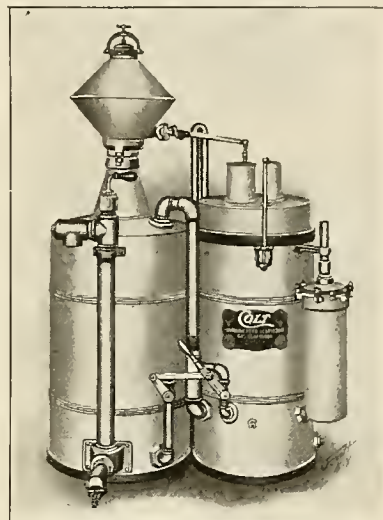
The Colt Municipal Generator is particularly designed for large installations.

Colt Portable Generators meet every lighting requirement of the camper, photographer, lecturer or contractor. For portable lighting of any character, they are unequalled.

Colt Cartridge Generator for automobile headlights is a boon to autoists.

Architects and builders are invited to refer to us for any information they may wish regarding Acetylene or the installation of Acetylene apparatus.

Complete illustrated catalogues regarding house lighting apparatus or any of the specialties referred to will be gladly furnished on request.



COLT ACETYLENE GENERATOR.

DAVIS ACETYLENE COMPANY

ELKHART, INDIANA

CONSTRUCTION AND SUPERIORITY.

The Davis Carbide Feed Acetylene Generator is self-contained, cylindrical in form, double trussed by concave and convex bottoms, with iron bands top and bottom, being most compact and strongest form of construction.

It has an independent weight motor for feeding Carbide—the only method insuring absolute control. It feeds lump Carbide, giving the largest, coolest, cleanest and best yield of gas. The amount of unconsumed carbide can be seen at a glance. After recharging it will not run unless the closing plug has been replaced, obviating any danger from carelessness. The Carbide cannot be discharged accidentally or in excess of the capacity of the escape pipe. The tank cannot be over-charged with water, and the drainage chamber is outside with all parts readily accessible. The gas being clean and cool, will not clog pipes or burners.

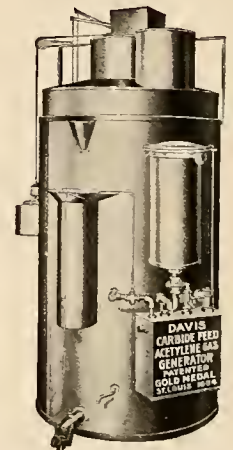


FIG. 1. 50 LBS. CARBIDE CAPACITY
"Runs like a Clock"

These and other points of superiority secured from a jury of Gas Experts the Gold Medal at the St. Louis Exposition.

INSTALLATION.

Our Generators can be installed by any competent mechanic. Full information is sent with each machine.

Existing gas piping can be used in installing one of our Generators by simply substituting Acetylene Burners for the ordinary gas burners.

The usual size of piping for an ordinary residence is $\frac{3}{4}$ inch risers, $\frac{1}{2}$ inch mains, $\frac{3}{8}$ inch branches and drops.

GENERAL INFORMATION.

Electric igniting Acetylene appliances and stoves are in general and successful use. In cold climates, Acetylene generators are usually installed in basements, as they must be protected from frost.

One pound of Carbide should produce at least four and one-half cubic feet of gas which would supply a half foot burner nine hours.

Stoves consume nearly three feet per burner per hour.

A common error is the purchase of generators of too small capacity. A 35 or 50 lb. generator will light an ordinary house, on an averaging charging of once a month.

REFERENCES.

The Davis Carbide Feed Acetylene Generator "runs like a clock." It has been used for over six years in nearly every State in the Union. It is used by the United States Government for lighting Public Buildings.

References cheerfully furnished.

PRICES.

The correct capacity of a generator is its carbide capacity. Prices f. o. b. factory. The 15 and 25 lb. sizes use $\frac{1}{4}$ inch carbide; larger sizes, $1\frac{1}{4} \times \frac{3}{8}$ inch carbide.

Prices for larger sizes on application.

CAPACITY	FLOOR SPACE	TOTAL HEIGHT	WEIGHT	SERVICE PIPE	BLOW-OFF	PRICE
15 pounds	20 x 34"	49"	225 pounds	$\frac{1}{2}$ inch	$\frac{3}{4}$ "	\$ 75.00
25 pounds	20 x 38"	49"	250 pounds	$\frac{1}{2}$ inch	$\frac{3}{4}$ "	100.00
35 pounds	31 x 35"	60"	380 pounds	$\frac{3}{4}$ inch	1 "	150.00
50 pounds	31 x 35"	66"	420 pounds	$\frac{3}{4}$ inch	1 "	175.00
75 pounds	38 x 43"	64"	550 pounds	1 inch	1 "	250.00
100 pounds	38 x 43"	70"	575 pounds	1 inch	1 "	300.00
200 pounds	45 x 51"	108"	1300 pounds	$1\frac{1}{4}$ inch	2 "	600.00
300 pounds	56 x 61"	108"	1600 pounds	$1\frac{1}{4}$ inch	2 "	750.00
500 pounds	76 x 82"	108"	2400 pounds	2 inch	2 "	1,000.00

GILBERT & BARKER MANUFACTURING CO.

OFFICES

82 JOHN STREET, NEW YORK CITY
51 UNION STREET, BOSTON, MASS.

193 LYMAN STREET, SPRINGFIELD, MASS.
12 N. SEVENTH STREET, PHILADELPHIA, PA.

PRODUCTS—Manufacturers of the SPRINGFIELD (GASOLINE) GAS MACHINE for lighting country homes, etc. We have been manufacturing this machine for nearly forty years, and more than one million dollars' worth of these machines are in operation.

Gas Generators (See Cut)—These Generators are arranged to give the greatest possible evaporating surface to the action of the air. They are made up of a number of evaporating chambers; these chambers are divided by frames into sinuous passages which are subdivided by aprons which by capillary attraction draw the gasoline into contact with the air passing through the generator. Gasoline evaporates as the square of its temperature. We are at all times ready to guarantee the amount of gasoline our generators will evaporate in a given time. Other things being equal, the more evaporating surface the gas generator presents, the stronger and more uniform will be the quality of the gas furnished.

Mixing of Gas—Ours is the only Automatic Mixer of air and gas ever invented. It weighs the gas which passes through it, and if too heavy it automatically opens an air-port and makes it lighter. If it is too light, it automatically shuts the air-port and makes the gas heavier. It is a governor of quality. It automatically compels all the gas that passes through it to contain the desired proportion of air and gasoline vapor.

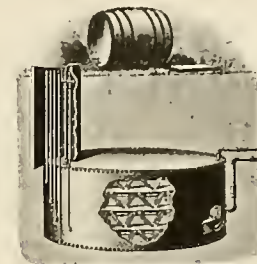
Utility—Gasoline is an economical and convenient fuel for cooking and laundry purposes and is adapted to gas ranges, broilers, laundry irons, heaters, gas logs, etc. Over twenty village plants are supplying gas made by these machines to their customers in a satisfactory manner and profitably to themselves.

Comparative Cost—Gas as manufactured by the Springfield Gas Machine costs less than \$1.00 a thousand feet. A flat flame burner consuming city gas at the rate of four cubic feet per hour gives a light of sixteen candles; whereas a Springfield Incandescent Burner consuming three feet per hour gives a light of fifty candles, showing that city gas costs more than four times as much. Acetylene gas costs over three times as much as gasoline. Electric light costs from five to ten times as much.

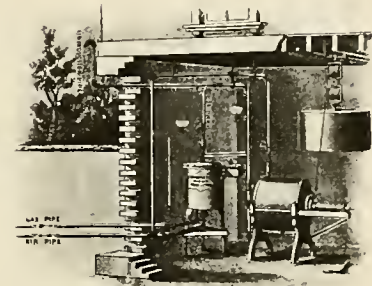
References—We should be glad to furnish, on request, a pamphlet containing 17 pages of names of those who are using successfully our machines.

Specifications—Architects should insist that specifications and contracts for gas machines should state the number of square feet of evaporating surface furnished by the gas generator, as well as its capacity in gallons.

Second—That the proposed machine should be supplied with an Automatic Mixer, or equalizer, which will deliver the gas which passes through it, mixed with such proportion of air, that it is of approximately uniform quality at all times, without adjustment or attention of any kind.



GAS GENERATOR



AIR PUMP

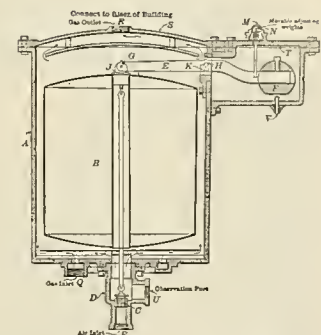


DIAGRAM OF MIXER

MONARCH ACETYLENE GAS CO.

OFFICES AND FACTORIES

66-70 EXCHANGE STREET
BUFFALO, N. Y.

1012 FARNAM STREET
OMAHA, NEB.

PRODUCTS.

Manufacturers of the MONARCH CARBIDE FEED ACETYLENE GENERATORS for private installations, MONARCH MUNICIPAL LUMP CARBIDE FEED GENERATORS for town plants and large installations, and dealers in Acetylene Accessories and Supplies of every description.

ADAPTABILITY.

While acetylene lighting is adapted to isolated residences, churches, stores, etc., it is especially adapted for lighting towns, villages and large institutions, conducting the gas through a pipe system from a central station to any place where light is needed.

The Insurance interests demand that all acetylene apparatus be submitted for examination and passed upon by the engineers of the National Board of Underwriters. The Monarch has passed this rigid examination and stood the test. It is permitted to be installed in any insured building without affecting the insurance in any way.

INSTALLATION.

Monarch Generators are shipped ready to attach to the pipe system. But two connections are necessary, one to the service pipe, and one to the air pipe leading outside. The generator should be placed in a cellar or basement, but any other convenient place where the water in the machine will not freeze, can be used. The place should be dry and roomy, so that free access can be had to all parts of the generator, and light enough so that the machine can be recharged without the aid of artificial light.



FIG. 1. MONARCH ACETYLENE GAS GENERATOR

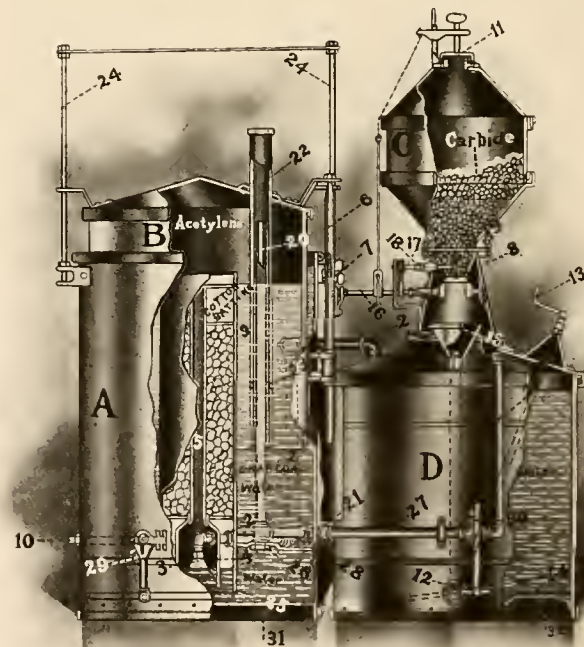


FIG. 2. CONSTRUCTION OF MONARCH ACETYLENE GAS GENERATOR

MONARCH
CARBIDE
FEED
GENERATOR.

The Monarch Generators are constructed to operate on the most advanced principle known to Acetylene Engineering—the feeding of the carbide into the water in quantities sufficient to insure steady and safe generation of the gas. It is a high grade machine for those who appreciate quality rather than cheapness—for cheapness is not economy; and for all classes of work in the field of lighting, it is without an equal.

OPERATION.

The operation of the Monarch Generator can readily be followed by referring to the sectional view in Fig. 2. Letter A represents the water tank; B the gasometer or gas bell; C the carbide holder; D the generator.

When the feed valve (8) is slightly opened, carbide drops into the water in D. Acetylene is instantaneously produced and passes from D through pipe 2 out of inverted funnel 3 into and up through the water seal 4, and through 5 up under the gas bell B, raising it, and by engagement of the rod 6 and lever 7 closes the valve 8. As acetylene is used, the gas passes from B through the purifier 9 into the service pipe 10 to the pipe system and burners. B serves as a temporary gas storage, pressure regulator and motive power for automatic opening and closing of feed valve 8.

RECHARGING.

After opening vent valve 30, the residue is removed by opening gate 12; turning handle 13 rotates scraper blade 14 and dislodges all residue from the slanting bottom 32 of D. Close 12 and refill with fresh water through funnel 15. Remove cap 15 and refill C with carbide. The water seal prevents acetylene from returning to D after once passing into the Bell B.

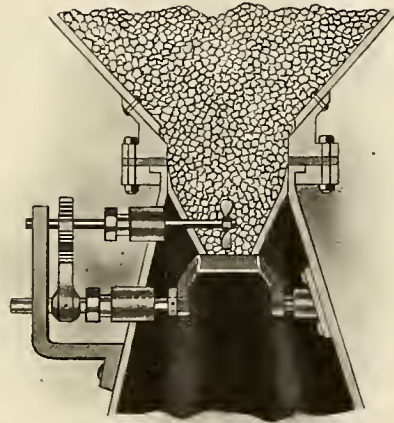


FIG. 3. CARBIDE FEED VALVE CLOSED

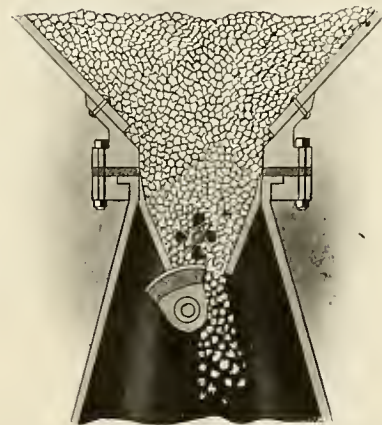


FIG. 4. CARBIDE FEED VALVE PARTLY OPENED

FEEDING
DEVICE.

The Feeding Device, which is the heart of the generator and is responsible for the phenomenal success attained by the Monarch, is clearly shown in Figs. 3 and 4. It consists of a solid hardened bronze casting, which may be described as a rotary slide or rocker valve. It is operated to open and close by a shaft passing through a stuffing box, and is turned by a lever fastened to the shaft and connecting loosely with the slide on the gas bell, by which it is positively controlled to feed just the right quantity of carbide at precisely the right time, producing acetylene only as needed at the burners, whether one or the full rated number of burners are lighted. Fig. 3 shows the valve tightly closed with the agitator in the carbide above it. Fig. 4 shows the valve partly open and carbide flowing into the generator. This valve is always tightly closed excepting at the moment when actually feeding carbide. Therefore, moisture cannot raise into the carbide and no after-generation ensues.

SIZES,
CAPACITIES
AND PRICES.

Size	Burner capacity	Pounds Carbide	Floor Space	Height	Price	Size	Burner Capacity	Pounds Carbide	Floor Space	Height	Price	MONARCH MUNICIPAL		
												Size	Max. Burner Cap.	Lbs. Carbide
20	1 to 20	20	22x40"	56"	\$100	300	1 to 300	300	36x104"	72"	\$ 600			
30	1 to 30	30	24x42"	56"	125	400	1 to 400	400	40x126"	80"	700			
40	1 to 40	40	24x46"	56"	150	500	1 to 500	500	44x132"	80"	850	400	500	400
50	1 to 50	50	26x50"	56"	175	600	1 to 600	600	96x96"	80"	1000	500	750	500
75	1 to 75	75	28x58"	61"	225	800	1 to 800	800	108x108"	80"	1250	600	900	600
100	1 to 100	100	30x60"	68"	300	1000	1 to 1000	1000	112x112"	80"	1500	1000	1500	1000
150	1 to 150	150	32x70"	72"	375	1500	1 to 1500	1500	116x116"	90"	2000	1500	2850	1500
200	1 to 200	200	36x96"	72"	450	2000	1 to 2000	2000	128x128"	90"	2500	2000	3000	2000

Prices on application

ESTIMATES.

All Generators F.O.B. either factory. Estimates for complete installations will be given on short notice. Every machine guaranteed perfect in construction and operation.

RUSH ACETYLENE GENERATOR CO.

Incorporated, Capital \$50,000.00
HOME OFFICE AND FACTORY
34 Beemis Street
CANANDAIGUA, N. Y.

NEW YORK CITY, N. Y.

BALTIMORE, MD.

BRANCH OFFICES
BUFFALO, N. Y.

SAVANNAH, GA.

PHILADELPHIA, PA.

PRODUCTS.

Manufacturers of RADIANT AUTOMATIC ACETYLENE GENERATORS for lighting homes, churches, towns, hospitals and factories. RADIANT ACETYLENE ENGINES for power and pumping purposes; RADIANT ACETYLENE REFLECTORS; BURNERS of all kinds; RADIANT ACETYLENE STOVES, RANGES, COOKERS and HEATERS; RADIANT ACETYLENE BUNSEN BURNERS and supplies for the Laboratory; RADIANT ACETYLENE SAFETY RADIATORS for isolated gas houses; RADIANT AUTOMATIC and NON-AUTOMATIC ACETYLENE TOWN LIGHTING PLANTS; ACETYLENE FIXTURES, CHANDELIERS and supplies for Acetylene.

ACETYLENE LIGHTING.

Acetylene Gas Lighting has become very popular for isolated dwellings, and is desirable for any place or purpose where the Best and Cheapest artificial lighting system is desired.

We have installed hundreds of large apparatus in hospitals, almshouses, factories, churches, laboratories and towns, and are prepared to handle contracts of any size.

SAFETY.

The Radiant Acetylene Generator is permitted by the National Board of Fire Underwriters. It is the safest, simplest, surest system of artificial lighting on the market at the present time.

HEATING, COOKING AND POWER.

Our Patent Dissolving Process has solved the problem of heating and cooking, and we have a complete line of heaters and cookers for Acetylene. The Radiant Acetylene Engine, works perfectly with our system, and is very desirable for pumping and power purposes.

COMPARATIVE COST.

Acetylene with our system compares favorably with kerosene in cost and is only equalled by the sun in purity and quality of light.

DISSOLVING PROCESS.

The problem of dissolving the carbide properly, prevented the use of Acetylene for heating, cooking and power, until our Dissolving Process was perfected. This process is very simple and consists of a device which keeps the entire mass of water in constant circulation the moment any carbide is dropped. Thus, every particle of water is utilized in the generating process, and not merely the top layer as in other machines. This is effected by means of the heat generated by dissolving the carbide, hence the process is automatic and self-sustained. It prevents the upper layer of water from doing all the work and becoming excessively heated.

BURNERS AND REFLECTORS.

The matter of burners is a most important one and no machine can do justice to itself unless good burners are used. We handle a complete line of burners and reflectors. The "Rush Acetylene Reflector" is the most artistic, powerful and practical acetylene fixture ever produced. We can supply any of the standard makes of burners.

ACETYLENE FOR THE GREENHOUSE.

Cornell University has made exhaustive tests and experiments which show that acetylene, as produced with our Dissolving Process, is of great value in forcing plant life.

PLANTS IN OPERATION

We now have in operation three of the largest automatic acetylene town lighting plants. The first one installed, of the large type, was at Canandaigua, N. Y., in September, 1904, which is to-day the largest automatic plant in the world.

PRICES.

Estimates, prices and an elaborate and exhaustive catalogue will be sent free upon request.



FIG. 1
THE RADIANT GENERATOR



FIG. 2
THE RUSH ACETYLENE REFLECTOR

TIRRILL GAS MACHINE LIGHTING COMPANY

75 Fulton Street

NEW YORK CITY, N. Y.

TELEPHONE, 624 JOHN

FOUNDED 1864

PRODUCTS.

Manufacturers of TIRRILL'S EQUALIZING GAS MACHINE for Lighting, Cooking, Power and Fuel purposes. GAS FUEL PLANTS, GAS and GASOLINE PUMPING ENGINES, GAS and GASOLINE POWER ENGINES, TIRRILL INCANDESCENT BURNERS, GAS-RANGES, COOKING and HEATING STOVES, GAS FIXTURES, GAS WATER HEATERS.

We also manufacture all kinds of Gas Supplies including AUTOMOBILE STORAGE TANKS, GAS MANTLES, etc.

TIRRILL'S EQUALIZING GAS MACHINES.

Tirrill's Equalizing Gas Machine is an independent plant, easily installed, absolutely safe, simple to operate, requires no fire or attention and has an automatic action that produces a uniform quality of gas.

ADVANTAGES.

First—No vessel containing gas is inside of the house. The Mixing Chamber is buried in the ground outside with the Generator.

This Machine is the only one in the world that does the "mixing" outside. It is approved by all fire underwriters.

Second—The Weight can be wound up with few or many lights burning without affecting them. It is a positive never-failing device against fluctuating lights while it is being wound. It may be operated by either weight or water.

Third—The Generator is wholly and absolutely buried in the earth, requiring no vault of any kind.

Fourth—This Generator requires no attention from one end of the year to the other, except filling.

Fifth—The simplicity of this machine, coupled with its continuous, positive and perfect action, has never been equalled. It takes more time and work to take care of one kerosene lamp than of our whole machine.

Sixth—It is absolutely safe. It has been on the market for many years and no defect in this machine has ever caused an accident.

Seventh—It is perfection itself for cooking purposes and will afford a constant supply of hot water with a suitable boiler. It will also pump water for the house when connected with a gas pumping engine.

Eighth—With our Patented Improved Incandescent Burner we can, with this Machine, furnish the cheapest light in the world.

Figure 1 represents the Tirrill Equalizing Gas Machine, fully set and ready for operation. This Machine makes Standard, Uniform Gas, instantly without Fire, Danger, Smell or Smoke, using bat-wing or any other burner of suitable size.

GUARANTEE.

We warrant this Machine to deliver a white, absolutely smokeless flame without odor. We guarantee it to be of perfect construction, permanent and easily managed, both for cooking and lighting purposes.

Tirrill's Pumping Engine (Fig. 2) can be run in connection with our Gas Machine or City Gas or Gasolene, and assures a plentiful supply of water at all times for all purposes. It can lift 1000 to 2000 gallons of water hourly to a height of 100 ft. Costs about two cents an hour.

Tirrill's Incandescent Gas Burner is a 70 candle power light, costing less than 1/2 per cent. per hour to maintain. It is constructed so as to fit any fixture and can be used with ordinary globes, avoiding the expense of special glassware.

It is a non-vibrating burner that saves money in mantles; it is adapted to City Gas or Gas made by our machine.

TIRRILL'S PUMPING ENGINE.

TIRRILL'S INCANDESCENT GAS BURNER.



FIG. 1. TIRRILL'S EQUALIZING GAS MACHINE

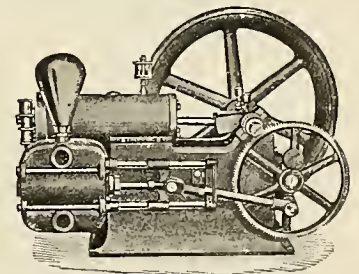


FIG. 2. TIRRILL'S PUMPING MACHINE



FIG. 3. TIRRILL'S INCANDESCENT GAS BURNER

SUNLIGHT GAS MACHINE CO.

OFFICE
49 WARREN STREET
NEW YORK CITY, N. Y.

FACTORY
20-26 RICHARDS STREET
BROOKLYN, N. Y.

PRODUCTS.

We are manufacturers of the well-known SUNLIGHT "OMEGA" ACETYLENE GAS GENERATOR for the illumination of buildings.

We also make Acetylene Apparatus for other purposes.

ACETYLENE LIGHTING.

The position of Acetylene as the most effective illuminant known to mankind is settled scientifically and practically, and the only question the architect and owner have to consider in installing this modern light is the make of apparatus they will use; in other words, which Acetylene Gas Generator will they specify.

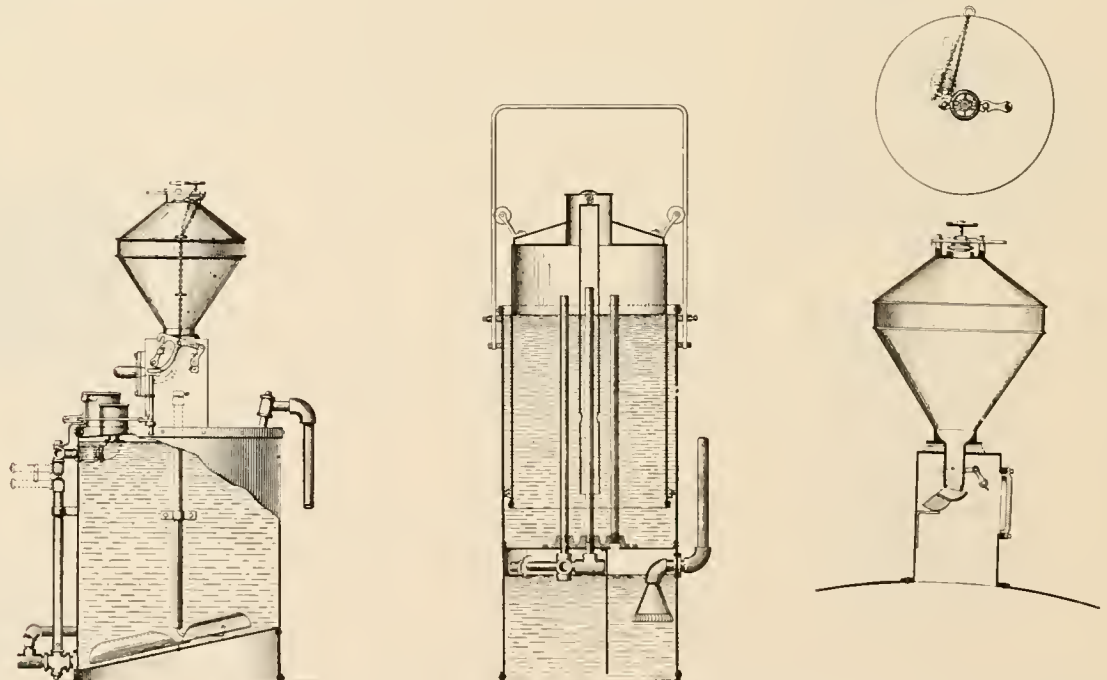
OUR "OMEGA" GENERATOR.

We offer the Sunlight "Omega" Acetylene Gas Generator, making for it the broad claim that it is the best that is purchasable to-day. This claim is made conservatively, and upon substantial grounds, regarding which we invite investigation.

We have devoted the utmost attention and scientific skill to embodying the prime requisites and every possible improvement in our "Omega," and guarantee our generator to be:

First—Absolutely safe; this result being obtained by means of devices that are so arranged that an accident is impossible, even with the most careless attention.

Second—Our Generators are so constructed that they do not have either valves or diaphragms (a potent source of weakness in other machines).



INTERIOR VIEWS OF SUNLIGHT "OMEGA" WITH POSITIVE CARBIDE-FEED

Third—The Carbide "feed" in the "Omega" Generator is a positive feeding device and is much superior to the valve feed system used on other machines.

By means of this device carbide can be discharged into the water only as the carbide is used, and it is simply impossible for a greater amount to pass into the generator at any time than is provided for by the operation of this mechanism. Neither accident nor design can in any way modify this positive result.

We claim that our feeding device is the only way of introducing carbide into water with perfect safety for the following reasons: Should the cap of the hopper be left off by oversight, the ordinary machine would continue to generate gas, which would pass off into the room until all the carbide in the hopper was exhausted.

In the Sunlight "Omega," under similar conditions, no carbide will be deposited in the generator, and the machine will not generate any more gas until the cap is replaced. This is one of the crowning points of the Sunlight "Omega," and is a slight warning that the machine needs attention and refuses to work until it receives it.

Fourth—Our machine can be recharged and refilled with all lights burning if necessary, although on general principles it is more satisfactory to conduct this operation in the daylight.

Fifth—Our Generator is the simplest on the market; filling, cleaning, etc., being all direct operations, each of them checked and controlled by simple arrangements which make it impossible for even the most careless to go astray.

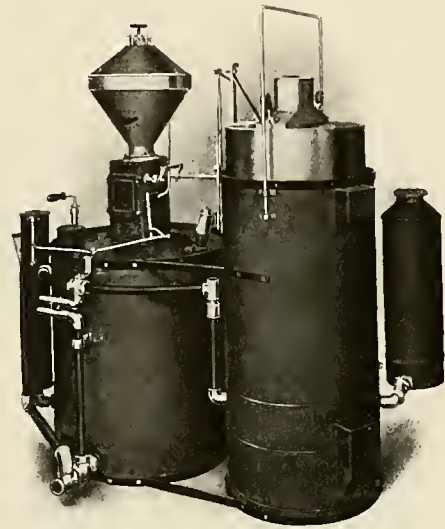
Sixth—The Sunlight "Omega" Generator is wonderfully compact, and yet it is rated on a ten-hour lighting basis, the highest possible rating for a carbide-feed system. This compactness necessitates unusually small floor space for the installation of the Generator, which can be passed through an ordinary doorway to cellar or basement.

Seventh—The Sunlight "Omega" is constructed of the highest grade galvanized sheet steel, all joints double seamed or riveted, and the workmanship cannot be surpassed. We manufacture the machines at our own factory, and every machine is tested with carbide before delivery.

WEIGHT AND DIMENSIONS.

Lights	Floor Space Inches	Height Inches	Weight Crated Pounds
10	19 x 39	54	190
20	22 x 42	58	250
30	24 x 44	60	290
50	28 x 46	62	350
75	31 x 49	67	400
100	33 x 56	71	450
150	37 x 64	80	525
200	42 x 71	83	590
250	45 x 73	85	650
300	49 x 77	87	700

Weights and dimensions of larger sizes furnished on application.



MACHINE WITH SAFETY DEVICES CONNECTED
READY FOR OPERATION

ADAPTABILITY.

Our machines have been duly examined and passed by the National Board of Fire Underwriters, and also by the Building Departments of the chief cities of the United States and Canada. Insurance rates are the same where acetylene is used as with any other gas.

INSTALLATION.

Where a building is piped for any gas, the same pipes and fixtures are utilized for Acetylene. To the main rising pipe in the basement the generator is attached, the burner tips are changed, and all is in readiness for the new illuminant. If a system of piping must be placed, even in a completed and finely finished building, this need not be an obstacle. Black wrought-iron pipe of the small sizes necessary for distributing Acetylene is very inexpensive, and in the average building this pipe can be placed in such manner that it will be concealed within the walls and between floors.

More than one building can be supplied with Acetylene from a single generator, as Acetylene passes through pipes to any distance as readily as does common gas. In most cases a residence, a factory or store, and, perhaps, the street lamp are supplied from the same generator. Frequently a church and the parsonage, with one or more street lamps, are supplied from one apparatus.

TERRITORY.

Our Generators can be shipped to any part of the world, and can be installed by any competent workman.

THE BRUNSWICK REFRIGERATING COMPANY

NEW BRUNSWICK, N. J.

PRODUCTS.

Manufacturers of HOUSEHOLD HYGIENIC ICE-MAKING and REFRIGERATING PLANTS, ICE-MAKING and REFRIGERATING MACHINES, REFRIGERATOR BOXES, "BRUNSWICK" AMMONIA COMPRESSORS.

HOUSEHOLD ICE-MAKING.

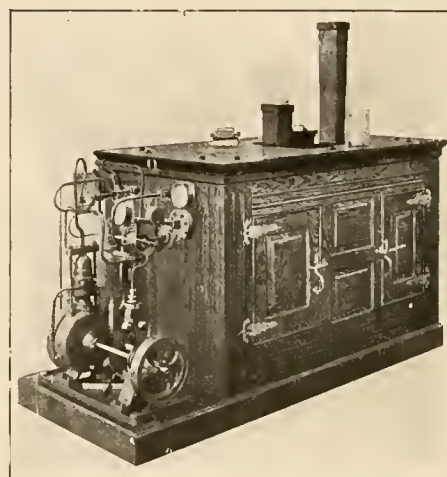
Mechanical refrigeration makes possible the preservation of food products, supplies pure hygienic ice at all times and forever does away with the lodgment of poisonous germs which accumulate in wood or metal lined refrigerators that become water-soaked and soggy from melted ice. It insures a uniform temperature and makes the refrigerator a fountain of health instead of a source of disease.

ICE-MAKING MACHINE.

The illustration shows a combined ice-making and refrigerating machine, which when operated ten or twelve hours each day makes 20 pounds of Hygienic Ice and refrigerates two storage compartments to a temperature of from 35 to 38 degrees F., maintaining these temperatures through the night when the machine is idle. The machine may be driven by any available power. A $\frac{1}{2}$ horse power electric motor is the most desirable motive power.

The size of the first compartment is 18" wide, 18" deep, 26" high.

The second compartment is 14" by 19" by 26" and the complete plant is 32" wide, 84" long and 44" high, weighing 1475 lbs. net, and boxed for shipment 1875 lbs.



BRUNSWICK ICE-MAKING AND REFRIGERATING MACHINE

FULLY AUTOMATIC.

The machine is automatic throughout and can be operated by any person of ordinary intelligence.

REFRIGERATOR BOXES.

We also make Refrigerator Boxes, combined with our Automatic Refrigerating Machines arranged for refrigeration only. The entire space in the box is divided into three compartments and the temperature is held between 35 and 40 degrees F. The compressor requires about one horse power for its operation.

"BRUNSWICK" AMMONIA COMPRESSORS.

We build "Brunswick" Ammonia Compressors with refrigerating capacities ranging from 200 pounds to 24,000 pounds. The Ice-Making capacity of a machine is rated by the number of pounds of ice it will produce every 24 hours. The Ice Making capacity of a machine is rated at one-half its refrigerating capacity, based on 24 hours for each day's run. Hence, when used for refrigerating purposes, a machine is rated in pounds per day of 24 hours, equivalent to the refrigeration which would be produced by an equal number of pounds of melting ice.

COMPLETE REFRIGERATING OR ICE-MAKING PLANTS.

We install complete Ice Making Plants, complete Refrigerating Plants or combined Ice Making and Refrigerating Plants. Price and all necessary details will be furnished upon application.

BUFFALO REFRIGERATING MACHINE CO.

SALES OFFICE
126 Liberty Street
NEW YORK CITY, N. Y.

FACTORY
HARRISON, NEW JERSEY

TELEPHONE CONNECTION

PRODUCTS.

Manufacturers of complete ICE MACHINES and REFRIGERATING PLANTS of all sizes, for Ice Plants, General Cold Storage, Breweries, Hotels, Apartment Houses, Candy Manufacturers, Ice Cream and Dairy Produce Dealers, Powder Works, etc.

Builders of the BUFFALO VERTICAL DOUBLE ACTING COMPRESSOR, operated by an improved slide valve steam engine on the smaller, and horizontal Corliss on the larger sizes.

DETAILS OF CONSTRUCTION.

All machines are heavily built, and tested to 300 lbs. pressure before leaving the factory. All parts being made to gauge they are interchangeable so that new parts can be quickly supplied if needed.

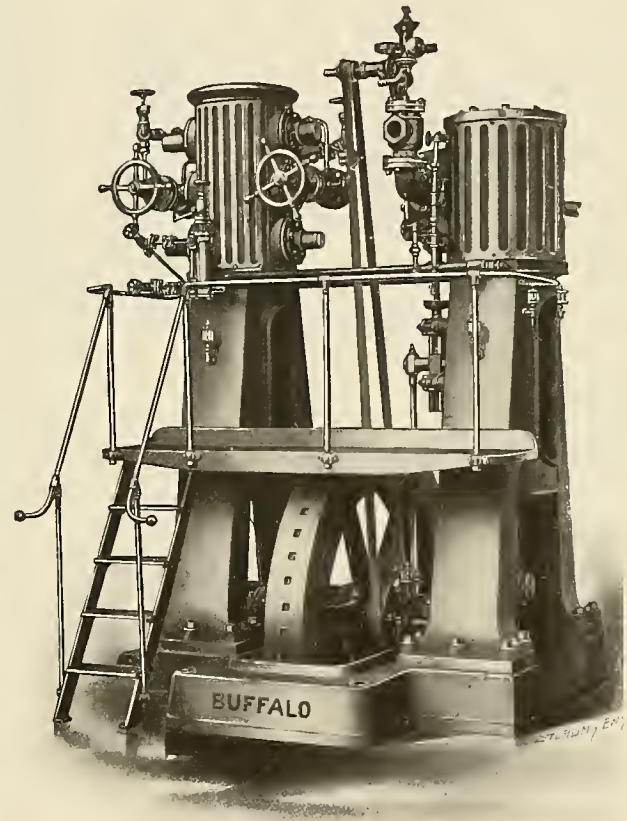
Machines are noiseless in operation, being provided with cushion valves, giving long life to same. The general design of the machines makes all parts easy of access.

The condensers are of the double pipe or atmospheric type of improved design, producing the lowest pressures with the least amount of water.

Brine coolers are of the double pipe or shell type. All other parts, such as valves, fittings, pipe, oil separators, suction trap, liquid receivers, etc., are in keeping with the other parts of the apparatus.

Our long experience in the business (over 20 years), qualifies us to design and execute work which will give satisfaction in durability, efficiency, ease of handling, etc., as the numerous plants installed by us bear testimony.

Further details may be had by addressing or calling at our general sales office, 126 Liberty Street, New York City, where all those interested in the trade may be supplied with our Bulletins, which also contain valuable data and tables relating to refrigeration.



STANDARD VERTICAL STEAM-DRIVEN REFRIGERATING MACHINE

With a daily capacity of 3 to 22 tons

CARBONDALE MACHINE CO.

MAIN OFFICE AND WORKS
CARBONDALE, PA.

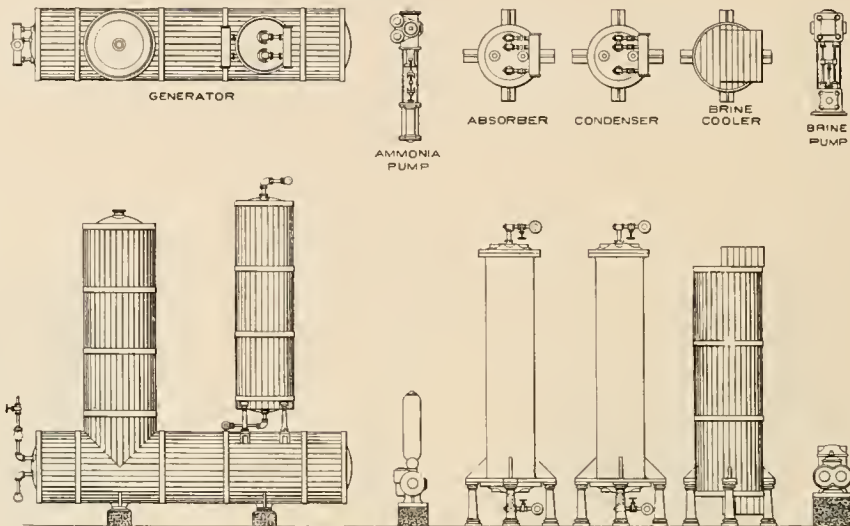
NEW YORK
BOSTON

BALTIMORE

PITTSBURG
CHICAGO

PRODUCTS.

ICE MAKING AND REFRIGERATING MACHINERY FOR HOTELS, OFFICE BUILDINGS, HOSPITALS, CLUBS, RESIDENCES, etc.



ICE MACHINERY IN ENGINE ROOM
For Cooling Brine Pumped to Refrigerators. Apparatus for Hotel

ADAPTABILITY.

The Carbondale Machine Co.'s system of refrigeration is specially adapted for Hotels, Apartment Houses, Office Buildings, Restaurants, Clubs, Hospitals and other public institutions where low brine temperatures are required, noiselessness is absolutely essential, and a low operating cost is necessary.

Its distinctive features, viz., the use of exhaust steam and the saving of condensing water, enables this system to furnish refrigeration at a very low cost.

COST.

A city hotel of, say, 200 rooms requires about a dozen refrigerator boxes, aggregating approximately 3000 cubic feet of space, and uses additionally about one ton of ice per day.

A 12-ton refrigerating plant, including the ice-making tank and the brine circulating system complete, installed ready for service, would cost between \$5000 and \$6000, exclusive of the refrigerator boxes.

POWER EQUIPMENT.

Such a plant requires about 15 H.P for its operation, including the power for the brine and ammonia pumps. For hotel refrigeration, exhaust steam, from electric lighting and other engines and auxiliary steam machinery, is usually available; at small additional expense the refrigerating machine can be arranged for operation with exhaust steam, thus eliminating the item of steam from the cost of operation.

WATER REQUIRED.

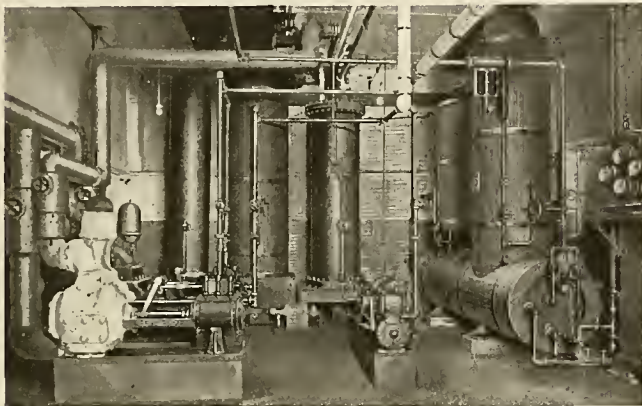
Such a plant requires about 15 gallons of condensing water per minute; this passes through an ammonia condenser of the closed type, so that the water can be used in any part of the building for other purposes. This condenser being of a very efficient type, the water consumption of the plant does not usually exceed the other requirements of the building.

DRINKING
WATER
COOLING
SYSTEMS.

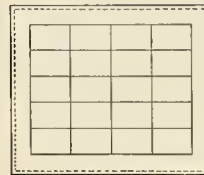
For this purpose, plants of 5 to 10 tons of refrigerating capacity, costing from \$2500 to \$4000, including water circulating system, are generally used. They are operated by means of exhaust steam. Electric power can be used where steam is not available. Such machines are designed to operate only during office hours, or, say, 8 to 10 hours daily.

COOLING
BUILDINGS.

The entire air supply of the New York Stock Exchange is cooled during the summer months by the Carbondale Machine Co.'s refrigerating system, using low pressure exhaust steam from the lighting and elevator engines for operating three 150-ton machines. This plant was started in 1904, and has performed its work in a very satisfactory manner, both as to cooling effects and economy, due to the use of low pressure exhaust steam.



ICE MACHINERY AS IT LOOKS IN ENGINE ROOM
(Ice on Brine Pump)



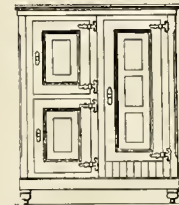
ICE TANK



REFRIGERATOR



ICE TANK IN ENGINE ROOM
OR BASEMENT



REFRIGERATOR IN
KITCHEN

DATA
SHEETS.

Blank forms, indicating the information required for estimating upon the installation of such ice-making and refrigerating plants, will be sent upon application. Preliminary drawings and specifications, as well as estimates, will be cheerfully furnished.

REFERENCES.

The Carbondale Machine Co.'s refrigerating plants are in operation to the extent of more than 400 plants; we name among others the following, viz:

HOTELS.

Hotel Astor, New York City.
Hotel Belmont, New York City.
Hotel Chatsworth, New York City.
Hotel Gotham, New York City.

Hotel Pierrepont, New York City.
Bretton Hall, New York City.
Hotel Belvidere, Baltimore.
Hotel Aspinwall, Lenox, Mass.

Hotel Lorraine, New York City.

CLUBS.

University Club, New York City.

Harmonie Club, New York City.
Engineers' Club, New York City.

DEPARTMENT
STORES.

Siegel-Cooper Co., New York City.
John Wanamaker, New York City.
Abraham & Strauss, Brooklyn.
Henry Siegel & Co., Boston.

Marshall Field & Co., Chicago.
Sears, Roebuck & Co., Chicago.
Hutzler Bros., Baltimore.
McCreery & Co., Pittsburgh.

HOSPITALS.

St. Luke's Hospital, New York City.

Kings County Hospital, Brooklyn.

OFFICE
BUILDINGS.

Hall of Records, New York City.
Stock Exchange, New York City.
Board of Trade Building, Boston.
C. & N. R. R. Building, Chicago.
First National Bank, Chicago.
Chicago Post Office, Chicago.
Heyworth Building, Chicago.

Railway Exchange, Chicago.
Union Traction Building, Cincinnati.
Terminal Traction Building, Indianapolis.
Frick Building, Pittsburgh.
Keystone National Bank, Pittsburgh.
Penn. R. R. Building, Pittsburgh.
Telephone Building, Pittsburgh.

RESIDENCES.

L. C. Phipps, Pittsburgh.
A. R. Peacock, Pittsburgh.

F. T. F. Lovejoy, Pittsburgh.
Gen. W. T. Palmer, Glen Eyrie, Col.

CREAMERY PACKAGE MFG. CO.

Refrigerating Machinery Branch

CHICAGO, ILL.

FACTORY AT DEKALB, ILL.

PRODUCTS. ICE and REFRIGERATING MACHINERY, DOUBLE-PIPE CONDENSERS, BRINE COOLERS, SEMI-STEEL and DROP-FORGED AMMONIA FITTINGS.

FACILITIES AND GUARANTEE. Our factory is equipped with the most modern equipment for turning out the highest grade of work with great rapidity. We are prepared to accept orders for and to install machinery in any part of the United States, or in any foreign country.

Our long experience in the manufacture of ice-making and refrigerating machinery and our ample capital qualifies us to fully guarantee our machinery.

TYPE OF MACHINERY. Our machines are of the ammonia compression type. Unless otherwise specified, all machines are horizontal and double acting, which we believe is the most economical.

Being the first on the market with a successful small machine, we can justly claim pre-eminence in this particular line. We have over one thousand machines in successful operation. The complete list of users, which will be sent on request, contains the names of some of the best known and best posted users of mechanical refrigeration in the country, and includes a number of machines in the United States government hospitals and army posts.

COMPRESSORS CLASS "D." Our Compressors, Class "D" (Fig. 1), range in capacity from twenty tons to sixty-five tons refrigeration. Unless otherwise specified, a complete machine includes a Corliss engine of sufficient size to furnish ample power. The Compressor can be belt driven by the use of an out-board pillow block.

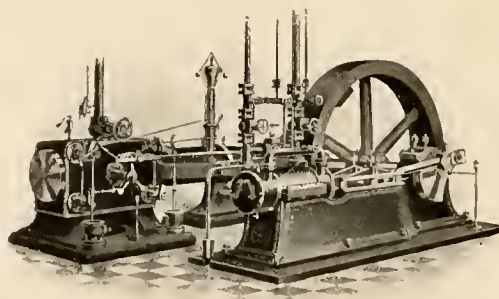


FIG. 1. COMPRESSOR, CLASS "D"

COMPRESSORS CLASS "A." The Class "A" Compressors are center crank machines made for belt driving only. This type of compressor is the first successful small machine that has been put on the market. Capacity three to twenty-five tons.

COMPRESSORS CLASS "B." The Class "B" Compressors are side crank machines; they differ from Class "D" mainly in the style of the frame; they are especially suited for direct connection with slide valve engines, or they may be belt driven, as preferred. The capacities range from three to twenty-three tons.

PRICE LIST OF
COMPRESSORS.
SUBJECT TO
DISCOUNTS.

CLASS A—CENTER CRANK

No. of Compressor	Tons Refrigeration	Or Tons Ice	Size of Cylinder Inches	Speed. Revolutions per Minute	Size of Pulley Inches	Diameter of Shaft Inches	Diameter of Discharge Pipe Inches	Diameter of Suction Pipe, Inches	Horse Power Required	Gallons Water Required per Minute at 60°	Shipping Weight Pounds	Price F. O. B. Chicago
1½	3	1½	4½x 6	125	36x 6	2½	1	1¼	4-5	5	3,500	\$1,213
2	5	2	5½x 6	125	40x 6	2½	1	1¼	7-8	7	4,500	1,473
3	6	3	5½x 9	115	40x 6	2¾	1	1¼	8-9	8	5,200	1,733
3½	7	3	5½x 9	115	40x 6	2¾	1	1¼	9-10	9	5,500	1,832
4	8	4	6¼x 9	105	48x 8	3	1¼	1½	10-12	11	7,200	2,079
5	10	5	6¼x 11	105	48x 8	3½	1½	2	13-15	14	8,800	2,339
6	12	6	7 x 11	105	54x 10	4	1½	2	15-18	17	9,800	2,685
7	14	7	8 x 11	95	60x 10	4	1½	2	18-20	20	11,000	3,032
8	18	9	9 x 11	95	66x 12	4½	2	2½	24-26	25	12,800	3,638

CLASS B—SIDE CRANK

6-B	13	6	7 x 14	90	60x 10	4	1½	2	18-20	17	15,000	\$3,075
7-B	17	8	8 x 14	90	66x 12	4½	1½	2	24-26	24	17,500	3,825
8-B	23	10	9 x 14	90	72x 12	5	2	2½	34-36	34	23,000	4,650

CLASS D—SIDE CRANK

11-D	20	10	8½x 18	75	84x 12	5½	2	2½	30-33	28	23,000	\$6,930
12-D	25	12	9½x 18	75	96x 12	6½	2	2½	37-40	34	28,000	7,536
13-D	30	15	10½x 18	75	96x 14	6½	2½	3	45-48	42	35,000	8,749

Nos. 1½ to 8 compressors are for belt driving and include no power or belt.

Nos. 6-B, 7-B and 8-B compressors include direct connected slide valve engines.

Nos. 11-D, 12-D, and 13-D compressors include direct connected Corliss engines.

Prices for ice-making details, expansion coils, or brine coolers to suit requirements of each installation will be furnished on application.

We also build compressors directly connected to tandem compound and cross compound Corliss Engines, in sizes from one hundred to two hundred tons.

Detailed information regarding the construction of our machinery will be furnished on request.

INSTRUCTIONS
AS TO ORDERS.

Excepting in the smaller sizes, all machines must be made to order. The length of time necessary for the delivery of machines will depend upon the size and character of the installation. We have in many of the large cities special agents who are authorized to accept contracts on behalf of the Company, and who are prepared and are willing to assist architects in estimating installation.

ESTIMATES.

To estimate intelligently we must have the following information:

1. Plan of building, showing proposed location of machine, and rooms to be cooled and the dimensions.
2. State what the machine is to be used for, whether for refrigeration, ice making or a combination of both.
3. If refrigeration, give inside length, width and height of rooms or boxes to be cooled. State temperature desired in different rooms.
4. Describe fully the insulation, and give the temperature to which outside of room is exposed.
5. How often will doors be opened.
6. State kinds, weights and temperatures of the stock to be put into the room each day.
7. If for ice making, state quantity of ice you wish to make per twenty-four hours, and number of hours machine is to be operated daily; also whether ice is to be made from distilled water or opaque.

INSTALLATION.

Our machinery can be installed by any contractor, or the work will be undertaken by ourselves.

GRAND RAPIDS REFRIGERATOR COMPANY

Main Office and Factories

GRAND RAPIDS, MICHIGAN

CHICAGO OFFICE AND WAREROOMS

174 EAST LAKE STREET
C. A. WELCH, *Manager*.
TELEPHONE 4553, MAIN

NEW YORK OFFICE AND WAREROOMS

54 WARREN STREET
W. H. WHITTIER, *Manager*
TELEPHONE 1235 CORTLANDT

PRODUCTS.

Manufacturers of the LEONARD CLEANABLE REFRIGERATORS, lined with zinc and real porcelain. Refrigerators for Hotels, Residences, Cafés, Saloons, Clubs, Apartment Buildings, Grocers, Butchers and Florists.

FACILITIES.

We operate three factories and employ only skilled mechanics.

We carry a very complete assortment of stock sizes to meet every requirement, in Grand Rapids, Chicago and New York, which enables us to deliver our goods in the shortest space of time.

PORCELAIN LINED REFRIGERATORS.

Our real Porcelain Lined Refrigerators are *not* white enamel paint or galvanized iron, but *real porcelain* on heavy sheet steel. The porcelain is fused on to the steel at a temperature of 2500° Fahrenheit and is proof against corrosion by grease or acid. It is preferable to crockery tiles, which are sure to craze, or opal glass, which is easily broken. Tile lining being made up of many joints soon fills with impurities. In our refrigerators, not only is the entire provision chamber lined with real porcelain, but the shelves are also made of the same material. We are the only refrigerator manufacturers who have a complete plant for the production of real porcelain enamel. Samples of our porcelain lining will be gladly forwarded, free by mail, or through our agents, to all who are interested.

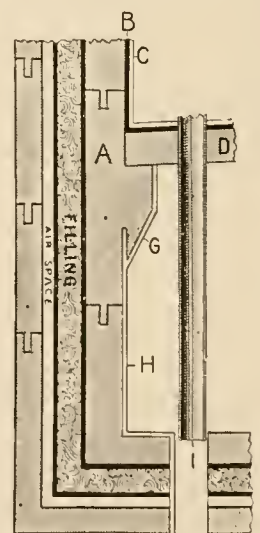
When you consider all the advantages of our real porcelain lining over every other kind, and also consider the superior construction which we offer in our removable flues for cleanliness; our air-tight locks; our interior construction, which returns the water from accidental leakage to the waste pipe, insuring the durability of the refrigerator; our sliding adjustable shelves, our mineral wool filling, with eight walls for insulation, and the superior workmanship of our Grand Rapid mechanics, we are confident you will buy the LEONARD CLEANABLE REFRIGERATORS.

INTERIOR CONSTRUCTION.

One of the most important features in the construction of refrigerators is the keeping of dampness from the woodwork. We are the sole owners of the only patent which accomplishes this object, and as such work is necessarily concealed from view, your only way to be sure of a durable refrigerator, and one that is free from smell or mould, is to buy the LEONARD CLEANABLE. In the illustration *A* is a part of the inside box; this is made from a two-inch plank, with a flange *G*, which supports the ice compartment. *B* is the waterproof sheathing behind the zinc in the ice chamber. *D* is the bottom of the ice chamber. Should the zinc lining start leaking, the water would run down either the waterproof sheathing *B*, or the incline *D*, which is thoroughly waterproofed to the plank *A*. This is also thoroughly waterproofed, and the water would be thrown forward onto the flange *G*. This flange has a groove on the under side into which the zinc lining *H* projects. This lining would catch all the water and lead it into the waste pipe *I*. Thus is the durability of the refrigerator assured.

OUR TRAP ATTACHMENT.

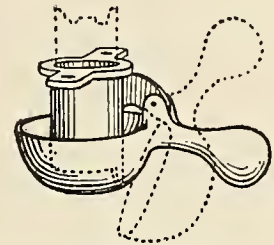
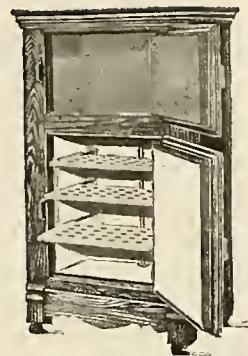
Our PATENT IRON TRAP (Fig. 2), which is used on our refrigerators is attached to the bottom of the refrigerator with screws. It cannot drop off and let cold air escape. In case of clogging, the weight of water in pipe will cause the trap to open automatically and flush itself. Dump contents of trap into waste pan before emptying same and it will be unnecessary to put a dish in place of waste pan, as the trap will catch all the waste water until pan is replaced.



Patented June 28, 1890
LEONARD ENAMELED
Interior Construction

ILLUSTRATIONS
AND PRICE LIST.

DIMENSIONS							
No.	Code	Length	Depth	Height	Weight	Lbs. Ice	Price
51	Arctic.....	25	18	50	200	55	\$37 10
	Ice Chamber.....	15 ³ / ₈	12	14 ¹ / ₂			
	Provision Chamber	17	12	21 ³ / ₈			
52	Account.....	29	19	54	220	75	45 00
	Ice Chamber.....	18 ⁵ / ₈	12 ¹ / ₂	14 ³ / ₄			
	Provision Chamber	20 ¹ / ₄	12 ¹ / ₂	21			
53	Abram.....	30	20	59	250	85	50 50
	Ice Chamber.....	20 ¹ / ₂	14 ¹ / ₄	16 ³ / ₄			
	Provision Chamber	22 ⁵ / ₈	14 ¹ / ₄	26 ¹ / ₂			
54	Africa.....	35	22	52 ¹ / ₂	265	150	53 80
	Ice Chamber.....	24 ¹ / ₂	15 ⁵ / ₈	17			
	Provision Chamber	26 ¹ / ₂	15 ⁵ / ₈	21 ³ / ₄			
64	Gage.....	36	24	67	350	125	74 80
	Ice Chamber.....	25 ³ / ₄	18	18			
	Provision Chamber	27 ³ / ₄	18	33 ¹ / ₂			

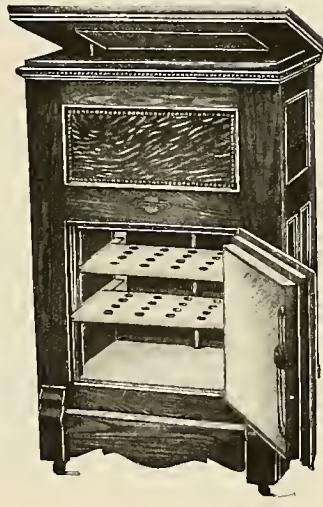


No. 51, 52, 53, 54 and 64
Case of Ash. Golden Oak finish.
Insulated with Mineral Wool. Por-
celain Sliding Adjustable Shelves.
Eight Walls. Provision Chamber
lined with Genuine Porcelain on
Heavy Sheet Steel. Ice Chamber
lined with Heavy Galvanized Iron.
NOTE. No. 64 has two doors to
provision chamber.

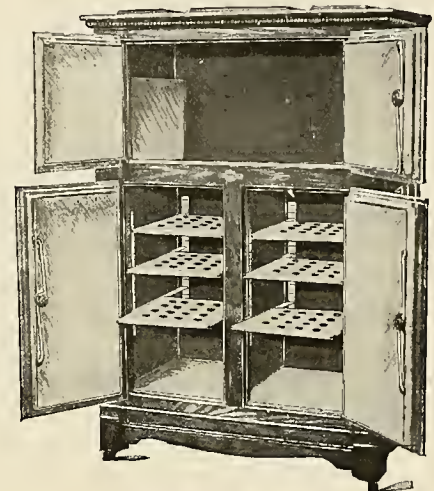
FIG. 2. PATENT TRAP
ATTACHMENT



Nos. 93, 94 and 95
Case of Ash. Front Panels Quar-
ter Sawed Oak. Insulated with
Mineral Wool. Sliding Adjustable
Shelves. Golden Oak Finish. Lined
with Zinc. Eight Walls.



Nos. 70, 71, 71A and 72
Case of Ash. Front Panels Quar-
ter Sawed Oak. Insulated with
Mineral Wool. Sliding Adjustable
Shelves. Golden Oak Finish. Lined
with Zinc. Eight Walls.



Nos. 38, 76 and 77
Case of Ash. Front Panels Quar-
ter Sawed Oak. Insulated with
Mineral Wool. Sliding Adjustable
Shelves. Golden Oak Finish. Lined
with Zinc. Eight Walls.

OUTSIDE DIMENSIONS							INSIDE DIMENSIONS				
No.	Code	Length	Depth	Height	Weight	Lbs. Ice	Price	No.	Ice Chamber	Provision Chamber	Ice Door
38	Nimbus.....	38 ¹ / ₄	22	48	250	130	\$47 30	38	28x15 ⁵ / ₈ x13 ¹ / ₂	14 ¹ / ₂ x15 ⁵ / ₈ x19 ¹ / ₂	26 ⁵ / ₈ x11 ¹ / ₂
76	Oasis.....	42	24	56	320	197	59 50	76	29x18 ⁵ / ₈ x17	15 ³ / ₄ x18 ⁵ / ₈ x25 ¹ / ₂	28x14 ¹ / ₂
77	Officer.....	43	25 ¹ / ₂	62 ¹ / ₂	360	216	65 00	77	31 ¹ / ₂ x18 ¹ / ₂ x18	16 ¹ / ₂ x18 ¹ / ₂ x29	15 ¹ / ₂ x31
70	Nectar.....	27	18	42 ¹ / ₂	145	50	23 30	70	16x11x11 ¹ / ₂	18 ¹ / ₂ x11 ⁵ / ₈ x15 ¹ / ₂	
71	Noble.....	30	19	45	175	85	28 35	71	19x11 ³ / ₄ x13 ¹ / ₂	21 ¹ / ₂ x12 ¹ / ₂ x16 ¹ / ₂	
71A	Manacle.....	32	20	47	195	95	31 50	71A	21x12 ¹ / ₂ x11 ¹ / ₂	23 ¹ / ₂ x13 ¹ / ₂ x19	
72	Nutmeg.....	32	24	47	220	110	34 65	72	21x16 ³ / ₄ x12 ¹ / ₂	23 ¹ / ₂ x17 ¹ / ₂ x19	
93	Diana.....	25	18	50	175	55	26 50	93	15 ¹ / ₈ x12 ¹ / ₄ x14 ¹ / ₂	19 ¹ / ₄ x12 ¹ / ₄ x20 ¹ / ₂	14 ³ / ₄ x12
94	Dulcina.....	29	19	54	200	75	32 10	94	18x12 ¹ / ₂ x15	20 ¹ / ₄ x12 ¹ / ₂ x24	16 ¹ / ₈ x12 ³ / ₄
95	Digit.....	30	20	59	225	85	36 30	95	17x14 ¹ / ₄ x16 ³ / ₄	22x14 ¹ / ₄ x26 ¹ / ₂	14 ¹ / ₂ x17 ³ / ₄

EUREKA REFRIGERATOR CO.

Temple and Nowland Avenues
INDIANAPOLIS, IND.

TELEPHONE, MAIN 1259.

PRODUCTS—EUREKA OPAL GLASS REFRIGERATORS, the Highest Grade Refrigerator in the world.

Eureka Opal Glass Refrigerators—The public in general has recognized the superior sanitary merits of the Eureka Opal Refrigerators (Fig. 1) over the old style of zinc, wood, tile and porcelain lined. There is no wood to become filled with germs, no metal to corrode, and no inaccessible corners to catch and hold dirt and decaying vegetable matter. The inside and outside of the case is made of opal glass, and the interior arrangements are all made so as to be easily removed for perfect cleansing (Fig. 1).

Construction—The frame is made of three inch lumber, thoroughly kiln dried, mortised, tenoned and nailed together, making a frame for strength and durability which cannot be equalled. The Snow White Opal Material is placed in large sheets both on the interior and the exterior. The sheets are closely joined and held in place by nickel-plated brass strips screwed into the solid wood frame.

The top, back, two sides, floor and all the doors are insulated with a two-inch course of Granite Rock Wool, and two courses of Air-Proof Insulating Paper. Every article of metal used in the refrigerator, except the ice pan, rack and shelves, is made of solid brass, nickel-plated. There is absolutely nothing in the refrigerator to rust or corrode. All Opal refrigerators are great ice-savers and in a short time will offset the difference of the first cost in the saving of the ice bills.

Oak-Case Refrigerators—This type is opal lined; the frame is constructed of two and one-half inch poplar lumber thoroughly seasoned, mortised, tenoned, glued and nailed together, making a rigid and substantial frame. The best grade of White Oak is used in the case, which has raised panels and a highly polished hand-rub finish.

The Oak Case, Opal-Lined Refrigerators are insulated in the same manner (Fig. 2) as the All Opal Refrigerators.

Opal Glass—The beautiful and cleanly Opal Material used for lining all of our Refrigerators is a Snow White Material (Fig. 3), originated by us, which is beyond question the best and most sanitary material that can be used for a refrigerator lining. It is non-absorbent, and will not crack or craze. It is always as cold as a stone jar, and a perfect non-conductor. Opal can be cleaned of any accumulations on its surface as readily as a china plate. The strongest vegetable acids have no effect upon it whatsoever.

Heavy Wire Shelf-Frames—The shelf frames (Fig. 4) are constructed of heavy No. 3 wire formed to fit the space desired. The frames are covered with No. 13 wire, with a three-quarter inch mesh. This construction makes extra strong and durable shelves, which do not in the least retard the circulation of air in the refrigerator.

All shelves are coated with block tin, giving them a beautiful silver finish and preventing any possibility of corrosion. The shelves are light in weight and easily removed for cleaning.

Hinges, Trimmings and Rear Ice Doors—All hinges, catches, screws and trimmings, including the drain pipes and traps, are made of solid brass, heavily nickel-plated, and will not corrode or rust.

Rear ice doors can be placed in any of the stock size refrigerators at a small additional cost. Drawings giving sizes of rear doors will be furnished on application.

Plans and Specifications of Special Sizes—Special sizes built to order for Florists, Butchers, Grocers, Clubs, Hotels, Public Institutions and Private Residences, and made to fit any space desired. We will furnish plans and specifications for approval free of charge.

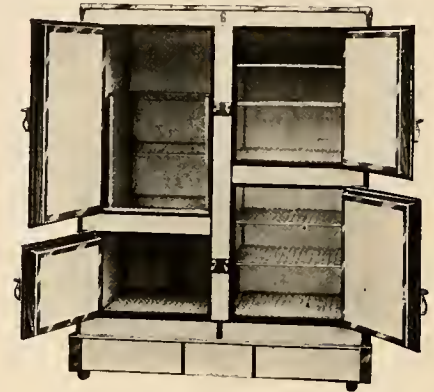


FIG. 1. OPAL GLASS, OPAL-LINED
EUREKA REFRIGERATOR

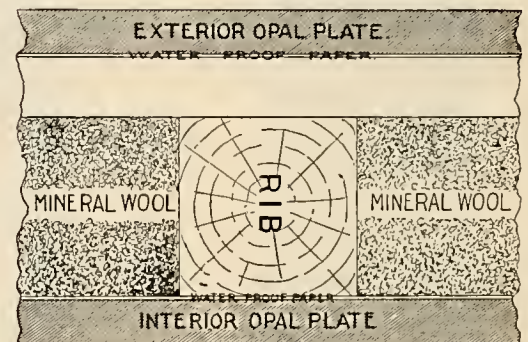


FIG. 2. CONSTRUCTION OF EUREKA
REFRIGERATOR

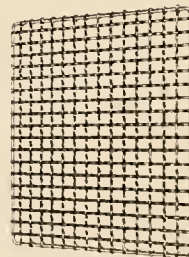


FIG. 4. WIRE
SCREEN SHELF



FIG. 3. OPAL GLASS LINING

THE JEWETT REFRIGERATOR COMPANY

EDGAR B. JEWETT

JOHN E. JEWETT

BUFFALO, N. Y.

NEW YORK OFFICE

1135 Broadway (St. James Building). Telephone, 4198 Madison

ALLSTON SARGENT, *Manager*

PRODUCTS.

Builders of REFRIGERATORS and REFRIGERATOR WORK to order from special designs.

FACILITIES AND TERRITORY.

Our long experience (since 1849) and ample facilities enable us to successfully execute contracts in all parts of the country.

ESTIMATES.

We make a specialty of preparing layouts and drawing up general specifications for all classes of REFRIGERATOR CONSTRUCTION, which we are always ready to furnish promptly and without charge, together with detail drawings, specifications and estimates covering refrigerators in any size, arrangement or finish.

We invite your inquiries.

QUALIFICATION.

Our qualification as builders of REFRIGERATOR WORK on the most advanced lines may be exemplified by the following recent New York city contracts:

HOTELS	CLUBS AND RESTAURANTS	RESIDENCES
HOTEL ST. REGIS	NASSAU COUNTRY CLUB	SEN. WILLIAM A. CLARK
HOTEL KNICKERBOCKER	LARCHMONT YACHT CLUB	HON. FRANKLIN MURPHY
HOTEL GOTHAM	LAMBS' CLUB	MR. CHARLES M. SCHWAB
HOTEL IMPERIAL	RACQUET & TENNIS CLUB	MR. JAMES A. BURDEN, JR.
HOTEL ANSONIA	N. Y. LIFE INS. BUILDING RESTAURANT	MR. HARLEY T. PROCTER
LOUIS SHERRY'S	GIBSON'S RESTAURANT	MR. MURRAY GUGGENHEIM
HOTEL WEBSTER	MRS. RORER'S RESTAURANT	MR. WEBB HORTON
HOTEL LEONORI	HOLTZ & FREYSTOOT CO.'S RESTAURANT	MR. LOUIS C. TIFFANY
	JOHN WANAMAKER'S RESTAURANT	MR. HENRY PHIPPS
	LACKAWANNA TERMINAL RESTAURANT	MR. WALTER JENNINGS
		MR. RALPH J. PRESTON
		MR. WILLIAM GUGGENHEIM

HOSPITALS

MT. SINAI HOSPITAL
ST. LUKE'S HOSPITAL
J. HOOD WRIGHT MEMORIAL HOSPITAL

THE LORILLARD REFRIGERATOR CO.

MAIN OFFICE

23 West 34th Street

NEW YORK CITY, N. Y.

TELEPHONE, 2063 38TH STREET

FACTORY, MOUNT VERNON, N. Y.
TELEPHONE, MT. VERNON, 81 L

PRODUCTS.

Builders of special REFRIGERATORS for Residences, Hotels, Cafés, Restaurants, Hospitals, Clubs, Confectioners, Steamships, and Yachts; DISPLAY REFRIGERATORS for Meats, Flowers, etc.; MORTUARY REFRIGERATORS for Morgues, etc., and for all places and purposes for which refrigerators are required. Also PORTABLE and STOCK REFRIGERATORS of all kinds.

Our specialties are the "De Canio" Patent Drawer and Mortuary Slide, which permit the drawer or slide (however heavily laden) to be drawn out to its full length and held rigidly in a horizontal position without any other support or brace. A slight push causes them to close automatically.

FACILITIES.

Our factory facilities enable us to undertake, execute and install a refrigerator contract of any size, from the largest Hotel system to small private residence work, in from three weeks' to two months' time.

Rush orders can occasionally be executed in one week's time, but at least three weeks should be allowed from time of placing order and verification of measurements.

TERRITORY.

Our field of operation is unlimited. We install refrigerators in all parts of the United States, Canada, Mexico and Europe.

THE "LORILLARD" SYSTEM.

The "Lorillard" system insures a constant and positive circulation of cold dry air. The drain pipes can be reached and cleaned through the provision chamber.

The frames and jambs of doors are formed from a solid piece of select ash, of full thickness, splayed, double or triple rebated on exposed faces, thus forming air tight seats and ready clearance of doors, reverse faces rebated to receive each successive wood sheathing composing the walls of the refrigerator.

Our system of wall insulation and arrangement of ice chambers insure a saving of from 25% to 40% in ice over all other makes.

PORTABLE REFRIGER- ATORS.

In our display rooms, 23 West 34th Street, New York City, we carry a complete line of Portable and Stock Refrigerators, both glass and wood lined. These are fully illustrated and listed in our catalogue, copy of which will be mailed at your request. Subscribers of the Catalogue Cabinet Co. System.

SERVICES.

We are always pleased to assist architects and prospective purchasers in "laying out," to furnish data, drawings, and general information, free of charge, and would suggest and earnestly advise that you call our representative into consultation when contemplating large or important work. A few hints from the practical refrigerator man, while the plans are being drawn, may obviate many changes and save much labor and expense later on after the building is erected. For those who find it impracticable to call in our representative, we append the following:

HINTS ON "LAYING OUT" CONSTRUC- TION, INSULA- TION, LINING, ETC.

Refrigerators should be rectangular; avoid "freaks" *i. e.*, irregular shapes, jogs, projections, etc.

In space enclosed on three sides avoid mouldings or projections except on front and scive outer sheathing to walls of space.

The proportion of interior cubic measurements required for the ice chamber ranges from 20% in large to 35% in small refrigerators.

"Bunker" Refrigerators (ice chamber over provision chamber) large enough to walk into must be at least 10' in height over all.

Where storage spaces are reached from outside refrigerator should not be more than 3' 6" in depth over all.

Ice opening cut through wall of house, when it is intended to fill the refrigerator from the outside must be at least 2' 6" x 2' 6" in the clear. The location and size of this opening will depend upon the style of refrigerator to be used.

It is advisable, however, to call in our practical refrigerator men to decide on the size and location of this opening.

Boiler hair felt is the only perfect dead air space filler. Charcoal, cork shavings, granulated cork and mineral wool should never be used.

Interior lining should be either 7/16" to 3/4" Opal glass or clear seasoned spruce; never glazed tiles or zinc.

An ideal wall insulation for small refrigerators is as follows:

THREE THICKNESS SPECIFICATION.

"Exposed outer sheathing will be of hardwood, 'ship finish,' that is, paneled with all edges of panel frames rounded down to face of panels, thus affording no chance for the lodgment of dirt or disease germs. Next to the outer sheathing will be a sheathing of waterproof paper; then spruce, tongued and grooved, running in the opposite direction from the outer sheathing, then waterproof paper, then best quality boiler hair felting, then waterproof paper, then the inner sheathing of spruce, tongued and grooved. Interior lining of storage compartments (unless otherwise specified) is 7/16" to 3/4" white Opalite Glass, presenting a clean, white, sanitary surface. Outside finish is of white ash (unless otherwise specified).

"This may be increased to four, five or six sheathings of wood, with corresponding increase in quantity of boiler hair felting and waterproof paper, in the event of very large work operated by artificial refrigeration; *i. e.*, ice machine and coils. The degree of temperature to be maintained will determine the character of the insulation."

FLOORS.

Floors are insulated in the same manner as the walls. Inner bottoms are covered with heavy galvanized iron made water tight, and flashed up a suitable height on the inner face of the walls. In spruce lined work the upper edge of this iron is let into the woodwork to prevent the accumulation of dirt or moisture between the iron and the woodwork. Where storage compartments are lined with Opalite Glass, a floor of hexagonal, glazed, vitrified, white tile, set in waterproof cement, is laid over this iron. In large special work, that is to withstand excessive wear, a special indestructible floor is used, detail of which will be furnished upon application.

ESTIMATES.

Our estimates for special work located in New York City always include setting in place complete but exclusive of any necessary plumbing connections. Estimates for special work outside New York City limits are, unless otherwise specified, f.o.b. New York City. We will, however, if necessary, send trained workmen to erect same within a radius of 100 miles without additional cost to the purchaser.

REPRESENT- ATIVE WORK.

From the date of its inception, 1877, it has been the constant aim and endeavor of The Lorillard Refrigerator Co. to produce the best at any cost; with the result that to-day all leading architects and engineers specify "The Lorillard Refrigerator." Among the former may be mentioned: McKim, Mead & White; Hunt & Hunt; Clinton & Russell; Warren & Wetmore; Trowbridge & Livingston, of New York; Peabody & Stearns; Little & Browne, of Boston, Mass.; Stone, Carpenter & Wilson, of Providence, R. I.; Horace Trumbauer, of Philadelphia, Pa.

Among the representative work executed by us may be mentioned:

- Hotel Astor, 45th Street and Broadway, New York City, N. Y.
- Hotel Belmont, 42d Street and Park Avenue, New York City, N. Y.
- Hotel Breslin, 29th Street and Broadway, New York City, N. Y.
- Holland House, 30th Street and 5th Avenue, New York City, N. Y.
- New Willard, Washington, D. C.
- King Edward Hotel, Toronto, Canada.
- United States Naval Department. All Battle Ships and Cruisers.
- Cunard Steamship Co.
- North German Lloyd Steamship Co.

ANTON LARSEN

Dumbwaiters, Elevators, Refrigerators

ESTABLISHED 1881

134th Street and Brook Ave.,
NEW YORK CITY, N. Y.

TELEPHONE
OFFICE, 114 MELROSE
RESIDENCE, 2603 R HARLEM

PATENTS
Oct. 28, 1890 Jan. 13, 1896
Apr. 18, 1893 Oct. 6, 1896
Sept. 12, 1893 Aug. 10, 1900
Jan. 29, 1901

PRODUCTS.

Patentee and Manufacturer of LARSEN'S IMPROVED DUMBWAITERS and REFRIGERATORS.

DUMBWAITERS.

Larsen's Improved Dumbwaiter (Fig. 1) for flats, tenements and private residences, automatically adjusts itself to all climatic changes. It also has the Larsen's Patent Lock and automatically retains the load secure at any point desired, on release of rope. It is made of hardwood in all sizes and open on one, two, or three sides, according to requirements.

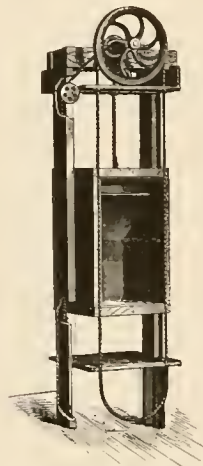


FIG. 1. LARSEN'S IMPROVED
DUMBWAITER

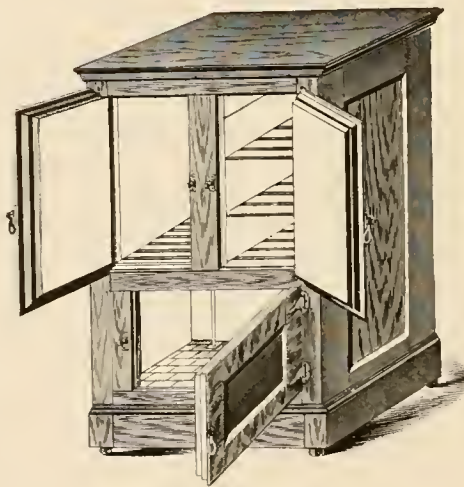


FIG. 2. LARSEN'S IMPROVED
REFRIGERATOR

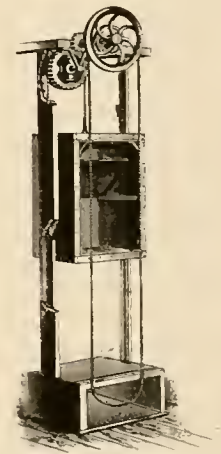


FIG. 3. LARSEN'S GEARED,
DUMBWAITER

REFRIGERATORS.

Larsen's Improved Refrigerator (Fig. 2) is so constructed as to cause a continuous flow of air in one direction. It is centrally divided by a partition, at one side of which is the ice chamber. The cold air normally descends on one side, causing the air to follow from the other. By this means the refrigerator is thoroughly cooled, top and bottom, and all impurities deposited on the ice are carried off through a trapped pipe, which is removable for cleaning. They are made of hardwood, in all styles and sizes.

GEARED DUMBWAITERS.

Larsen's improved and geared dumbwaiter (Fig. 3) is designed for heavy use, in private dwellings, bakeries, factories, and stables, as the case might be. It has the Larsen's Patent Lock, and retains a load up to 3000 lbs. on release of rope. They are made in all styles and sizes.

McCRAY REFRIGERATOR COMPANY

475 Mill Street
KENDALLVILLE, IND.
BRANCHES IN MANY LARGE CITIES
(See City and Telephone Directory)

PRODUCTS.

Manufacturers of REFRIGERATORS, COOLING ROOMS, COLD STORAGES, OPAL GLASS, WOOD and TILE LINED REFRIGERATORS.

THE McCRAY REFRIGERATOR.

The McCray Refrigerator is highly respected everywhere on account of its superior construction, perfect insulation and the excellent service it gives. The walls are strongly made and the insulation is of the best quality mineral wool, carefully packed, with special waterproof insulating paper, and matched lumber on either side, whether the lining is of opal-glass, white glazed tile or poplar. All our Refrigerators are built with the McCray Patent System of Refrigeration by which a perfect circulation of pure cold dry air is obtained in each compartment. To this circulation and system must be attributed the splendid refrigerating qualities of the McCray Refrigerator.

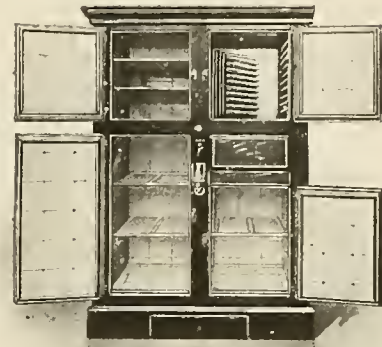


FIG. 1. REFRIGERATOR No. 323
Tile lined, built to order

TILE LINED REFRIGERATOR.

Figures 1, 2 and 3, illustrating our Refrigerators Nos. 323, 478 and 2900 are intended simply as examples of construction and finish. No. 323 (Fig. 1) illustrates a tiled lined refrigerator, 48" wide, 28" deep and 72" high; in a quarter-sawed oak case. The ice door in the back of this refrigerator is for icing from a rear porch, thus keeping the ice man out of the house. The faucet and cup-holder furnish convenient means for procuring ice-cold drinking water that is not "ice water"—the faucet being in connection with a coil of block tin pipe, which lays in ice water beneath the ice and is connected through the back of the refrigerator to a water tank or water mains.

OPAL-GLASS REFRIGERATOR.

No. 478 (Fig. 2) shows a special refrigerator, 76" wide, 34" deep and 72" high; lined with white opal-glass. The exterior is also of white opal-glass held in place by polished nickel bands.

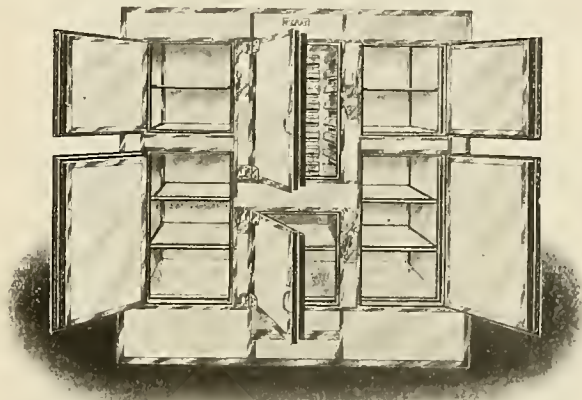


FIG. 2. REFRIGERATOR No. 478
Special Opal-Glass lined, with Opal-Glass Exterior

GLAZED TILE REFRIGERATOR.

No. 2900 (Fig. 3) illustrates a three compartment cooler, 26" wide, 11' 4" deep and 8' high; lined with white glazed tile; built for the Georgetown University, Washington, D. C. The exterior finish is of oak.

SIZES AND STYLES.

The sizes and styles of the refrigerators we manufacture are innumerable and cover every requirement, for residences, clubs, hotels, restaurants, hospitals, etc.

While a large percentage of our work is built to order, we carry in stock a complete line of regular sizes ready for prompt shipment. Special attention is given to architects' specifications.

ESTIMATES AND CATALOGUES.

Write to us for plans and estimates for the construction of refrigerators of any size, for machine or ice refrigeration. Our complete catalogues can be had for the asking. No. 80 for Residences; No. 46 for Hotels, Restaurants, Clubs, Hospitals, Colleges, etc.; No. 64G for Grocers; No. 70 for Florists; No. 57 for Meat Markets.



FIG. 3. No. 2900 TILE LINED COOLING ROOMS

MONROE REFRIGERATOR COMPANY

MAIN OFFICE AND FACTORY

LOCKLAND, CINCINNATI, O.

PRODUCTS. Manufacturers of THE MONROE PORCELAIN LINED REFRIGERATORS exclusively.

ADAPTATION. The Monroe Solid Porcelain Lined Refrigerators are built for fine residences, apartment houses, clubs, hospitals, hotels, and all classes of buildings requiring Sanitary furnishings.

SPECIAL WORK. We are prepared to construct special work from architects' drawings, or we will submit our own designs, and contract for installing our work.

REGULAR SIZES. All sizes listed are carried in stock for immediate shipment. These are as carefully made as our "made-to-order" work, and will be found to meet all ordinary requirements.

SELLING PLAN. We sell direct from factory to user on approval. We guarantee satisfaction or refund the purchase price.

THE MONROE CONSTRUCTION. Our plan of construction is a radical departure from ordinary refrigerator construction. Features that are peculiar to the "Monroe" make it superior to the best modern refrigerator of other makes. Unchallenged sanitary features, substantial construction, and a positive circulation combine to make the "Monroe" the ideal refrigerator.

FOOD COMPARTMENTS. A distinctive feature of the "Monroe" is the food compartments. These are made of snow white porcelain ware, moulded in *one piece*, absolutely without joint or crevice, and are, therefore, strictly sanitary. All corners are rounded, and compartments are easily kept clean and sweet. No other refrigerator can be made with porcelain food compartments, as this and other features are covered by our letters-patent.

WOOD-WORK. The outer case of a "Monroe" is made of kiln-dried white oak, free from useless projections and attached ornaments. All our goods are durably finished in Golden Oak and trimmed with heavy nickel-plated hardware of modern design.



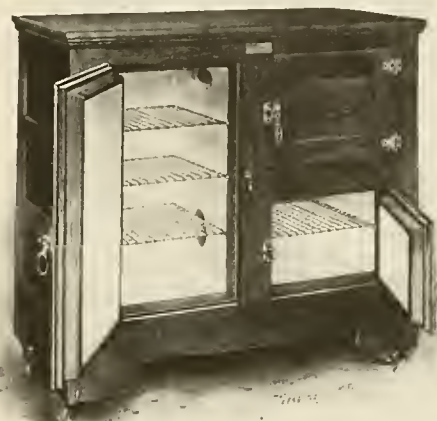
FOOD COMPARTMENT IN A "MONROE" REFRIGERATOR

ILLUSTRATIONS.

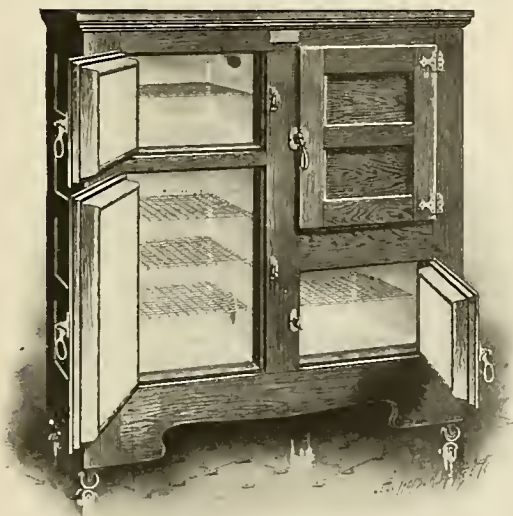
The accompanying illustrations show a few recent styles of the "Monroe."



STYLE No. 11 $\frac{1}{2}$
 Outside Dimensions 39 $\frac{3}{4}$ in. wide, 38 $\frac{1}{2}$ in. high, 23 $\frac{1}{2}$ in. deep.
 Ice Capacity 100 lbs.



STYLE No. 21
 Outside Dimensions 47 $\frac{1}{2}$ in. wide, 43 in. high, 24 $\frac{1}{2}$ in. deep.
 Ice Capacity 100 lbs.



STYLE No. 91
 Outside Dimensions 47 $\frac{1}{2}$ in. wide, 54 in. high, 24 $\frac{1}{2}$ in. deep
 Ice Capacity 175 lbs.



STYLE No. 30
 Outside Dimensions 47 $\frac{1}{2}$ in. wide, 56 $\frac{1}{2}$ in. high, 24 $\frac{1}{2}$ in. deep.
 Ice Capacity 200 lbs.

PRICES.

Prices will be furnished on application.

BUILDINGS
EQUIPPED.

The following is a partial list of buildings equipped with the "Monroe."

Hotel St. Regis, New York City, N. Y.
 Ansonia Apartment Hotel, New York City, N. Y.
 Mt. Sinai Hospital, New York City, N. Y.
 Weissinger-Gaulbert Apartments, Louisville, Ky.
 The Connecticut Apartments, Washington, D. C.

California Women's Hospital, San Francisco, Cal.
 Manhattan Maternity Hospital, New York City, N. Y.
 St. Luke's Hospital, New York City, N. Y.
 Madison Square Apartments, New York City, N. Y.
 Astor Court, New York City, N. Y.

WHITE ENAMEL REFRIGERATOR CO.

MAIN OFFICE AND WORKS

ST. PAUL, MINNESOTA

PRODUCTS—We are the manufacturers of a line of REFRIGERATORS, each equipped with **BOHN'S PATENT DRY-AIR SYPHON SYSTEM**. This system is owned and manufactured by us.

Description of Bohn's Patent Dry-Air Syphon System. A better understanding of our claim that the Bohn Air Syphon White Enamel-Lined Refrigerator embodies the best and only true construction for reaching a very low temperature in the shortest time can be obtained by examining the detail plan of construction given herewith. The cold air passes through a galvanized iron grating in the bottom of the ice chamber, rising through the openings provided in shelves, and is drawn back through the syphons into the ice chamber, and through and around the ice, whereby all vapors and odors given off by the provisions are condensed and deodorized, thus leaving all impurities to pass off through the drip pipe with the melted ice. This condensation is the same as seen on a pitcher or glass of ice water coming in contact with the warm, moist air, and is also illustrated by the breath in a cold, frosty atmosphere. It will therefore be seen that all odors and gases are removed, and the pure, dry air returns to the provision chamber, thus providing the most favorable conditions possible for the preservation of all articles stored in the food chambers, and explains why fruits do not taint milk and the like in Bohn Refrigerators.

The Bohn Dry-Air Syphon White Enamel-Lined Refrigerator—These Refrigerators (Figs. 2, 3, 4 5 and 6) are constructed in such a manner that our claims for perfection are absolutely justified. For instance, take the Provision Chambers; they are all lined with white enamel, so that when the food is placed upon the shelves it looks as appetizing as if set upon the table linen. There is no darkness, but all the contents can be plainly seen.

The Syphons that divide the provision chambers are constructed of heavy galvanized iron, enameled. They cannot break, wear out or get out of order.

Now if one turns to Fig 1, it will be noticed that the Drainage in this system is entirely from the bottom of the ice bunker, requiring a drip pipe only three inches long which dispenses with a long drainage pipe and thereby avoids the accumulation of slimy matter and bad odors, so often found in drip pipes in all other refrigerators. Our Patent Trap is placed on the inside of the refrigerator, where it is always in sight and easily reached for cleaning.

Practical Value and Advantages—We give below eight special features of our Refrigerators for which we claim superiority, and challenge comparison and competition: 1. Low and uniform temperature ranging from 38 to 48 degrees. 2. Pure and dry atmosphere. 3. Ease in keeping clean. 4. Free circulation and absence of odors. 5. Freedom from moisture. 6. Economy in consumption of ice. 7. Perfect drainage. 8. Enameled lining of provision chamber.

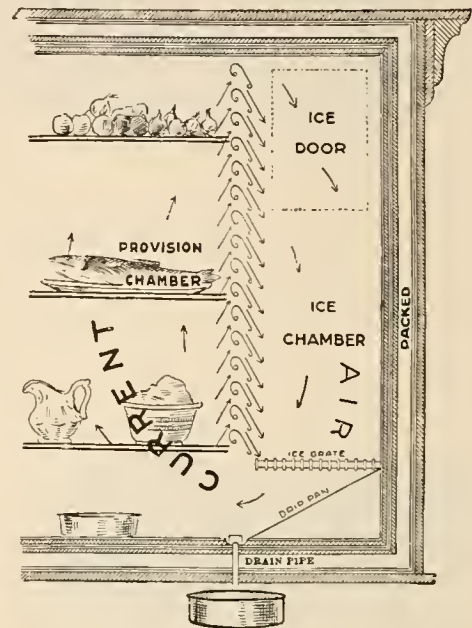


FIG. 1. DETAILS OF CONSTRUCTION OF BOHN'S REFRIGERATOR



FIG. 2. ENAMEL-LINED REFRIGERATOR, No. 1, Style A



FIG. 3. ENAMEL-LINED REFRIGERATOR
No. 5 Style D

Style C, two panel doors. Style D, upper door glass, lower door panel. Style E, two glass doors.



FIG. 4. ENAMEL-LINED REFRIGERATOR
No. 6. For Residences, Grocers and Florists

This Refrigerator has four doors—the two upper doors being glass and the two lower doors panel.

This style is also made with upper doors paneled instead of Glass. Can give you all doors glass if you wish.



FIG. 5. ENAMEL-LINED REFRIGERATOR
No. 7

This Refrigerator has two upper glass and two lower paneled doors. The ice compartment is in the middle and will contain 400 lbs. of ice. This style is also made with upper doors paneled instead of glass. It has two provision chambers, each as above stated.



FIG. 6. ENAMEL-LINED REFRIGERATOR
No. 8

This Refrigerator has two upper glass and two lower paneled doors. The ice compartment is in the middle and will contain 435 lbs of ice. This style is also made with upper doors paneled instead of glass. It has two provision chambers, each as above stated.

The Bohn Air Syphon Opalite Glass-Lined Refrigerator—This Refrigerator (Figs. 8 and 9) is constructed on scientific principles and along the same lines as our celebrated White Enamel-Lined Refrigerators, with the exception of the linings and woodwork.

Lining of Provision Chamber.—The provision chambers are lined throughout with the finest quality opalite glass $\frac{7}{16}$ of an inch thick and snow white. The shelves are white enameled and the whole presents a very attractive appearance.

Material and Construction.—The case or outside work is very elaborately gotten up, being made of selected quarter-sawed oak, with all-raised panels. All corners are rounded, as shown in the illustrations. There are no cornices, mouldings, etc., the refrigerator is perfectly plain, which gives a handsome and rich effect. The hardware is of solid brass, polished, and of a special design made to order expressly for our opalite refrigerators. The finish is extraordinary; four coats of the best quality varnish being applied and then high polished. The latches have "Patent Lever Catcher." The castors are of the latest anti-friction pattern, nickel-plated.

We use only white enamel of our own preparation (and known to us only) baked upon galvanized metal and subjected to different degrees of heat.

References.—Our refrigerators are in use among the following:—Great Northern Ry., Northern Pacific Ry., The Pennsylvania Lines, Pullman Company, Wisconsin Central Ry., Atchinson, Topeka & Santa Fé Ry., and Fred. Harvey's Eating Houses, Chicago & Alton R. R., Louisville & Nashville R. R., Canadian Pacific Ry., New York, New Haven & Hartford R. R., Chicago, Burlington & Quincy R. R., Minneapolis, St. Paul & Sault Ste. Marie R. R., Western Railway of Alabama, Great Northern R. R., Atlantic and W. Point R. R., Chicago, Rock Island & Pacific R. R., Union Pacific R. R., Missouri Pacific R. R., Chicago, St. Paul, Minneapolis & Omaha R. R., Southern Pacific R. R., Union Pacific R. R., Wisconsin Central R. R., Michigan Central R. R.



FIG. 7. ENAMEL-LINED REFRIGERATOR No. 9

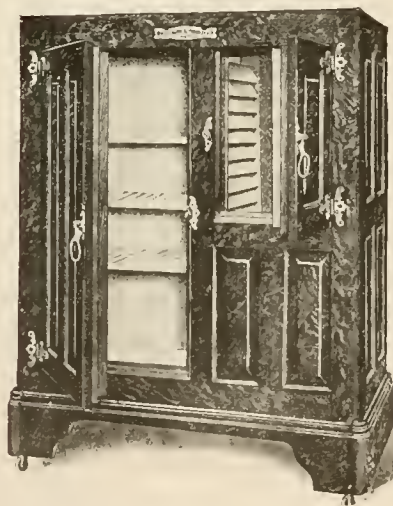


FIG. 8. OPALITE GLASS-LINED REFRIGERATOR
No. 103, Style A

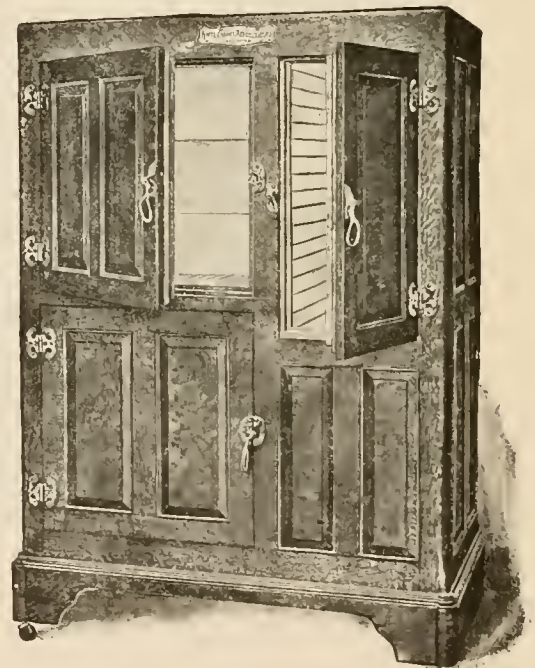


FIG. 9. OPALITE GLASS-LINED REFRIGERATOR
No. 105, Style C

Guarantee—The following is the guarantee which goes with every Refrigerator sold by us:

We guarantee the Bohn Dry-Air Syphon White Enamel Refrigerator to be just as represented by us. If, after ten days' trial, observing carefully our printed instructions, yours should not do all we claim for it, upon notice from you we will make good any deficiency or take back the Refrigerator, refund your money and pay freight both ways.



SHE SAYS IT'S "THE BEST"
(TRADE MARK)

Dimensions and Weights—Enamel-lined Refrigerators. (Dimensions in inches.)

No. 1.			
Outside	Width 35½	Depth 20½	Height 40½
Provision chamber	" 14	" 14	" 28
Ice chamber	" 11	" 14	" 22
Ice chamber capacity, 65 lbs. Shipping weight, 200 lbs.			

No. 5.			
Outside	Width 49½	Depth 26½	Height 66½
Provision chamber	" 24	" 20	" 54
Ice chamber	" 14	" 20	" 46
Ice capacity, 225 lbs. Shipping weight, 520 lbs.			

No. 6.			
Outside	Height 74	Width 62½	Depth 29
Provision chamber	" 60	" 31	" 22
Ice chamber	" 53	" 19	" 22
Shipping weight, 730 lbs. Ice capacity, 400 lbs.			

No. 7.			
Outside	Height 74	Width 62½	Depth 29
Provision chamber	" 57	" 17	" 20
Ice chamber	" 50	" 18	" 20
Shipping weight, 760 lbs.			

No. 8.			
Outside	Height 77	Width 68½	Depth 30½
Provision chamber	" 61	" 19	" 23
Ice chamber	" 56	" 18	" 23
Shipping weight, 825 lbs.			

No. 9.			
Outside	Width 72	Depth 46	Height 84
Provision chamber	" 65½	" 21½	" 70
Ice chamber	" 65½	" 13½	" 63
Shipping weight, 1880 lbs.			

OPALITE GLASS-LINED REFRIGERATORS (Dimensions in inches).

No. 103.			
Outside	Width 39½	Depth 22	Height 50½
Provision chamber	" 17	" 15½	" 37
Ice chamber	" 12	" 16	" 32
Ice chamber capacity, 125 lbs. Shipping weight, 436 lbs.			

No. 105.			
Outside	Width 47	Depth 26	Height 66½
Provision chamber	" 23½	" 19	" 53
Ice chamber	" 14½	" 20	" 45½
Ice chamber capacity, 225 lbs. Shipping weight, 610 lbs.			

COMMISSARY REFRIGERATORS (Dimensions in feet).

Outside	Width 12	Depth 8	Height 7
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PRICES—Below are the list prices on our Refrigerators. Kindly write us for discounts.

BOHN'S ENAMEL-LINED REFRIGERATORS.

No. 1, Style A. Panel door	\$30.50	No. 3½, Style E. 2 Glass doors	\$ 63.50
No. 1, Style B. 1 Glass door	33.50	No. 4, Style C. 2 Panel doors	57.50
No. 2, Style A. Panel door	36.50	No. 4, Style D. Upper door glass, lower panel	60.50
No. 2, Style B. 1 Glass door	39.50	No. 4, Style E. 2 Glass doors	63.50
No. 2½, Style A. Panel door	39.50	No. 5, Style C. 2 Panel doors	72.50
No. 2½, Style B. 1 Glass door	42.50	No. 5, Style D. Upper door glass, lower panel	75.50
No. 3, Style A. Panel door	42.50	No. 5, Style E. 2 Glass doors	78.50
No. 3, Style B. 1 Glass door	45.50	No. 6, Any Style	117.50
No. 3½, Style C. 2 Panel doors	50.00	No. 7, Any Style	137.00
No. 3½, Style D. Upper door glass, lower panel	53.00	No. 8, Any Style	152.00
No. 3½, Style C. 2 Panel doors	57.50	No. 9, Any Style	249.50
No. 3½, Style D. Upper door glass, lower panel	60.50		

BOHN'S OPALITE GLASS-LINED REFRIGERATORS.

No. 102, Style A. Opalite glass-lined	\$ 67.00	No. 105, Style C. Opalite glass-lined	\$137.00
No. 103, Style A. Opalite glass-lined	78.00	No. 106, Style C. Opalite glass-lined	225.00
No. 103½, Style C. Opalite glass-lined	93.00	No. 107, Style C. Opalite glass-lined	263.00
No. 103½, Style C. Opalite glass-lined	107.00	No. 108, Style C. Opalite glass-lined	293.00
No. 104, Style C. Opalite glass-lined	107.00		

THE WILKE MANUFACTURING. CO.

Fine Refrigerators and Hardwood Floors

24 East 22d Street

NEW YORK CITY, N. Y.

TELEPHONE No. 5010 GRAMERCY

W. S. HUESTON,
Manager

FACTORY AND WORKS
ANDERSON, IND.

PRODUCTS.

Manufacturers of FINE REFRIGERATORS, the WILKE PORCELAIN and CRYSTAL REFRIGERATOR, the WILKE COMPARTMENT and AUXILIARY REFRIGERATOR. We are also manufacturers of FINE HARDWOOD FLOORS and PARQUETRY.

THE WILKE REFRIGERATOR.

Is manufactured strictly with the idea of producing a standard refrigerator suitable for all purposes, and of any size and shape, entirely scientific in both structure and materials, that insure absolute purity, perfect insulation, ice economy, complete circulation of cold, dry air, and remarkable durability, and at the same time contains not a single particle of organic material or material that is subject to corrosion or capable of absorbing moisture, odors or gas.

The doors are air-tight. The internal fixtures are all removable and the entire refrigerator may be cleaned as easily as a piece of glass or a china dish.

DETAILS OF WILKE PORCELAIN AND CRYSTAL REFRIGERATORS.

The exteriors are built of two materials, either white, glazed tile laid under Wilke patents on the unit system; or oak, either panelled and hand finished or oak ceiling; all hardware of solid brass, hinges of wrought brass.

The interior is lined with either white encaustic tile or opaque plate glass in large dimensions half an inch thick. The sheets of glass are assembled in such a manner that at no point is glass in contact with glass, thus avoiding the possibility of crumbling on the edge, or of any injury resulting from the expansion or contraction due to varying temperatures. All joints between the glass are sealed with our own special cement which is as hard as the glass itself. The inner face of all the doors and the front partition are similarly lined. The whole construction is air-tight, water-tight, sanitary and aseptic.

PERFECT INSULATION.

Is secured by the use of mineral wool so disposed that it cannot settle. This material is inorganic, is vermin-proof and is the only 100% insulator known. All spaces between framing timbers will be found to be thoroughly packed with this material, in sides, top, bottom, front and back.

PERFECT CIRCULATION OF COLD, DRY AIR.

Is secured by our patent ice pan construction. Our system secures a constant circulation throughout the entire refrigerator, without sweating or even a suggestion of moisture in any of the provision compartments. A wet cloth or blotter on any of the provision shelves will dry out completely in a very few hours if the refrigerator has near its complement of ice.

The ice chamber, with all the other chambers of the Wilke refrigerator, is tile or glass lined, the ice pan being of heavy galvanized iron and the shelves of woven wire retinned. They are all removable for cleansing purposes.

The Wilke Refrigerator is the only refrigerator, the entire interior of which is lined with glass or tile.

It is a hand-made product. In making it, our criterion is the highest excellence and the perfect adaptability of the refrigerator to its functions.

The Wilke refrigerator was awarded the Grand Prize at the St. Louis Exposition, 1904. It was adopted against all competitors for the new Naval Academy at Annapolis.

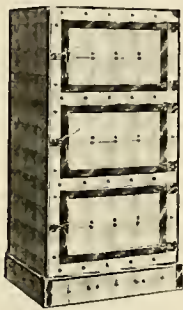
ECONOMY.

It consumes from 25% to 50% less ice than the ordinary refrigerators of the same size.

Large specials of sectional construction may be assembled by any mechanic following directions sent with shipment. The household models are complete when shipped, ready for installation.

ESTIMATING AND INFORMATION.

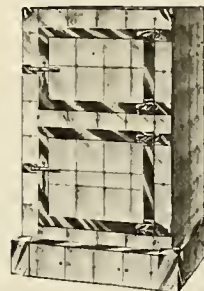
We shall be glad to give architects, contractors, and others any special information that they may require, or assist them in any special problems.



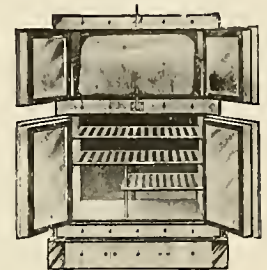
No. 233, CLOSED



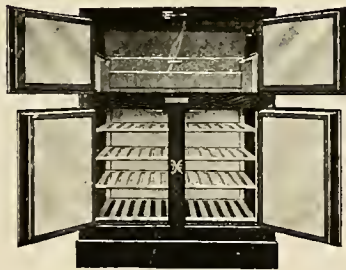
No. 388, OPEN



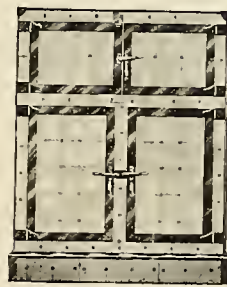
No. 208, CLOSED



No. 209, OPEN



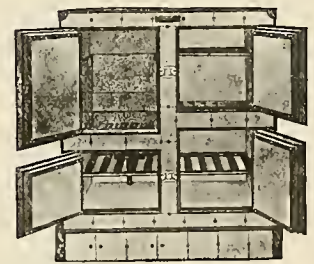
No. 312, OPEN.



No. 13, CLOSED



No. 316, CLOSED.



No. 211, OPEN

ARCHITECTS' SPECIAL DESIGNS.

We manufacture refrigerators for all purposes from architects' special designs.

FINE HARDWOOD FLOORS AND PARQUETRY.

The Wilke Mfg. Co., manufacture a complete line of hardwood floors and parquetry, plain and ornamental, thick and thin.

The plant is especially equipped for the production of this work, being situated in the famous Indiana White Oak Belt. The company guarantees its flooring to be of the highest grade, thoroughly kiln dried and of careful manufacture.

YORK MANUFACTURING COMPANY

MAIN OFFICE AND WORKS

YORK, PA.

GENERAL WESTERN OFFICE, 1060 MONADNOCK BLDG., CHICAGO, ILL.

BRANCH OFFICES

New York City, N. Y.
 Philadelphia, Pa.
 Pittsburgh, Pa.
 Houston, Texas.
 Boston, Mass.
 Cincinnati, O.
 St. Louis, Mo.
 San Francisco, Cal.
 Atlanta, Ga.

14-18 Park Place.
 1202 North American Building.
 515 House Building.
 429 Commercial National Bank Building.
 147 Milk Street.
 222-224 East Ninth Street.
 206 Houser Building.
 330 Market St., Cor. Battery.
 52 Cooper Street.

PRODUCTS.

Manufacturers of ICE and REFRIGERATING MACHINERY, VERTICAL, SINGLE-ACTING and HORIZONTAL DOUBLE-ACTING AMMONIA COMPRESSORS in all sizes from one ton refrigerating capacity upwards. AMMONIA CONDENSERS, BRINE COOLERS, and AMMONIA FITTINGS and SUPPLIES of all kinds. Also BOILERS and TANK WORK.

FACILITIES.

Our Company is the largest manufacturer of Ice and Refrigerating Machinery in the United States, employing over 1000 hands. We are prepared to fill orders of any size promptly.

FITTINGS AND SUPPLIES.

All standard Fittings and Supplies are carried in stock at the following places and can be supplied promptly. Catalogue of Fittings and Supplies will be furnished upon application:

The Ahrens & Ott Mfg. Co.,
 Baronne & St. Joseph Sts.,
 New Orleans, La.
 Cotton States Belting & Supply Co.,
 7 & 9 S. Broad Street,
 Atlanta, Ga.
 United Iron Works,
 330 Market St., Cor. Battery,
 San Francisco, Cal.
 York Mfg. Co.,
 1060 Monadnock Bldg.,
 Chicago, Ill.

Geo. T. Matthews & Co.,
 20 S. Main Street,
 St. Louis, Mo.
 The F. W. Niebling Co.,
 Highland Ave.,
 Cincinnati, O.
 York Mfg. Co.,
 14-18 Park Place,
 New York City, N. Y.
 York Mfg. Co.,
 515 House Building,
 Pittsburgh, Pa.

ESTIMATES.

We will cheerfully furnish estimates on any installation requiring Ice Making or Refrigerating Machinery, upon receipt of a statement of requirements.

CONSTRUCTION.

While we build both single-acting and double-acting Ice-making and Refrigerating Machines, the Machine which we have adopted as our standard is what is known to the trade as the compression type of machine (Fig. 1) with single-acting, vertical compressors and horizontal engine.

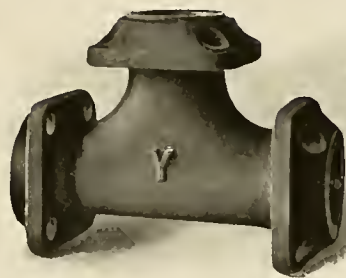
The design is very simple and at the same time substantial; the different parts are readily accessible for adjustment.

There are but two bearings for the crank-shaft, the fly-wheel being placed between them.

The Compressor we use on our standard machine is known as the single-acting, false or safety head type of Compressor.

The gas enters at the bottom of the compressor and passes up through the suction valve in the piston and is compressed and driven out by the up-stroke of the piston through the discharge valve in the center of the safety head.

The compressor is encased in a water jacket. The water entering at the bottom, circulates around the walls of the compressor and up over the top cover, where it overflows.



AMMONIA TEE SQUARE FLANGE,
"Y" Style



STANDARD YORK REFRIGERATING MACHINE



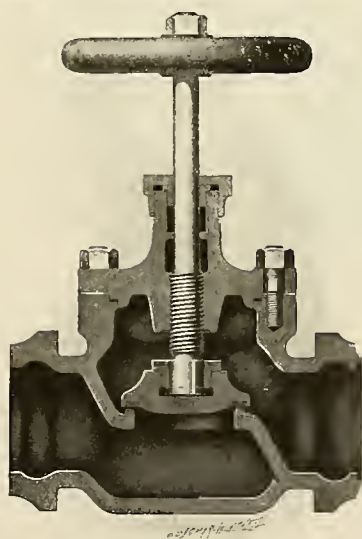
AMMONIA FLANGED RETURN BENDS



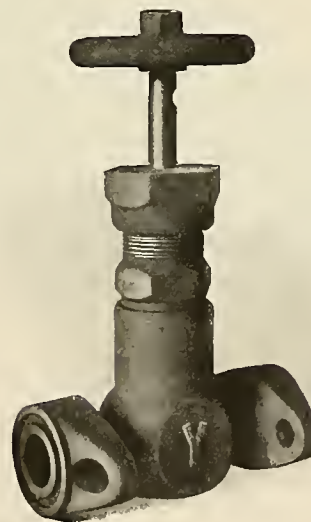
DOUBLE PIPE COUNTER-CURRENT AMMONIA CONDENSER



AMMONIA GLOBE VALVES, SQUARE
FLANGE, "Y" STYLE



"Y" AMMONIA VALVE
SECTIONAL VIEW OF STANDARD



AMMONIA VALVE, OVAL FLANGE, "Y" STYLE

DE LA VERGNE MACHINE COMPANY

MAIN OFFICE AND WORKS
Foot of East 138th Street
NEW YORK CITY, N. Y.

TELEPHONE: 1044 Harlem

GIRARD BUILDING,
Philadelphia, Pa.

TREMONT BUILDING,
Boston, Mass.

BRANCH OFFICES

TIMES BUILDING

Pittsburg, Pa.

NEAVE BUILDING,

Cincinnati, O.

SECURITY BUILDING

Chicago, Ill.

WAINWRIGHT BUILDING,

St. Louis, Mo

PRODUCTS.

We manufacture REFRIGERATING and ICE-MAKING MACHINES, the "HORNSBY-AKROYD" OIL ENGINE, and the KOERTING GAS ENGINE.

FACILITIES.

Our works in New York City occupy three city blocks. The floor space aggregates over 223,000 square feet, and from 700 to 1200 men are employed.

The aggregate capacity of the De La Vergne Refrigerating Machines in operation in the United States is practically twice that of any other builder. We have equipped the largest breweries in the world.

REFRIGERATING AND ICE-MAKING MACHINERY.

The cut herewith (Fig. 1) shows one of the most popular of the many types of refrigerating machines built by our Company. In the horizontal machines the suction and discharge valves, which are of the usual poppet type, are arranged tangentially to the cylinder, the counterbore for their housing occupying the same relative position to the cylinder as those of Corliss steam engine valves. This construction makes it absolutely impossible for parts of broken valves to get into the cylinder, and makes the valves practically as accessible for inspection and repairs as those of a Corliss.

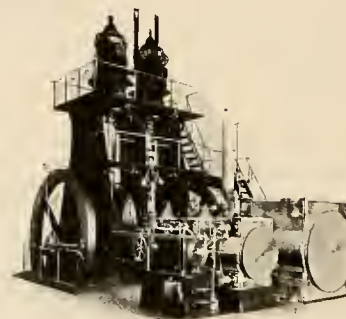


FIG. 1. 500 TON CROSS COM-
POUND MACHINE

Besides the above, we build several types of tandem and cross compound belted and motor driven horizontal machines, simple, tandem and cross compound machines with vertical compressors and machines with steam and ammonia cylinders both vertical. This great variety of types makes it possible for us to solve the most difficult problems arising from limited or odd shaped floor space.

We make small and medium sized belt motor and steam driven refrigerating machines especially adapted to use in hotels, restaurants, office buildings, department stores, confectionery and other plants. We have equipped in New York City, the Hotel St. Regis, Luechow Restaurant, Butterick Building, Siegel-Cooper Department Store, and Huyler's Chocolate Factory. The New York Hippodrome has also been equipped with our refrigerating system for cooling and drying air for the auditorium.

Our long experience has demonstrated the fact that the ammonia compression system of refrigeration in which double acting compressors are used is the most economical, satisfactory and altogether practical system yet invented, and for design, workmanship, and material employed the De La Vergne has long been conceded to be the best.

The aggregate cooling capacity of the De La Vergne machines operating in the United States is equivalent to the melting of 64,453 tons of ice per day, which is practically twice that of any other manufacturer. (Data from the *Ice and Refrigeration Blue Book*.)

ESTIMATES.

The requirements to be fulfilled in the case of refrigerating plants should be stated concisely in terms of cubic feet of space to be cooled, weights of products to be chilled per day, together with all temperatures involved. Do not specify means as you may limit our resources. Give us your requirements and we will solve the problem to the best advantage. The service of our engineering staff is at your service. Plans, specifications and estimates furnished on request.

HORNSBY-AKROYD OIL ENGINES.

The "Hornsby-Akroyd" Oil Engine (Fig. 2), of which over 10,000 are in actual operation, has peculiarities of design, which enable it to run on not only kerosene, but also on the cheap crude and fuel oils. These oils can be procured at about half the cost of kerosene or gasolene, so that the cost of power developed by this engine is less than that produced by other engines in almost the same ratio.

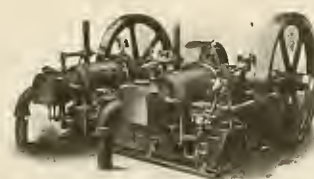


FIG. 2. TWIN CYLINDER "HORNSBY-AKROYD"

On kerosene, a brake H.P. has been produced on less than three quarters of a pound of oil. On one gallon of kerosene oil, 120 incandescent lamps can be burned one hour, or 110 lamp hours can be produced with a gallon of fuel oil which may be bought for from 2 3/4 to 4 cents. Anyone can operate a "Hornsby-Akroyd" Oil Engine.

On account of their simplicity, reliability and economy, these Engines have been generally adopted by the United States and other governments for use in their light-houses and fortifications. They are used for lighting, pumping, air-compressing work, and for almost every purpose for which a steam engine has been used.

Belted units, similar to the one illustrated (Fig. 3) are in operation in the private residences of: Alfred G. Vanderbilt, Esq., Reginald Vanderbilt, Esq., J Mitchell Clark, Esq., and scores of others.

Over 10,000 "Hornsby-Akroyd" oil engines are in operation in various parts of the globe. We are now building these engines in sizes up to 125 H.P. for a single cylinder or 250 H.P. for twin cylinder units, which is the largest size of oil engine built in the United States.

GENERAL DIMENSIONS OF "HORNSBY-AKROYD" OIL ENGINES.

Actual Horse Power	Revolutions Per Minute	Size of Fly-Wheels	Approx. Weight of Engine (Lbs.)	Space Occupied
4	260	4'x5 1/2"	3250	7'3 1/2" x 3'6 1/2"
5	260	4'x5 1/2"	3350	7'6" x 3'6 1/2"
7	260	4'6"x6"	4050	7'8 1/2" x 3'8 1/2"
9	260	(2) 4'6"x6"	5000	7'7 1/2" x 3'8 1/2"
13	225	(2) 4'9"x7"	6850	9'4 1/2" x 4'3 1/2"
16	225	(2) 4'9"x7"	9500	9'10" x 5'3 1/2"
20	220	(2) 5'x7"	10000	10'x5'3 1/2"
25	215	(2) 6'x7"	13500	10'9" x 5'10 1/2"
32	200	(2) 6'x8"	16400	12'3 1/2" x 6'8"
44	220	(2) 5'x7"	20700	10'x9'6 1/2"
50	215	(2) 6'x7"	22500	10'9" x 10'8"
75	160	(1) 9'x12"	.....	16'x8'6"
125	145	(1) 12'x13"	68000	20'3 1/2" x 14'9 1/2"

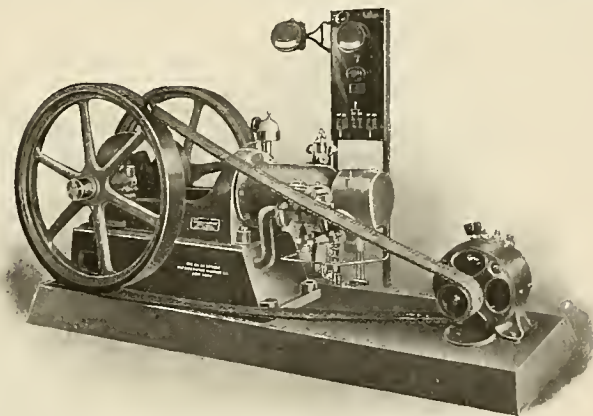


FIG. 3. "HORNSBY-AKROYD" OIL ENGINE Small Lighting Unit, for Private Houses

KOERTING GAS ENGINES.

We manufacture Koerting Gas Engines from 65 to 3000 Horse Power. In the past four years we have sold Koerting Gas Engines aggregating over 42,000 brake Horse Power. We have equipped the largest single gas power installation in the world, viz.: that of the Lackawanna Steel Co., of Buffalo, N. Y.

Catalogues descriptive of Refrigerating and Ice Making Machinery, Oil Engines or Gas Engines of any capacity furnished on application.

STEVENSON COMPANY

CHESTER, PENN.

PRODUCT. STEVENSON'S PATENTED AUTOMATIC DOORS for Refrigerating Apartments.

CONSTRUCTION. These Doors are shipped with their Doorframes, hinges and fasteners complete, ready to be set in place, screwed fast and used. As shown in the following diagram, the door makes an overlapping contact, with a soft hemp gasket in the joint, and is held to its seat against front of Doorframe by powerful elastic hardware. The thick portion of the Door fits loosely so that considerable change of size, form and position due to wear, swelling, etc., does not make it leak or bind.

All old style Doors when they work badly or leak must be eased, thus forever destroying their fit; a slight readjustment of our Doorframe restores our Door to its original perfection of fit and freedom in a minute at no expense. As these Doors do not stand in the Doorway when open, it can be 6 inches less in width than for old style Doors—an important economy in refrigeration.

ADVANTAGES.
 A perfect seal at top, bottom and corners, where others always fail.
 Has patented adjustable, flexible doorframe.
 Can not stick, leak or wear out.
 Works from either side, gives clear doorway, includes lock.

Made for cement or asphalt floors. Has beveled threshold where trucks are used.

As constructed in this year, 1905, the opening in wall to receive these doorframes should be $3\frac{1}{2}$ in. wider and 4 in. higher than the size of the doorway in the clear, following construction numbered 1 and 2. For over-head track doors this rough opening should extend $13\frac{1}{2}$ in. above the lower edge of track. Doorframes are secured with lag screws $\frac{3}{4} \times 4$ in. inserted through front casing at A.

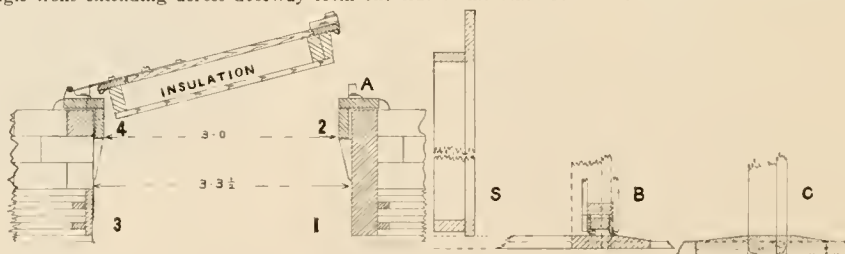


STEVENSON'S AUTOMATIC DOOR FOR REFRIGERATING APARTMENTS
 Fastens and Tightens Itself

DETAILS. Fig. S shows doorframe with full standard sill and head used on all sizes of doorframes. Suited only to walking through.

Fig. B shows our wooden beveled threshold which connects lower ends of doorframe and forms a part of it, let down into floor. No jolt, no feather edge, no splinters. For warehouses, accommodates trucks.

Fig. C, Cement floor, shows lower ends of doorframe extending 3 inches below the surface of the floor and connected by angle irons extending across doorway from one side to the other below the surface.



DIAGRAMS SHOWING CONSTRUCTION OF THE STEVENSON AUTOMATIC DOOR

SPECIAL PATTERNS. Doors for abattoirs and beef houses with port in head of doorframe to accommodate over-head track. Special doors on a modified plan for intermittent or continuous freezers, perfectly tight and perfectly free regardless of temperature, moisture or accumulation of ice.

Combined self-closing ice door and chute of two styles. Ice counters.

Fireproof metal covered doors made the same as above, covered all over door and all over doorframe with metal sheets, lock-seamed in the most approved manner.

SPECIFICATION. To guard against infringers and substitutes for our work, specify "Cold Storage Doors and Doorframes with Self-tightening hinges and fasteners complete to be furnished by Stevenson Company, Chester, Pa."

Patents are granted or applied for on every valuable feature of this work. Infringers will be prosecuted.

L. K. COMSTOCK & COMPANY, Inc.

CONTRACTING ENGINEERS
114 Liberty Street
NEW YORK CITY, N. Y.

TELEPHONES: 7726 Cortlandt
7727 Cortlandt

BRANCH OFFICE
House Building
PITTSBURG, PA.

SERVICES.

We are ELECTRICAL ENGINEERS and CONTRACTORS for ELECTRICAL WORK in all its branches.

FACILITIES.

This Company is in a position to execute electrical contracts of any magnitude and, as a matter of fact, has equipped some of the largest and most important buildings erected in recent times.

TERRITORY.

The operations of the Company are quite unrestricted as to territory, the Company having equipped many important buildings in Baltimore, Md.; Washington, D. C.; Pittsburg, Pa.; Chicago, Ill., and other cities—buildings to which we should be pleased to refer any possible client desiring this information.

As an indication of both the character of work and our capacity to execute contracts of the largest kind, it may be sufficient to direct the attention of the reader to the new Trinity Building, Broadway and Thames Street, New York City, the electrical equipment of which, excepting dynamos, was furnished by us. An illustration of this building is appended. Our work is guaranteed to be of the highest character.

ESTIMATES.

We shall be pleased to receive from architects, builders, owners, and others inquiries for estimates.



NEW TRINITY BUILDING
Broadway and Thames Street, New York City

CROCKER-WHEELER COMPANY

Manufacturers and Electrical Engineers

Main Office and Works

AMPERE, N. J.

BRANCH OFFICES

4 P. O. Square
BOSTON, MASS.

817 O. C. S. Bank Building
SYRACUSE, N. Y.

1001 Union Trust Building
BALTIMORE, MD.

607 Empire Building
PITTSBURGH, PA.

1232 Union Trust Building
CINCINNATI, O.

808 First National Bank Building
NEW HAVEN, CONN.

425 Empire Building
ATLANTA, GA.

814 New England Building
CLEVELAND, O.

403 Chemical Building
ST. LOUIS, MO.

39 Cortlandt Street
NEW YORK CITY, N. Y.

1213 North American Building
PHILADELPHIA, PA.

Hibernia Bank Building
NEW ORLEANS, LA.

Old Colony Building
CHICAGO, ILL.

525 17th Street
DENVER, COLO.

Fremont and Howard Streets, SAN FRANCISCO, CAL.

TELEPHONE IN ALL OFFICES

WESTERN UNION AND POSTAL TELEGRAPH
WIRES DIRECT TO MAIN OFFICE

PRODUCTS—ELECTRIC MOTORS and GENERATORS and a complete line of ELECTRIC APPARATUS for POWER and LIGHTING SERVICES.

USES—Architects, builders and contractors find in the extended line of Crocker-Wheeler electric motors and generators, a machine for every conceivable service.

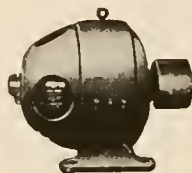
PRICES—Prices and detailed description of any of our apparatus will be furnished promptly by any of our Branch Offices, or by the Main Office at Ampere, N. J.



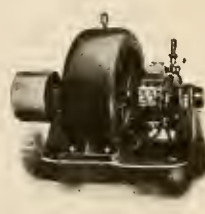
FORM L MACHINE
Outputs $\frac{1}{2}$ to 3 H. P.



FORM F MACHINE
Outputs 3 to 9 $\frac{1}{2}$ H. P.



FORM I MACHINE
Outputs 3 to 90 H. P.



FORM D MACHINE
Outputs 10 to 275 H. P.

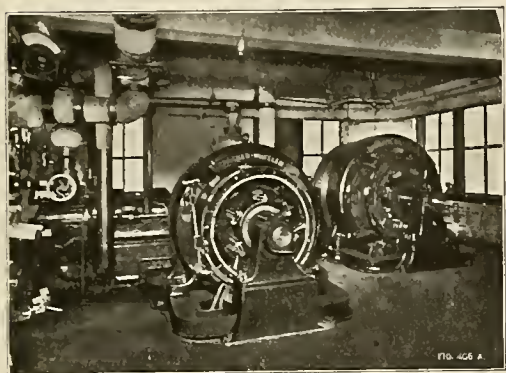


FORM K MACHINE
Outputs 1 $\frac{1}{2}$ to 60 H. P.

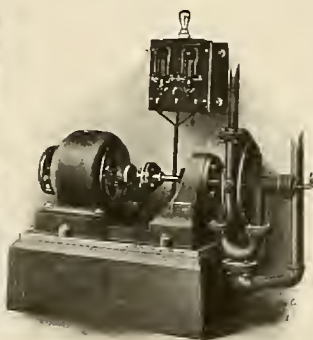
TESTS, INSPECTION AND GUARANTEE—Each machine when completed is fully tested under load and for insulation, and to see that both mechanically and electrically it meets specifications. No machine, which fails to meet requirements will be passed by the Testing Department or delivered for shipment. We, therefore, guarantee all machines to be in perfect condition when they leave our works.

RELIABILITY—The reliability of Crocker-Wheeler machines has made them as popular among business and professional men as they are in the field of electrical engineering. Our machines, large and small, are honestly rated. A 10 horse-power Crocker-Wheeler motor is never a 7 $\frac{1}{2}$ horse-power machine rated up.

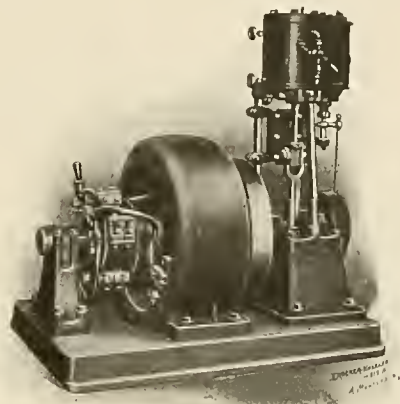
LIGHTING AND POWER PLANTS FOR OFFICE BUILDINGS—A modern office building without its own electric plant would not deserve to be called modern. We invite correspondence on this point. Reliable, economical generating plants are installed in many of the finest buildings in our large cities. Some notable Crocker-Wheeler plants are Whitehall Building, New York City, (400-kilowatts); First National Bank Building, Chicago, (four 150-kilowatt generators); John Wanamaker Department Store, Philadelphia, (four 500 kilowatt and six 175-kilowatt generators, aggregating 3050 kilowatts, the largest isolated lighting plant of this description in the country.



TWO UNITS OF THE 400 K. W.
Lighting and Power Plant in Whitehall Building, New
York City, N. Y.



FORM L MOTOR
Driving Centrifugal Pump



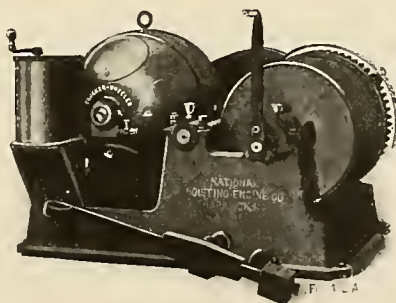
SMALL ELECTRIC LIGHTING SET
Showing Crocker-Wheeler, Form D Generator

PUMPS, MOTOR DRIVEN—Crocker-Wheeler motors, being supplied with moisture-proof end-shields, are peculiarly well suited for pump driving. These motors are built in a number of sizes and a variety of outputs, which enables any condition requiring small power to be met with a high degree of economy.

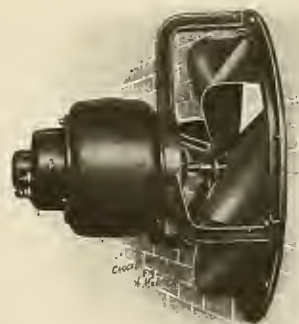
ELECTRIC HOISTS—Powerful motors, capable of sustaining heavy overloads, are required for lifts, hoists and elevators. Crocker-Wheeler motors successfully meet these severe conditions. These motors are of a compact design and the more delicate parts are protected from external injury. They can be directly connected, and form an integral part of the machine.



CROCKER-WHEELER FORM L MOTOR
Driving Church Organ Bellows



CROCKER-WHEELER FORM I MOTOR
Driving Contractor's Hoist



CROCKER-WHEELER MOTOR
Direct Connected to Fan

ELECTRIC FANS AND BLOWERS—Electric Fans and Blowers, such as we supply for restaurants, schools, churches, etc., are not driven by belts or gears, but are direct-connected to the motor-shafts. This means high efficiency, cleanliness and economy.

ELECTRO-DYNAMIC COMPANY

Electric Motors and Generators

11 Pine Street

NEW YORK CITY, N. Y.

TELEPHONE, 7890 CORTLANDT
CABLE ADDRESS, "EDCO"

MAIN OFFICE AND WORKS
BAYONNE, N. J.
TELEPHONE, 250 BAYONNE

BRANCH OFFICES

75 Bates St., DETROIT, MICH.
164 Federal St., BOSTON, MASS.
1326 Sycamore St., CINCINNATI, O.
Atlantic and Plume Sts., NORFOLK, VA.
1201 Westinghouse Bldg., PITTSBURGH, PA.

Arcade Bldg., PHILADELPHIA, PA.
135 Adams St., CHICAGO, ILL.
ST. LOUIS, MO.
116 East 5th St., LOS ANGELES, CAL.
105 Main St., SAN FRANCISCO, CAL.

PRODUCTS. INTER-POLE ELECTRIC MOTORS for variable and constant speed duty.

ADAPTABILITY. The INTER-POLE MOTOR is especially designed for operating Machine Tools, Centrifugal Pumps, Elevators, Blowers and Refrigerating Machines, and for any purpose where electric power is to be used.



INTER-POLE VARIABLE SPEED MOTOR

DESCRIPTION. Their light weight and compactness per horse-power in comparison with other styles of motors is very marked. They do not spark under any load, even up to 100% overload. Having Ball Bearings, thereby obviating the use of oil, they require but very little attention. They can be set in any position, a great advantage in a limited space. They run on single voltage; they are simple in construction and have no cumbersome or expensive mechanical and electrical contrivances. They are reversible at any load or overload. They have a very high efficiency which is maintained at all loads and speeds, and will maintain a constant speed at any set speed.

Will run under full load equally well in either direction; in other words, they are Perfectly Reversible under any load.

PRICES. Price-lists, wiring diagrams, capacity chart and efficiency curves will be sent on application.

KOHLER BROTHERS

Manufacturers, Electrical Contractors, Designers and Engineers

GENERAL OFFICES

1804-1806-1808-1810-1812 Fisher Building

CHICAGO, ILL.

FACTORY

54-56 CUSTOM-HOUSE PLACE, CHICAGO, ILL.

NEW YORK CITY OFFICE

10089 METROPOLITAN LIFE BUILDING

FOREIGN OFFICE

56 LUDGATE HILL, LONDON, E. C., ENGLAND

OUR WORK IN GENERAL.

Consists of ELECTRICAL CONTRACTING and ENGINEERING in all its phases.

Complete ELECTRIC LIGHTING and POWER PLANTS for Manufacturing and Office Buildings, covering GENERATORS, ENGINES, BOILERS, and the wiring for buildings of every description. Also manufacturers of SWITCHBOARDS, PANEL BOARDS. Builders of Electric Railways and owners of numerous patents covering time and labor-saving devices, both mechanical and electrical.

ELECTRIC WIRING.

Architects and builders of experience recognize the fact that the electrical work in a building is of as much importance as any other part of the building, and, therefore, quality rather than price should be the guiding principle in determining who should be intrusted with their work. The conscientious work done by us has secured contracts from clients who want the best rather than the cheapest construction. We employ none but superior workmen, watch every job carefully, and never allow things to drag. Our work is completed when promised, and we are never called upon to do our work over, because we do it right the first time.

SWITCHBOARDS.

Our manufacturing department for switchboards, panel boards, etc., is equipped to turn out the best work in the shortest possible time. The designing of our boards is done by skilled and careful engineers, and our work when finished is mechanically and electrically perfect. Apparatus of this nature manufactured by us is in use throughout this country and abroad. It is recognized as the best.

THE "KOHLER SYSTEM."

We are sole owners of patents covering "The Kohler System," which comprises electrical controlling apparatus for the operation of printing presses and other machinery; also other labor and time-saving devices. "The Kohler System" is in use by most of the large newspaper plants throughout the United States, and in many other parts of the world. It is recognized as the only reliable system. We were given the highest award at the St. Louis World's Fair.

NORTHERN ELECTRICAL MANUFACTURING CO.

MADISON, WISCONSIN

DISTRICT OFFICES

NEW YORK CITY, N. Y.
MILWAUKEE, WIS.

CHICAGO, ILL.

NEW ORLEANS, LA.

ST. PAUL, MINN.

SAN FRANCISCO, CAL.
PHILADELPHIA, PA.

PRODUCTS—The products of this Company embody a complete range of ELECTRICAL APPLIANCES for POWER and LIGHTING service.

USES—Northern machines are extensively employed in Federal, State and Municipal plants for electric power and lighting service, Water Works pumping and the operation of all kinds of industrial plants. We specialize on the application of Northern machines in isolated and industrial installations.

INSTRUCTIONS AS TO ORDERS—We carry at our factory and at the principal industrial centers extensive stocks of new dynamos and motors. Wire us your requirements for electrical machines, and we will state what delivery can be made.

GUARANTEE—All Northern apparatus is covered by liberal guarantees extending over a year's time. The Northern Company has a well-deserved name for liberal treatment of its customers.

INSTALLATION—We are prepared to take contracts for the installation of machines ready to operate, or to supply the machinery f.o.b., factory or destination, leaving the contractor or customer to do his own erection work.

It is our custom when receiving orders for direct connected engine type equipments, to send dimension prints to engine builders concerned, thus facilitating the work of the engine builder and guarding against unforeseen contingencies. The design of our various types of machines makes them especially suited to installation in cramped places.

REPAIR PARTS—Northern machines are built on the interchangeable system, and standard apparatus is constructed to jigs, insuring quick, accurate and easy fitting of repair parts.

INFORMATION AND ESTIMATES—We are prepared to co-operate with architects and engineers in the matter of electrical equipment, and are frequently called upon by our friends for information regarding the best means of applying electrical machinery to secure satisfactory results. (Our extensive experience in all sorts of work makes it possible for us to render this co-operation of real value.)

NORTHERN LIGHTING OUTFITS—We are prepared to combine Northern Dynamos with standard steam, kerosene, gas or gasoline engines, and are able to make very compact units. We can generally quote prices on learning the type of engine wanted, and the capacity, voltage and speed of dynamo. We can get a general idea of dynamo construction on learning of the number of 16 c.p. incandescent electric lamps or their equivalent for which current must be generated, the greatest distance to which it must be transmitted, and the speed of the engine. For quotations on belted dynamos, indicate the number of lamps required, the distance of transmission, and the speed and diameter of the pulley to drive the dynamo.

Engine type machines from 25 K.W. to 200 K.W., medium speed, when supplied for direct connection to center crank engines, are built with taper sleeve attachment whereby the armature can be mounted on the engine shaft at the place of erection if desired. (Generator Bulletin No. 4946).

NORTHERN SPHERICAL MACHINES—The Northern spherical line includes the standard type illustrated (Fig. 1), as well as modifications of the type, such as the Back-gear motor (Fig. 3), the Vertical Motor (Fig. 5) and the Universal Motor (Fig. 4). It will be noted that the Spherical frame and its modifications is a compact, self-contained device. The range of sizes includes motors to run the smaller types of machines, as well as the largest types ordinarily employed in industrial work and arranged for operation by direct drive. The spherical line includes motors up to 75 H.P. The standard spherical type shown in Figure 1, also built as a dynamo for power and lighting service in sizes as large as 60 K.W.



FIG. 1. NORTHERN SPHERICAL MACHINE

The standard spherical, vertical and universal motors can be built to operate at different speeds if desired. The speed variation is secured by the use of the Northern single voltage two-wire system employing but a single voltage and using current which can be secured from any power company supplying direct current. (Bulletin No. 4953.)

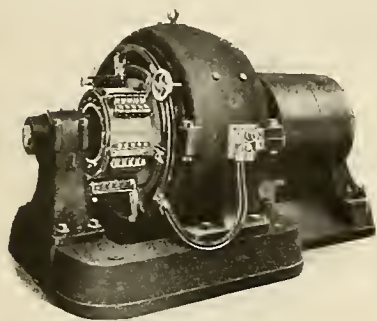


FIG. 2. NORTHERN RING TYPE MACHINE
3 bearing, 6 pole, open type

NORTHERN RING TYPE MACHINES—For general industrial plant power and lighting service, we build our apparatus in sizes above 75 H.P. (motors) and 60 K.W. (dynamos), in the Ring Type Frame illustrated in Fig. 2. This consists of a horizontally split field. The armature bearings are carried by the machine base. Northern Ring Type Machines are very simple, compact, sturdy and economical in operation. The characteristics of construction include form wound coils, laminated armatures, commutators built of hard drawn copper and insulated with mica. (Bulletin No. 4951.)

NORTHERN BACK-GEARED MOTORS—Designed to supply slow speeds—a combination of standard spherical construction with speed reducing counter shaft, giving slow speed with slight addition to motor cost. Ordinary slow speed motors, in which the initial or armature speed is low, are large and hence more expensive in first cost. The design and construction of Northern Back-gear Motors keeps armature pinion and back gear in perfect alignment, thus providing noiseless operation. (Bulletin No. 4950.)

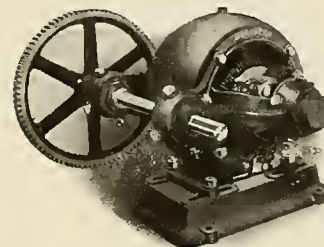


FIG. 3. NORTHERN BACK-GEARED MOTOR
Open Type

NORTHERN UNIVERSAL MOTORS—The special field of application of electric motor drive is covered by the Northern Universal Motor. This consists of a motor built without feet. It is self-contained and the method of support is to apply a special split ring, with appropriate means of mounting on the driven machine. This ring encircles the circumference of the motor, which is especially designed and machined for such application. Fig. 4 shows the Northern Universal Motor. It can be applied vertically or horizontally as required. (See Fig. 10.)



FIG. 4. NORTHERN UNIVERSAL MOTOR
Open Type

Northern Universal Motors are extensively used for application to elevators, ventilating fans, pumps, motor driven valves, sand mixers, etc. (Bulletin No. 4950.)

NORTHERN VERTICAL MOTORS—For the operation of vertical shafts, we supply motors built to drive such shafts through coupling or direct (Fig. 5) connection, doing away with the necessity of bevel gear or turned belting. In the development of the Northern Vertical Motor, we have accomplished the satisfactory lubrication of the motor bearings.

Northern Vertical Motors are generally applied at the top of the machine to be driven. If desired, they can be placed below the driven machine or at any other convenient point. (Bulletin No. 4950.)



FIG. 5. NORTHERN VERTICAL MOTOR
Protected Type

NORTHERN ELEVATOR MOTORS—These motors are built in a variety of types, designed for both high speed passenger service and medium speed passenger and slow speed freight work. They are especially constructed for such service—simple and good for many years of hard work. They are easily applied and capable of giving constant and satisfactory operation under all sorts of conditions.

Northern Elevator (Fig. 6) Motors are specified by careful architects and builders, who appreciate the fact that to give satisfaction, the buildings designed or constructed by them must embody elevator motors which can be relied upon implicitly. (Bulletin No. 4942.)



FIG. 6. NORTHERN SQUARE TYPE ELEVATOR MOTOR



FIG. 7. NORTHERN BOX TYPE MOTOR

NORTHERN BOX TYPE MOTORS—Designed and built for application to all sorts of hoists, travelers, lifts, etc. It is simple, dust proof, easy to apply, requires but little attention and gives satisfaction under the most rigid conditions of work.

Northern Box Type Motors are frequently installed by contractors for the operation of their hoists; thus the builder saves money by cutting fuel costs and firemen's wages, as but one man is required to operate the motor driven hoist. (Bulletin No. 4932.)

NORTHERN ELECTRIC EMERY GRINDERS AND BUFFING LATHES—We build electric Emery Grinders and Buffing Lathes for manufacturing work and also for hotel and domestic service. The illustrations show the types built by us. They are all self-contained, compact, sturdy and economical in operation.

The use of Northern Electric Buffing Lathe equipments in hotel and home housekeeping makes it easy to keep silver, glass and all metal tableware in good condition. The use of our electric emery grinders and buffing lathes saves money and time.

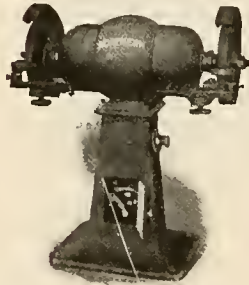


FIG. 9. NORTHERN ELECTRIC EMERY GRINDER

Quotations on such equipments can be submitted on our learning of the diameter and face of the grinding wheels and buffs required and the voltage of the power circuit. (Bulletin No. 4948.)

than to operate ventilating fans, blowers, etc., by means of line shaft drive or individual steam engine. Northern machines are very conveniently applied to all sorts of ventilating and blowing devices. We illustrate a recent application (Fig. 10). We are, of course, not limited to the type shown, and can apply our machines to a wide range of appliances.

Quotations on ventilating fan equipments embodying Northern machines and standard fans can be submitted upon our learning of the diameter of the fan desired, the cubic feet of free air delivery required and the voltage of the power circuit. Quotations on electric blower equipments can be submitted on our learning of the diameter of the outlet of the fan, the pressure in ounces, cubic feet of air delivery per minute and the voltage of the power circuit. (Leaflets Nos. 49143 and 49145 on Ventilating Fans and Blowing Equipments.)

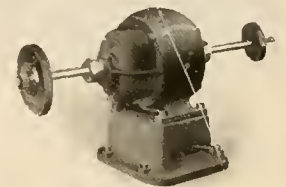


FIG. 8. NORTHERN ELECTRIC BENCH BUFFER

We build two styles as illustrated respectively in Figs. 8 and 9. Fig. 9 shows the heavy type for manufacturing work. These are built so that the speed of the spindle can be adjusted to suit the varying diameters of the wearing wheels or buffs. The bench type of grinder and buffer shown in Fig. 8 is constant speed. It is started and stopped by a lever in the base.

NORTHERN ELECTRICAL VENTILATING FANS AND BLOWING EQUIPMENTS—Electric motor drive for ventilating fans, blowers, etc., is generally accepted as the most economical means of driving such devices, as electric current is universally available and it is more economical to use electric power

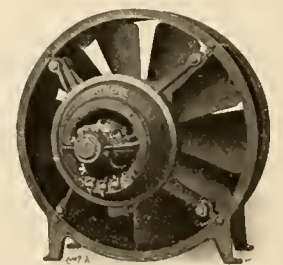


FIG. 10. NORTHERN UNIVERSAL MOTOR Driving Ventilating Fan

ELECTRIC POWER AND LIGHTING OUTFITS FOR COUNTRY HOME AND FARM SERVICE—The sale of Northern machines is being extended through the domestic and farm field—not so much because we are pushing it, but because Northern equipments are adapted to the service. Our dynamos are used for supplying power and light in country home work. Northern Motors are being applied extensively in farming work. Electric power is easily secured by many farmers who can avail themselves with the superior productive facilities afforded by electric motor drive. (Bulletin No. 4952.)

SPRAGUE ELECTRIC COMPANY

527 to 531 West 34th Street
NEW YORK CITY, N. Y.

BRANCH OFFICES

Fisher Building
CHICAGO, ILL.

Weld Building
BOSTON, MASS.

American Building
BALTIMORE, MD.

House Building
PITTSBURG, PA.

PRODUCTS.

Manufacturers of INTERIOR CONDUITS AND APPLIANCES FOR ELECTRIC WIRING, ELECTRIC GENERATORS, ELECTRIC MOTORS, ELECTRIC FAN MOTORS, ELECTRIC PRINTING PRESS MOTOR EQUIPMENTS, CRANE MOTORS, VENTILATING FAN MOTOR EQUIPMENTS, DYNAMOTORS, ELECTRIC HOISTS AND CRANES, and FLEXIBLE STEEL-ARMORED STEAM AND AIR HOSE.

GENERAL CHARACTERISTICS.

We manufacture all of the above in a variety of sizes and types. Our machines are economical in power consumption, graceful in appearance, and easy and quiet running. These machines are unequalled in efficiency, durability, compactness, and commercial value.

GENERATORS FOR LIGHT AND POWER.

Our direct current generators for light and power are acknowledged to be unsurpassed in efficient and satisfactory service. They combine high efficiency and remarkable durability with compactness, and embody all the requirements of a modern generator designed in accordance with the latest and most approved practice. They are extensively used in isolated plants and range in sizes up to 1000 kilowatts.

MOTORS.

We manufacture direct current motors from 1-20 H. P. up to 300 H. P., which are designed in accordance with the most approved practice. They are adapted to drive all kinds of machinery in an efficient and reliable manner.

FLEXIBLE METALLIC CONDUIT AND FLEXIBLE STEEL-ARMORED CONDUCTORS.

The modern building, either private or public, must be wired for electric light, power and ventilation, and the choice of a conduit system that will be both safe and simple to install is important. From mechanical, electrical and commercial view points, the Flexible Metallic Conduit and Flexible Steel-armored Conductors, manufactured by us, represent the highest development in the art of electric wiring, which is thus reduced to absolute simplicity. No elbows are required, as they readily bend to a curve formation without flattening. These products are used extensively for wiring in modern buildings, in railway service, marine work and telephone connections. In damp places and certain classes of underground and submarine wiring, the lead covered conductors are especially desirable. The U. S. Government uses Flexible Steel-armored Conductors in large quantities for various classes of work.



SECTION OF FLEXIBLE METALLIC CONDUIT

UNDERWRITERS' APPROVAL.

The Underwriters' National Electric Association has decided that conductors used in this conduit should have insulation equal to that required for conductors installed in uninsulated metal conduit, and that the conduit will be approved under the same conditions imposed by them on any other uninsulated pipe. The principal municipal inspection authorities throughout the United States also have given this material their hearty endorsement.

OUTLET BOXES.

It is conceded that the most important fittings used in equipping the modern building with interior conduits, are the outlet boxes. We keep in close touch with the requirements of the trade, and are constantly developing this branch of our conduit business, and invite correspondence from architects and builders on this point.

PRICES.

We shall be pleased to quote prices and furnish further information concerning our products upon application.

FEDERAL ELECTRIC COMPANY

Lake and Desplaines Streets
CHICAGO, ILL.

EASTERN REPRESENTATIVES
FEDERAL SIGN SYSTEM (ELECTRIC)
317 W. 42d St. New York City, N. Y.
405 Courtland St., Baltimore, Md.
37 East Third St., Cincinnati, Ohio

WESTERN OFFICE
105-107 BATTERY STREET
SAN FRANCISCO, CAL.

PRODUCTS.

Manufacturers of ELECTRIC LIGHTING FIXTURES, SOCKETS, and SPECIALTIES. Also PORCELAIN ENAMELED STEEL ELECTRIC SIGNS, PORTABLE COUCH BRACKETS, and WARDROBE LIGHTS, COMBINATION STREET FIXTURES with PORCELAIN ENAMELED STEEL SHADES.

INSTRUCTIONS AS TO ORDERS. INSTALLATION.

In ordering use catalogue number.
Our goods can be installed by any electrician.

FEDERAL PATENTED EDISON BASE CLAMP SOCKETS.

These sockets are made of one piece, of the best grade of vitrified porcelain, and have shells of pure copper and clamping rings of aluminum.

They are designed for use in any place where it is desired to attach sockets to sheet metal, glass, or any other similar material. The sockets are attached to the supporting surface by means of a threaded clamping ring which screws on to a similar thread in the porcelain, and clamps the socket tightly against the supporting surface.

One of the greatest advantages of these sockets is the great saving of labor in attaching them, as there are no holes to tap, no screws to be put in and no tools are required in the operation, the socket and clamping ring both being corrugated so that they can be securely adjusted by hand.

They are especially adapted for use in sign work, outlining buildings, window reflectors, and a great many other similar forms of construction.



CLAMP SOCKET
Showing Method of Attachment
No. 301. Standard size, Edison Base, list price each\$35
No. 310. Candelabra Base, list price each\$25



No. 302. WEATHERPROOF SOCKET
List price, each.....\$0.35



No. 303 WEATHERPROOF SOCKET
List price, each.....\$0.35



No. 304. OUTLET BOX SOCKET IN PLACE
List price, Socket only..\$0.35



SOCKET WITH STANDARD CLIP AND LAMP
List price, Standard Clips per 100\$3.25
No. 312. Weatherproof Candelabra Base, list price, each..... \$25

PORCELAIN ENAMELED STEEL CUP SHADES.

These Shades are made of Steel and are Porcelain Enameled inside and out and can be adjusted in a moment. They are intended for use with the Federal Weatherproof Clamp Sockets in places where moisture collects, such as breweries and packing houses. They not only keep the lamps clean, but protect the base of the lamp and effect a great saving in lamp renewals.

PRICES.

- No. 216— 4" Cup Shade only, list price.....\$0.25
- No. 217— 5" Cup Shade only, list price.....\$0.35
- No. 218— 8" Cup Shade only, list price.....\$0.55
- No. 219—10" Cup Shade only, list price.....\$0.70



No. 216. CUP SHADE With No. 302 Socket



No. 217. CUP SHADE With No. 303 Socket

FEDERAL PORCELAIN CANDLE AND ADAPTER.

These candles and adapters are made of the best vitrified porcelain and can be used for decorative work where it is desired to burn candelabra base lamps in standard sockets without removing the sockets. They can be inserted or removed in an instant.

PRICES.

No. 315 Candle \$.65.
No. 314 Adapter \$.25.



No. 315. PORCELAIN CANDLE



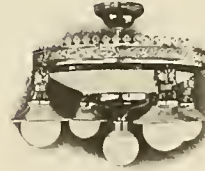
No. 314. ADAPTED FOR PORCELAIN CANDLE

MERIDIAN LAMP CLUSTER.

These fixtures are designed to take the place of arc lamps in stores, offices, halls and lodge rooms where a more artistic and ornamental fixture is desired. They can be used with either meridian or incandescent lamps, and give a soft mellow light, casting no shadows and requiring no attention.

PRICES.

Prices, Discounts and further information will be supplied on application.



No. 504. 5 LIGHT MERIDIAN CLUSTERS



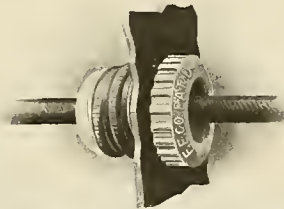
No. 501. 5 LIGHT MERIDIAN CLUSTERS

FEDERAL LOCKNUT BUSHINGS.

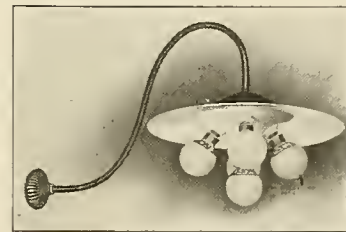
These bushings are made of one piece of the best vitrified porcelain and have clamping rings of copper or aluminum. They are the only bushings made with locknut and can be used for sheet metal and cabinet work. To install them it is only necessary to punch holes of proper size and the locknut holds the bushing secure.

LIST PRICES.

A 1 Bushing Inside Diameter 9-32"	Outside Diameter 41-64"	List Price, each.....	\$.06
A 2 Bushing Inside Diameter 13-32"	Outside Diameter 13-16"	List Price, each.....	.07
A 3 Bushing Inside Diameter 7-16"	Outside Diameter 1"	List Price, each.....	.07½
A 4 Bushing Inside Diameter 3/8"	Outside Diameter 1 5-16"	List Price, each.....	.08½
A 5 Bushing Inside Diameter 15-16"	Outside Diameter 1 19-32"	List Price, each.....	.10½
A 6 Bushing Inside Diameter 1 5/8"	Outside Diameter 2 11-32"	List Price, each.....	.26



FEDERAL SOCKET BUSHINGS
Bushings in Place



No. 550. WITH COMBINATION B FEDERAL 5 LIGHT CLUSTER

FEDERAL CLUSTERS.

These clusters are designed for use with either meridian or incandescent lamps. For outdoor lighting, especially in exposed places, their weatherproof and unbreakable qualities make them very desirable. They can be furnished with stem or gooseneck of loricated conduit. The shades and cups are made of porcelain enameled steel which will not scale or tarnish. We also make a similar cluster, designed for indoor use, having brass stem and canopy, and porcelain shade. The sockets are the patented weatherproof clamp style. These clusters can be furnished in 4, 5, 6 or 7 lights.

LIST PRICES.

PRICE LIST	Comb. A with 1-foot stem and base	Comb. B with 3-foot gooseneck and base	Comb. C with 1-foot stem, crowfoot Casing and canopy
No. 550 4-light cluster.....	\$4.50	\$5.00	\$5.75
No. 550 5-light cluster.....	4.75	5.25	6.00
No. 550 6-light cluster.....	5.00	5.50	6.25
No. 550 7-light cluster.....	5.25	5.75	6.50

Prices do not include lamps.

TERMS.

All Prices subject to discounts. Write for Bulletins and Discount Sheet.

BENJAMIN ELECTRIC MFG. COMPANY

42 W. Jackson Boulevard
CHICAGO, ILL.

NEW YORK CITY OFFICE
27 THAMES STREET
TELEPHONE 7664 CORTLANDT

TELEPHONE HARRISON 1538

SAN FRANCISCO OFFICE
332 CROSSLEY BUILDING
TELEPHONE BUSH 241

PRODUCTS.

Manufacturers of BENJAMIN WIRELESS ELECTRIC CLUSTERS, ARC BURSTS and SPECIALTIES for STORE, WINDOW, SHOW CASE and general INDOOR and OUTDOOR ELECTRIC LIGHTING.

UNDERWRITERS' APPROVAL.

The " Benjamin " Wireless Clusters and Fixtures are National Code Standard. Complete lines are carried in stock in Chicago; also at our New York City and San Francisco offices.

INSTRUCTIONS AS TO ORDERS.

This Company is also prepared to suggest and to submit designs to harmonize with any style of architecture, from the plainest to that of the most ornate character.

In ordering, use catalogue number as given below, which indicates to us the number of lights desired as well as style of fixtures.

State whether multiple or series clusters are wanted where both are listed.

All clusters and cluster fixtures (except weather-proof forms) will be finished in polished brass, unless otherwise specified.

Weather-proof forms are furnished with aluminum shells, unless otherwise specified.

In ordering pendant fixtures, give length from crowfoot to tip of fixtures, otherwise fixture measuring twelve inches will be furnished. Prices of fixtures do not include stem wires.

We are prepared to furnish goods in any finish other than standard (polished brass) on short notice at a slight advance in price. It is desirable that you send, when possible, a sample of the finish wanted.

INSTALLATION.

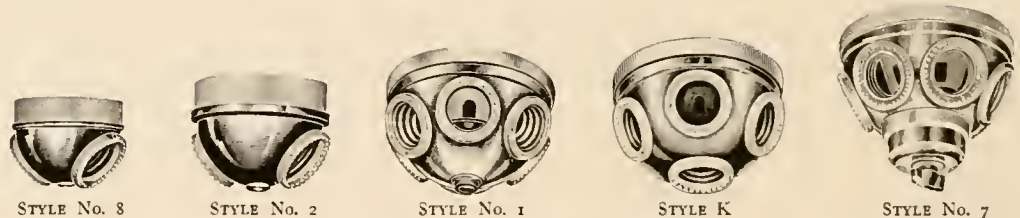
Benjamin Wireless Clusters and Specialties have few parts, are well insulated, present a neat appearance, and can be easily installed.

BENJAMIN WIRELESS CLUSTERS.

The Clusters here listed are fibre lined and attach to ceiling with screws, the same as a wall socket. They are adapted for stems by adding fittings.



BENJAMIN WIRELESS CLUSTERS
Diagram Showing Principle of Construction



STYLE No. 8

STYLE No. 2

STYLE No. 1

STYLE K

STYLE No. 7

BENJAMIN WIRELESS CLUSTERS

SIZES.

These clusters are made in three sizes as follows:

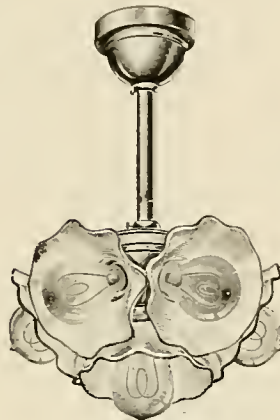
No. 8	2½ inches in diameter, 2 light only	Edison Base only
No. 2	3 inches in diameter, 2, 3 and 4 light	Edison Base only
No. 1	4 inches in diameter, 2, 3, 4, 5 and 6 light	Edison Base only
Style K	4 inches in diameter, 3, 4, 5, 6 and 7 light	Edison Base only
No. 7	4 inches in diameter, 2, 3, 4, 5 and 6 light	Edison Base only

Style No. 7 is the same as No 1 with indicating switch added. Recently improved

PRICES.

Style No. 8, Catalogue No. 82, Two light.....	\$.60 each
Style No. 2, Catalogue No. 22 Two light.....	.75 each
Style No. 1, Catalogue No. 12, Two light.....	.90 each
Style K, Catalogue No. 13K, Three light.....	1.08 each
Style No. 7, Catalogue No. 72, Two light.....	1.50 each

Additional lights for styles 2, 1, K and 7, 15 cents each.



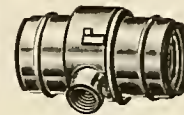
No. 816-KO
CLUSTER FIXTURE
With Shades



No. 19
WALL BRACKET



No. 18-O
WALL BRACKET
With Shade



BENJAMIN No. 4
TWIN SOCKET



No. 824
CLUSTER
FIXTURE

WALL BRACKETS.

These wall brackets or angle sockets present a neat appearance and are easily connected.

They are made in one and two lights, and are especially adapted for attaching to side walls. Edison base only.

PRICES.

No. 18, one light, socket only, 39c each; No. 18-O, one light, with opal shade and holder, 57c each; No. 19, two light, socket, only, 60c each; No. 19-O, two light, with opal shades and holders, 96c each.

BENJAMIN No. 4 TWIN SOCKETS.

These sockets are designed for store, window and show case lighting. They take two lamps, end to end, both being fed by one set of wires and being as easy to connect as single sockets. A great saving in both time and material is resultant from their use.

PRICE.

No. 4, Twin Socket, polished brass, 39c each.

CLUSTER FIXTURES.

Style 824. This cluster is 12" long and consists of cluster body, back fitting, stem, crow-foot and canopy. With this cluster only two stem wires are needed and they connect direct to binding screws in the body. Shade holders are furnished when required.

PRICES.

Catalogue No.	Light	Price
882	Two	\$1.02 each
823	Three	1.32 each
824	Four	1.47 each
815	Five	1.80 each
816	Six	1.95 each
872	Two, with switch added	1.95 each
873	Three, with switch added	2.10 each
874	Four, with switch added	2.25 each
875	Five, with switch added	2.40 each
876	Six, with switch added	2.55 each

STYLE K-O.

This cluster is 12" long, without lamps and is very effective in appearance and in the distribution of light.

Any shades of suitable form and size can be used. Prices include stem, shade-holders, opal shades, canopy and crow-foot.

PRICES.

Catalogue No. 813-KO Three light, without lamps.....	\$2.07
Catalogue No. 814-KO Four light, without lamps.....	2.40
Catalogue No. 815-KO Five light, without lamps.....	2.73
Catalogue No. 816-KO Six light, without lamps.....	3.06

WEATHER-PROOF CLUSTERS.

Style No. 50, represents an outdoor type of cluster with 15 inch porcelain enameled steel shade, gooseneck and pole fitting. The cluster shell is made of aluminum which is not affected by ordinary atmospheric conditions.

PRICES.

Catalogue No.	51	One	light.	\$2.16	each
"	"	52	Two	2.76	"
"	"	53	Three	2.91	"
"	"	54	Four	3.06	"
"	"	55	Five	3.21	"
"	"	56	Six	3.36	"



ARC-BURST
With Frosted Lamps



No. 50. WEATHER-PROOF CLUSTER

ARC-BURST.

The Arc Burst Cluster is most largely used for lighting offices, stores and public buildings.

An ideal substitute for Arc Lamps. A practical grouping of high efficiency meridian type frosted lamps, with reflectors so arranged as to perfectly distribute all available light.

The fixture measures 26 inches high, with lamps in position, and 18 inches in diameter, wired ready to hang. This cluster can be furnished with a turn-down feature, the center lamp being so connected as to be operated independent of the others. Add 15c to list for this feature.

PRICES.

Catalogue No.	Light	PRICE	
		90-130 Volts	200-250 Volts
D43	Three with lamps	\$6.60	\$7.20 each
D44	Four with lamps	7.26	7.98 each
D45	Five with lamps	7.92	8.76 each
D46	Six with lamps	8.58	9.54 each
D47	Seven with lamps	9.24	10.32 each

Specify Voltage in Ordering.

BUILDINGS LIGHTED WITH BENJAMIN FIXTURES.

Our products are installed in a number of modern buildings. The following are but a few taken at random from the list:

- Mercantile Building, 23d St. and 4th Ave., New York City.
- Barclay Building, Broadway, New York City.
- Times Building, Times Square, New York City.
- Taber Building, Pearl and Wall Sts., New York City.
- Trinity Building, 111 Broadway, New York City.
- N. Y. Produce Exchange Bank, Broadway and Beaver Sts., New York City.
- Hotel Breslin, Broadway and 28th St., New York City.
- Butterick Building, New York City.
- Baltimore-American Building, Baltimore, Md.
- Continental Building, Baltimore, Md.
- Diamond National Bank Building, Pittsburgh, Pa.
- Keystone Bank Building, Pittsburgh, Pa.
- Penn Building, Pittsburgh, Pa.
- Chicago Post Office, Chicago, Ill.
- Custom House, Chicago, Ill.
- Mutual Life Insurance Building, Mexico City, Mexico.
- Mutual Life Insurance Building, Cape Town, South Africa.
- Williamson Building, Cleveland, Ohio.
- Majestic Building, Detroit, Mich.
- Kimball Hall, Chicago, Ill.
- Century Building, Atlanta, Ga.
- The Fair, Chicago, Ill.
- Kansas City Journal Building, Kansas City, Mo.

THE HART MANUFACTURING CO.

"Diamond H" Electrical Switches

HARTFORD, CONN.



NEW YORK OFFICE AND WAREHOUSE
203 BROADWAY

TELEPHONE CONNECTION
4969 CORTLANDT

PRODUCTS.

"DIAMOND H" SWITCHES. PUSH BUTTON FLUSH SWITCHES. AUTOMATIC DOOR SWITCHES. ROTARY FLUSH SWITCHES. ROTARY STANDARD SWITCHES. STEEL WALL APPLIANCES. AUTOMATIC FLUSH RECEPTACLES.

TERRITORY.

Orders shipped direct from Hartford, New York, Boston, Chicago, Denver, and Toronto branches.

GENERAL DESCRIPTION.

In completeness of detail and perfection of operation, the "Diamond H" line has no equal.

The greatest care has been used in the selection of the material best suited to the different purposes, and all parts are made sufficiently strong. The mechanism of both Push Button and Rotary Switches is insulated from the current-carrying parts by sheet mica, which will not wear nor burn out.

The condition of a switch, "on" or "off," is shown by the buttons of the Push Switch, by the position of the handle of the Rotary Flush Switch, by the dial of the



STANDARD DIAL SWITCH
5, 10, 20 and 35 Amp.



AUTOMATIC FLUSH RECEPTACLE AND PLUG
The only one made



No. 222
10 Amp. D. P.



PUSH BUTTON SWITCH
With Plate



STANDARD SWITCH
With Handle and Cover removed



STANDARD SWITCH
With Handle, Cover and Dial removed for connecting up



ROTARY FLUSH SWITCH
With Plate

All "Diamond H" Standard Switches are Supplied with Removable Dials of the above type

Rotary Standard Switch. The Rotary handle is provided with an adjusting spring contained in the body of the handle, and not between the body of the handle and a separate collar.

Both Push Button and Rotary Flush Switches fit the "Diamond H" steel wall appliances, or may be used with push button wall frames and conduit boxes of other make.

Flush plates are carried in stock, finished in old Brass, Polished Brass, Bronze, Nickel and on Copper. Any hardware finish can be furnished on short notice.

H. T. PAISTE CO.

Electrical Material
PHILADELPHIA, PA.

26 CORTLANDT STREET
NEW YORK CITY, N. Y.

BRANCHES:
7 OTIS STREET
BOSTON, MASS.

190 SO. DESPLAINES STREET
CHICAGO, ILL.

PRODUCTS.

Manufacturers of NATIONAL ELECTRICAL CODE STANDARD HOUSE and MILL ELECTRICAL MATERIAL, consisting of over four hundred different specialties. Detail Bulletins and Samples gladly sent upon request.

ADAPTABILITY.

The Paiste line of electrical hardware is standard in every particular and is adapted for an unusually wide range of electrical conditions. Our products have been examined, approved, and listed by the Underwriters' National Electrical Association for use under the requirements and rules of the National Board of Fire Underwriters. This means that they will pass inspection everywhere.

SOCKETS.

Standard Sockets, for Edison and T-H Base, Key and Keyless styles, are used for all classes of work. Capacity up to 50 C.P.—250 V.

CATALOGUE NO. STANDARD SOCKETS.

- 9386—Edison Key Socket.
- 9392—Edison Keyless Socket.
- 227—T-H Key Socket.
- 229—T-H Keyless Socket.



9386. STANDARD SOCKET



22754. WEATHER-PROOF SOCKET

WEATHER-PROOF SOCKETS.

This Weatherproof Socket has a protecting and reflecting hood, which carries away drip from the lamp bulb, and is used for Mines, Breweries, and other damp places. Capacity 50 C.P.—250 V.

HOLOSHADE SOCKETS.

For the best and most rigid socket, we particularly recommend the Holoshade styles. A special type of shade-holder is permanently joined to the standard socket shell, practically making them one. They stand up under the weight of the shade without the slightest sagging.

All of our sockets are fitted with standard movements and the "Holoshade" is recommended for best fixture work.

CATALOGUE NO. HOLOSHADE SOCKETS.

- | | |
|---|---|
| <p>With 2 1/4" Shade-holder.</p> <ul style="list-style-type: none"> 27740—Edison Key Socket. 27741—Edison Keyless Socket. 2227—T-H Key Socket. 2229—T-H Keyless Socket. | <p>With 3 1/4" Shade-holder.</p> <ul style="list-style-type: none"> 29400—Edison Key Socket. 29402—Edison Keyless Socket. 3227—T-H Key Socket. 3229—T-H Keyless Socket. |
|---|---|



27740. HOLOSHADE SOCKET

N. E. CODE STANDARD CUT OUTS.

Our Edison Plug Cut Out (Fig. 2965) for 125 Volt work, is made in nine styles of branches and mains. The Enclosed Fuse Cut Out (Fig. 72965) is used for 250 Volt work and is also made in nine styles of branches and mains.

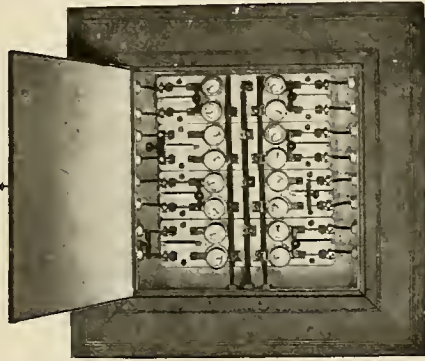


2965. EDISON PLUG CUT OUT

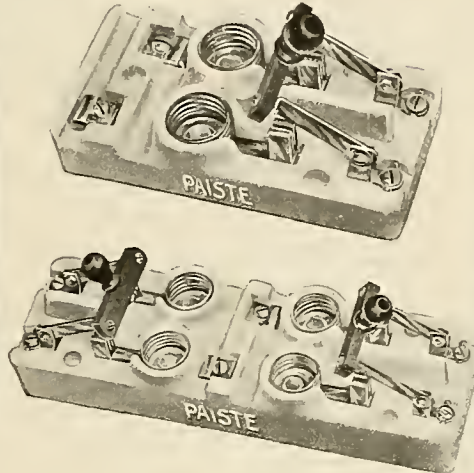


72965. ENCLOSED FUSE CUT OUT

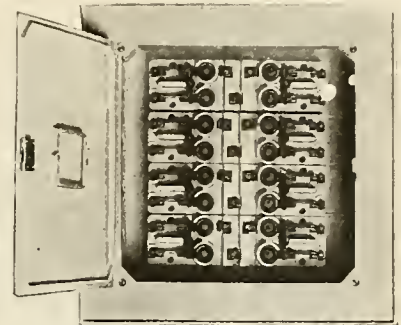
PANEL BOXES AND CUT OUTS.



4950. ASBESTOS LINED WOODEN PANEL BOXES
Capacities 1 to 20 Circuits



4012 AND 4015. PANEL CUT OUTS
18 Styles of Branches and Mains



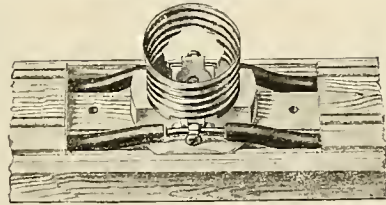
SECTIONAL IRON PANEL BOXES
Capacities 1 to 30 Circuits.

RECEPTACLES AND ROSETTES.

For Mill work where especially rigid fastenings are necessary, we have a full line of Receptacles and Rosettes. "P-K" Fusible Rosettes have that extra fastening of the cap so that no amount of vibration can loosen it. It is the standard Fusible Rosette for mill work. With capacity for 125 Volt work.



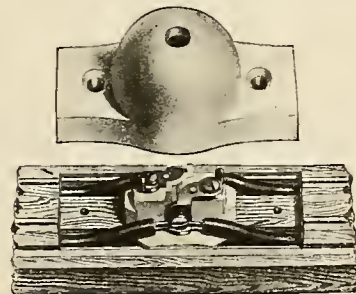
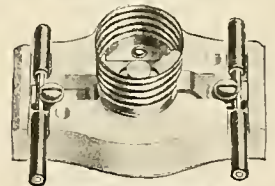
50724. FIELDING RECEPTACLE FOR MOLDING WORK
250 Volt



816. FIELDING ROSETTE FOR CLEAT WORK
125 Volt.



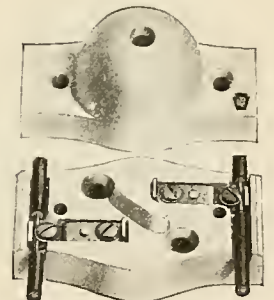
23210. FIELDING RECEPTACLE FOR CLEAT WORK
250 Volt



435. FIELDING FUSELESS ROSETTE
For 250 Volt Molding Work

CATALOGUE NO.

- 816 Cleat Ros. Stamped Lugs.
- 810 Cleat Ros. Cast Lugs.
- 811 Concealed Ros.
- 812 Molding Ros.



433. FIELDING FUSELESS ROSETTE
For 250 Volt Cleat Work

THE PROMETHEUS ELECTRIC CO.

NEW YORK CITY, N. Y.

OFFICES AND FACTORY

236-238 East 43d Street, New York City.

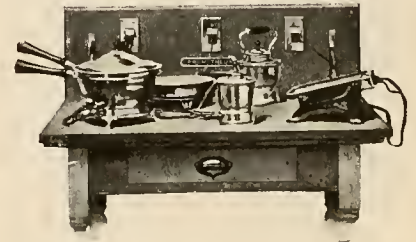
PRODUCTS.

Manufacturers of ELECTRIC HEATING and COOKING APPARATUS.

ADVANTAGES OF ELECTRICITY FOR HEATING AND COOKING.

Where Electricity is used for heating and cooking:

- There is no smoke, flame or soot.
- No vitiation of the atmosphere.
- Neither fuel nor cooking range.
- No labor to make and maintain a fire.
- No danger from fire or explosion.
- A uniform heat instantly applied and instantly cut off.



"PROMETHEUS" ELECTRIC COOKING AND HEATING APPARATUS

Electric heating and cooking with apparatus and utensils equipped with "Prometheus" heating units is feasible, practical, economical, and has been tried and given satisfaction for years.

STANDARD APPARATUS.

The Prometheus Electric Company manufactures a standard line of heating and cooking apparatus, comprising every heating utensil for domestic use, and builds or equips electrically:



WARMING CLOSET
(Exterior View)

- WARMING CLOSETS.
- PLATE WARMERS.
- BAKING OR ROASTING OVENS.
- COFFEE AND HOT WATER URNS.
- STEAM TABLES, GRIDDLES and BROILERS.
- ENTIRE ELECTRIC KITCHEN OUTFITS for RESIDENCES, RESTAURANTS, HOTELS, HOSPITALS, and INSTITUTIONS.



WARMING CLOSET
(Interior View)

GENERAL INFORMATION.

Catalogue and prices of Standard "Prometheus" Heating and Cooking apparatus on application.

Specifications and Estimates furnished for any special requirement.

REFERENCES.

Interborough Rapid Transit Company, New York City, N. Y.; Niagara Construction Co., Ltd., Niagara, N. Y.; Eastern Ship Building Company, etc.

M. T. DAVIDSON

Pumping Machinery

MAIN OFFICE & WORKS
43-53 Keap St., Brooklyn, N. Y.

NEW YORK OFFICE, 141 Broadway
BOSTON OFFICE, 30 Oliver St.

PRODUCTS.

The DAVIDSON ELEVATOR PUMP for HYDRAULIC ELEVATOR SERVICE (simple and compound, single and separable duplex), BOILER FEED PUMPS, HOUSE and TANK PUMPS, AUTOMATIC RETURN PUMPS and RECEIVERS, ARTESIAN and DEEP WELL PUMPS, VACUUM PUMPS, CIRCULATING PUMPS, BREWERY PUMPS, TANNERY PUMPS, HYDRAULIC PRESSURE PUMPS, PUMPING ENGINES, ELECTRIC POWER PUMPS, CONDENSERS, etc., etc., etc.

ADVANTAGES OF THE DAVIDSON PUMPS.

The Davidson Pumps have been on the market for over twenty-five years and during that time they have maintained the highest reputation among users. The highest class of workmanship and material is employed in their construction and they will be found a better investment, in cost of operation, repairs and length of service than any others built.

THE DAVIDSON COMPOUND ELEVATOR PUMP.

The Davidson Compound Elevator Pump is especially adapted for the economical operation of hydraulic elevators. This is a positively automatic pump with steam and properly proportioned for maximum load, capable of starting promptly under full load with practically no loss of water pressure.

The reasons for the economical performance of the Davidson Pump for elevator service are: a properly proportioned steam end to do the work, starting promptly when regulator acts, a positive acting valve motion which does not "short stroke" and cause excessive clearance in the steam end to be filled with steam, without return in work, long stroke, small clearances and but two steam ports in chest, tight water pistons fitted with hydraulic leather packings, easily replaced and giving practically full efficiency for piston displacement. Few moving parts, which wherever practicable are adjustable to compensate for wear.

THE DAVIDSON COMPOUND SEPARABLE DUPLEX PUMP.

The Davidson Compound Separable Duplex Pump for Elevator Service (Fig. 2) consists of a pair of Davidson Single Cylinder Elevator Pumps (described above) arranged to operate as a duplex machine, either side of which may be shut down and the other side run as a single cylinder, double-acting pump. This change can be made instantly and without interruption to the service.

The advantage of being able to use the duplex machine for full load and the single machine for light load is obvious.

All the advantages of my Pumps, as noted above are retained in this machine. The duplex machine cannot "short stroke," the valve mechanism of each side controlling its own valve closure.

ENQUIRIES

When making enquiries about pumps please give:
Steam pressure, state if at boiler or pump.
Back Water pressure, when exhaust is used for heating.
Quantity of water required, or number, diameter and speed of elevator pistons.

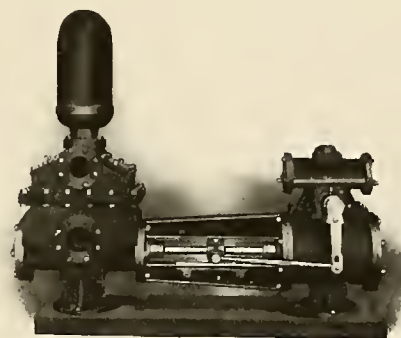


FIG. 1. THE DAVIDSON PRESSURE PUMP

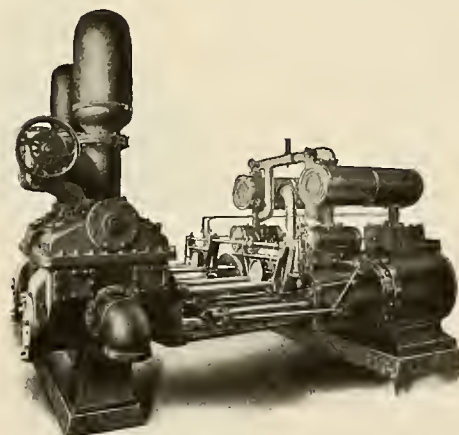


FIG. 2. THE DAVIDSON SEPARABLE DUPLEX PUMP FOR ELEVATOR SERVICE

THE DEMING COMPANY

Pumping Machinery

SALEM, OHIO

GENERAL AGENCIES

HENION & HUBBELL, 61-69 North Jefferson Street, Chicago, Ill.
 HARRIS PUMP & SUPPLY Co., 320 Second Avenue, Pittsburgh, Pa.
 W. P. DALLETT, 49 North Seventh Street, Philadelphia, Pa.
 RALPH B. CARTER Co., 47 Dey Street, New York City, N. Y.
 CHAS. J. JAGER Co., 166 High Street, Boston, Mass.
 ROOT, NEAL & Co., 178 Main Street, Buffalo, N. Y.
 BORDEN & SELLECK Co., 133 Water Street, Cleveland, O.
 HENSHAW, BULKLEY & Co., San Francisco, Cal.

SYDOR PUMP & WELL Co., Richmond, Va.
 CROOK-HORNER Co., 301 North Howard Street, Baltimore, Md.
 LAIB Co., 439 West Main Street, Louisville, Ky.
 MOORE & HANDLEY HARDWARE Co., Birmingham, Ala.
 THE ENGLISH IRON WORKS Co., Kansas City, Mo.
 HENORIE & BOLTHOFF MFG. & SUPPLY Co., Denver, Colo.
 L. BOOTH & SONS, Los Angeles, Cal.
 DARLING BROTHERS, Montreal, Canada.

PRODUCTS.

Manufacturers of PUMPING MACHINERY for operation by any power, including SINGLE and DOUBLE ACTING TRIPLEX PUMPS for various services, DEEP WELL POWER WORKING HEADS, ARTESIAN WELL CYLINDERS, ROTARY PUMPS, etc. We also make a complete line of HAND PUMPS for shallow and deep wells, WIND MILL PUMPS and STANDARDS, HYDRAULIC RAMS, HAND FIRE ENGINES, SPRAY PUMPS, NOZZLES, etc.

FACILITIES.

With our two and a half acres of floor area and thoroughly modern equipment of machinery and appliances devoted exclusively to the manufacture of pumps, we are in a position to insure the prompt execution of all contracts.

ADAPTABILITY OF PRODUCTS.

Our power pumps are of the highest type of construction and are particularly adapted for Water Works, Mine Service, Boiler Feeding, Hydraulic Elevators, Railway Water Supply and General Service in Paper Mills, Factories, etc.

GENERAL INFORMATION.

Orders for our power pumps, and inquiries regarding same, will have our most careful attention. We should be pleased to have an opportunity of submitting estimates on power pumps for such work as is mentioned above, and will either place same in charge of our Engineering Department or refer to our nearest agency.

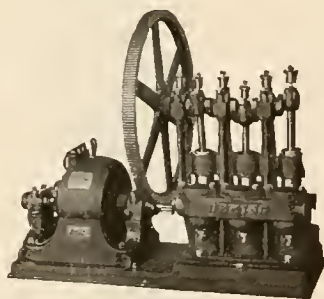


FIG. 1. (Catalogue No. 46.)

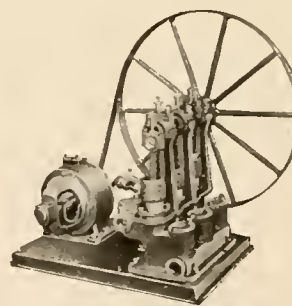


FIG. 2. (Catalogue No. 47.)

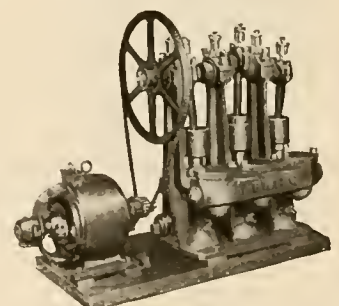


FIG. 3. (Catalogue No. 49.)

DEMING TRIPLEX PUMPS WITH ELECTRIC MOTORS

In Figs. 1, 2 and 3, we show different methods of connecting an electric motor with our Triplex House Pump, while Fig. 4 represents one of our popular Deep Well Power Working Heads.

DEMING ELECTRIC-DRIVEN TRIPLEX PUMPS.

For quietness of running and durability, these combinations of motor and pump cannot be excelled.

Fig. 1 shows the connection made by a single reduction of machine cut gearing, the motor pinion being made of rawhide, unless specified of bronze or steel.

Fig. 2 shows the connection made by belt and spring idler; because of the absence of any gearing this is unusually quiet in operation.

Fig. 3 is also noiseless in operation, the connection being by silent chain and gearing.

SIZES, ETC. OF TRIPLEX PUMPS.

PLUNGERS		CAPACITY		Maximum Working Pressure Pounds	DIAMETER OF PIPES	
Diameter Inches	Stroke Inches	Gallons per Rev.	Usual Speed and Capacity per Minute		Suction Inches	Discharge Inches
1½	1½	.034	140 revs. 4.76 gals.	100	1¼	1
2	2	.081	120 revs. 9.7 gals.	100	2	1½
2½	2	.127	120 revs. 15.2 gals.	100	2	1½
2½	3	.19	110 revs. 20.9 gals.	100	2½	2
3	3	.27	110 revs. 29.7 gals.	100	2½	2
3½	3	.37	110 revs. 40.7 gals.	100	2½	2
3½	4	.50	90 revs. 45.0 gals.	100	3	2½
4	4	.65	90 revs. 58.5 gals.	100	3	2½

DEMING DEEP WELL POWER WORKING HEAD.

Fig. 4 shows a Deep Well Pump adapted especially for supplying water from deep wells for private estates, manufacturing plants, farms, etc. The "low-down" design makes it exceptionally substantial and accessible.

The main base is of cast-iron, and carries the crank and pinion shaft bearings, which are lined with best babbitt metal.

The gearing is machine cut, the main gear being bolted to a flange integral with the crank shaft.

The crosshead is babbitt lined, and the guide rods are of polished steel.

Each pump has a polished steel differential plunger which discharges part of the water on the down stroke, thus equalizing the load and giving a more uniform flow of water.

In connection with this working head we recommend the use of our deep well brass cylinder, as shown in Fig. 5, together with octagon wood sucker rod.

SIZES, ETC., OF DEEP WELL PUMPS.

Stroke Inches	MAXIMUM DIAMETER OF PIPES		Gear Ratio	Tight and Loose Pulleys	Maximum Height Inches
	Suction Inches	Discharge Inches			
8, 9 & 10	4½	2½	6 to 1	16 x 3	40½
12, 14 & 16	6	3	7 to 1	20 x 5	51

Diameter and Stroke of Cylinder	CAPACITY		*Maximum Depth of Well, Feet
	Gallons per Rev. of Crank Shaft	Usual Speed and Capacity at Maximum Stroke per Minute	
2¾ x 10	.257	40 revs. 10.2 gals.	300
2¾ x 16	.411	35 revs. 14.3 gals.	300
3¾ x 10	.478	40 revs. 18.1 gals.	175
3¾ x 16	.765	35 revs. 26.7 gals.	175
4¾ x 10	.614	40 revs. 24.5 gals.	135
4¾ x 16	1.227	35 revs. 42.8 gals.	110
5¾ x 16	1.499	35 revs. 52.4 gals.	95
5¾ x 16	1.798	35 revs. 62.9 gals.	75

* Refers to vertical distance from surface of water to point of delivery.

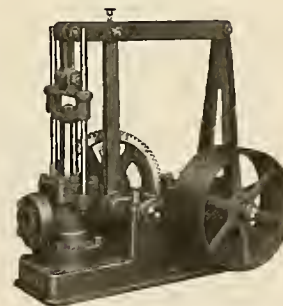


FIG. 4. DEEP WELL PUMP



FIG. 5. DEEP WELL CYLINDER.

(Catalogue No. 324)

THE GOULDS MANUFACTURING COMPANY

Pumps and Hydraulic Machinery

WORKS AND MAIN OFFICE
SENECA FALLS, N. Y.

PRINCIPAL BRANCHES

NEW YORK CITY, N. Y.
16 Murray Street
TELEPHONE, 7887 CORTLANDT

BOSTON, MASS.
8 Oliver Street
TELEPHONE, MAIN 221

CHICAGO, ILL.
22 N. Canal Street
TELEPHONE, 1193 MAIN

PITTSBURG, PA.
318 Bessemer Building
TELEPHONE, BELL 2177

PRODUCTS—HAND and POWER PUMPS for every service. CISTERN, WELL and HOUSE FORCE PUMPS. WINDMILL, IRRIGATION and SHIP PUMPS. WATER LIFTERS, HYDRAULIC RAMS, YARD HYDRANTS, STREET WASHERS. POWER PUMPS for General Service—DEEP WELL, ELEVATOR, VACUUM, AIR, MUNICIPAL WATER WORKS, BOILER FEEDING, HYDRAULIC PRESSURE, FIRE PROTECTION. SPRINKLER SYSTEMS built to operate by Belt from line shaft, steam, oil, gas or gasoline engine or electric motor, or direct connected to steam, oil, gas or gasoline engine or electric motor.

SUPERIORITY—We have been building pumps for 57 years and "Goulds Pumps" are used in every country. Our Power Pumps are the Standard of excellence wherever known, on account of workmanship, refined proportions, great durability and extremely low cost of operation. *It costs about 75% less to operate a Power Pump than it does a Steam Pump.*

FACILITIES—Practically all the hand and power pumps that we build for domestic uses are carried in stock and orders can be promptly filled. Power pumps for larger service require thirty to sixty days for delivery.

GENERAL INFORMATION—Fire Pumps are constructed to meet the requirements of the Fire Underwriters' Association.

Our Power Pumps are all self-contained and require only a firm foundation suitable to their size and capacity. Dimensions on blue prints furnished upon request. All regular goods should be ordered by Figure number. Estimates cheerfully given. Pumps can be built for any purpose upon receipt of full information as to the service required.

We ship our products to all parts of the world.

GOULDS SINGLE-ACTING TRIPLEX PLUNGER PUMP—Goulds Single-Acting Triplex Plunger Pumps are used for Municipal Water Works, Boiler Feeding, Hydraulic Elevators, Mine Pumping, General Water Supply, etc.

Fig. 1009 shows a very compact, strongly built, powerful pump. For 150 lbs. pressure or 350 feet elevation.

Figure 924 shows an extra heavy Pump for continuous hard work. For 130 lbs. pressure, or 300 feet elevation.

Diameter Inches	Stroke Inches	Cap. Per Min. Gal.	Suction	Discharge	Tight and Loose Pulleys
1 1/4	2	1.8	2	2	12 x 1 1/2
1 1/2	2 1/2	4.2	1	1	12 x 2 1/2
2	3	6	1 1/2	1 1/2	12 x 2 1/2
2 1/2	4	12	1 1/2	1 1/2	15 x 3
3	4	18	1 1/2	1 1/2	15 x 3
3 1/2	4	25	2	2	15 x 3
4	4	32	2	2	20 x 3
4	6	50	2	2	20 x 3
5	6	75	3	3	26 x 4
5	8	90	3	3	30 x 5
6	8	132	4	4	30 x 6
6 1/2	8	153	4	4	30 x 6
7	8	180	4	4	36 x 6
8	8	234	5	4	36 x 6
8	10	273	5	5	42 x 6
9	10	344	6	5	42 x 8



FIG. 924. GOULDS EXTRA HEAVY PLUNGER PUMP

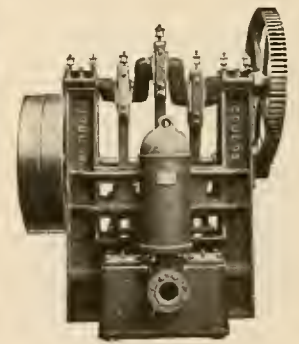
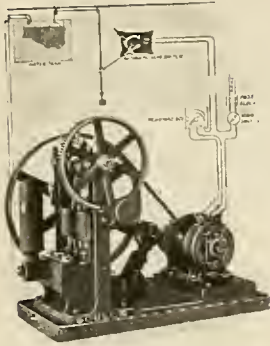


FIG. 1009. GOULDS PLUNGER PUMP

GOULDS PYRAMID PUMP—Figure 1329 shows a Double Acting Piston Pump with a 55 lbs. pressure or 125 ft. elevation. It requires only a small floor space. This pump is used for tank pump in Residences, Apartment Houses, Factories, Railroad Water Tanks, etc.

Diameter and Stroke of Pistons	Capacity Per Minute	Suction and Discharge	Geared	Tight and Loose Pulleys
3x5	12.4 gals.	1 1/4 in.	5 to 1	15x2 1/2 in.
4x5	21.6 "	1 1/2 "	5 to 1	15x3 "
5x5	34 "	2 "	5 to 1	16x3 1/2 "
6x5	48 "	2 1/2 "	5 to 1	16x4 "



ELECTRIC HOUSE PUMP

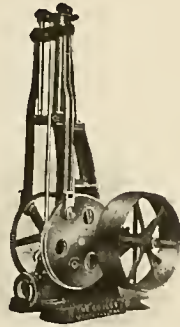


FIG. 1454. GOULDS POWER WORKING HEAD



FIG. 1329. PYRAMID PUMP

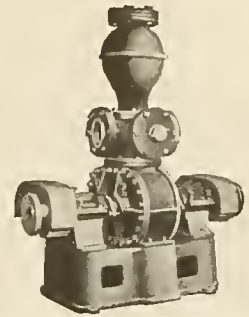


FIG. 1352. UNDERWRITERS ROTARY FIRE PUMP

GOULDS UNDERWRITERS ROTARY FIRE PUMP—Figure 1352 illustrates the best and most powerful Rotary Water Pump on the market. Figure 1354 is the same pump direct connected to electric motor. For service in Office Buildings, Mills, Factories, Warehouses, etc. It is built to conform with the requirements of the Fire Underwriters Association.

No.	Speed and Capacity per Minute for Good Fire Service	Suction	Discharges	
			Hose	Pipe
1	450 to 500 revolutions, 112 to 125 gallons	3 inch pipe	1½ inch	1½ inch
2	400 to 450 " 200 to 225 "	4 "	2 "	2 "
3	350 to 400 " 350 to 400 "	5 "	2½ "	2½ "
4	300 to 350 " 500 to 580 "	6 "	2½ "	4 "
5	250 to 300 " 625 to 750 "	7 "	2½ "	5 "
6	200 to 250 " 900 to 1125 "	8 "	2½ "	6 "

GOULDS POWER HEAD—For Wells 70 to 300 feet deep.

Figure 1454, built in two sizes, best low priced Pumping Head on the market. Designed to operate Figure 904, Deep Well Cylinder which costs extra.

ADJUST. STROKE	SIZE PIPE, SUC. DIS.	GEARED	TIGHT AND LOOSE PULLEY	LIST
6, 8, 10 inch	5 inch, 3 inch	5 to 1	20x3	\$ 75
12, 16, 20 inch	6 inch, 4 inch		26x4	150

ELECTRIC PUMPS—These electric pumps are arranged to operate automatically with the rise and fall of water level in an elevated tank.

Full particulars on application.

GOULDS DUPLEX WATER LIFTER—Figure 1466 for pumping Cistern or Well Water, using City Water for motive power.

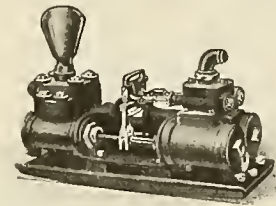
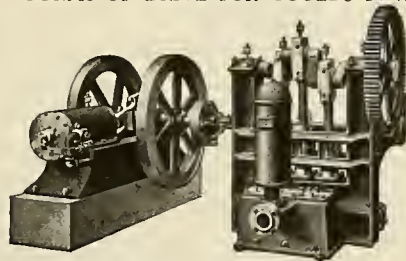


FIG. 1466. GOULDS DUPLEX WATER LIFTER

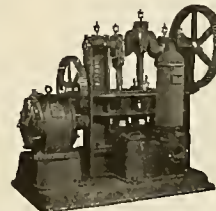
FORMS OF DRIVE FOR GOULDS POWER PUMPS



FORM "A" ELECTRIC MOTOR AND IDLER



FORM "D." DIRECT CONNECTED TO GAS ENGINE



FORM "C." ELECTRIC MOTOR; DIRECT CONNECTED

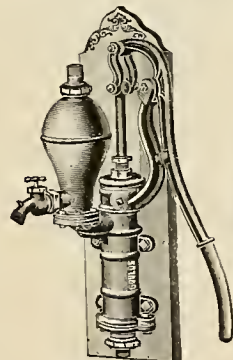


FIG. 395 GOULDS HOUSE FORCE PUMP

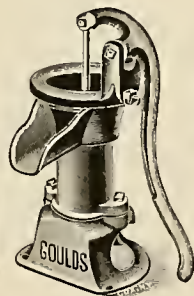


FIG. 205 GOULDS PITCHER-SPOUT PUMP

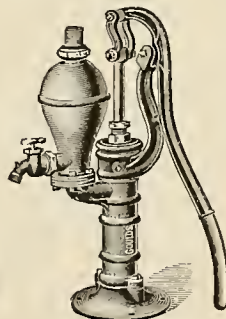


FIG. 394 GOULDS HOUSE FORCE PUMP

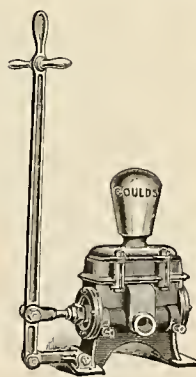


FIG. 1334 GOULDS "NEW ALERT" FORCE PUMP

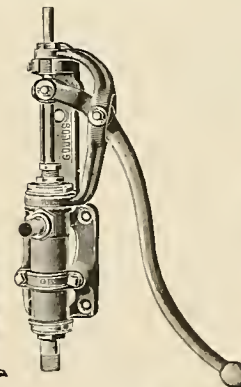


FIG. 1122 GOULDS BRASS HOUSE FORCE PUMP



FIG. 1440 GOULDS "COLUMBIA" FORCE PUMP

TYPES OF PUMPS FOR DOMESTIC WATER SUPPLY

UNION STEAM PUMP COMPANY

61 So. Madison Street

BATTLE CREEK, MICH., U. S. A.

PRODUCTS—Manufacturers of BURNHAM STEAM PUMPS and AIR COMPRESSORS.

ADVANTAGES—The following features are distinct advantages possessed by our pumps only: They will not *Short Stroke* nor injure from *Full Load to No Load*.

FLOOR DIMENSIONS AND CAPACITIES.

LOW DUTY TANK PUMPS—For liquids to limited heights and distances. Used at railroad water stations, gas and oil works, tanneries, refineries, plantations, distilleries, etc. Pumping hot, cold, thick, alkaline or other liquids.

AIR COMPRESSORS—Are admirably adapted to the requirements of Compressor work where large quantities of air are required at a medium pressure.

HIGH DUTY BOILER FEED PUMPS—For general service where the water pressure does not exceed 150 pounds per square inch.

AIR PUMPS AND JET CONDENSERS—Well built machines. They are self-contained and occupy but little room.

HYDRAULIC PRESSURE PUMPS—For oil and cotton presses, testing machines, hydraulic riveting, punching and all high pressure work. Will not hammer nor pound if pressure is suddenly removed or suction broken.

HIGH VACUUM DUTY PUMPS—Applied to evaporating apparatus, condensers, or any plant using concentrating or vacuum apparatus.

DEEP WELL ENGINES—Adapted for non-flowing artesian, tubular or bored wells.

Low Duty Tank Pumps						Air Compressors				Air Pumps and Jet Condensers				High Vacuum Duty Pumps				
Displacement in Inches, Approximate.			Shipping Weight, Approximate.	Gallons per Hour, at 100 feet Piston Travel.	Displacement in Inches, Approximate.			Shipping Weight, Approximate.	Cubic Feet, Free Air per Minute.	Displacement in Inches, Approximate.			Shipping Weight, Approximate.	Lbs. of Steam Consumed per Hour, Injection Water at 70 to 75 deg. at Maximum Speed.	Displacement in Inches, Approximate.			Shipping Weight, Approximate.
Length.	Width.	Height.			Length.	Width.	Height.			Length.	Width.	Height.			Length.	Width.	Height.	
35	12	18	175	2205	31	7	14	125	8	60	27	50	700	750	46	12	17	350
35	12	18	190	3001	31	7	14	125	13	60	27	50	700	1100	46	12	17	350
35	12	18	200	3900	32	7	16	175	8	62	27	53	900	1200	49	14	19	500
35	12	18	200	4900	32	7	16	175	13	62	27	53	900	1600	49	14	19	550
35	12	18	350	6000	34	12	16	200	19	62	35	74	1400	2100	49	14	19	550
35	12	18	350	7000	34	12	16	200	26	62	35	74	1400	2700	47	14	19	500
35	12	18	350	8800	42	15	20	225	8	62	35	66	1600	3300	47	14	19	500
48	14	20	475	3900	42	12	20	225	13	66	35	72	1600	4000	56	15	24	685
48	14	20	500	4900	42	14	20	250	19	72	36	78	2500	5800	56	15	24	685
38	14	20	350	3000	42	14	20	250	26	72	36	78	2500	5800	49	15	24	550
38	14	20	400	3900	44	15	20	300	34	84	39	79	2800	5800	49	15	24	550
38	14	20	425	4900	46	15	20	300	13	84	39	79	2800	7800	49	15	24	550
38	14	20	425	6000	46	14	20	400	19	84	47	82	2800	8000	49	15	24	700
38	14	20	500	7000	46	14	20	400	26	84	47	82	3100	8000	56	15	24	725
38	14	20	500	8800	52	20	20	600	34	94	47	82	3270	8000	56	16	24	900
42	12	22	750	6000	52	20	20	600	43	95	40	80	3000	10500	56	16	24	900
42	12	22	750	8800	61	20	22	800	80	105	62	96	4500	10500	57	17	28	950
44	18	22	750	12000	61	20	22	800	43	105	62	96	4500	12900	66	20	28	1150
44	12	20	500	3900	65	20	22	900	51	105	62	96	5100	12900	66	20	28	1150
44	12	20	550	4900	65	20	22	900	61	105	62	96	5100	15900	70	24	32	1800
44	12	20	550	6000	65	20	22	1000	81	105	62	96	5400	12900	70	24	32	1800
45	14	22	650	8800	65	20	22	1100	117	105	62	96	5500	15000	70	24	32	1800
46	14	20	700	12600	63	22	28	1200	51	118	68	102	6500	18900	70	24	32	2200
46	14	20	700	6000	63	22	28	1150	64	118	68	102	6700	18900	57	16	24	1150
46	14	20	700	8800	63	22	28	1200	81	118	68	102	7000	20900	57	16	24	1150
46	14	20	700	12600	63	22	28	1350	117	120	68	102	7000	26900	70	24	32	2000
58	18	26	800	6000	68	22	32	1500	81	120	68	102	7500	29000	70	24	32	2400
58	18	26	800	8800	68	22	32	1600	117	125	68	102	7500	35000	70	24	32	2400
58	18	26	825	12000	70	22	32	1700	81	125	68	102	7500	35000	70	24	32	2400
58	19	26	1000	15900	70	22	32	1700	117	125	68	102	7500	35000	70	24	32	2400
58	20	27	1000	19800	75	24	28	2000	142	125	70	104	7600	32000	70	24	32	2600
58	20	27	1100	24900	75	24	28	2000	186	125	70	104	7600	32000	79	24	36	2750
58	20	27	1200	29000	75	24	28	2000	186	142	70	104	7600	32000	87	28	36	3500
48	14	22	900	12000	75	26	32	2200	186	142	70	104	7600	32000	87	28	36	3500
48	14	22	1150	15600	75	26	32	2400	112	142	70	104	7600	32000	108	30	30	3400
50	15	24	1150	19800	75	26	32	2400	186	142	70	104	7600	32000	108	30	30	3400
50	15	24	1300	24000	78	24	36	2700	142	142	70	104	7600	32000	108	30	30	3400
50	18	26	1000	8800	78	26	36	3000	186	142	70	104	7600	32000	108	30	30	3400
50	18	26	1000	12600	80	24	36	3000	142	142	70	104	7600	32000	108	30	30	3400
60	19	26	1100	15600	80	26	36	3000	186	142	70	104	7600	32000	108	30	30	3400
60	20	27	1150	19800	86	24	38	3500	142	142	70	104	7600	32000	108	30	30	3400
60	20	27	1300	24000	86	26	38	3500	186	142	70	104	7600	32000	108	30	30	3400
66	25	32	1500	15600	100	38	32	3800	235	142	70	104	7600	32000	108	30	30	3400
66	25	32	1500	19800	100	38	32	3800	235	142	70	104	7600	32000	108	30	30	3400
66	25	32	1600	19800	102	38	36	4000	235	142	70	104	7600	32000	108	30	30	3400
66	25	32	1600	24000	102	38	36	4000	235	142	70	104	7600	32000	108	30	30	3400
66	20	28	2100	24000	104	38	40	4700	235	142	70	104	7600	32000	108	30	30	3400
66	20	28	2100	29600	104	38	38	4500	288	142	70	104	7600	32000	108	30	30	3400
66	20	28	2100	35000	108	42	42	4200	369	142	70	104	7600	32000	108	30	30	3400
70	25	28	1800	15600	108	42	42	4200	369	142	70	104	7600	32000	108	30	30	3400
70	25	28	1800	19800	108	42	42	4500	369	142	70	104	7600	32000	108	30	30	3400
70	20	28	2300	24000	108	42	42	4500	369	142	70	104	7600	32000	108	30	30	3400
70	20	28	2300	29600	108	42	42	4500	369	142	70	104	7600	32000	108	30	30	3400
72	20	28	2400	35000	100	15	22	900	235	142	70	104	7600	32000	108	30	30	3400
72	23	40	2800	48000	100	15	22	900	235	142	70	104	7600	32000	108	30	30	3400
75	23	34	2200	15900	100	15	22	900	235	142	70	104	7600	32000	108	30	30	3400
75	23	34	2200	19800	100	15	22	900	235	142	70	104	7600	32000	108	30	30	3400
75	23	34	2500	24000	100	15	22	900	235	142	70	104	7600	32000	108	30	30	3400
75	23	34	2500	29600	100	15	22	900	235	142	70	104	7600	32000	108	30	30	3400
80	27	40	2800	35000	104	15	24	1150	288	142	70	104	7600	32000	108	30	30	3400
80	27	40	2800	48000	104	15	24	1150	288	142	70	104	7600	32000	108	30	30	3400
80	27	40	2800	48000	104	15	24	1150	288	142	70	104	7600	32000	108	30	30	3400
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80	27	40	2800	78000	104	15	24	1150	288	142	70	104	7600	32000	108	30	30	3400
80	27	40	2800	88000	104	15	24	1150	288	142	70	104	7600	32000	108	30	30	3400
80	27	40	2800	98000	104	15	24	1150	288	142	70	104	7600	32000	108	30	30	3400
80	27	40	2800	108000	104	15	24	1150	288	142	70	104	7600	32000	108	30	30	3400
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100	38	50	4700	62600	68	21	60	1400	10320	108	20	36	2300	2170	108	30	30	3400
100	38	50	4700	72600	68	21	60	1400	10320	108	20	36	2300	2170	108	30	30	3400
100	38	50	4700	82600	68	21	60	1400	10320	108	20	36</						

THE BRUCE-MERIAM-ABBOTT COMPANY

Gas Engines

CLEVELAND, OHIO

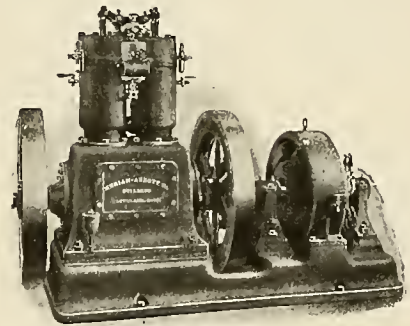
PRODUCTS—Builders of GAS ENGINES for Electric Lighting and Power Service.

MERIAM-ABBOTT ENGINES—The MERIAM-ABBOTT ENGINES are of the vertical twin-cylinder type, the cylinders operating upon the four-cycle principle, both cranks running together. The gearing transmission is of the simplest form, there being but one vertical shaft at the rear of the engine, midway between the cylinders, which is connected to the secondary shaft by means of 2 to 1 beveled gears. This secondary shaft, which supports the cams and also the ignition mechanism, is centrally located above the heads.

ELECTRIC LIGHTING SERVICE—To secure a steady, brilliant electric light from a gas engine, several things are essential. We have designed every detail of our complete plant with these in view. Our vertical twin-cylinder engines are especially built for electric lighting service, although the smooth operation and high efficiency are steadily commending them to power users as well. The engines are of the four-cycle type and by using twin-cylinders, we get an impulse every revolution.

SIZES AND CAPACITIES

K. W.	H. P.	SPEED	DRIVING PULLEYS	HEIGHT	NO. LIGHTS
4	8	475	20 in.	4 ft. 5 in.	80
7	12	360	22 in.	5 ft. 6 in.	120
10	18	350	22 in.	5 ft. 7 in.	180
15	27	325	26 in.	5 ft. 9 in.	270
20	35	300	30 in.	6 ft. 2 in.	350
25	42	290	36 in.	6 ft. 5 in.	420
30	50	280	60 in.	7 ft. 3 in.	500
50	80	275	64 in.	8 ft. 0 in.	800
75	125	275	64 in.	8 ft. 0 in.	1250



MERIAM-ABBOTT ENGINE
Showing Direct Couple Unit

These plants are designed so that they do not require the attention of a skilled engineer. We can instruct any intelligent man so that he can operate the plant satisfactorily. Upon request, we furnish with any of our engines a pulley on the outside flywheel for power purposes. Air starters are used on all plants from 18 H. P. upwards which makes starting very easy. We guarantee an overload of 10% and a speed variation of less than 2% from no load to full load.

SIZE AND CAPACITY—The 4, 7 and 10 K. W. units are mounted on extended sub-base. The larger units are mounted on a solid cement foundation, and direct connected by means of our flexible leather-link coupling.

MARINE ENGINE AND MACHINE CO.

Secor Engine Department

SALES OFFICE

126 Liberty Street

NEW YORK CITY, N. Y.

WORKS

HARRISON, NEW JERSEY

PRODUCTS.

SECOR OIL ENGINES, Direct-Connected ELECTRIC GENERATING UNITS, Complete PUMPING PLANTS, Isolated ELECTRIC PLANTS, including batteries and automatic controllers.

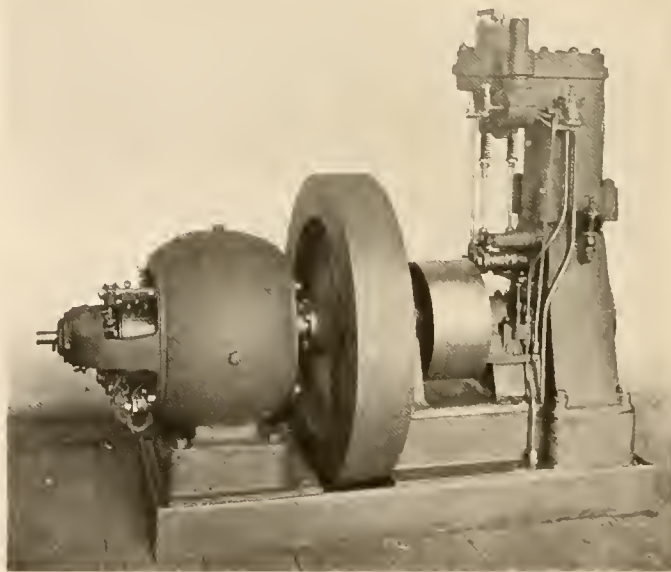
WHERE USED.

The Secor Automatic Oil-Electric Machine is offered as an important advance in electric generating equipment. Owners of private residences, or others requiring electric service for Churches, Country Clubs, Public Buildings, Theatres, Shop Windows and Interiors, Factories, Mines and Boats, have been unable, heretofore, to obtain plants especially designed for such uses. An exhaustive study of the requirements for lighting, charging and electric power has resulted in the development of Oil-Electric plants especially adapted to every variety of service.

SPECIAL FEATURES OF THE SECOR ENGINE.

Its promptness in starting, steadiness, reliability, and freedom from "shut-downs" are unequalled. It is entirely free from the uncertainty, annoyance and renewal costs of flexibly connected or belted plants, whether operated by gasoline or steam engines. Its fuel, kerosene oil, can be had at oil supply stations all over the world, even in places where coal, wood and other fuels are unobtainable. Oil contains more potential heat, or power, per gallon than gasoline, although lower in price. As used by the SECOR SYSTEM, kerosene is cheaper than any other fuel for small engines. Unlike gasoline, kerosene is absolutely safe, producing a constant non-variable power. The successful use of kerosene, for fuel, therefore, renders the Oil-Electric Machine universally available, economical and perfectly safe.

Being simple and automatic, it can be cared for by the class of help usually available. Its reliability under these conditions insures satisfactory service.



DIRECT-CONNECTED GENERATING SET

REGULATION.

The supremacy of the SECOR SYSTEM is due to its unequalled automatic control, which provides constant voltage and complete combustion of safe oil, without requiring expert attention or readjustment of fuel supply, governor, or rheostat to compensate for variations in number of lights, or changes in atmospheric conditions.

The electric current is supplied at uniform voltage, irrespective of the load, without the use of storage batteries.

Either incandescent or arc lamps operated by SECOR PLANTS are as free from fluctuation as if supplied by the best and largest steam plants. The common irregularity of gas and gasolene engine installations is entirely removed. The lights are brilliant and steady. The dimming during the early part of the evening, common in residences in outlying districts, supplied by central stations, is eliminated.

ECONOMY.

The fact that one pint of ordinary kerosene oil used in a SECOR ELECTRIC PLANT produces more candle power in the form of electric light than can be obtained if the oil is burned in an ordinary oil lamp, producing common yellow light, indicates the unusual economy of this system. In a plant of ordinary size, one pint of oil will produce sufficient electric current to operate 8 16-c. p. incandescent lamps for one hour.

When used for pumping, the saving in operating cost, as compared with hot air engines or electric motors is remarkable. For instance: one gallon of kerosene oil will furnish sufficient power when used in a very small SECOR ENGINE, to lift 4,500 gallons of water 100 feet high. In a larger plant the same amount of oil will lift twice as much to the same elevation.

SAFETY.

Compared with central station service, there is a marked reduction in fire hazard, as well as a great gain in reliability and steadiness of lights. The low potential, direct-current, self-contained wiring circuit of the isolated plant is obviously free from the contingent dangers of high potential alternating current supplied by outside wires, including liability of lightning expending itself within the house.

TYPES OF
ELECTRIC
GENERATING
PLANTS.

To meet the diversified requirements of various installations, the SECOR SYSTEM includes four types of ELECTRIC GENERATING PLANTS, each of which is especially adapted for service of a different class.

Type "A" machine is a constant potential generating unit, consisting of engine and dynamo solidly coupled together on a common base, making a compact, self-contained plant which automatically furnishes current at uniform voltage, irrespective of changes of load. Lights can be turned on and off at will without readjusting the apparatus. This type of plant is adapted to the illumination of Mills, Public Buildings, Residences, etc.

Type "B" machine is an automatically variable potential plant of the same general construction as the type "A" machine except that it is adapted for charging automobiles or other batteries, lending itself to the varying potential required for this class of work. Type "B" machines are not suitable for electric lighting.

Type "C" machine is a self-contained direct-connected unit, combining the advantages of types "A" and "B." It can be operated at either constant or variable potential, as desired, and may be used interchangeably for lighting or for battery charging.

Type "D" plant is especially adapted to Residence installations. It combines a type "C" machine with special storage battery, and automatic controlling mechanism, whereby electric current is available day and night. The interlocking features of this machine eliminate the complications which have been inherent to isolated lighting plants in the past, and make the SECOR EQUIPMENT thoroughly reliable in the hands of the gardener, stable man or farmer.

Provision is made for insuring an abundance of current at proper voltage for the maximum number of lights required during a "Ball" or "House Party," as well as for such auxiliary uses as flatirons, chafing-dishes, nursery heaters, and regular cooking apparatus, together with organ motors and elevators in larger installations.

LOCATION OF
ELECTRIC
PLANTS.

While in the case of Mills, Public Buildings, etc., it is often feasible to install the generating plant in the main building, in the case of Residences it is recommended that the plant be put in some part of the stable or other outbuilding. The plant should also be located on the ground floor and not in a basement. Type "A," "B" or "C" direct-connected unit of the size ordinarily used for lighting Residences or small buildings, requires a well lighted room having about 100 square feet floor space.

Type "D" plant for moderate sized Residence service, should have an engine room of about the same size, with a separate battery room about 10 feet square. It is essential that battery rooms have ample ventilation, and it is recommended that doorways at least 3½ feet by 6½ feet, in the clear, be provided for both engine and battery rooms. Where several buildings are to be lighted, the electric plant should be placed as near as possible to the center of electric distribution.

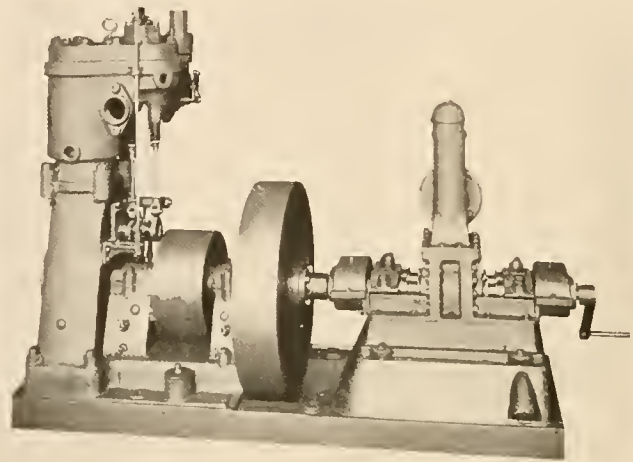
AUXILIARY
PUMPING.

The engines of all types of SECOR ELECTRIC PLANTS are provided with pulleys from which pumps or other machinery may be driven. The engine can be used for pumping when not operating electric lights, or when only a part of the lights are in use. When not needed the pump is easily disconnected.

If the local conditions require that the pump be located a long distance from the generating plant, provision can be made for operating the pump electrically. It can be stopped and started from the engine room.

LOCATION
OF PUMP.

It is essential that the pump be located near the source of water supply, and if more than 15 or 20 feet above the water a "deep-well" type pump must be used. Where permissible a building of about 15 feet by 30 feet, ground plan, is recommended for the generating unit pump and storage battery, making a complete, isolated, self-contained, power plant. For a pump and engine without electrical equipment, a building 10 or 12 feet square is usually amply large.



DIRECT-CONNECTED PUMPING SET

PORTABLE AND
YACHT
PLANTS.

In addition to the standard equipments described above, the MARINE ENGINE AND MACHINE COMPANY manufacture a line of portable and semi-portable oil-electric generating units for lighting temporary structures; for traveling shows; for search-lights and cabin illumination on sailing vessels and yachts; as well as for Army and Navy field service; for wireless telegraph plants, etc.

The smallest of these machines is of twenty-five 16-c. p. lamp capacity, occupies a floor space only twenty by thirty-five inches, is twenty-eight inches high and weighs less than six hundred pounds.

PAST
PERFORMANCE.

The following are quotations from testimonial letters received from well known individuals and concerns who have used SECOR ENGINES for several years.

"Regarding the engine purchased of you, I am glad to be able to say that it works well, giving no trouble whatsoever, and fully bears out the statements made in your circular concerning the same."

"The Engineer who has charge of this plant expresses himself as more than pleased, and is highly satisfied with the working of both the Engine and the Generating Plant."

"The lighting and pumping plant installed for Mr. Spencer Trask at Crosbyside, Lake George, gives perfect satisfaction."

"It is with the greatest pleasure that I recommend your engine. It has been running since 1902, and I can truthfully say that it does excellent work and gives perfect satisfaction."

"The yard foreman has had no difficulty in running the engine, and has plenty of time to direct and handle the work and men. The engine has only to be supplied with the fuel and lubricating oils, and then after starting, it simply runs itself. My engine is now running twenty-two hours per day, six days in the week and driving the dynamo supplying electric lights at night. I had no thought, when purchasing the engine, of putting it to so severe a test, but it has met all requirements. It is economical, safe, always ready, and when the work is over, can be shut down in two minutes, leaving no fire, no cinders, and no danger behind, and all expense instantly ceases."

"I wish to say that I have installed a good many gas and gasoline engines, also one kerosene engine, but your engine is in every respect far superior to any of them, and especially for electric lighting cannot be equalled. The regulation is better than a high speed steam engine. The voltage variation as measured with a Weston portable volt-meter was less than one-half of a volt, and at a time when the engine was running under normal load, and at the same time driving a double-acting duplex pump belted to the engine. This I consider an ideal performance for a direct-connected unit."

MARINE ENGINE AND MACHINE CO.

126 Liberty Street

NEW YORK CITY, N. Y.

SALES OFFICE

WORKS

TELEPHONE, 5491 CORTLANDT

HARRISON (EAST NEWARK), N. J.

WORKS TELEPHONE 33 HARRISON

PRODUCTS.

Makers of ALL TYPES OF ELECTRIC and HYDRAULIC ELEVATORS for passenger, freight, dumb-waiter, sidewalk, automatic or special service, and the PRATT SAFETY DEVICE. Also makers of the BUFFALO REFRIGERATING APPARATUS, ARMINGTON-SIMS STEAM ENGINES, SECOR KEROSENE ENGINES and GRAY IRON CASTINGS.

FACILITIES.

The works, at Harrison, have tidewater and railroad alongside; the equipment consists of the latest and best machinery, and the company is prepared to undertake work of any magnitude, for delivery or installation in any part of the world.

MATERIAL USED.

The material used in building our apparatus is of the best grade only. The apparatus is designed on the latest and most approved lines. Complete specifications for any type will gladly be furnished on request.

DATA REQUIRED FOR ESTIMATE FOR ELEVATOR.

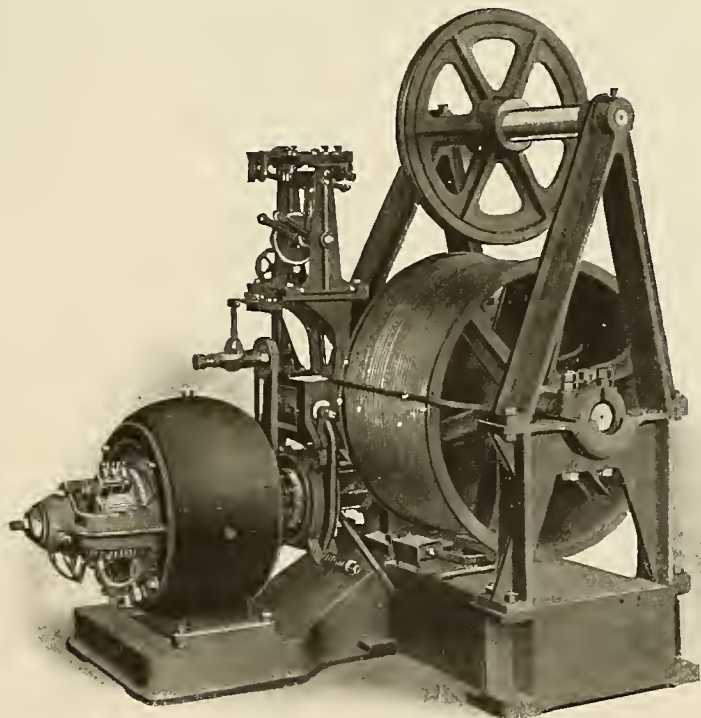
The following list of data is required on which to base an estimate:

FOR ELECTRIC ELEVATORS

Service
Car Travel (ft.)
No. Landings
Max. Load (lbs.)
Speed with Max. Load (ft. pr. min.)

FOR ELECTRIC ELEVATORS—Continued

Max. Speed (ft. pr. min.)
Load with Max. Speed (lbs.)
Current and Voltage
Car Guides (steel or wood)
Counterweight guides (steel or wood)
Car finish-value \$
Electrolier (styles and No. lights)
Signal System, type
Indicators
Sheave Beams by (owner, or contractor)
Supports for sheave beams by
Pit by
Counterweight Screen by
Foundations by
Painting by
Wiring for Current Supply by
Grating under Sheaves by
Drawings, Plan and elevation
Type of Machine
Type of Control



ELECTRIC ELEVATOR TYPE "E" MACHINE

FOR HYDRAULIC ELEVATORS

The same as for Electric and the following:
System (Plunger, Horizontal, or Vertical Cylinder)
Control (Hand, Rope, Lever or Wheel)
Schedule of Round Trips pr. hour
Water Pressure (lbs.)
Water Pumps (type, No. and by whom)
Air Pumps (type, No. and by whom)
Steam Piping by
Water Piping by
Air Piping by
Drip Piping by
Pressure Tanks (size and number)
Discharge Tank (size and number)
Drilling (if plunger) by
Kind of Soil
Casing by

SPECIFICATIONS.

The following specifications are suggested, as covering first-class apparatus. Complete specifications for any type of machines will be furnished on request.

ENGINE.

The *Hoisting Engine* shall consist of a direct-current motor, direct-connected through worm and gear to the winding drum, all self-contained on a single, rigid cast-iron bed-plate.

MOTOR.

The *Motor* shall be of slow speed, multipolar type, balanced electrically and mechanically, compound wound, with shunt-field winding capable of giving a wide speed range, designed to withstand the shocks and temporary overloads of elevator service without injury or excessive heating.

The *Armature* shall be laminated, and have form-wound coils thoroughly insulated. The slots of the armature core shall be lined with special insulating material before coils are put in place.

The *Commutator* shall be built up of forged copper segments, thoroughly insulated with best quality of mica, of uniform thickness and hardness.

The *Field Coils* shall be form wound, compact and even, thoroughly insulated from poles of motor, and rigidly held in place.

The *Motor* must show an insulation of not less than one megohm, and withstand a di-electric test of 1,500 volts alternating current for one minute, and be capable of carrying its normal rated load for a period of two hours continuous run, at the expiration of which time the rise of temperature in the armature and field shall not exceed 40 degrees C.; and in the commutator, 45 degrees C. above the temperature of the surrounding atmosphere—the temperature to be measured by thermometers shielded by cotton waste.

The *Bearings* shall be self-aligning and self-oiling.

The *Brushes* shall be of carbon, independently and collectively adjustable. The current density in the brushes shall not exceed 40 amperes per square inch. The Motor shall be designed to operate on the current and voltage specified.

SHAFTS, WORM AND GEAR.

All *Shafts* shall be made of high carbon, hammered steel, the *worm* threads to be cut from a solid part of the worm shaft. The *gear* wheel shall be made of best grade phosphor-bronze, accurately cut and bolted to a cast-iron spider, which spider shall be fastened by turned bolts in reamed holes to a flange forged on the drum shaft.

THRUST.
ALTERNATE FOR
TANDEM GEAR.
OIL CASE.

The *End-thrust* of the worm shaft shall be taken by means of specially hardened steel-balls and plates.

The *gearing* shall be of the *Tandem*, or *double worm and gear* design, the *gear-wheels* interlocking, and driven by *right-and-left worm threads cut from a solid part of the worm shaft*.

The gearing shall run in oil in a dust-proof, cast-iron case, and all the bearings of the gearing shall be self-oiling, thus eliminating the use of oil cups.

DRUM.

The winding *Drum* shall be of cast-iron, of as large diameter as possible, accurately turned and grooved, and of length to accommodate at least one additional turn each of hoisting and counterweight cables in addition to length required for actual travel of the car. The hub of the drum shall be fastened by turned bolts in reamed holes to a flange forged on the drum shaft.

BRAKE.

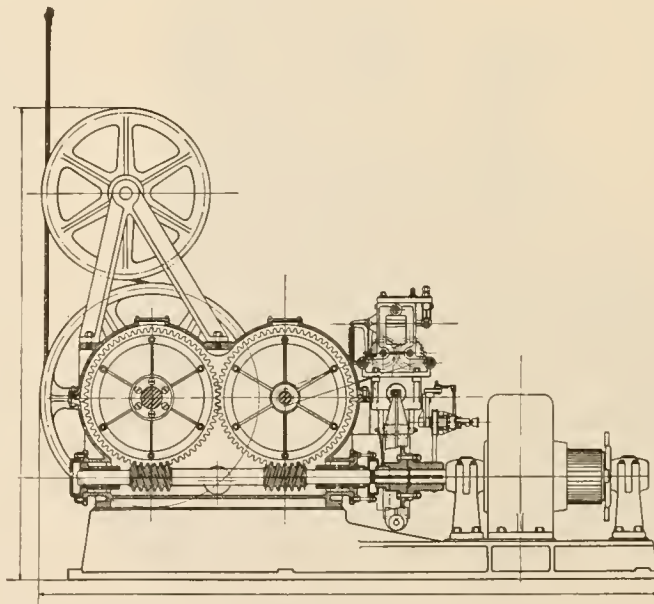
The *Brake* shall be of the mechanical, negatively-acting type, consisting of wood-lined shoes applied by strong spring pressure to the brake pulley on the worm shaft, and released by an electro-magnet. It shall be applied instantly when the control is brought to a stop position, or on failure of the current, securely locking the car until the motor is again started.

LIMITS.

The *Engine* shall have a top-and-bottom-limit-switch device, operated by the drum shaft, which shall open first the control circuit and then the armature circuit, whenever the car has reached either limit of travel. Whenever either limit-switch is open it shall be impossible to move the car in that direction.

SLACK CABLE
DEVICE.

The *Engine* shall have a device to cut off the current and apply the brake if for any reason the car becomes blocked in its descent.



TYPE "A" TANDEM SPIRAL GEAR ELEVATOR

GOVERNOR.

The Engine shall have a centrifugal speed-governor, driven by the armature shaft, arranged to stop the motor should its speed increase 10% above normal.

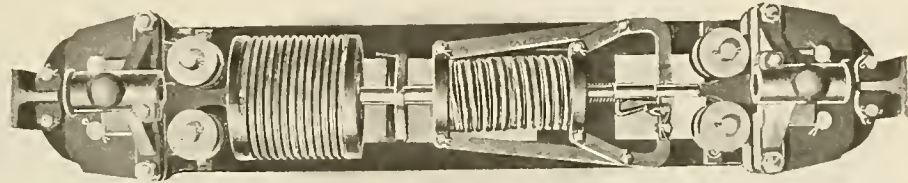
CONTROL.

The Elevator shall be operated by an electric control of the latest design; in the car an electric hand-switch connected through flexible electric cable suspended from junction-box on bottom of car to similar box at center of hoistway, thence to control-board at machine through stationary cable. On the control-board there shall be "up" and "down" circuit breakers, or reversing switches, solenoid device for cutting out the starting resistance, and other devices required in connection therewith.

The *Controller* shall be so designed that when the motor is running in one direction, it shall be impossible to start it in the reverse direction, or complete the electrical connections for the reverse direction, until the reversing switches and regulating devices shall have returned to their normal "stop" position; and it shall, therefore, be possible for the operator to throw his control switch from full speed in one direction to full speed in reverse direction without damage or shock to any part of the apparatus. The car switch shall be designed to automatically return to "stop" position, making it necessary for the operator to hold the handle in running position.

CAR FRAME
AND PLATFORM.

The *Car Sling and Platform Framing* shall be of strong steel construction; the floor shall be of matched hard wood, designed to carry the car finish or cab; the hoisting ropes shall be fastened to the frame so that no lifting strain may come on the cab.



PRATT ELEVATOR SAFETY AT MAXIMUM PRESSURE

CAR SAFETY
DEVICE.

On the lower beam of the car, a *Rail-gripping Car Safety Device* shall be placed, which will stop the maximum load at any speed with perfect safety and comfort. It shall be operated by a rope, passing through a clamping device on the car, over a sheave on a centrifugal governor at the top of shaft, and around safety drum under the car. When normal speed is exceeded the governor shall grip and stop the rope, the moving car thus revolving the drum and operating the grips through right and left screws, the initial gripping pressure on the rails being produced instantly by a spring, succeeded by a gradually, but constantly increasing pressure, until the car has come to an absolute rest.

The *Grip* shall have a releasing device operated from the car. In the car there shall be an emergency lever or grip, by means of which the operator can apply the safety device irrespective of the speed.

GUIDE RAILS.

The *Car Guides* shall be best quality cold-rolled steel, 4 $\frac{3}{8}$ " x 3 $\frac{3}{8}$ ", Tee section, weighing not less than 15.8 lbs. per foot, the ends to be matched or dowelled, and secured by fish plates at the joints.

The *Counterweight Guides* shall be similar to the car guides except that the section may be smaller, but shall not weigh less than 7.4 lbs. per foot.

LIST OF
INSTALLATIONS.

BUILDING	LOCATION	ARCHITECTS
WASHINGTON MONUMENT	Washington, D. C.	GEN. THEO. A. BINGHAM.
WHITE HOUSE	Washington, D. C.	GEN. THEO. A. BINGHAM.
LIBRARY OF CONGRESS	Washington, D. C.	GEN. THEO. A. BINGHAM.
U. S. COURT HOUSE AND P. O.	Covington, Ky.	SUPERVISING ARCHIT. TREAS. DEPT.
U. S. COURT HOUSE AND P. O.	Dallas, Texas	SUPERVISING ARCHIT. TREAS. DEPT.
U. S. COURT HOUSE AND P. O.	Nashville, Tenn.	SUPERVISING ARCHIT. TREAS. DEPT.
U. S. COURT HOUSE AND P. O.	Norfolk, Va.	SUPERVISING ARCHIT. TREAS. DEPT.
U. S. CUSTOM HOUSE AND P. O.	Jacksonville, Fla.	SUPERVISING ARCHIT. TREAS. DEPT.
U. S. CUSTOM HOUSE AND P. O.	Hartford, Conn.	SUPERVISING ARCHIT. TREAS. DEPT.
INSTITUTE OF ARTS AND SCIENCES	Brooklyn, N. Y.	MCKIM, MEAD & WHITE.
HAMBURG AMERICAN LINE	Hoboken, N. J.	AUGUST BLIEDUNG, Engr.
PA. R. R. POWER STATION	Long Island City	WESTINGHOUSE, CHURCH, KERR & Co.
U. S. APPRAISERS STORES	Philadelphia, Pa.	SUPERVISING ARCHITECT.
FIRST NATIONAL BANK	Pittsburg, Pa.	
NEW AMSTERDAM THEATRE, Office Bldg.	New York City	HERTS & TALLANT.
NEW AMSTERDAM THEATRE, Proper.	New York City	HERTS & TALLANT.
NEW AMSTERDAM THEATRE, Special stage lifts	New York City	HERTS & TALLANT.
KNOX BUILDING	40th St. and 5th Ave., New York City	JOHN H. DUNCAN.
HEGEMAN BUILDING	200 Broadway, New York City	EDWARD CORNING.
CHRISTIAN SCIENCE CHURCH	90th St. and Cen. Park West	CARRERE & HASTINGS.
MRS. WILLIAM MDIR, (Res.)	42 W. 53d St., New York City	
J. S. MELCHER, (Res.)	5 E. 51st St., New York City	EDWARD CORNING.
W. W. & T. M. HALL	18 Residences, New York City	
ASTOR ESTATE	23 W. 26th St., New York City	
BORDEN CONDENSED MILK Co. BLDG.	Franklin and Hudson Sts., New York City	G. HOWARD CHAMBERLIN.

CONCLUSION.

The Elevator Department of the Marine Engine & Machine Company was established under the direction of prominent elevator engineers whose experience in the designing of machines and controls dates from the beginning of electric elevator science. The apparatus has been designed and built with the sole purpose of producing the best mechanism that modern skill and shops could make possible, and it is the intention to embody in our elevators every known old and new device which conduces to safety, economy and durability.

The purchasing public is cordially invited to communicate with this company on the subject of any of its products, to visit the shops, and make thorough inspection.

THE ELEKTRON MFG. CO.

Main Office and Works
 SPRINGFIELD, MASS.

BRANCH OFFICES

NEW YORK CITY, N. Y.
 156 Fifth Avenue

BOSTON, MASS.
 179 Lincoln Street

ROCHESTER, N. Y.
 German Ins. Co. Bldg.

WASHINGTON, D. C.
 Washington Loan & Trust Bldg.

PRODUCTS.

PASSENGER ELEVATORS, FREIGHT ELEVATORS, SIDEWALK ELEVATORS, GENERATORS, MOTORS, HOISTS, DUMB-WAITERS, BOOK-LIFTS, MOTOR CONTROLLERS, PUMPS, PUMP CONTROLLERS, VENTILATING FANS, ORGAN - BLOWING APPARATUS and AUTOMATIC RHEOSTATS.

FACILITIES.

We were one of the first firms to build Electric Elevators, and we were the first to build a practical low speed Electric Motor. We have always maintained the very highest standard of construction and design and we have the very best facilities for getting out work promptly. We have a complete plant and we manufacture our entire apparatus in our own factory. We have an experienced corps of Electrical and Mechanical Engineers, many of whom have been with us for the last twelve years. We will be pleased at all times to furnish information and preliminary plans, to owners or architects contemplating the installation of ELECTRIC ELEVATORS or other apparatus which we manufacture.

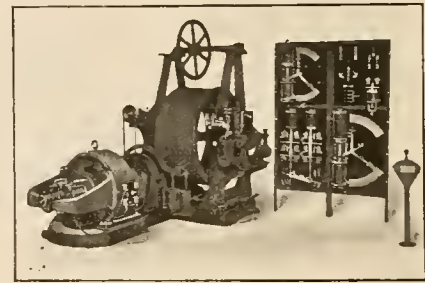


FIG. 1. ELEKTRON ELEVATOR MACHINE EQUIPMENT

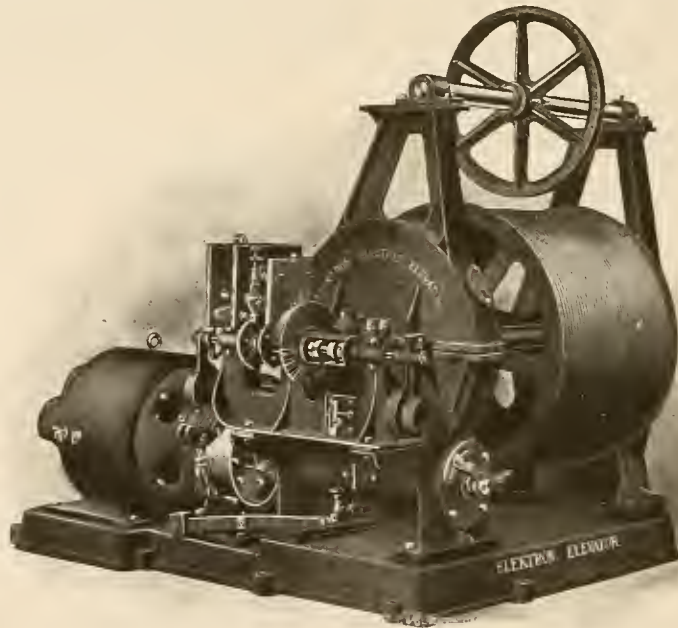


FIG. 2. ELEVATOR MACHINE, CLASS F. H. 6.

ELECTRIC PASSENGER ELEVATORS.

We manufacture and install ELECTRIC PASSENGER ELEVATORS with car speed as high as 400 feet per minute, and equipped with the latest perfected magnet control. This consists of a small lever switch (Fig. 1) in the car, which is extremely easy in operation and which gives absolute and perfect control of the car. The speed of cutting out the resistance is regulated entirely by the apparatus at the machine; the lever in the car can be instantly reversed without causing the slightest damage, and in case the operator removes his hand from the lever it returns to a central position, stopping the car in the usual way. This is one of the greatest safeguards ever applied to an Elevator. We equip our Passenger and Freight Elevators with the latest improved "toggle joint" governor safety, which in point of simplicity, smoothness of operation and absolute safety, is positively unexcelled.

The winding machinery used in our ELECTRIC PASSENGER ELEVATOR MACHINES will successfully stand, without repairs, constant and severe work.

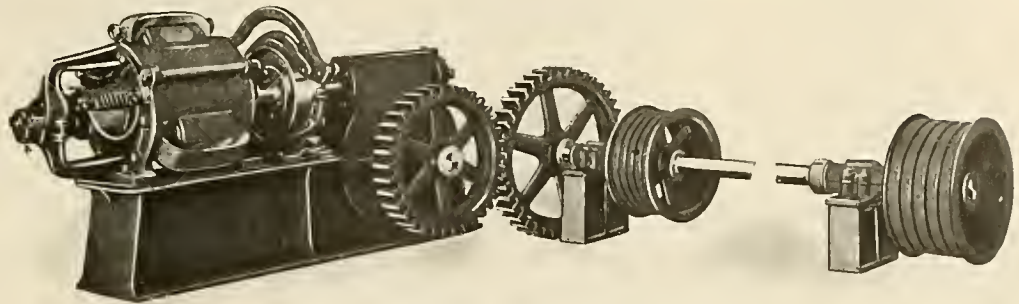


FIG. 3. SIDEWALK ELEVATOR MACHINE

SIDEWALK TYPE
ELEVATOR
MACHINE.

Our Sidewalk Type Elevator Machine (Fig. 3) is especially heavy and durable and will easily handle the most severe service. This machine is of the inverted style.

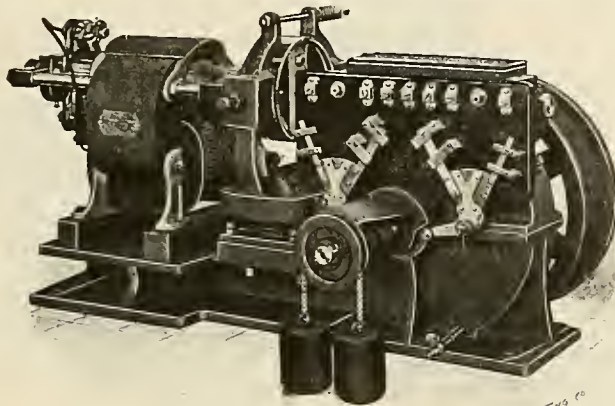


FIG. 4. DUMB-WAITER MACHINE

DUMB-WAITER
AND
BOOK LIFT
MACHINE.

Our class Y Dumb-Waiter Machine (Fig. 4) is but one of many of our high grade Electric dumb-waiter, book and material lift machines where no passengers or operators are carried in the car. A series of push buttons is placed on each landing, but none in the car. A person at any landing may send the car from any one landing to any other by pressing the proper button.

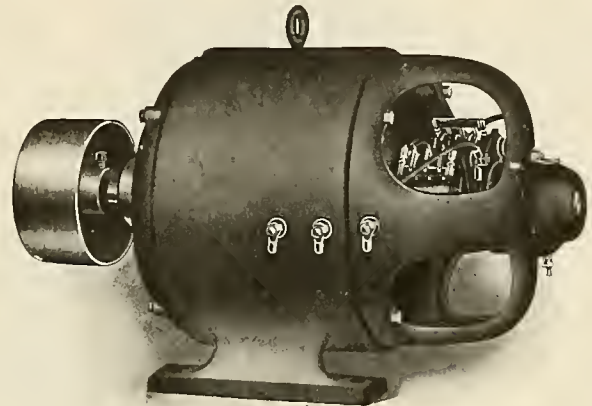


FIG. 5. ELEKTRON MOTOR, CLASS H.

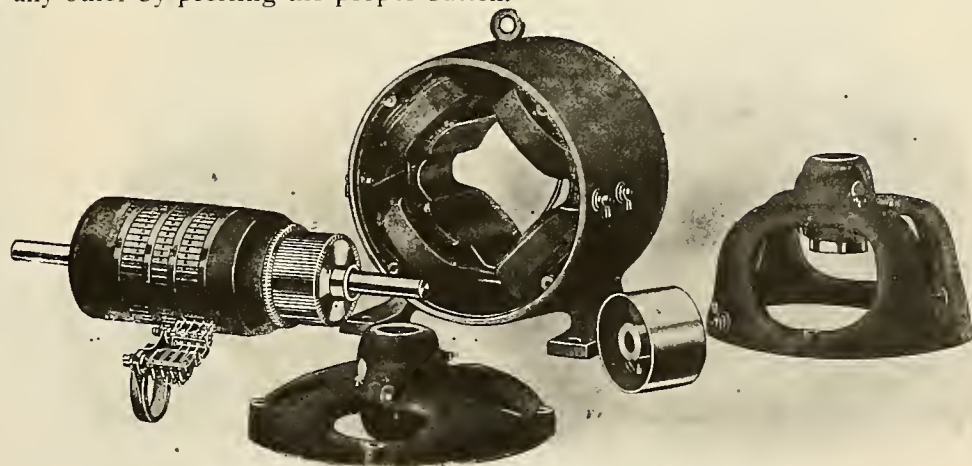


FIG. 6. ELEKTRON MOTOR, CLASS H. SHOWING PARTS BEFORE ASSEMBLING

MOTORS AND
DYNAMOS.

We build a complete line of high grade motors and dynamos for all purposes. Fig. 5 illustrates one of the many types. The simplicity and strength will be noticed by a glance at Fig. 6, which shows the same machine before the parts are assembled.

ESTIMATES.

Estimates on our products to meet any requirement will be quoted on request.

KAESTNER & COMPANY

Elevators
CHICAGO, ILL.

ESTABLISHED 1863

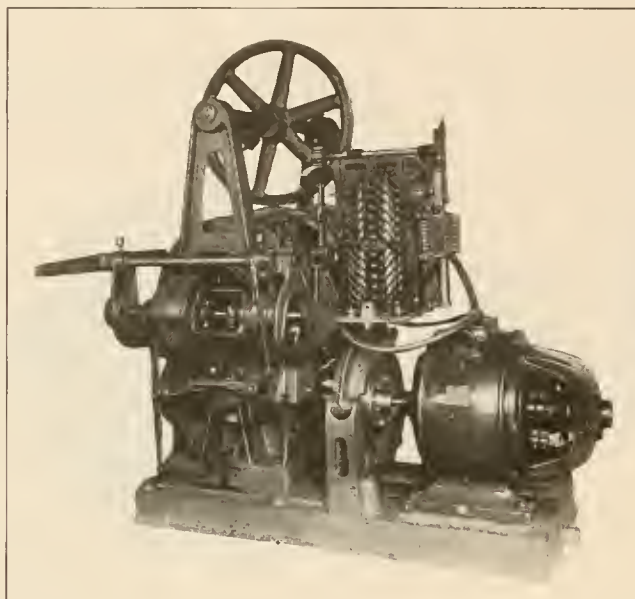
INCORPORATED 1903

PRODUCTS.

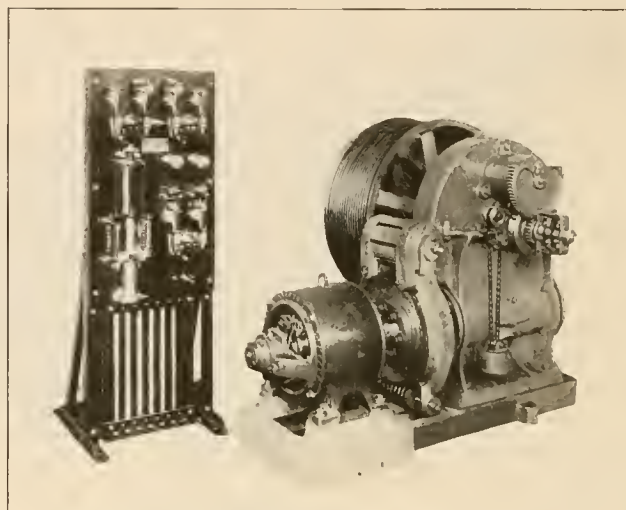
Builders of high-grade ELECTRIC, HYDRAULIC, STEAM POWER, and PLUNGER TYPES of ELEVATORS of any capacity and speed.

INSTALLATION.

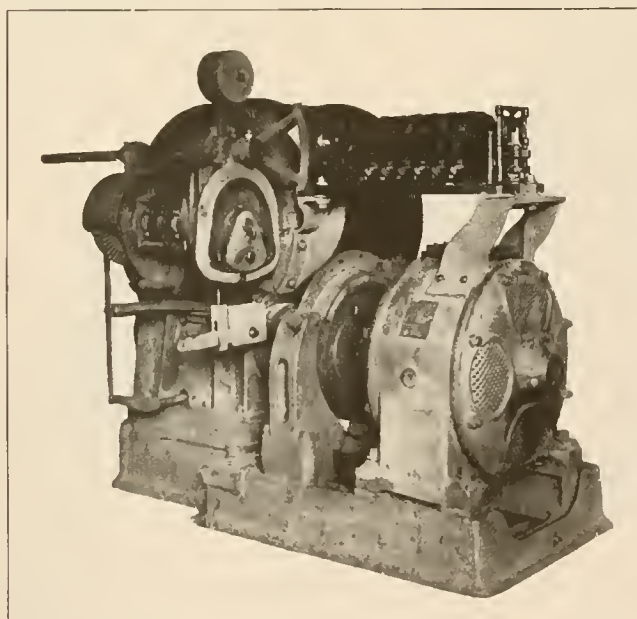
We install all Elevators, and guarantee specified results anywhere.



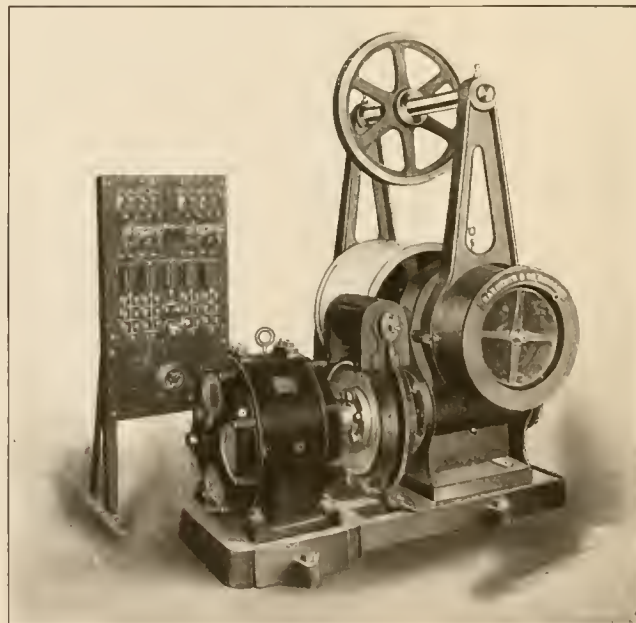
MECHANICAL CONTROL
Lever or Hand Cable Operation. For Passenger or Freight Service



FULL MAGNETIC CONTROL
For Alternating or Direct Current. For Passenger or Freight



ALTERNATING CURRENT
Direct Connected for Freight and Passenger Service



AUTOMATIC PUSH BUTTON CONTROL
For Alternating or Direct Current. For Passenger or Freight

HOWARD IRON WORKS

ESTABLISHED 1847

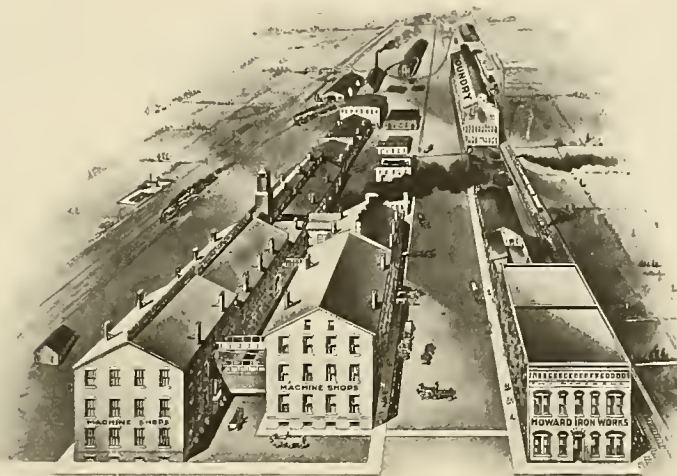
Elevators

BUFFALO, N. Y.

PRODUCTS.

Manufacturers of VERTICAL, HORIZONTAL, HYDRO-ELECTRIC, PLUNGER HYDRAULIC ELEVATORS. DIRECT CONNECTED ELECTRIC ELEVATORS for Direct or Alternating Current. BELTED WORM GEAR, SPUR GEAR and HAND POWER ELEVATORS.

VISES, BOLT MACHINERY and POWER TRANSMISSION MACHINERY.



PLANT OF THE HOWARD IRON WORKS, BUFFALO, N. Y.

ELEVATORS.

Thousands of successful installations throughout the country bear testimony to the remarkable strength and wearing qualities of our elevator machinery.

FACILITIES.

Our works are complete and we manufacture every part of our machinery ourselves. This enables us to positively guarantee that none but the best of materials are used.

OTIS ELEVATOR COMPANY

BUILDERS OF

Hydraulic and Electric Passenger and Freight Elevators, etc.

NEW YORK CITY, N. Y.

CHICAGO, ILL.

SAN FRANCISCO, CAL.

PRODUCTS.

BUILDERS OF HYDRAULIC and ELECTRIC PASSENGER and FREIGHT ELEVATORS.

ELECTRIC PASSENGER ELEVATORS and DUMBWAITERS with push-button control.

ESCALATORS (Moving Stairways).

ELECTRIC HOISTS for Mines, Docks, Warehouses, Building Operations, etc.

ELECTRIC HOISTS for Blast Furnaces, for both Vertical and Incline Hoisting, with Automatic Skip for furnace duty and Slow-down Attachment.

ELECTRIC AND HYDRAULIC WHIP HOISTS.

ELECTRIC DOCK HOISTS—portable and stationary.

STEAM HOISTING ENGINES for Blast Furnaces, Mines, Inclines, etc.

STEAM FREIGHT ELEVATORS.

INCLINED RAILWAYS.

WORM AND SPUR GEAR POWER ELEVATORS.

GRAVITY PACKAGE AND BARREL CONVEYORS.

GENERAL
INFORMATION.

Plans, estimates, specifications and special pamphlet, with illustrations, furnished on application.

On the following page will be found a copy of the blank form which we send, upon request, for use in giving particulars of elevator service required, and by which we may make suggestions and estimates.

INFORMATION REQUIRED UPON WHICH TO BASE AN ESTIMATE

Date.....190..

To the OTIS ELEVATOR COMPANY:

GENTLEMEN—Please give us an estimate of cost on..... Elevator., as follows:

- Building located at.....
- Owner of building, Address,
- Architect, Address,
- Character or kind of building,
- When will elevator contract be let?
- How soon must elevator be erected?
- Proposal addressed to
- Passenger service, Freight service,.....
- Maximum lifting capacity, passenger,lbs. Average load, passenger,lbs.
- Maximum lifting capacity, freight,lbs. Average load, freight,lbs.
- Speed of passenger car,feet per minute. Speed of freight car, feet per minute.
- Size of pass. car ft. x ft. Size of freight car, ft. xft.
- State about the value of car if for passenger service, \$.....

Give number of stories the elevator will travel,, and indicate on diagram the floors which you wish to reach by the elevator.

If Steam Elevator, give steam pressure,lbs. If Hydraulic Elevator, give water pressure from the street main at the level of the basement floor,lbs.; or if the hydraulic system is to be used in connection with steam pump, by pressure tank in basement or tank on roof, give the steam pressure available at the pump,lbs.

If Electric Pump is to be used, or if an Electric Elevator is required: If direct current, give voltage, If alternating current, give phase,; voltage,; cycles, If Belt Power Elevator is required, give position and distance of line shafting from hatchway; also revolutions per minute of line shaft. State whether you will operate the Belt Power Elevator from line shafting or direct by electric motor,

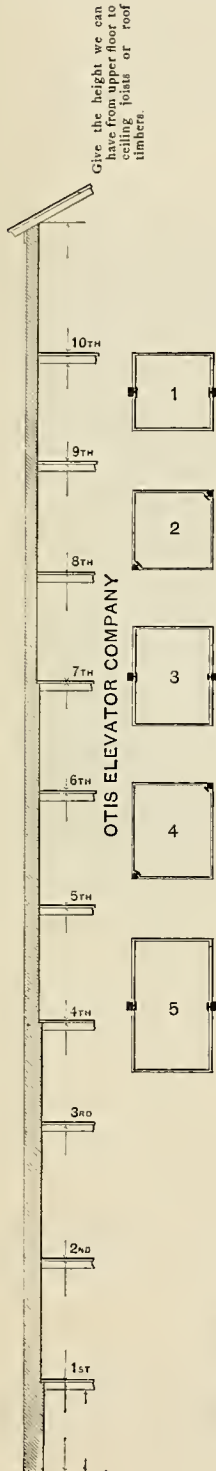
Give H. P. and class of your power plant,

Keep the maximum lifting capacity of the elevator as low as possible, as your average loads will not exceed 500 to 800 pounds, and by reducing your maximum load down to your actual requirements you will secure the most economical results.

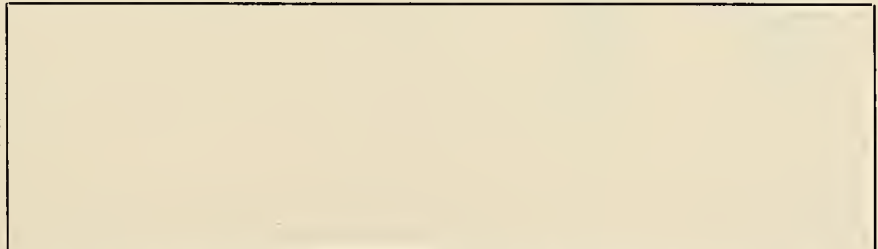
We build both the vertical and horizontal type of hydraulic elevators. The vertical cylinder will occupy space through the entire height of building about 2 feet by 4 feet. The horizontal machine will occupy space in the basement only, say 3 feet in width by 20 to 35 feet in length.

We operate the hydraulic elevator by steam or electric pump. We also build the hydraulic plunger or direct-lift elevator. If estimate is required for this style of elevator, give character of the soil, whether stone, gravel, sand or clay, which must be excavated for sinking of the cylinder or casing.

We furnish the Belt and Hand Power Elevator f. o. b. as well as erected. When quoting f. o. b. price, we will give full instructions with drawings for erecting.



Give height of basement in the clear. Give distance from floor to floor as indicated by arrow points. Mark on diagram which style of hatchway will be used. The platform of car must necessarily be smaller than the size of the hatchway, to allow for guide-posts, cables and counter-balance weight. State whether elevator is to go to basement floor or not.



Mark on diagram where hatchways are located, giving the size of each hatchway and where elevator machinery can be placed. Give distances, etc.

THE RENO INCLINED ELEVATOR COMPANY

553, 555, 557 West 33d Street

NEW YORK CITY, N. Y.

TELEPHONE, 5606 38TH STREET
CABLE ADDRESS, "RENOCLINE"

LONDON, ENGLAND, OFFICE
70 FINSBURY PAVEMENT, E. C.

PRODUCTS.

The oldest and largest manufacturer of INCLINED ELEVATORS, ESCALADERS or MOVING STAIRWAYS in the world; SINGLE, DUPLEX, MULTIPLEX and REVERSE ELEVATORS.

TERRITORY.

All home and foreign markets, for which orders can be filled with reasonable promptitude at any time.

SIMPLICITY OF CONSTRUCTION.

The construction of the Reno Inclined Elevator meets fully the fire department regulations as to stairways, and obviates the necessity for the additional stairs needed with other elevators.

Because of its simplicity, the cost for the erection, installation, and operation of each and every kind of our elevators is very much less than any other machines of a like character on the market. The same simplicity of construction also insures not only a very long life, but an irreducible minimum for repairs.

OPERATION OF A DUPLEX.

The weight of the passengers descending assists in raising the ascending passengers, consequently the passengers themselves contribute to reduce the very small cost of operation and make the expense for power almost insignificant. For example, in the large department stores of the Siegel-Cooper Company, New York City, N. Y., sixty thousand passengers have been carried in a single day at a total cost for power of only sixty cents. It is easily within the capacity of the Reno Moving Stairway to convey passengers both up and down at the rate of three thousand per hour each way.

One of these Duplex Elevators will convey as many passengers within a given time as seven vertical elevators.

ADVANTAGES.

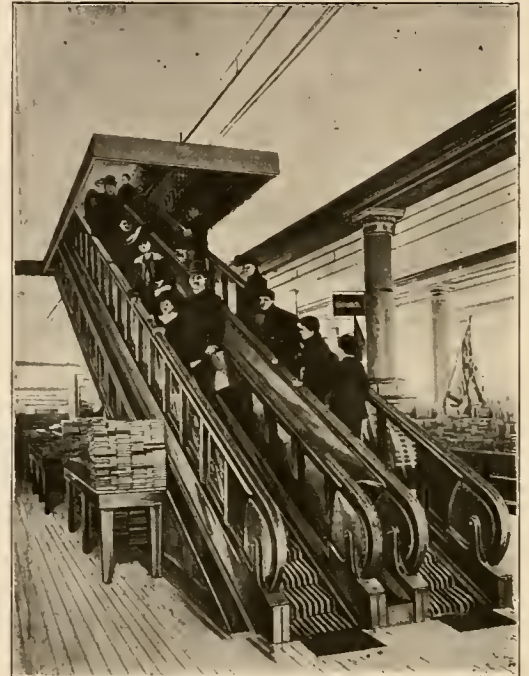
These elevators are especially valuable in Department Stores. They deliver the passengers comfortably and gracefully into each section of the store, with no delays or long waits and no crowding, but a continuously even distribution. For this reason they are extremely popular with shoppers, and convert the upper floors and the basement into as valuable shopping centres as the ground floor.

ESTIMATES.

Estimates and any further information will be cheerfully and promptly furnished on request.

REFERENCES.

Among the prominent customers who are using our machines, are The Siegel Cooper Company of New York; The Fredrick Loeser Company, Brooklyn, N. Y.; The R. H. White Company, and Filane Sons, Boston; John Wanamaker and Lit Brothers, Philadelphia; John Garlick, Cape Town, South Africa; and the T. Eaton Company, Toronto, Canada; also the Elevated Railroads in New York and Chicago, and many Theatres and Amusement Resorts.



NOTE OUR LATEST IMPROVED STEP TREAD

ELEVATOR SUPPLY AND REPAIR COMPANY

76 Monroe Street,
CHICAGO, ILL.

136 Liberty Street
NEW YORK CITY, N. Y.

PRODUCTS—Manufacturers of ARMSTRONG ELECTRIC SIGNALS and MECHANICAL FLOOR INDICATORS for PASSENGER ELEVATORS, ROOD'S EXPRESS SIGNAL for OFFICE BUILDINGS, AUTOMATIC DOOR-OPENING and CLOSING MECHANISM for FREIGHT ELEVATORS, SUPPLIES and REPAIR PARTS for all makes of PASSENGER and FREIGHT ELEVATORS, STEEL and ASBESTOS FIRE PROOF CURTAINS for THEATRES, AUTOMATIC HYDRAULIC and ELECTRIC CURTAIN HOISTS.

THE ARMSTRONG COMPLETE ELECTRIC SIGNAL—This signal tells the operator that at a fixed distance above or below his car one or more passengers stand waiting. A passenger desiring to signal the first car of a bank of elevators pushes either the up or down button. This sets the signal and when the first car moving in the direction the passenger wishes to go reaches a point about three floors distant from that on which he is standing, the lamp in the up or down compartment of the signal lantern on the outside of the elevator enclosure is automatically illuminated. When the first car approaching the waiting passenger and going in the direction he wishes, either up or down, reaches a point about one floor distant, the Operator's Signal is flashed, giving him ample time to stop his car without running by the floor.

The controllers are adjustable, being so constructed that the signals to waiting passengers and operator may be given at any desired point in advance of the car, depending on the speed at which the elevators are operated.

The lamps in both the lantern and the car fixture remain illuminated until the car has left the floor from which the signal was given.

Should the first car that receives the signal be fully loaded and therefore unable to stop for more passengers, the operator may transfer the signal to the next car by pushing a button.

MECHANICAL INDICATORS AT THE GROUND FLOOR—

For buildings with three or more elevators, where our Electric Signals are adopted, Mechanical Indicators placed on the elevator enclosure at the ground floor are of great value as they show the starter the position of each car at all times and so enable him to properly regulate the service.

We make a specialty of supplying artistic dial plates to harmonize in design and finish with the elevator enclosure.

DISPATCHER'S AND CALL BACK SYSTEM—This device consists of a push button for each elevator, electrically connected with a buzzer in each car. The push buttons are mounted in an ornamental plate located on the ground floor at a point most convenient for the starter, so that he may start the cars from the top and bottom and signal the operator at will.

ELECTRIC SIGNALS FOR HOTEL PASSENGER ELEVATORS—For the service of hotels or other buildings where the elevators are not run on regular schedule, we have perfected a signal that serves the duty admirably.

Each car is equipped with an ornamental annunciator box, which is fitted with a double row of miniature lamps corresponding with the number of floors in the building. One row of lamps repre-



DESIGN B.
PUSH BUTTON
PLATE



DESIGN D.
PUSH BUTTON
PLATE



DESIGN F.
PUSH BUTTON
PLATE



DESIGN H.
PUSH BUTTON
PLATE

sents the up movement of the elevator and the other the down. When the waiting passenger pushes the up or down button, placed in an ornamental plate on the hatchway enclosure, a lamp corresponding to the number of the required floor is lighted in the annunciator box in all the elevators, telling the several operators that at a certain floor a passenger waits wishing to go up or down. These lamps remain lighted until one of the cars has answered the call, when all of the lights are automatically extinguished. In this manner, the elevators make no unnecessary trips and at the same time serve their required duty without delay. No other signal performs this service.

ORNAMENTAL SIGNAL FIXTURES—The Operator's Signal Lamp is set in an ornamental iron fixture placed in each car in front of the operator.



DESIGN I
SIGNAL LAMP FOR
WAITING PAS-
SENGER



DESIGN K
SIGNAL LAMP FOR
WAITING PAS-
SENGER



DESIGN N
SIGNAL LAMP FOR
WAITING PAS-
SENGER
First and Top Floors



DESIGN O
FIXTURE IN CAR
FOR OPERATOR'S
SIGNAL



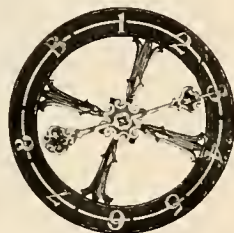
DESIGN P
FIXTURE IN CAR
FOR OPERATOR'S
SIGNAL



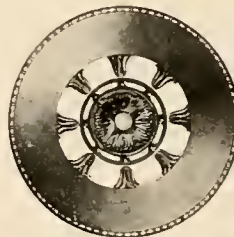
DESIGN R
FIXTURE FOR ELE-
VATOR STARTER
TO OPERATE
DISPATCHER'S
SYSTEM



DESIGN No. 5
MECHANICAL
INDICATING DISC



DESIGN No. 13
MECHANICAL
INDICATING DISC



DESIGN No. 14
MECHANICAL
INDICATING DISC



DESIGN No. 19
MECHANICAL
INDICATING DISC



DESIGN S
SIGNAL FIXTURE IN
CAR FOR HOTEL
ELEVATOR

The Signal Lamps for waiting passengers are set in ornamental iron lanterns attached to the elevator enclosure in front of each elevator at the several floors. The lanterns are made with two compartments, one of which is generally marked "UP" and the other "DOWN."

The push buttons are mounted in ornamental plates plainly marked "UP" and "DOWN," showing for what use intended, and placed where easily seen by the public.

ADVANTAGES—The value of the Armstrong system of signals must be apparent to every one familiar with the requirements of modern elevator service.

It is a conservative claim that five passenger elevators equipped with the Armstrong Electric Signals will render at least as satisfactory service as six elevators without these signals.

With high speed elevators especially, do the Armstrong Signals effect a great saving in cost of repairs to the plant, because the quick reversals always made by operators when not signaled in advance are very hard upon elevator machinery and are also a frequent cause of accident.

Not only are great efficiency and economy of repairs effected, but the avoidance of running past and returning to floors, with necessary reversals, effects a decided saving in cost of power. This point should not be underestimated, especially where electric elevators are in use, as the economy in cost of power will in itself cover the entire cost of the signals within a limited period of time.

ESTIMATES AND SPECIFICATIONS—Estimates of cost with detailed specifications will be furnished on request. The following data is required:

The number of elevators to be equipped and the number of floors each elevator travels.

State which of the following systems is to be estimated upon:

- 1 Complete Signals for Operator and Waiting Passenger.
- 2 Operator's Signal Only.
(Stating if Mechanical Indicators at ground floor or Dispatchers' and Call Back System are to be included in estimate.)
- 3 Signal for hotels or other building where elevators do not run on schedule.
- 4 Mechanical Indicators only on all floors.

ROOD'S ELECTRIC EXPRESS CALL SYSTEM—This is a patented system of calls and signals, and provides a very efficient means by which tenants can display a signal on the outside of the building without leaving their floor, thereby notifying the express call driver, without any unnecessary delay, of the room requiring his service.

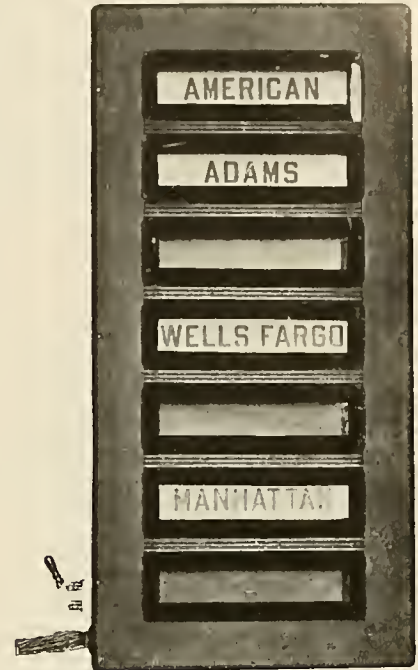
DESCRIPTION—The system consists of a tube or conduit running from the corridor or rotunda of the building to the top floor and can be made either a part of, or arranged alongside, the mail chute, run down the elevator shaft or wherever most convenient, with an



DISTRIBUTING BOX FOR THE CORRIDOR OF A BUILDING

opening on each floor, or in each room if desired, for the reception of a small disc, several of which, representing the different express companies, are provided for each room. To illustrate more particularly, suppose that a tenant in room 1842 on the 18th floor of a skyscraper, desires to make a shipment by Express Co. A. Selecting disc representing Express Co. A, from the several that he is provided with, he places it in the aperture of the tube from whence it descends to the ground floor, slowly rolls over a distributor from whence it drops into the box of Express Co. A. By a simple electrical device, as soon as the disc has dropped into the box of Express Co. A., an electrical contact is made with the signal displayed on the outside of the building, or at the most convenient location for the purpose, which signal remains set until a passing call-driver representing the Company signaled, unlocks the box in the corridor, thus breaking the contact and allowing the signal to display again a blank surface. With the disc then in his possession, he sees at a glance from the number on it, exactly what room he is expected to visit. At night the outside signals are illuminated and can be seen for blocks, so there is no possible chance for overlooking a call.

ADVANTAGES—The advantages of this system of calls and signals in large office buildings are many from the standpoint alike of building owners, tenants and the Express Companies. A saving of time on the part of the latter means quicker service for their patrons. A tenant saves telephone calls or the time of a messenger to the express office. His part is done when he drops the call check. The building owner adds popularity to his building because of its great convenience to tenants, and makes it unnecessary for expressmen to use elevators and hallways except when called by a tenant. It also relieves the owner and employees from any responsibility in connection with shipments by either tenants or express companies.

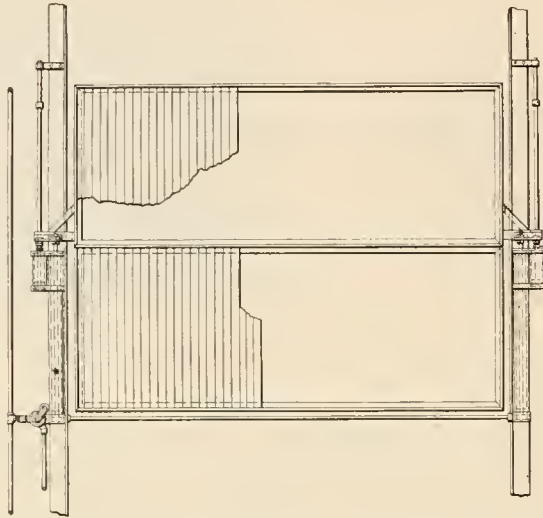


SIGNAL FOR THE OUTSIDE OF A BUILDING

AUTOMATIC FREIGHT ELEVATOR DOOR OPENING AND CLOSING MECHANISM—

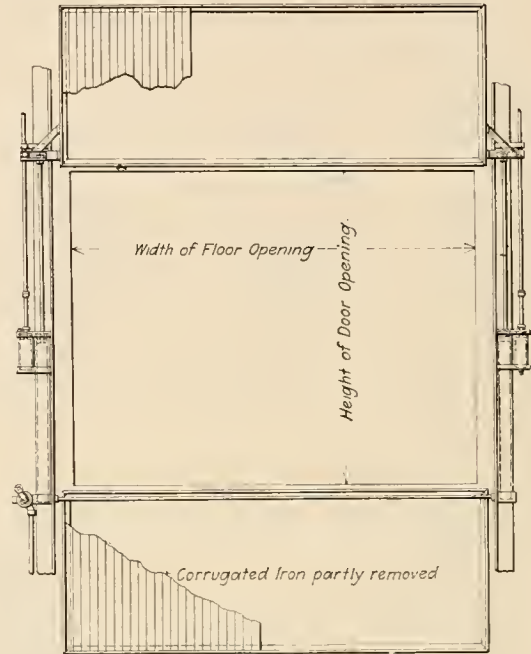
This is a pneumatic device for automatically opening and closing the Meeker type of freight elevator doors. It can be used for elevators of all speeds. The doors are operated by compressed air and controlled by the elevator operator through a foot treadle so located on the elevator platform that the operator can open or close the doors without leaving his operating lever or hand rope.

It is impossible for the operator to leave the doors open, as they close automatically immediately after the elevator leaves the floor level.



MEEKER DOORS CLOSED

Vertical Section of the Elevator Shaft, showing the Operating Devices in Position and connected to the Doors



MEEKER DOORS OPEN

Sectional View showing the Door Opening

ADVANTAGES—The Opening and Closing Mechanism insures for a Freight Elevator, Safety, by preventing employees or others from falling into the hatchway through open doors, Double the Ordinary Efficiency, because the doors can be opened while the elevator is being stopped at the floor level without the operator leaving his position at the operating lever, and Perfect Fire Protection, as all the doors are always closed except at the floor from which the elevator is taking on or unloading freight. The mechanism is independent of the elevator and its machinery, and is therefore the only device that can be used on high speed elevators.

WHERE USED—All Freight Elevators in the new Wanamaker Stores in New York and Philadelphia are equipped with this device. Other references will be furnished on request.

FIREPROOF THEATRE CURTAINS, CURTAIN HOISTS—We will furnish plans and estimates for complete Steel and Asbestos Fireproof Curtain Equipments for theatres, and for Automatic, Hydraulic, and Electric Curtain Hoists.

The following theatres have been equipped by us:

Hyde & Behman's Theatre, Chicago, Steel Curtain, Hangings and Hoisting Apparatus complete.

Majestic Theatre, Chicago, Steel Curtains, Hangings and Hoisting Apparatus complete.

Lyric Theatre, Philadelphia, Steel Curtain, Hangings and Hoisting Apparatus complete.

McVicker's Theatre, Chicago, Hangings and Hoisting Apparatus.

Garrick Theatre, Chicago, Hangings and Hoisting Apparatus.

Academy of Music, Chicago, Hangings and Hoisting Apparatus.

Grand Opera House, Chicago, Hydraulic Curtain Hoist.

Bush Temple, Chicago, Electric Curtain Hoist.

FURTHER INFORMATION—Catalogue showing all our products furnished upon application.

BURDETT-ROWNTREE MFG. CO.

Electric Dumbwaiters
FACTORY AND HOME OFFICE
85 and 87 West Jackson Street
CHICAGO, ILL.

NEW YORK CITY, N. Y.
17 Battery Place

PRODUCTS.

Manufacturers of ELECTRIC DUMBWAITERS and ELEVATOR DOOR DEVICES.

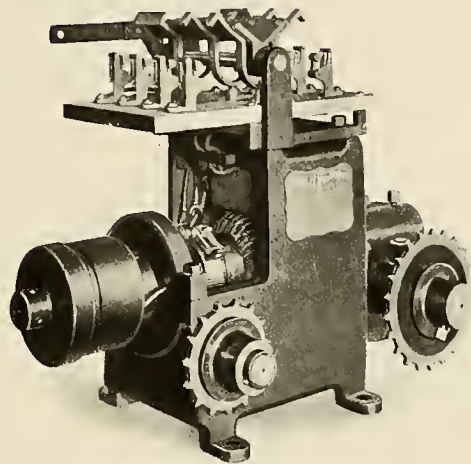


FIG. 1. ROPE CONTROL DUMBWAITER

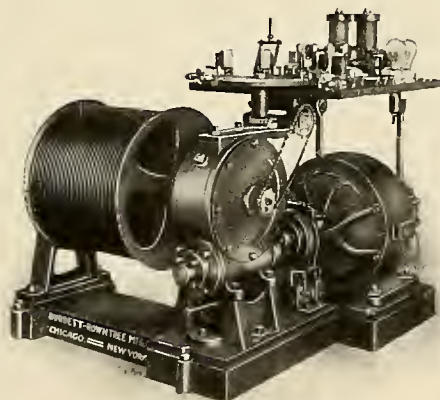


FIG. 2. AUTOMATIC ELECTRIC HIGH-SPEED DUMBWAITER ENGINE, With Push-Button Control

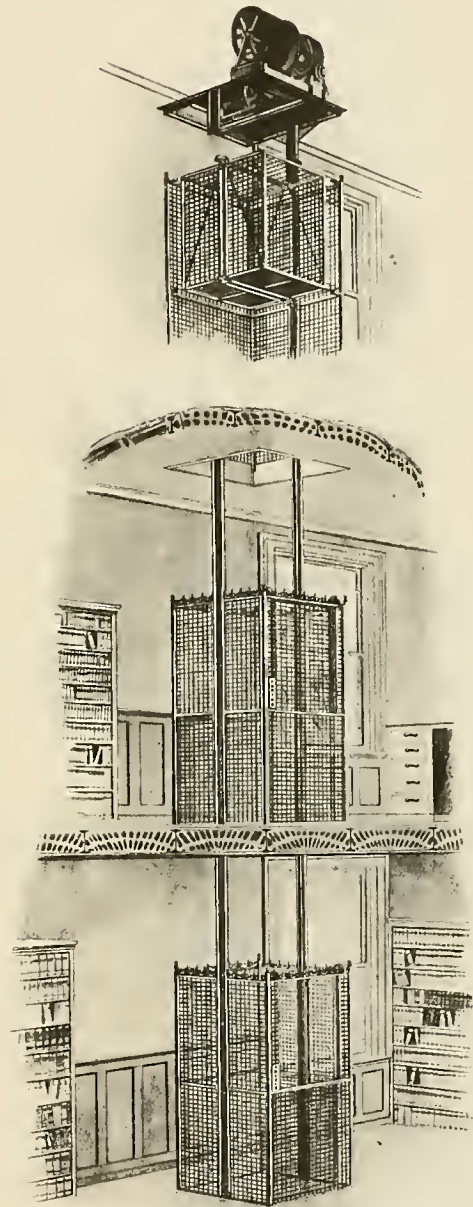


FIG. 3. PUSH-BUTTON CONTROL DUMBWAITER In Operation

ELECTRIC DUMBWAITERS.

We are the largest manufacturers of Electric Dumbwaiters in the world. We make all sizes, from our Rope Control Dumbwaiter (Fig. 1), of twenty-five pounds to two hundred pounds capacity, to our large Electric Push-Button Control Machine (Figs. 2 and 3), of fifty to five hundred pounds capacity. Speeds vary from fifty feet per minute to 500 feet per minute. Full information, including references in all parts of the country, will be furnished on request.

SEDGWICK MACHINE WORKS

POUGHKEEPSIE, N. Y.

NEW YORK OFFICE, 128 LIBERTY ST.

PRODUCTS—Manufacturers and Specialists in **HAND POWER LIFTS** for every purpose. Many special designs for special conditions. Consultation invited. Our experience is at the service of prospective customers without charge.

INSTALLATION—We will install work anywhere, and where local mechanics are to install, we furnish full directions.

AUTOMATIC BRAKE DUMB WAITER—Our new Automatic Brake Dumb Waiters are a great improvement over all automatic lock, and other self-retaining machines, and are especially designed for purchasers who consider just as carefully what they are getting as what they are paying.

The Automatic Brake is supported independently of the rest of the machine, relieving it from all end-thrust, strain, friction and unnecessary wear.

The brake does not lock fast, but is applied and regulated by the load, holding the car securely at any point, allowing it to be raised and lowered smoothly and easily, without the jumping and jarring common to all other automatic dumb waiters.

These machines are superior in principle, design, construction and finish, and are unequalled for durability and security.

They are manufactured in large quantities with special tools, insuring the greatest accuracy, and are sold at the lowest price consistent with the quality of the mechanism.

All shafting is of steel, and all bearings are fitted with steel anti-friction rollers to reduce the friction; the machine running easily, quickly and smoothly.

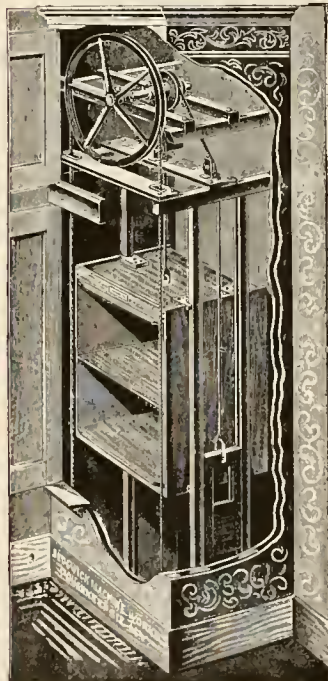


FIG. 2. SEDGWICK AUTOMATIC BRAKE DUMB WAITER

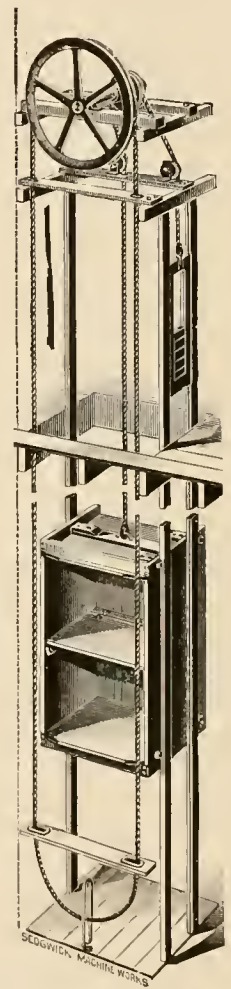


FIG. 1. SEDGWICK AUTOMATIC BRAKE DUMB WAITER

ILLUSTRATIONS—Fig. 1 shows Dumb Waiter Outfit complete, ready for erecting in well; machine mounted on platform, weight running in double guide runs inside the well, saving space and expense of a pocket. The weight is always accessible.

Cars and platforms for machines will be made any size required at same price as next larger size given in list.

Well should be 3 in. larger both ways than size of car wanted.

Fig. 2 shows the Sedgwick Dumb Waiter properly erected, with door or panel in front of machine, and studs back of runs; well being either ceiled or plastered.

Nos. 1, 2 and 3 are the favorite sizes for ordinary private house work.

Nos. 3 or 4 are suitable for larger residences, apartment houses, etc., where a strong, reliable machine is required.

Double face Fixtures require a longer shaft, extra hand wheel and hand rope. Double face Outfits cost for Nos. 1 and 2, \$6.00 extra; Nos. 3 and 4, \$7.00 extra.

Order Dumb Waiter Outfits complete, ready for erecting, to insure best construction and best results.

Complete Outfits include Machine, Car, Ropes, Runs and Counterweight for total height of 20 feet.

PRICES—F. O. B. Poughkeepsie.

No. 1 Outfit, Complete, Car up to 20 in. x 16 in.	\$36.00
Machine only, Single Face	20.00
Machine only, Double Face	24.00
No. 2 Outfit, Complete, Car up to 24 in. x 20 in.	44.00
Machine only, Single Face	25.00
Machine only, Double Face	29.00

No. 3 Outfit, Complete, Car up to 28 in. x 24 in.	\$53.00
Machine only, Single Face	30.00
Machine only, Double Face	35.00
No. 4 Outfit Complete, Car up to 34 in. x 30 in.	62.00
Machine only, Single Face	35.00
Machine only, Double Face	40.00

THE "SIMPLEX" DUMB WAITER (Fig. 3)—The "Simplex" meets the demand for a good low priced dumb waiter. The Fixture includes the hand wheel, hoist wheel 8 in. diameter, steel shaft, two babitted bearings for shaft, two pulleys for guiding the rope, three thimbles for rope, spring clamp for holding the load.

Double face Fixtures require a longer shaft, extra hand wheel, and hand rope. Double face Outfits cost for Nos. 1 and 2, \$5.00 extra; Nos. 3 and 4, \$6.00 extra.

Order Dumb Waiter Outfits complete, ready for erecting, to insure best construction and best results.

Complete Outfits include Machine, Car, Ropes, Runs and Counter-weight for total height of 20 feet.

PRICES—F.O.B. Poughkeepsie, N. Y.

No. 1 Outfit, Complete, Single Face, Car up to 20 in. x 16 in.....	\$24.25
Machine only, Single Face.....	10.00
Machine only, Double Face.....	13.00
No. 2 Outfit, Complete, Car up to 24 in. x 20 in.....	30.00
Machine only, Single Face.....	12.00
Machine only, Double Face.....	15.00
No. 3 Outfit, Complete, Car up to 28 in. x 24 in.....	35.00
Machine only, Single Face.....	13.00
Machine only, Double Face.....	17.00
No. 4 Outfit, Complete, Car up to 34 in. x 30 in.....	40.00
Machine only, Single Face.....	15.00
Machine only, Double Face.....	19.00

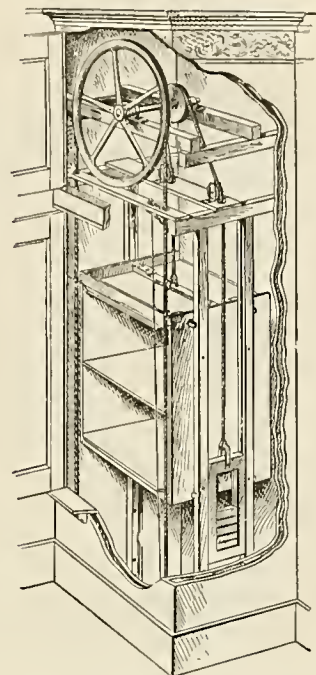


FIG. 3. "SIMPLEX" DUMB WAITER



FIG. 4. SEDGWICK BAND-BRAKE DUMB WAITER

No. 1 Outfit, Complete, Single Face, Car up to 20 in. x 16 in.....	\$43.50
Machine only, Single Face.....	20.00
Machine only, Double Face.....	24.00
No. 2 Outfit, Complete, Car up to 24 in. x 20 in.....	52.00
Machine only, Single Face.....	25.00
Machine only, Double Face.....	29.00
No. 3 Outfit, Complete, Car up to 28 in. x 24 in.....	62.50
Machine only, Single Face.....	30.00
Machine only, Double Face.....	35.00
No. 4 Outfit, Complete, Car up to 34 in. x 30 in.....	71.50
Machine only, Single Face.....	35.00
Machine only, Double Face.....	40.00

THE SEDGWICK BAND-BRAKE DUMB WAITER (Fig. 4)

—The Band-Brake Dumb Waiter is specially adapted for use in High Wells for Factories, Flats, Apartment Houses, etc., where a strong, reliable, easy-running Dumb Waiter for hard service is required. The load is held securely at any point by means of the Band-Brake (Fig. 5), and controlled by the Brake Cord at any speed required. Pulling down on the Brake Cord stops and locks the load at any floor.

Double Face Fixtures require a longer shaft, extra hand wheel and hand rope. Double Face Outfits cost for Nos. 1 and 2, \$6.00 extra; Nos. 3 and 4 \$7.00 extra.

Order Dumb Waiter Outfits complete, ready for erecting, to insure best construction and best results.

Complete Outfits include Machine, Car, Ropes, Runs and Counter-weight for total height of 20 feet.

Prices, F. O. B. Poughkeepsie, N. Y.

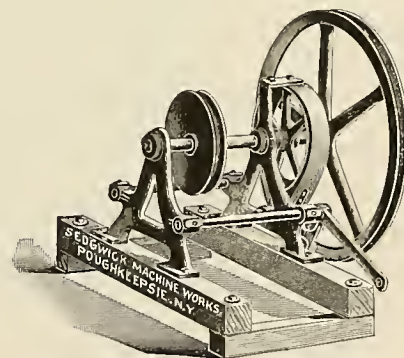


FIG. 5. SEDGWICK BAND-BRAKE DUMB WAITER MACHINE

SEDGWICK HAND POWER ELEVATOR (Fig. 6)—These machines are without exception the fastest, easiest running and best designed hand power elevators in the market to-day. We have hundreds of them in use for every class of work, and we do not know of a single case where they are not giving perfect satisfaction.

All machine work and fitting is strictly high grade in every respect, and the machines contain every improvement which long years of experiment and experience have proven to be of value.

All shafting is of steel, the gears are of ample size and strength, and all bearing are fitted with steel anti-friction rollers.

The heavy iron frame, braced and bolted together, makes the machine rigid, and renders it impossible for it to get out of line.

We have an improved Band-Brake (Fig. 7) on this machine, with "Locking Lever," by which the machine is under perfect control from all floors and from the car.

The two hoist wheels, as shown in lower cut (Fig. 7), allow the use of two separate hoist cables, thus dividing the load, and one acting as a safety cable for the other. This is the safest arrangement known.

This large illustration shows the complete outfit, which is suitable for handling freight, or for trunk lifts, etc. With passenger car it is suitable for invalid or light passenger service.

On any of this work we will furnish, upon application, estimates for the whole outfit, put up ready for use.

The capacity of elevators is the load the machines are intended to safely carry.

One man should easily raise from one-third to one-half of the full load.

Complete Outfits include Machine, Car, Runs, Ropes, Cables and Counter-weight for total height of 20 feet.

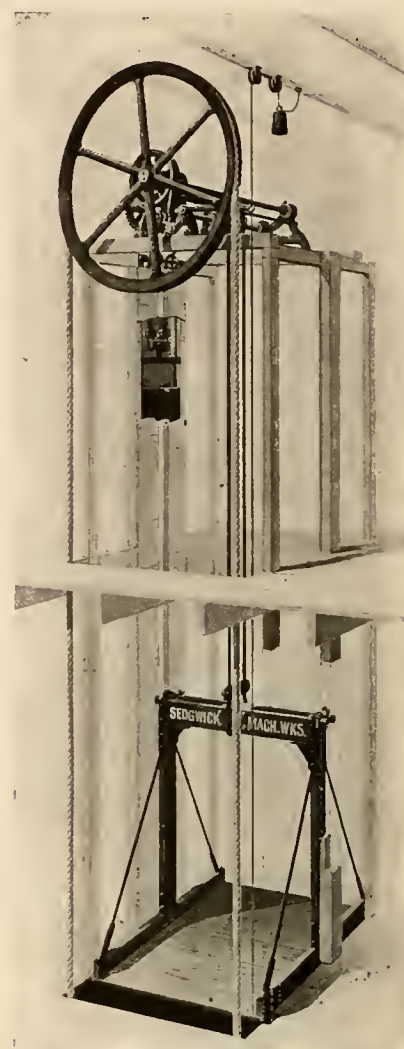


FIG. 6. SEDGWICK HAND POWER ELEVATOR

PRICES—F.O.B. Poughkeepsie, N. Y.

500 lb. Elevator Outfit, Complete	\$ 90.00
Machine only, Single Hoist Wheel.....	42.00
Each extra story, additional.....	5.50
600 lb. Elevator Outfit, Complete	102.50
Machine only, Double Hoist Wheels.....	48.00
Each extra story, additional.....	6.75
800 lb. Elevator Outfit, Complete	140.50
Machine only, Double Hoist Wheels.....	72.00
Each extra story, additional.....	10.25
1000 lb. Elevator Outfit, Complete	158.50
Machine only, Double Hoist Wheels.....	84.00
Each extra story, additional.....	10.25
1200 lb. Elevator Outfit, Complete	180.00
Machine only, Double Hoist Wheels.....	96.00
Each extra story, additional.....	12.00
1500 lb. Elevator Outfit, Complete	198.00
Machine only, Double Hoist Wheels or Iron Drum.....	108.00
Each extra story, additional.....	12.00
2000 lb. Elevator Outfit, Complete	224.00
Machine only, Double Hoist Wheels or Iron Drum.....	120.00
Each extra story, additional.....	15.50
2500 lb. Elevator Outfit, Complete	238.00
Machine only, Double Hoist Wheels or Iron Drum.....	132.00
Each extra story, additional.....	15.50

Corner Post Platforms or Passenger Cars extra. Estimates for erecting or on heavier outfits on application.

Elevators will be fitted with Automatic Brake device at extra price when desired.

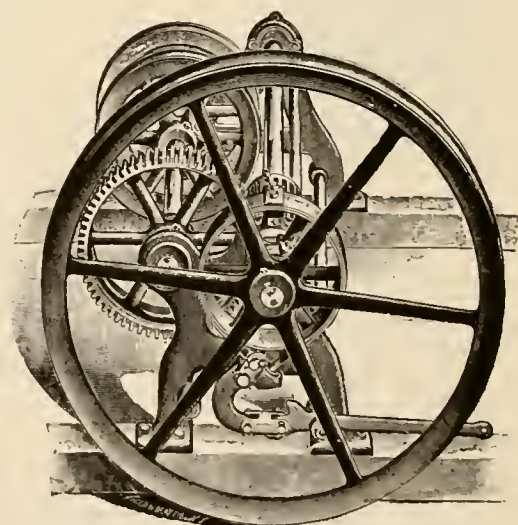


FIG. 7. SEDGWICK HAND POWER ELEVATOR MACHINE

SIDEWALK and CELLAR HOIST (Fig. 8)—

These machines have improvements contained in no other make, and the machine-work and fitting is equalled by few. All parts are of ample strength. The machine is fitted with lock latch and safety pawl. The crank shaft is thrown out of gear in lowering, and the Band-Brake is our improved Brake with "Locking Lever."

The entire outfit is of high grade and is fully guaranteed.

PRICES—F. O. B. Poughkeepsie, N. Y.

2000 lb. Outfit, any size up to 4 ft. x 4 ft. for 10 ft. travel or less. . \$190.00

2500 lb. Outfit, any size up to 5 ft. x 5 ft. for 10 ft. travel or less. . 204.00

Estimates for erecting or on heavier Outfits on application.

CARRIAGE and WAREHOUSE ELEVATOR (Fig. 9)—

This is what is known as a four-cable outfit; that is, the platform is carried by four cables, there being another cable to the weight. This outfit is built of the best material, all workmanship being first-class, and the brake being our Improved Band-Brake with "Locking Lever," makes it the most satisfactory outfit that can be obtained for the purpose intended.

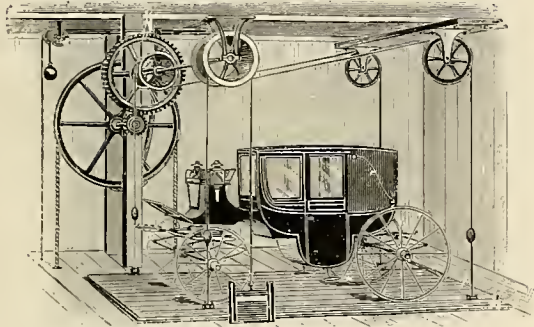


FIG. 9. CARRIAGE AND WAREHOUSE ELEVATOR

LIGHT PASSENGER CAR (Fig. 10)—The car shown herewith, varied in style, shape and size, as required, is adapted for use with our machines.

For use in private houses, hospitals, club houses, stores, and in other places where a light passenger elevator is required to work by *hand or belt power*.

Hatchway Hoists, Automatic Gates and Trap Doors, Power Attachments, Crank Grand Carriage or Automobile Lifts, and many other types and modifications of the apparatus here shown. Metal Cars instead of wood, when desired, at special prices.

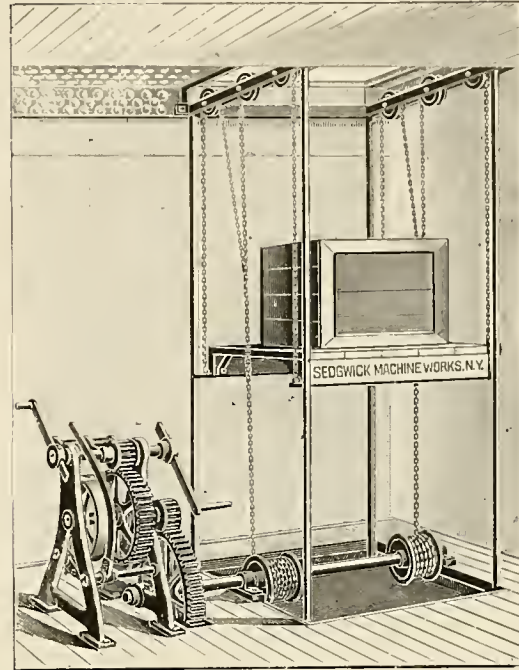


FIG. 8. SIDEWALK AND CELLAR HOIST

PRICES—F. O. B. Poughkeepsie, N. Y.

1500 lb. Outfit, Platform up to 7' 6" x 12' 0" \$210.00

2000 lb. Outfit, Platform up to 8' 0" x 15' 0" 258.00

Complete Outfits include Machinery, Ropes, Cables, Platform, Counter-weight and Guide Runs for total height of 20 feet.

Estimates on erecting or on heavier outfits upon application.

The Counter-weight can be carried to any convenient position at a small additional cost for extra sheave wheel and cable.

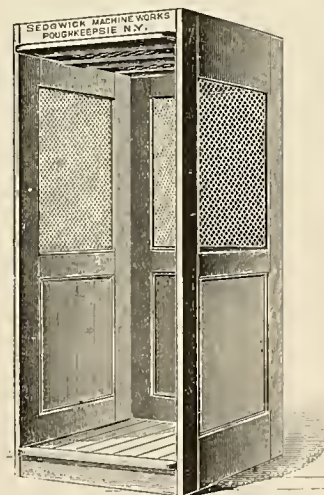


FIG. 10. LIGHT PASSENGER CAR

THE STORM MANUFACTURING CO.

Dumb Waiters and Elevators

Foot of Centre Street
NEWARK, N. J.

LONG DISTANCE TELEPHONE CONNECTION

PRODUCTS. Manufacturers of DUMB WAITERS and HAND ELEVATORS of all descriptions, for all kinds of work.

INSTALLATION. Our machines are so constructed that any good mechanic, assisted by the directions which we send, can install them.

We will, if desired, send experienced men to any part of the country to do the erecting.

NEW YORK SAFETY DUMB WAITER.

The New York Safety Dumb Waiter (Fig. 1) is the simplest, most durable and economical dumb waiter ever made. It will lift from fifty to seventy-five pounds with ease. The fixtures are one size only, but are suitable for all well-holes less than twenty-four inches square. Diagrams for installation accompany each set of fixtures.

The wheels EE are placed on top of the car so that the weight of the car is lifted from the center in all cases. They can be placed diagonally if necessary to accomplish this. The counter-weight should weigh about the same as the combined weight of the car and the two wheels EE, not less.

Flat counter-weights which can be run in guides or box should be used.

For stringing, $\frac{1}{2}$ in. pliable cotton rope is used, and for safety rope, $\frac{3}{8}$ in.

Samples of rope are sent with each set.

Guide runs should be $\frac{7}{8}$ in. by $1\frac{1}{8}$ in., and should be coated with black lead.

PARAGON SELF- RETAINING AUTOMATIC DUMB WAITERS.

The Paragon is constructed so that it will hold the car stationary at any point, without the use of a brake or rope clamp. It works easily and with perfect safety; the moment the operator ceases pulling the hand rope, either in raising or lowering, the clutch will hold the car stationary.

Nos. 1 and 2 are sheave machines and are arranged for weight to come at right (Fig. 2), unless otherwise ordered.

The Pulley Wheels are placed three to six inches below the weight rope.

Machines Nos. 6 and 8 are geared machines. The car is lifted by a wire cable, and they are especially adapted for Trunk Lifts in private houses.

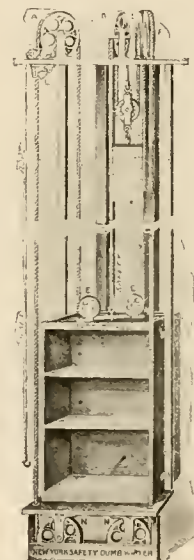


FIG. 1. NEW YORK SAFETY DUMB WAITER

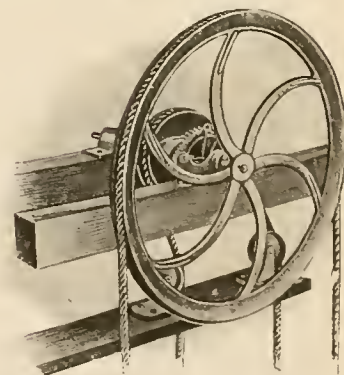


FIG. 2. PULLEY WHEELS OF PARAGON SELF-RETAINING AUTOMATIC DUMB WAITER

MANHATTAN
DUMB WAITER.

The Manhattan Dumb Waiter has a capacity of two hundred pounds. The shafts of the fixtures run on Babbitt Metal bearings; they are frictionless and noiseless, handsomely bronzed, perfectly made, and warranted in all particulars. We make the hoist wheels in three sizes, 20 in., 24 in., and 30 in. The counterpoise weight can run on either side or at the back. These fixtures should not be used in well-holes or openings more than 36 inches square. We also make this as a double-faced fixture, with hoist wheels on both ends of the shaft, so that it can be operated from either side on any floor. These fixtures are adjusted to a 1 1/4 inch shelf, ready to place over well-hole.

HUMPHREY
HAND
ELEVATOR.

This style is especially adapted for store and factory work, hospitals and public buildings, also for Trunk and Invalid Lifts. It is so simple and low priced that it can be used in many places instead of a Dumb Waiter. The machinery is handsomely bronzed, the shafts which run in Babbitted bearings are perfectly fitted and guaranteed in every respect. A large ball weight is attached to the brake rope, and raising or pulling on this rope relieves or applies the brake.

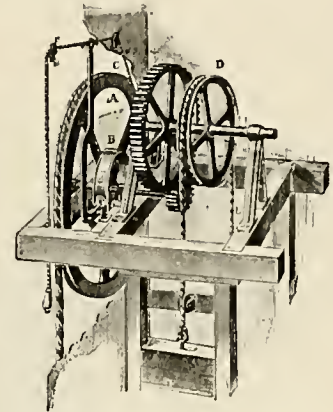


FIG. 3. FIXTURES OF HUMPHREY
HAND ELEVATOR

The counter-weight can run on either the right or left hand side. We always send them for the weight to run on right hand side, unless otherwise ordered.

INSTRUCTIONS
AS TO
ORDERING.

In ordering, the total height of the well-hole and the size of the finished well-hole inside it should be stated. Send sketch if possible. State kind of material of which well-hole is built, and whether plastered or wood lined. Give position of counter-weight looking into a well-hole, and whether in inside or outside.

PRICES AND
SIZES.

DUMB
WAITERS

Capacity	Suitable for Well-Holes	Overhead Fixtures Only		Complete for First 10 Feet Travel of Car		Each Additional Foot of Travel		
		Single Face	Double Face	Single Face	Double Face	Single Face	Double Face	
N. Y. Safety	75 lbs.	24" x 24"	\$16.00		\$57.00		\$.40	
Paragon, No. 2.....	100 lbs.	25" x 28"	21.00	\$27.00	60.00	\$67.50	.50	\$.60
Paragon, No. 1.....	200 lbs.	32" x 32"	30.00	36.00	78.00	86.00	.50	.60
Manhattan	225 lbs.	36" x 36"	30.00	36.00	85.00	93.00	.60	.70

For any of the above, weights can run at right, left or back

HAND
ELEVATORS.

Paragon, No. 6.....	300 lbs.	42" x 42"	\$39.00	\$48.00	\$ 90.00	\$100.00	\$.60	\$.75
Paragon, No. 8.....	500 lbs.	54" x 54"	54.00	64.00	117.00	130.00	.65	.85
Humphrey, No. 1.....	500 lbs.	48" x 48"	54.00		114.00		.60	
Humphrey, No. 2.....	750 lbs.	60" x 60"	78.00		140.00		.65	
Humphrey, No. 3.....	1200 lbs.	60" x 60"	99.00		210.00		1.00	

Weights for above machines run at right or left, and not at back.

JAMES MURTAUGH CO.

OFFICE AND FACTORY
202 and 204 East 42d Street
NEW YORK CITY, N. Y.

ESTABLISHED 1855

INCORPORATED 1903

PRODUCTS.

Manufacturers of AUTOMATIC, PUSH BUTTON, RECIPROCATING AND FIREPROOF STEEL DUMB-WAITERS (Hand and Power). Also FREIGHT, CARRIAGE, AUTOMOBILE, SIDEWALK, TRUNK, INVALID and PASSENGER (Residence) ELEVATORS.

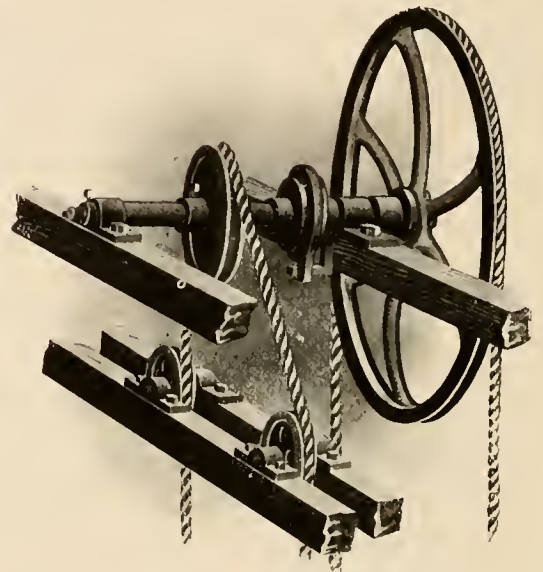
TERRITORY.

We will ship our Dumb-Waiters and Elevators to any part of the United States and Canada with full instructions for installing same, or we will send our own workmen to install them.

Note Dovetail



CAR



AUTOMATIC MACHINERY
Capacity 25 to 125 lbs.

PRICE LIST.

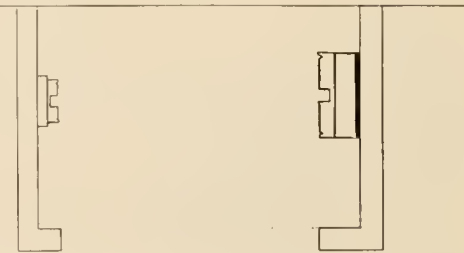
Automatic Dumb-Waiter, shaft not to exceed 2 feet 8 in. wide by 2 ft. deep, installed New York City, travel not exceeding 25 ft. Capacity, 100 lbs\$75.00

Each additional 10 feet or one story.....\$5.00

Machines packed and shipped complete, f.o.b. New York City, with full size plan, for practical erection, as per above size.....\$60.00

Prices on 200, 300 and 500 lbs. machines, shafts not to exceed 3 ft. 6 in. wide and 3 ft. deep, on application.

All machines equipped with our latest Patented Safety Attachment, if so desired, at an extra cost of\$15.00



POSITIONS OF RUNS AND WEIGHT BOX

REFERENCES.

A FEW RECENT NEW YORK CITY INSTALLATIONS

BUILDING

- "TRINITY" BUILDING, Broadway and Trinity Place
- "MACY" BUILDING, Broadway and 34th Street
- "SAKS" BUILDING, Broadway and 33d Street
- "METROPOLITAN" BUILDING, 1 Madison Avenue
- MT. SINAI HOSPITAL, 101st St. and Madison Avenue
- HOTEL ST. REGIS, 55th Street and Fifth Avenue

ARCHITECT

- FRANCIS H. KIMBALL
- DELEMOS & CORDES
- BUCHMAN & FOX
- LE BRUN & SONS
- A. W. BRUNNER
- TROWBRIDGE & LIVINGSTON

BUILDER

- Geo. A. Fuller Co.
- Geo. A. Fuller Co.
- Geo. A. Fuller Co.
- V. J. Hedden & Sons Co.
- Norcross Brothers
- Marc Eidlitz & Son

THE HARDESTY MANUFACTURING CO.

FORMERLY
THE A. R. MILNER SEATING CO.

201-223 Tuscarawas Street
CANAL DOVER, OHIO

PRODUCTS.

Manufacturers of AUTOMATIC OPERA CHAIRS, AUTOMATIC FOLDING AISLE SEATS, WALL SEATS, COUNTER STOOLS, AUTOMATIC SEATED TABLES and STATIONARY STOOLS and SPECIAL FURNITURE.

GUARANTEE.

We manufacture our goods from the best quality of raw material, which with the highest standard of workmanship, enables us to guarantee all our products for five years.

AUTOMATIC OPERA CHAIR.

This Chair can be used either with or without arms. The incline of the back and the shape of the seat allows the arms of a person to rest naturally on the lap, making the chair complete without arms. Each chair is complete in itself, without connecting slats underneath from one chair to another. This with the close folding allows the rows to be placed 26 inches from center to center with more room for the occupant when seated or for passing than by the use of any other chair placed 32 inches between rows.

This chair can also be made revolving, which allows a house to be all aisles, a great safeguard in case of fire.

AUTOMATIC COUNTER STOOLS.

Fig. 2 shows three types of stools: the Double-Acting, Single-Acting without foot rests and the Single-Acting with foot rests, with three styles of floor bases; for closed counter with quarter-round moulding, for open counter and for closed counter without quarter-round moulding.

Stools are numbered by their size which is their height when in position to occupy. When the occupant rises the stool folds up under the counter.

PRICES.

Single Acting	Per Doz.	Counter Height, in.	Double Acting	Per Doz.	Height in.
No. 18	\$25.00	27 to 30	No. 18	\$28.00	27 to 30
" 20½	25.50	30 to 33	No. 20½	29.00	30 to 33
" 22	26.00	33 to 36	No. 22	30.00	34 to 38
" 24	27.00	36 to 38	No. 24	31.00	36 to 40

WITH FOOT RESTS

Single Acting	Per Doz.	Counter Height, in.	Double Acting	Per Doz.	Counter Height In.
No. 24	\$29.00	36 to 38	No. 25	\$33.00	36 to 40
" 27	30.00	39 to 42	No. 27	34.00	39 to 41
" 30	32.00	42 to 45	No. 30	35.00	40 to 43
" 33	33.00	45 to 50			



FIG. 1. AUTOMATIC OPERA CHAIR

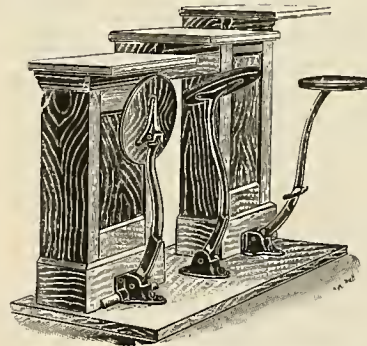


FIG. 2. AUTOMATIC COUNTER STOOLS

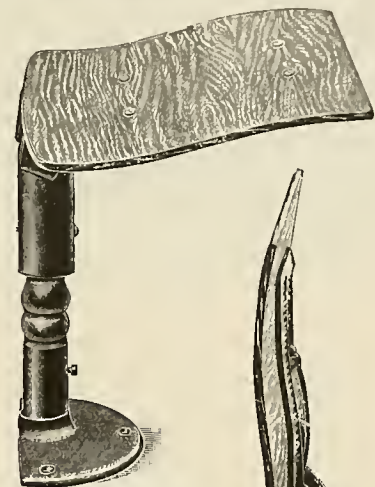


FIG. 3. AUTOMATIC WALL SEAT (Down)



FIG. 4. AUTOMATIC WALL SEAT (Up)

All Castings, Black Japanned. 12 in. seat in light oak, antique oak, or cherry finish. 9 or 10 in. seats furnished at no additional cost. Nickel aluminum band around seat \$2.00 per doz. extra. Aluminum lacquer finish, \$4.00 per doz. extra. Backs for stools, \$8.00 per doz. extra.

AUTOMATIC FOLDING WALL SEAT.

These stools use practically no space when placed in contact with a wall, the latter acting as a back for the seat. Finished in black enamel and gold bronze; the woodwork is 1/8" 3-ply veneer, maple, mahogany, or oak finish. The seat 15½" wide by 14" deep and is 13" to 20" from the floor. Also made non-automatic folding if desired. Price \$2.50.

AUTOMATIC MAIL DELIVERY CO.

Times Building

NEW YORK CITY, N. Y.

TELEPHONE, 1790 BRYANT

PRODUCTS.

Patentees and Makers of AUTOMATIC MAIL DELIVERY APPARATUS and MAIL CHUTES under authorization of United States Post Office Department.

AUTOMATIC MAIL DELIVERY APPARATUS.

The Automatic Mail Delivery Apparatus can be used in Apartment Houses, Business Buildings and Private Residences for the prompt, automatic and safe delivery of mail from the ground floor.

The device consists of a straight up and down well about eighteen inches square running the height of the house, and containing an elevating and lowering apparatus, which lifts up and down a steel tray with metal boxes. Electricity is used to work the lift.

The postman on the route has a key to the glass door of the hall box, which, when opened, reveals three rows of smaller metal boxes, one box to each apartment. The postman drops the mail as it is addressed, closes the door, which locks itself, and as it snaps shut, the carrier starts upward automatically. By a simple mechanical contrivance, the boxes are dropped off at the apartments where they belong, and at the same time overturned so that the mail falls out in a locked receptacle inside the apartment. The automatic carrier keeps on going up until it reaches the top, when it descends again, picking up the boxes as it comes down.

The space occupied by the machinery is at the base 12 in. by 15 in., and but 12 in. high. The motor starts from the closing of the door, reverses automatically when the carrier reaches top of the house, and stops automatically when the carrier reaches the ground floor.

MAIL CHUTES.

The Mail Chutes of the Automatic Mail Delivery Co. are superior to other chutes in the following advantages:

1. Simplicity of Construction.
2. Absence of Rivets.
3. Seamless Interior.
4. Porcelain Lining.
5. Increasing Width at every Inlet.
6. Vertical Insertion of Mail.
7. Frequent Expansion to assist Action of Gravity.
8. Telescopic Joints allowing for Settling of Buildings.
9. Pocket for the detention of Abnormal Mail.
10. Free Independent Path Uninterrupted by Detained Mail.

WM. J. McWADE
 Inter-Communicatory Systems
 1729 and 1730 Marquette Building
 CHICAGO, ILL.

TELEPHONE { CENTRAL 3489
 { AUTOMATIC 4171

PRODUCTS—STANDARD COMBINATION VESTIBULE TUBE-PHONE and MAIL BOX, and INTER-COMMUNICATORY SYSTEMS for Apartment and Flat Buildings.

STANDARD COMBINATION VESTIBULE TUBE-PHONE AND MAIL BOX—The unsatisfactory and inefficient systems of inter-communication which are used in the flat and apartment buildings of to-day, open a field which has been improved by the patentee of the Standard Combination Vestibule Tube-Phone and Mail Box. The old tube system from vestibule to several apartments, and from the apartment to laundry and janitor is obsolete in the same proportion as the oil lamp is to the electric light. In presenting the Standard Tube-Phone and Mail Box, we feel secure in the assertion that it fills absolutely every requirement of an inter-communicatory system, and that, from an architectural standpoint, it is the only equipment for first-class apartment buildings.



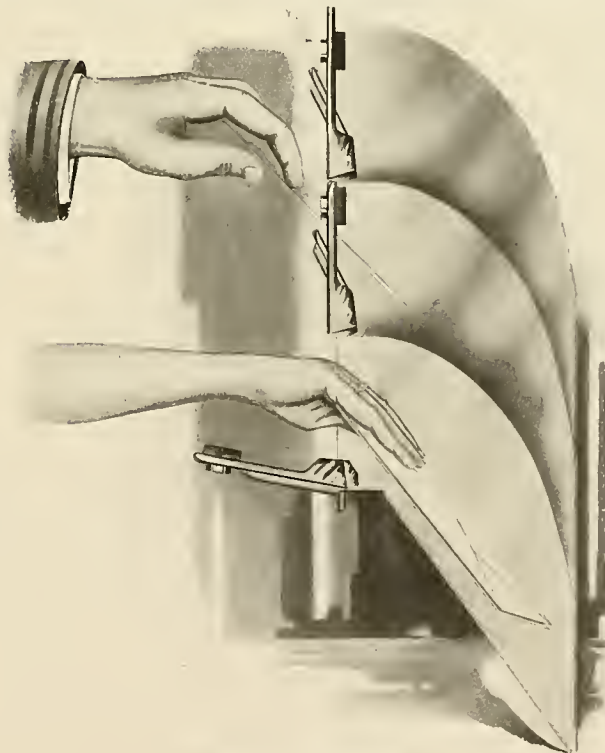
VESTIBULE SET
 Consisting of Receiver, Transmitter and Mail Boxes for six apartments

The Phones are made in both electric and tube systems, the external appearance being identical.

The new Phones are easily connected to an old system.

ADVANTAGES OVER OLD SYSTEMS

—The Standard Combination Vestibule Tube-Phone and Mail Boxes possess many advantages over the older systems. The tube-phone is superior in appearance, insures absolute privacy in conversation, is simple in construction, and there is no cost for maintenance. The mail box requires only one-third the space of the old style device, but accommodates twice the volume of mail, and is inaccessible without a key. Our illustrations demonstrate the ease by which mail is received and extricated from the box; they also show appliance for securely holding papers and small packages.



SECTIONAL VIEW OF THE MAIL BOX

PRICES—Estimates and prices will be furnished on application.



KEYLESS AUXILIARY
FIRE ALARM BOX
Size 4 x 6 in.

GAMEWELL AUXILIARY FIRE ALARM CO.

Executive Office, 19 Barclay St.
NEW YORK CITY, N. Y.

JOSEPH W. STOVER, *Pres.*
WM. GELLATLY, *Gen'l Manager.*
H. F. BENDER, *Treasurer.*
ALBERT H. CROSS, *Supt.*

PRODUCT.

We manufacture and install apparatus for the GAMEWELL AUXILIARY FIRE-ALARM SYSTEM.

DESCRIPTION.

The Gamewell Auxiliary System provides for the equipment of buildings with any desired number of interior stations, from any one of which an alarm of fire can be *instantly* sent to the Fire Department.

The Gamewell Auxiliary System includes complete apparatus for convenient and frequent testing and inspection, and is so arranged that in the event of accidental injury to the lines, notice is immediately and automatically given.

Our instant connection with the Fire Department through the nearest street fire-alarm box, gives an alarm service from one to two minutes quicker than any private fire-alarm service operating through a central office.

EXTENT OF USE.

The Gamewell Auxiliary Fire-Alarm Service has been in operation for more than ten years, and has been extensively introduced in New York City, Cleveland, Detroit, Milwaukee, San Francisco, and many other cities.

The service has been endorsed and approved by Fire Departments and by Municipalities, and by the New York and other Boards of Fire Underwriters.

Its value in saving life and property has been demonstrated in hundreds of notable instances.

This service is installed in over 5000 Hotels, Hospitals, Theatres, Public Institutions, Clubs, Apartment Houses, Office Buildings, Railroad Properties, Steamship Docks and Manufacturing and Mercantile Establishments of all kinds.

It will be found not only in the ordinary and more hazardous risks, but also in the largest and most modern fireproof structures, and in manufacturing and mercantile risks of fireproof construction, and containing sprinklers and automatic alarm equipments, and all other approved forms of protection from loss by fire.

The following names from the list of over 1000 users of the Auxiliary service in New York City, illustrates the variety and high class of establishments in which this fire-alarm system is used:

Penn., B. & O., N. Y. C., L. H. V., D. L. & W., Cunard, American, White Star, Clyde, and other docks and piers.

St. Regis, Manhattan, Grand, Grand Union, and 100 other hotels.

Metropolitan Opera House, Hippodrome, and 20 theatres.

New York Telephone Co. (19 Buildings), New York Times, and many fireproof office buildings of same class, with a station on every floor.

St. Luke's, Roosevelt, and over 100 Hospitals, Homes, and Schools.

Chelsea, Dakota, Knickerbocker, and scores of similar high-class apartment houses.

Manufacturers—American Sugar Refinery, Standard Oil Co., Lion Brewery, and 50 others.

Merchants—The H. B. Claflin Co., Arnold, Constable & Co., Park & Tilford, and 100 others.

MONTAUK FIRE DETECTING WIRE COMPANY

100 Broadway
NEW YORK CITY, N. Y.

TELEPHONE, 4031 CORTLANDT

PRODUCTS AND SERVICES.

Manufacturers of the MONTAUK TUBE THERMOSTAT and of the MONTAUK FIRE DETECTING WIRE, which together form a Fire Detecting Apparatus, automatic in its operation, and so sensitive to dangerous heat or flame that its warning is instantaneous, emphatic and definitive. Also GENERAL ELECTRICIANS.

INSTALLATION.

It may be installed by any good Electrical Engineer.

MONTAUK TUBE THERMOSTAT.

The Montauk Tube Thermostat (Figs. 1, 2 and 3) consists of a copper conductor, coated; first, with a fusible alloy; second, with a concentric insulation; third, with a concentric conductor.

The core conductor being connected in series with a battery, an annunciating instrument and the concentric conductor, there is formed a circuit which is open as long as the concentric insulation is intact.

In the tube thermostat, the second conductor consists of a gold-plated copper tube. This with the insulated core conductor, formed as above described, is bent into horse-shoe shape and the ends are passed into the cover of a porcelain receptacle. Within this cover the core wire is permanently connected with the base of one binding post and the tube connected with that of the other. All the interior of the cover is then filled with an insulating compound, and the cover is afterwards sealed into a porcelain base. Such thermostats connected by common wire with a battery and an annunciating instrument form a circuit complete except for the insulation between each core wire and its tube.



FIG. 1. TUBE THERMOSTAT



FIG. 2. CROSS SECTION OF THERMOSTAT TUBE

A, Copper Core, B, Fusible Alloy, C, Insulator, D, Copper Tube

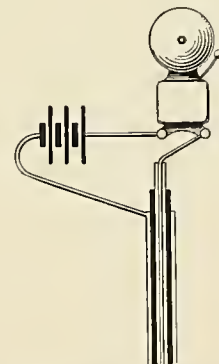


FIG. 3. TUBE CONNECTION With Battery and Alarm Bell

The puncture of this insulation, through the expansion or action of the heated fusible metal in any of a number of thermostats in multiple, closes the circuit. The effect of exposure to heat higher than the critical temperature of the alloy causes it to fuse, and in fusing it expands. This expansion results in numerous radial lines of alloy being forced through the surrounding insulation. As this insulation contains a fluxing compound, the alloy unites in a soldered connection with the concentric conductor, closing the circuit perfectly at many points.

Our thermostats are made to operate at any one of three temperatures, viz., 160°, 200° and 300°, Fah. The color of the porcelain cover is white, red or green, according to the operating point of the enclosed wire.

IN CONJUNCTION WITH
MONTAUK WIRE.

Our thermostats may be operated in connection with ordinary wire and prove of high efficiency. But when operated as they should be, in connection with the Montauk Fire Detecting Wire, the highest degree of efficiency in fire protection is obtained.

OFFICIAL
ENDORSEMENT.

Our thermostats have been approved by the various Underwriters, Fire Boards and Bureaus.

A comparison of the principles and construction of our thermostat with the National Board of Fire Underwriters' "Rules Governing the Construction of Thermostat Alarm Circuit Closers" shows that it complies with all essential requirements, as follows:

9. OPERATING POINT—(a), (b), (c) and (d) are complied with.
10. SENSITIVENESS—Fills easily the requirements of (a) and filled (b) to satisfaction of the Laboratory.
11. PERMANENCE—(a) Has no springs to be affected by every variation of temperature. (b) Has no solder under stress to be strained by each rise of temperature and to be finally overcome by a frequency of small rises.
12. DUST AND BUG PROOF—Absolutely closed and no working parts or exposed contact surface.
13. MOISTURE AND CORROSION PROOF—Is sealed, and exposes only porcelain and a gold-plated tube.
14. SHORT CIRCUIT—The case and tube being thoroughly sealed, short circuit from moisture cannot occur.
15. ADJUSTMENT—(a) Needs no adjusting. (b) Earns the preference in that there is no movable adjustment; and, a series of small increments of temperature cannot affect in any way the point at which operation occurs. (c) Shop practice is such that each wire is covered with different colored thread in core insulation which may be compared with color of cover by breaking the seal of the base and dissolving the insulating compound.
16. CONTACTS—Instead of a contact point that may become corroded or dirty, this thermostat contains 1½ square inch of contact surface, effectually sealed, against which a myriad of contacts are made with soldering action.
17. HEATING AND COOLING—(a) Alternate heating and cooling has no more effect upon the point of operation than alternate heating and cooling of water has upon its boiling point. (b) The contact made is a soldered joint and gives a permanent alarm.
18. STRENGTH—It is more than reasonably strong and would not necessarily give a false alarm if struck with a heavy hammer. In places of possible mechanical injury could be covered by a guard that would in no way affect its sensitiveness.

THE MONTAUK
TUBED WIRE
A THERMOSTAT.

The Montauk Thermostatic Tubed Wire is the same as the tubular section of the Montauk Tube Thermostat, and it can be furnished in any lengths from one foot to one mile. The finish of the exterior of the tube may be in any color or bronzed, as desired.

The copper tubing is extremely flexible, so much so that the tubed wire may be bent in any direction or wrought into any shapes, or woven into ornamental ceiling work, such as rosettes or fleur-de-lis, or made to girdle the interior of the house.

Being waterproof it may be run through damp places or used to effect connection through water; it may be calcimined or painted over without any impairment whatever of its efficiency.

Also being virtually indestructible, except by flame or excessive heat, it will last as long as the material to which it is fastened.

In a word, we offer, for the protection of life and property, that for which there is a crying and ever increasing need, viz., a highly sensitized wire, thermostatic at every minutest point along its entire length, whatever that length may be, protected from water, rust, dust or any hostile thing whatever, except that which it will assuredly detect and promptly report—*fire*.

MONTAUK FIRE
DETECTING
WIRE.

The Montauk Fire Detecting Wire is a perfect thermostat at every infinitesimal point of its entire length. It may be and is used as a conveyor of signals of all sorts, for door bells, etc., but if touched by flame or dangerous heat at any point its action is instantly thermostatic.

The invention consists of a wire made up of copper core wire, surrounded with a layer of fusible metal .017 thick, which is covered with a fine cotton braid completely saturated with ozokarite composition. Outside of this is a series of fine tinned copper wires, equal in conductivity to the central core, wound in a spiral fashion; these are covered with a cotton braid thoroughly saturated with ozokarite composition, the whole then being slicked down. This coating is waterproof, but is readily inflammable.

This fusible metal of the central core is made in two qualities, one grade melting at 160° Fah., and the other at 370° Fah. When the wire is heated, the fusible metal core expands and melts. In doing so it penetrates the braid covering it, and makes a contact with the fine outside spiral wires. If two poles of a battery and suitable means for giving an alarm (as a bell or annunciator) are connected respectively with the inner core and with the fine spiral wires at one end of a piece of Montauk Wire, when a flame is applied at any point of the wire, the circuit will automatically close and an alarm be given.



MONTAUK FIRE DETECTING WIRE

ADAPTATION

The 370° wire should be installed in public buildings, theatres, restaurants, kitchens, race track sheds, docks, piers, warehouses, dwelling-houses, stables, and in all buildings where there are special danger points, such as furnace rooms and coal bins, or where inflammable material is stored. In event of any undue heat or the smallest flame coming in contact with it the alarm is instantaneously given, and the annunciator warns the watchman immediately of the exact point whence the danger signal is sounded.

SOME NOTABLE
INSTALLATIONS.

Here are a few of the buildings and residences in which the Montauk Fire Detecting Apparatus is installed:

WM. A. READ RESIDENCE, 4 East 67th Street, New York City.

W. A. PERRY RESIDENCE, 7 East 56th Street, New York City.

BENJAMIN STEARN RESIDENCE, 7 West 53rd Street, New York City.

JDS. PULITZER RESIDENCE, 11 East 73rd Street, New York City.

WM. G. ROCKEFELLER RESIDENCE, 292 Madison Avenue, New York City.

CHAS. T. YERKES RESIDENCE, 5th Avenue and 68th Street, New York City.

A. A. COWLES RESIDENCE, 249 West 72nd Street, New York City and Country Seat, Greenwich, Conn.

T. J. O. RHINELANDER RESIDENCE, 36 West 52nd Street, New York City.

ISAAC N. SELIGMAN RESIDENCE, 36 West 54th Street, New York City.

WALTER LUTTGEN RESIDENCE, Linden, N. J.

GEO. T. MAXWELL RESIDENCE, 14 East 77th Street, New York City.

ANSON R. FLOWER RESIDENCE, 601 Fifth Avenue, New York City.

CHAS. ASTOR BRISTED RESIDENCE, Lenox, Mass.

R. FULTON CUTTING RESIDENCE, Tuxedo Park, N. Y.
MANHATTAN THEATRE, New York City.

NEW YORK CLUB, New York City.

U. S. GOVERNMENT IMMIGRANT STATION, Ellis Island, New York.

FOR USE U. S. GOVERNMENT WARSHIPS, Brooklyn Navy Yard, N. Y.

COMMERCIAL UNION ASSURANCE CO., Pine and William Streets, New York City.

AMERICAN SURETY BUILDING, 100 Broadway, New York City.

ASHLAND HOUSE, 24th Street and Fourth Avenue, New York City.

HER MAJESTY'S THEATRE, Melbourne, Australia.

BROOKS, McGLASHUN & MCHARG, Melbourne, Australia.

SPECIFICATIONS.

To protect themselves and clients, and to provide against possible substitution, the following form of specification is suggested to architects:

" There shall be installed under these specifications on various floors and locations as marked on the plans, Montauk Fire Detecting Wire and Thermostats, the installation of which shall be effected in accordance with the instructions, or under the supervision of MONTAUK FIRE DETECTING WIRE COMPANY, 100 Broadway, New York City, N. Y.

" CELLAR—Thermostats to be located on the ceiling in the rooms as called for, being electrically connected by means of 'Montauk Wire,' run on small porcelain insulators, making one complete circuit connected to drop on annunciator.

" BASEMENT—Place thermostats on ceiling of laundry, various closets, and front basement room, all connected electrically by 'Montauk Wire,' run in the special moulding used by the Montauk Company; moulding to be painted as directed by the architects. The basement equipment to be connected to annunciator.

" STAIRS—Stairs leading from cellar to basement, and both front and back stairs leading from basement to first floor, to be protected by 'Montauk Wire' attached to the woodwork in the manner required by the Montauk Company for this class of work. Said circuits to be connected to annunciator.

" TOP FLOOR—Servants' rooms to be protected by 'Montauk Wire' run around the woodwork of the various rooms and attached to same in 'Standard' manner as required by the Montauk Company. Said circuit to be connected to the annunciator.

Note—The outer covering of all wires run on woodwork must match said woodwork in color.

" ANNUNCIATOR—To be located as shown on second story plans, and contain the required number of drops, connected to the various circuits as called for. Said annunciator to be of 'Standard' type of the Montauk Company, no other being permitted. Finish of the annunciator to match color of woodwork in the room in which it is located, or of such finish as may be required by the architects.

" BATTERIES—There shall be installed in the cellar in cool place, in a standard battery box, two (2) sets of approved type of batteries, as required by the Montauk Company, one for the alarm circuit and the other for the ringing circuit.

" GUARANTEE—Contractor must guarantee the installation free of all expense for one (1) year and shall furnish a written guarantee from the Montauk Company to the owner, agreeing on behalf of the Montauk Company, to keep the installation in working order for a sum not to exceed \$20 per year, as long as may be required by the owner or purchaser.

" PAYMENT—No payment shall be made on this work except upon a written certificate from the Montauk Company, stating that the work has been done in accordance with their requirements and is satisfactory to them, said certificate to be endorsed by the architect."

GENERAL
ELECTRICAL
WORK.

The Montauk Fire Detecting Wire Company is also prepared to do general electrical work.

HERRING-HALL-MARVIN SAFE COMPANY

SUCCESSORS TO

HERRING & COMPANY
HALL'S SAFE & LOCK COMPANY

MARVIN SAFE COMPANY
FARREL & COMPANY

Largest Builders of Fire and Burglar-Proof Safes and Vaults in the World

400 Broadway
NEW YORK CITY, N. Y.

BRANCH OFFICES
CINCINNATI, O.

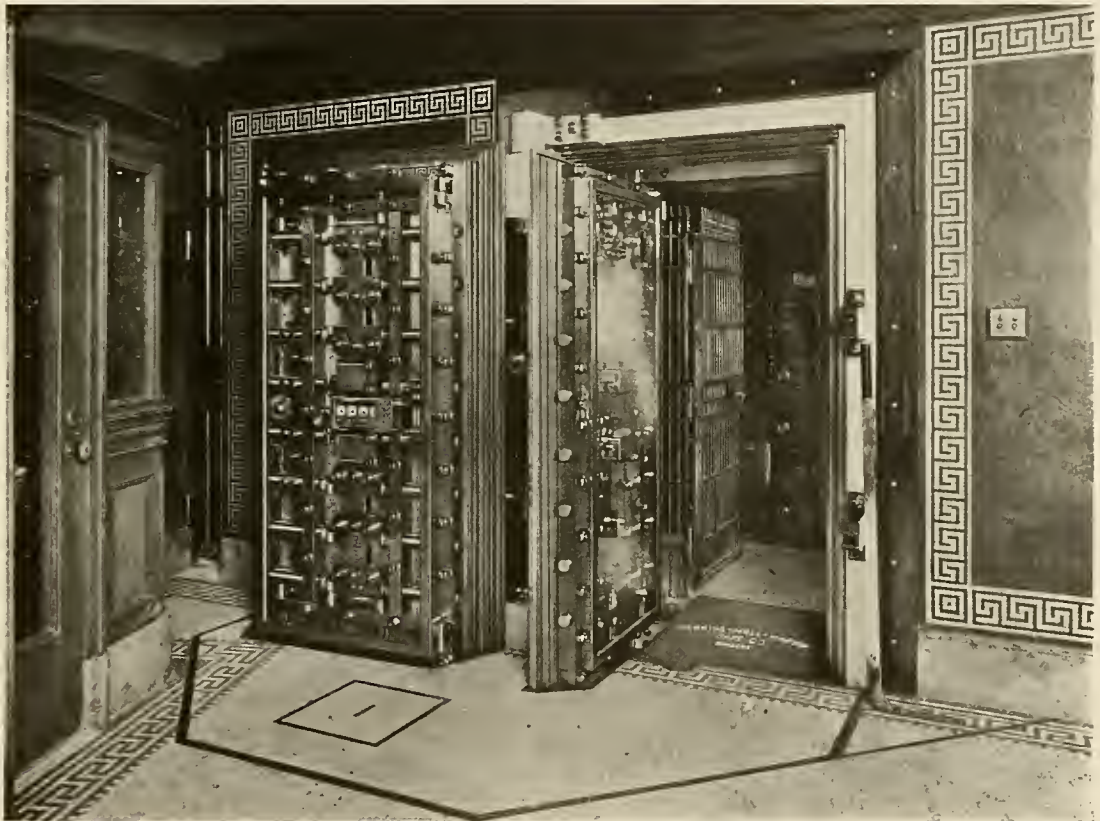
NEW YORK CITY, N. Y.
PHILADELPHIA, PA.
CHICAGO, ILL.
CABLE ADDRESS
"FIREPROOF," NEW YORK

HAMILTON, O.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.

FACTORIES
HAMILTON, OHIO
NEW YORK CITY, N. Y.

PRODUCTS.

FIRE and BURGLAR-PROOF SAFES and BANK VAULTS. Sole manufacturers of DOUBLE ROUND DOOR SAFES, VAULT DOORS, VAULT LININGS, SAFETY DEPOSIT BOXES, JEWEL BOXES, MESSENGER BOXES, CAR SAFES; Sole manufacturers of "SAFE-CRAFT."



A SAFE DEPOSIT VAULT BUILT BY THE HERRING-HALL-MARVIN SAFE COMPANY

FACILITIES.

We have the finest and best equipped safe manufactory in the world, and we are constantly adding to our equipment the newest and best in modern machinery. We employ the most skilled workmen and use only the finest materials obtainable. We are in a position to accept and promptly execute orders for the largest Bank Vaults. We build Safes and Vaults specially from Architects' designs, and in accordance with specifications furnished by Architects.

We have made over 400,000 safes for our customers.

GUARANTEE.

We guarantee to furnish better safes for less money than any other concern in the world.

FRANK H. GRAF

Medicine Cabinets

FACTORIES, SHOW-ROOMS AND OFFICES

322 Seventh Avenue

NEW YORK, CITY, N. Y.

TELEPHONE, 320 CHELSEA

PRODUCTS.

Manufacturer of MEDICINE CABINETS in Brass, Nickel-plated, and non-corrosive White Metal.

Importer and manufacturer of OPEN FIRE-PLACE FIXTURES, ANDIRONS, FRAMES, FENDERS, FIRE-SETS, GAS LOGS, SCREENS, etc., in all the leading styles and periods.



METAL MEDICINE CABINET

METAL MEDICINE CABINETS.

Our Metal Medicine Cabinets are made in all sizes. They are made to be set in flush with the wall, being lined with tiles, and each cabinet is supplied with two glass shelves which can be arranged at any desired height at time of installation. The standard depth is four inches, but they can be made deeper or shallower if necessary.

Any tile layer can install these cabinets without any difficulty.

As the frame and doors are made entirely of metal, they will not shrink or bind, warp or crack. The interior can be washed out and will not collect dirt and stains, which is so objectionable in the average medicine cabinet.

The fronts of these cabinets are supplied with a very fine grade of highly polished beveled French plate mirror.

These cabinets can be had from any of the Mantel and Tile Dealers.

THE PERFECT SAFETY WINDOW GUARD CO.

Room 2226, Park Row Building

NEW YORK CITY, N. Y.

TELEPHONE CONNECTION

PRODUCTS.

Manufacturers of SAFETY BELTS for outside Window Cleaners.

BELTS.

Our Safety Belts for Window Cleaners are all leather, the Life Belt being lined with a metal strip to insure extra strength and will stand a strain of over 3000 pounds.



FIG. 1. SAFETY BELT WITH BOLTS IN WOOD WINDOW FRAME

BOLTS.

The Bolts for Wood Frames are semi-globe head in shape, and when engaged with the Terminal attached to the end of the Life Belt carried by the Window Cleaner, makes a ball and socket joint, automatically locked (Fig. 1), which cannot become disengaged until removed by the operator.

ALL BRONZE ANCHOR BOLTS.

(Figs. 2 and 3)—Made in any requisite shape to fit 4", 8", 12" or 16" reveals. Are non-corrosive; thus preventing any drip of rust to deface the Building. They are placed in the joints of the reveals 51" above the sill and 2" out from the trim of the window frame, by the mason, during the construction of the Building.

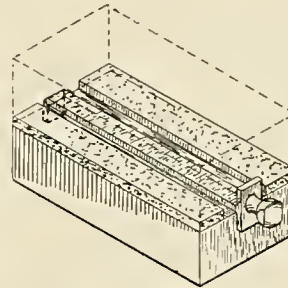


FIG. 2. BRONZE ANCHOR BOLTS For 4 inch Reveal or for Terra Cotta, Marble, Stone, etc.

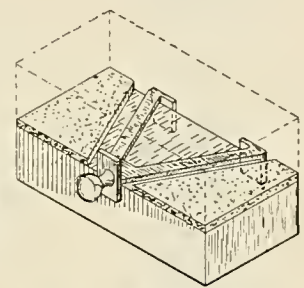


FIG. 3. BRONZE ANCHOR BOLT For 8 inch Reveal

EXPANSION BOLTS.

(Fig. 4)—Are used in Buildings already erected or where there are no joints in reveals. Special Bolts are made for Iron Frames, Mullions, or where the ordinary Bolts cannot be used.

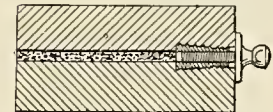


FIG. 4. BRONZE EXPANSION ANCHOR BOLT

REFERENCES.

The Perfect Safety Window Device is endorsed by the leading Architects throughout the country, and the Department of Buildings in New York City, and is installed on buildings throughout Canada and the United States.

Among the many Building equipped by us are:

Trinity Building, New York City, N. Y.
60 Wall Street, New York City, N. Y.
Fuller Building, New York City, N. Y.
Hotel Belmont, New York City, N. Y.
Tiffany Building, New York City, N. Y.
Store, Jos. Lang & Bros., Dallas, Texas.
Mt. Sinai Hospital, New York City, N. Y.
Gouvener Hospital, New York City, N. Y.
Residence of Hy. Phipps, Esq., 88th St. and 5th Ave.,
New York City, N. Y.
Residence of Payne Whitney, Esq., New York
City, N. Y.

Chateau Frontenac, Quebec, Canada.
Beaver Building, New York City, N. Y.
Hotel Astor, New York City, N. Y.
Bank of the Metropolis, New York City, N. Y.
Gorham Building, New York City, N. Y.
Harlem Hospital, New York City, N. Y.
Y. M. C. A. Building, New York City, N. Y.
Residence of Mr. W. K. Vanderbilt, Jr., New York
City, N. Y.
Siegel Store, New York City and Boston.

Office Building in Baltimore, Washington, Pittsburgh, Boston, Albany, Syracuse, Rochester and Buffalo, and Telephone Buildings throughout the United States.

PRICES.

As all our products are installed under various conditions, no two being alike, we can give no stated price, but must estimate on each installation separately. We will be pleased to receive communications from interested architects, and will willingly tender any suggestions that may help. Estimates will be given promptly, and no delay will be made in the delivery or installation of orders.

LOOMIS-MANNING FILTER CO.

MAIN OFFICE, 828 LAND TITLE BUILDING
 BROAD AND CHESTNUT STREETS
 FACTORY, 24TH AND YORK STREETS
 PHILADELPHIA, PA.

25TH ANNIVERSARY

ESTABLISHED 1880

BRANCH OFFICES AND SALESROOMS

NEW YORK, 516 Flatiron (Fuller) Building, 23d Street, Broadway and 5th Avenue
 BOSTON { 440 Exchange Building
 53 State Street
 BALTIMORE { 603 Calvert Building
 Fayette and St. Paul Streets
 WASHINGTON, 306 Colorado Building, 14th and "G" Streets, N. W.

SPECIALTY.

The preparation, purification and cleansing of all water supplies for all purposes, rendering the water bright, clean, harmless, and free from all deleterious matter, color, taste and smell.

THE FILTER.

The Loomis-Manning Filter is the outcome of twenty-five to thirty years' study, practical application, experience and scientific skill.

ITS APPLICATION.

It furnishes pure water for Public Buildings, Hotels, Public and Private Institutions, Hospitals, Clubs, Apartment Houses, Office Buildings, Private Residences, Farms, etc., also for Mills, Dye and Bleach Works, Boiler Plants, Sugar Refineries, Paper Mills, Laundries, Bottling Establishments, Public Water Supplies, etc.

ITS VALUE.

It prevents disease, such as Typhoid, Cholera, Diarrhoea, and other intestinal troubles.

It increases the value of any product where water is used in any way in the process of manufacture.

It conserves the health of all employees, which is a vital question with all employers of labor.

It protects all plumbing, plumbing fixtures, tanks, boilers, brass valves, bibbs, and elevator machinery, and it presents for use at all points, and for all purposes, bright, sparkling, clean water, instead of dirty water, which spoils everything it comes in contact with.

CONSTRUCTION.

The first essential is efficient construction demonstrating its ability to thoroughly cleanse or wash its filtering material or bed; its efficiency and economy depend on this feature, for without it all other features, no matter how valuable are worthless; from this point of view it stands unequalled and unchallenged, as is demonstrated by working glass model.

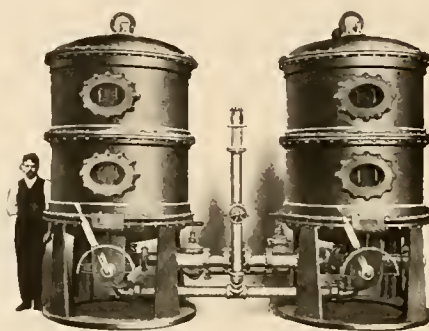
The second essential is substantial construction; its presence presents its own proof on this point and is emphasized by the fact that it costs from three to ten times as much in its construction as any other make. Demonstrated by eight years' service without repairs, Hotel Buckingham, New York City.

The third essential is simplicity in construction. This has been attained in a very high degree through the use of the Loomis Cutting and Confining Plates, and the Manning Single Controlling Valve, for they do away with the antiquated forms, such as rakes and other agitators, and of many valves in the operation of the machine. Demonstrated by working glass model.

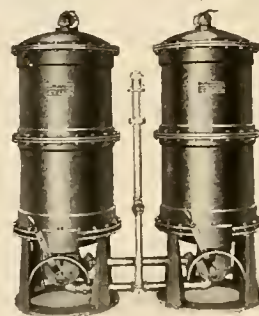
The fourth essential is attractive construction, which is exemplified in the details of its fetching ensemble. Demonstrated by a personal examination.

QUALITY OF MANUFACTURE.

Only the very best materials enter into the construction of the various sizes and styles of the Loomis-Manning Filters, such as Grey Iron Loam Castings, Gun Metal Brasswork and Valves, tinned copper perforated diaphragms, best grades of Galvanized Wrought Iron Pipe, or Seamless Tinned Brass Tube, Galvanized Malleable Iron Fittings, or tinned Red Brass Fittings, etc., etc., and no expense is spared to produce with skilled mechanics an efficient and handsome, as well as practically indestructible machine. Demonstrated by twenty-five years in daily use in the "White House," Washington, D. C.



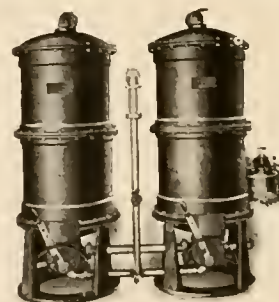
STYLE "SPECIAL." 104 TO 124



STYLE "M." 64 TO 124



STYLE "SPECIAL." 67 TO 127



STYLE "M." 67 TO 127

OPERATION.

The Manning Single Valve controls the operation of the Filter, and by the movement of its operating Lever an eighth of a circle over the plane of its registered dial, any desired action of the Filter may be obtained, such as: *Filtering, Filtering to Waste, Washing Filter Bed or By-Pass.*

GLASS MODEL.

We are the only manufacturers who exhibit by glass model the complete working of a Filter; thereby showing the operation of intercepting the refuse and suspended matter, and producing from the contaminated and unclean current the purified, sparkling stream, also showing the methods of cleaning the Filter; the simplest and most perfect known.

COAGULATION WHEN REQUIRED OR DESIRED.

We control the only method known of feeding Coagulants indirectly in preparing water for filtration. All of our Filters which are designated by the numeral or figure "7" are equipped with either our direct or indirect method of feeding a Coagulant, or both.

CAPACITIES.

From one gallon per minute to as many thousand gallons per minute as the requirements of any supply desired might indicate. Correspondents should state number of gallons desired per minute, per hour, or ten hours or twenty-four hours; also source and average condition, as well as the general characteristics of the water.

STYLES AND SIZES.

Various styles and sizes are on exhibition at our many salesrooms.

PRICES.

Prices furnished upon application. Owing to the great variety of, and the many different conditions which surround water supplies, it is impossible to issue a standard price list, for the same filter which will produce a certain quantity per minute will, under opposite conditions, only produce half that quantity.

SPECIFICATION.

Filter Plants for large supplies should be divided into two or more units, and the number of gallons required per minute, per hour, per ten, twelve or twenty-four hours, for each unit should be clearly given.

ESTIMATES.

We will be pleased to have our Engineers prepare plans and specifications for any desired supply of water or requirement of construction; also estimates for complete Filter Plants, both pressure and gravity systems, large or small, will be promptly furnished.

OFFICES.

We invite every one interested in the subject of filtration to call at any of our Salesrooms and examine the working model.

Competent men in attendance will explain fully our system, and give any desired information. Or, we should be pleased to call by appointment at your residence or office with a glass model filter, and have you see how perfectly it will cleanse itself.

This demonstration requires but from ten to fifteen minutes.

SIZES AND STYLES.

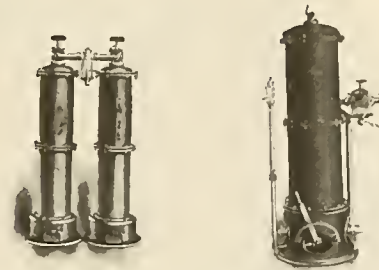
LIST OF SIZES AND STYLES

Size Numbers	Supply Pipe	Capacity Gallons per minute "L" Style "M" Style Each unit style special In Tandem style special	Shipping Weight in pounds "L" Style	Shipping Weight in pounds Style "M" & Style Special
14 or 17	3/4"	1 1/2 to 3	300	600
24 or 27	1"	3 to 6	450	900
34 or 37	1 1/4"	4 to 8	550	1000
44 or 47	1 1/2"	6 to 12	750	1500
54 or 57	2"	8 to 16	950	1800
64 or 67	2 1/2"	11 to 22	1500	3200
74 or 77	3"	15 to 30	1800	3500
84 or 87	3 1/2"	25 to 50	3000	6000
94 or 97	4"	50 to 100	5000	10000
104 or 107	4 1/2"	75 to 150	8000	16000
114 or 117	5"	100 to 200	12000	24000
124 or 127	6"	125 to 250	17000	34000

All Single Cylinder Loomis Filters are designated "Style L."
 All Double Cylinder or Tandem Loomis Filters are designated "Style M."
 All Loomis Filters in Batteries of two cylinders are designated "Style Special."
 All Loomis Filters without Coagulant Feeding Attachment are designated by numbers ending in figure "4."
 All Loomis Filters with Coagulant Feeding Attachment are designated by numbers ending in figure "7."
 All Loomis Filters contain as Filtering Medium Boneblack or Flint, or Quartz or Polarite, or the most efficient combination of those materials.

STOCK.

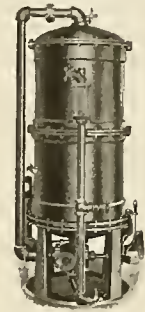
We carry in stock all sizes and styles, ready for immediate delivery or shipment.



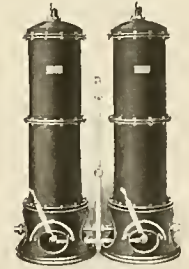
STYLE "M." 14 TO 24 STYLE "L." 37 TO 57



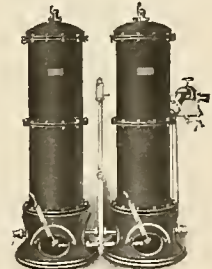
STYLE "L." 67 TO 127



SIDE ELEVATION
67 TO 127



STYLE "M." 34 TO 54



STYLE "M." 37 TO 57

THE PADDOCK WATER FILTER CO.

BUFFALO, NEW YORK.

PRODUCTS.

Manufacturers of the Improved PADDOCK DOUBLE WATER FILTER. Also low-down Single and Double Filters, to fit special cases.

CONSTRUCTION.

This Double Filter is made of cast-iron, and is composed of two complete filters, placed one above the other, and is so constructed that each filter is cleaned with water that has been filtered through the other filter, before passing under the grate of the filter being cleaned. The castings are lined throughout with Portland Cement. The grates are perforated copper-plate, tin-plated and covered with tin-plated copper wire cloth, making rust or corrosion impossible. The joints are lathe-finished and packed with rubber gaskets. The filling is fine river sand, quartz or emery, as various waters may require.

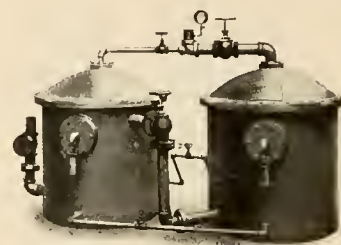
MECHANISM.

By a simple arrangement of valves, each filter is cleaned by a strong *reverse current* of *filtered water* which thoroughly agitates the filling, and carries off at the top all foreign matter, leaving the filling perfectly clean.

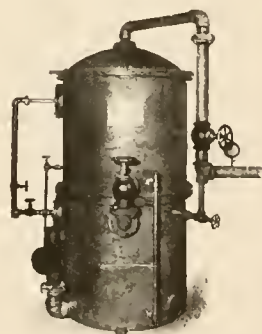
SIZES AND PRICES.

No.	Supply Pipe	Inside Diameter Inches	Gallons per Minute, 35 Lbs. Pressure	Height Over All	Price F. O. B. Buffalo	Shipping Weights Pounds	Cubic Feet
0	3/4"	10	8	5'	\$ 190	600	20
1	1"	13	11	6'	250	900	22
2	1 1/4"	16	14	6'	300	1300	24
3	1 1/2"	19	20	6'	350	1900	30
4	2"	25	30	6' 4"	500	2800	52
5	2 1/2"	32	48	6' 6"	750	4500	74
6	3"	39	70	6' 10"	1000	6500	102
7	4"	52	130	7' 9"	1500	9000	178
8	5"	65	200	8' 9"	2200	12000	288
9	6"	78	290	9' 8"	3000	16000	438

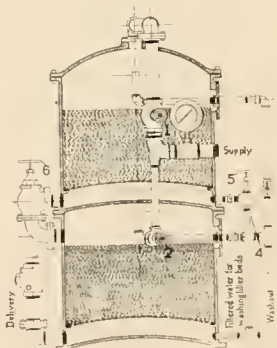
Write for discounts.



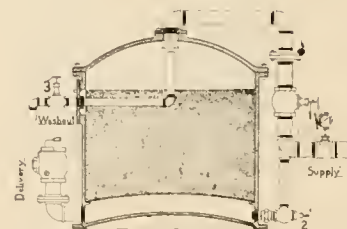
PADDOCK DOUBLE FILTER



THE PADDOCK WATER FILTER, LEFT HAND STYLE



THE PADDOCK WATER FILTER, SECTIONAL VIEW



PADDOCK LOW-DOWN WATER FILTER, SECTIONAL VIEW

REFERENCES.

Some of our customers to whom we can refer are:—

- Mr. Geo. R. Howard, Buffalo, N. Y.
- Mr. Whitney G. Case, Buffalo, N. Y.
- New Y. M. C. A. Building, Buffalo, N. Y.
- U. S. Post-Office, Lockport, N. Y.
- Wm. Keiser & Son, Wilkes-Barre, Pa.
- Mr. S. G. Wright, Fargo, N. D.
- Fox-Mihills Steam Laundry, Cedar Rapids, Ia.

- Mr. E. H. Hutchinson, Buffalo, N. Y.
- Mr. John D. Larkin, Buffalo, N. Y.
- Mr. Charles A. Sult, Lockport, N. Y.
- Mr. Louis Lang, Dye Works, Columbus, O.
- U. S. Arsenal, Rock Island, Ill.
- Columbia Steam Laundry, Laurium, Mich.

THE PHILADELPHIA WATER PURIFICATION CO.

1700 North 12th Street

PHILADELPHIA, PA.

KEYSTONE TELEPHONE

PARK 46-22 A

PRODUCTS. Manufacturers of the HUNGERFORD-ELFRETH PRESSURE and GRAVITY FILTERS.

ADAPTABILITY. Our Filters are without equal for all kinds of filtration, but are especially adapted for use in Hotels, Hospitals, Dwellings, Water Works, etc., owing to their efficiency, simplicity of operation, their durability and the ease and certainty with which they can be operated and the Filter-bed perfectly cleansed.

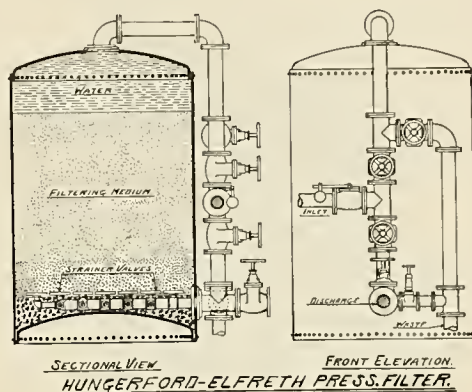
PRESSURE TYPE. All Filters of the Pressure type are inclosed in a heavy steel case tested to 150 lbs. pressure for ordinary conditions. When dealing with very high pressures the strength of the case is proportionally increased.

GRAVITY TYPE. Our Gravity Filters are contained in a heavy cypress wood tank, having round adjustable iron hoops. The water is automatically maintained at a constant level and passes through the Filter by gravity.

FILTER BEDS. The Filter-beds are composed of a specially prepared and indestructible Silica, and whatever other material the special case in hand may require. As we build all our Filters to suit each particular case, you are sure of getting a Filter built especially to do your work. Our Sand or Strainer Valves stand unrivalled as the *only* perfect Filter Valve on the market. The reason for this is, that all other Strainer Valves have stationary, rigid ports, and are consequently constantly clogging up, necessitating the removal of the filtering medium to clean them, and in many cases the replacing of the old filtering medium by new. Our Valves have movable ports, and are therefore not only *absolutely* self-cleansing, but admit several times as much water for washing as they do for filtering. They are protected by Letters Patent, and can only be used in the *Hungerford-Elfreth* Filters. They are manufactured from the best spring brass, and are automatic and self-cleaning in their action. Furthermore, they are so distributed in the Filter as to make each part of the Filter-bed do its full share of the work, and to thoroughly distribute the wash water when washing, thereby insuring a uniform and perfect wash.

COAGULANT CHAMBER AND FEED. The Coagulant Chamber and Feed is a specially constructed and necessary adjunct to the Filter proper, and we are enabled to feed the requisite amount of coagulant at all times without the necessity of continual adjustment.

GUARANTEE. We guarantee that this Filter when operated according to our instructions will deliver at all times the listed quantity of water in a crystal clear condition, free from all color and suspended matter, no matter what condition the raw water may be.



THE NATIONAL FILTER COMPANY

CHICAGO, ILL.

GENERAL OFFICE AND WORKS
DEARBORN AND VAN BUREN STS.
CHICAGO, ILL.

EASTERN OFFICE
603 N. CALVERT ST.
BALTIMORE, MD.

SOUTHERN OFFICE
157 BARONNE ST.
NEW ORLEANS, LA.

WESTERN OFFICE
1221 GRAND AV.
KANSAS CITY, MO.

PRODUCTS.

Manufacturers of NATIONAL STONE FILTERS, NATIONAL COAGULANT FILTERS and NATIONAL DUPLEX FILTERS. We install efficient water filters for every service.

NATIONAL STONE FILTERS.

The most important feature of a filter is the cleansing of the filtering medium. *National Stone Filters* (See Figs. 1 and 2) are equipped with Patented Automatic Cleaners. The filters are cleaned by turning the handle at the top, and opening the waste valve. There is nothing to take apart and nothing to remove.

No chemical whatever is used in connection with these filters.

Any desired amount of water can be obtained by installing the larger sizes in a battery.

TANK INSTALLATION.

We always recommend *Stone Filters* for domestic purposes; and it is desirable to use a *Storage Tank* in connection with them. Figures 3 and 4 show the two methods of installing the filters in connection with a *Storage Tank*; i. e. *Compression Tank Installation* (Fig. 3) and *Open Tank Installation* (Fig. 4). In the former, an air-tight tank is used. The filtered water entering the bottom of the tank compresses the air in the top; when a faucet anywhere is opened, the expansion of the air forces the water out under pressure.

In the *Open Tank Installation* the ball-cock *Storage Tank* is placed in the attic. The ball-cock valve works automatically, shutting the water off when the tank is full, thus preventing overflowing. This system is especially desirable in cities having low and intermittent water pressures.

Note particularly that only one line of piping is used. When convenient to place the *Storage Tank* in the attic, this system is preferable.



FIG. 1. NATIONAL STONE FILTER

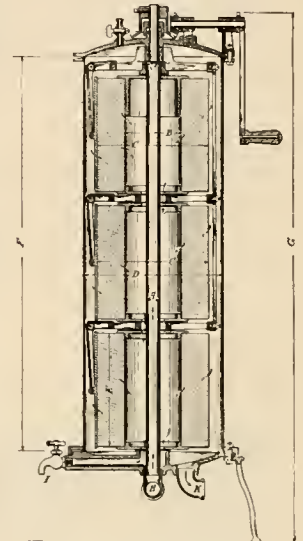


FIG. 2. SECTIONAL VIEW

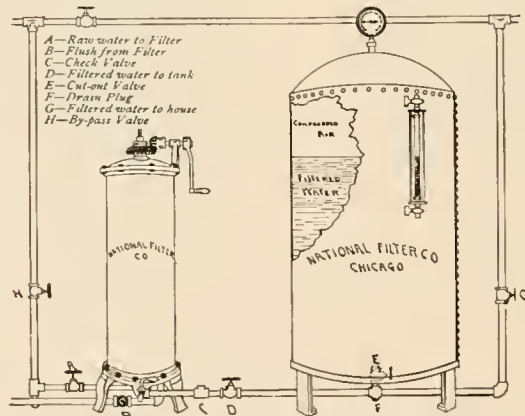


FIG. 3. COMPRESSION TANK INSTALLATION

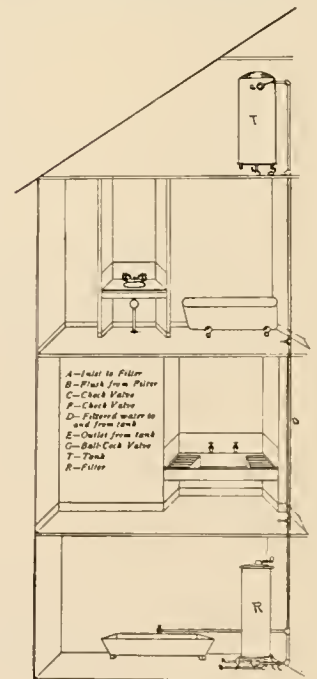


FIG. 4. OPEN TANK INSTALLATION

NATIONAL COAGULANT FILTERS—(Figs. 5 and 6). These are equipped with Combined Settling Basin, or Patented Single Controlling Valve; and Improved Strainers in the bottom. In these Filters the pipe connections will vary according to the water conditions in the different localities. Special sizes made if desired. Standard size guaranteed to stand 100 lbs. working pressure. Filters made to withstand up to 200 lbs. pressure, when desired.

NATIONAL DUPLEX FILTERS—(Fig. 7). In this method of filtration two cylinders are used, the water being double filtered. The special sizes and pipe connections referred to in the Coagulant Filters are the same in the Duplex Filters.

CAPACITIES AND PRICES. NATIONAL STONE FILTERS.

No. Serial	Capacity Per Hour		Dimensions		Connections	
	Lake Water 25 Lbs Pressure	Muddy River Water 25 Lbs. Pressure	Diameter	Height	Supply and Discharge Pipes	Washout Pipe
	Gallons	Gallons	Inches	Inches	Inches	Inches
5	50	7- 14	12	29	$\frac{1}{2}$	$\frac{1}{2}$
6	100	14- 28	12	44	$\frac{3}{4}$	$\frac{3}{4}$
7	150	21- 42	12	57	$\frac{3}{4}$	$\frac{3}{4}$
8	175	30- 45	16	44	$\frac{3}{4}$	1
10	250	50- 75	16	67	1	1 $\frac{1}{4}$
12	325	65-100	16	81	1 $\frac{1}{4}$	1 $\frac{1}{4}$

NATIONAL COAGULANT FILTERS

No. Serial	Capacity 25 Lbs. Pressure		Connections Supply and Discharge Pipes	Height Extreme Height Over All	Space Floor Space
	Per Hour	Per Day 24 Hours			
	Gallons	Gallons			
20	90- 180	1800- 3600	$\frac{3}{4}$	5- 3	1x1 $\frac{1}{2}$
21	125- 275	2400- 5000	$\frac{3}{4}$	5- 6	1 $\frac{1}{2}$ x2
22	150- 325	3000- 7500	$\frac{3}{4}$	5- 6	1 $\frac{1}{2}$ x2
23	250- 500	6000- 12000	1	5- 8	2x2 $\frac{1}{2}$
24	350- 700	8000- 16000	1 $\frac{1}{4}$	5- 9	2 $\frac{1}{2}$ x3
25	500- 1000	12000- 24000	1 $\frac{1}{4}$	5-10	3x3 $\frac{1}{2}$
26	700- 1400	16000- 32000	1 $\frac{1}{2}$	6- 2	3 $\frac{1}{2}$ x4
27	950- 1900	22000- 44000	2	6- 2	4x4
28	1200- 2400	28000- 56000	2	6- 2	4x4 $\frac{1}{2}$
29	1900- 3800	45000- 90000	2 $\frac{1}{2}$	6-10	5x5 $\frac{1}{2}$
30	2800- 5600	70000-135000	3	6-10	6 $\frac{1}{2}$ x7
31	3800- 7600	90000-180000	4	7- 4	8x9
32	5000-10000	120000-240000	5	7- 6	9x10
33	7500-15000	170000-340000	5	7- 6	10x12
34	9000-18000	215000-400000	6	10	10x14
35	12500-25000	300000-600000	6	12	12x15
36	15000-30000	360000-720000	7	10	10x20

NATIONAL DUPLEX FILTERS

No.	Capacity 25 Lbs. Pressure		Connections Supply and Discharge Pipes
	Per Hour Gallons	Per Day, 24 Hrs. Gallons	
40	90- 180	1800- 3600	$\frac{3}{4}$
41	125- 275	2400- 5000	$\frac{3}{4}$
42	150- 325	3000- 7500	$\frac{3}{4}$
43	250- 425	6000- 10000	1
44	350- 600	8000- 14000	1 $\frac{1}{4}$
45	500- 900	12000- 20000	1 $\frac{1}{4}$
46	700- 1400	16000- 32000	1 $\frac{1}{2}$
47	950- 1900	22000- 40000	2
48	1200- 2400	28000- 56000	2
49	1900- 3800	45000- 90000	2 $\frac{1}{2}$
50	2800- 5600	70000-135000	3
51	3800- 7600	90000-180000	4
52	5000-10000	120000-240000	5

SPECIFICATIONS—On receipt of information stating water conditions and local problems, we will prepare drawings and specifications of a filtration plant best suited to meet requirements.

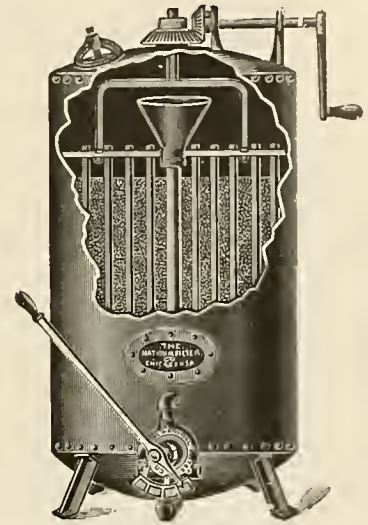


FIG. 5. NATIONAL COAGULANT FILTER Equipped with Single Controlling Valve

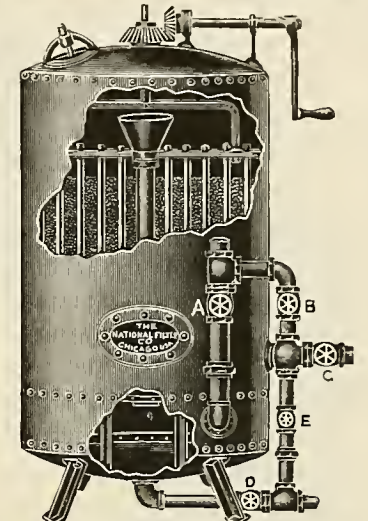


FIG. 6. NATIONAL COAGULANT FILTER With Combined Settling Basin

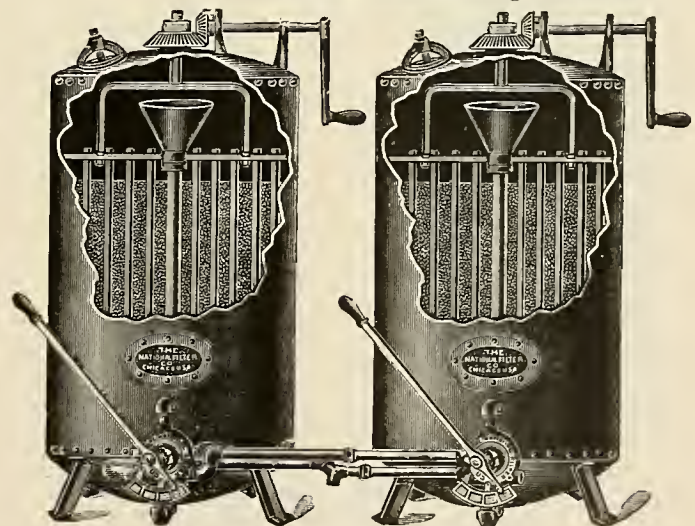


FIG. 7. NATIONAL DUPLEX FILTER Equipped with Single Controlling Valve

ROBERTS MANUFACTURING CO.

Manufacturers of Filters

Flatiron Building, Twenty-third Street and Fifth Avenue

NEW YORK CITY, N. Y.

MAIN OFFICE AND WORKS
PHILADELPHIA, PA.
Cor. 30th and Chestnut Streets

PRODUCTS.

Manufacturers of WATER FILTERS of any capacity, STONE FILTERS, CHARCOAL FILTERS, PRESSURE FILTERS and GRAVITY FILTERS. Contractors for the complete installation of filtration systems for Residences, Hotels, Office Buildings, Hospitals and Public Institutions, all branches of Industry, and for Municipal Work.

FILTERED WATER A NECESSITY.

An adequate and hygienic water supply is the first problem which confronts the Architect, and he cannot satisfy other conditions and requirements unless the water problem is settled first of all. Municipal Engineers have long been aware that the entire water supply of all cities and towns should be filtered before it is turned into the city mains, but City Officials are frequently slow to act, thereby forcing the Architect to specify isolated filter plants for his patrons.

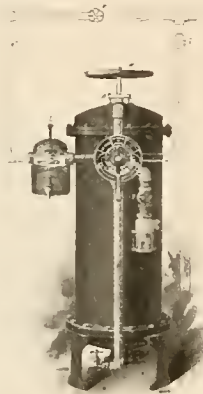


FIG. 1. STYLE D FILTER



FIG. 2. STYLE O FILTER

SMALL FILTERS.

It at once becomes evident that for local service, a large number of very small filters becomes necessary, and, for some demands, they must be very small indeed. To meet this demand, filters have been designed of sufficient size to supply water for a small or large house, and for groups of houses or hotels.

FILTERS.

SCHEDULE OF STYLE D FILTER

No. of Filter	Size of Pipe	Capacity Per Min.	Floor Space	Test Pressure	Shipping Weight
40	¾"	6 Gals.	2' x 2'	50 lbs.	450 lbs.
50	1"	10 Gals.	2½' x 2½'	100 lbs.	2000 lbs.
60	1¼"	14 Gals.	3' x 3'	100 lbs.	525 lbs.
70	1½"	18 Gals.	3' x 3'	100 lbs.	700 lbs.
80	1¾"	22 Gals.	3½' x 3½'	100 lbs.	875 lbs.
90	2"	30 Gals.	3½' x 3½'	100 lbs.	1100 lbs.

MEDIUM FILTERS.

Some buildings demand a water supply ranging from 30 to 150 gallons of water per minute, and for this class, filters described in the following table are designed:

SCHEDULE OF STYLE O FILTER

No. of Filter	Size of Pipe	Capacity Per. Min.	Floor Space	Test Pressure	Shipping Weight
90	2"	30 Gals.	3' x 5'	100 lbs.	3900 lbs.
100	2½"	50 Gals.	4' x 7'	100 lbs.	6150 lbs.
110	3"	70 Gals.	5' x 8'	100 lbs.	9000 lbs.
120	3"	100 Gals.	6' x 8'	100 lbs.	12460 lbs.
130	4"	150 Gals.	6' x 10'	100 lbs.	17385 lbs.

LARGE FILTERS.

For larger supplies of water, special designs of filters will be prepared, based upon the conditions of the service demanded.

CAPACITY.

The Capacities given in the tables are based on Croton water as supplied to New York City. The size of pipe varies according to the water pressure and conditions under which the filters are installed.

REFERENCES.

Our filters are indorsed and used by leading Architects and Physicians. Testimonials and lists of users will be furnished on application. We guarantee to render any water absolutely bright, clear and sparkling, regardless of its turbidity.

CHURCHILL & SPALDING

Durand-Steel Lockers

464-478 Carroll Avenue

CHICAGO, ILL.

PRODUCTS—Manufacturers of LOCKERS. (Durand-Steel.)

ADVANTAGES—The *Durand-Steel* Lockers are made of special sheet and angle steel, finished with a furnace-baked japan comparable to that used on hospital ware, which will never flake off nor require refinishing, as do paints and enamels.

The sides and backs are usually made solid, while the doors are perforated for ventilation. If desired, however, we perforate any or all sides. The Durand Multiple Locking Device fastens the door at several places, making it impossible to spring or pry open the door at top or bottom.

All parts fit accurately together, and are respectively interchangeable. The Lockers are usually shipped "knocked down," and can be quickly assembled by anyone, with the aid of only a wrench and a screw-driver.

COST—Cheaper than a well-made wooden locker, and practically indestructible.

SUPERIORITY—Cage lockers are easily and noiselessly entered with wire cutters, and valuables can be fished through the mesh by means of hooks or bent wires. The *Durand-Steel Lockers cannot* be entered by wire cutters, nor can articles be fished through the perforations.



FIG. 1. DURAND STEEL LOCKER
Double Tier Style

Dust from sweeping, etc., constantly settles on the clothes in cage-lockers. The *Durand-Steel Lockers exclude* dust to the greatest possible extent compatible with proper ventilation, and the perforations are of such size that mice cannot enter.

The *Durand-Steel Lockers* do not resemble animal cages, but with the symmetrical grouping of the perforations, neat workmanship, and the handsome black japan finish, they are distinctly ornamental.

Fire originating in one locker cannot spread to adjoining locker.

REFERENCES—Among recent contracts we have filled are the following: The twenty new Public Gymnasiums of the South Parks of Chicago; Elgin National Watch Company, new factory, Elgin, Ill.; Chicago Edison Company, General Offices and Sub-stations; Commonwealth Electric Company, Chicago; Yale University; Oak Park, Ill., Y. M. C. A.

SIZES	WIDTH	DEPTH	HEIGHT	LEGS	TOTAL HEIGHT (From Floor)
Double	12"	12"	36"	6"	78"
Tier	15"	15"	36"	6"	78"
	12"	12"	42"	3"	87"
Single	12"	12"	60"	6"	66"
Tier	15"	15"	60"	6"	66"
	18"	18"	60"	6"	66"
	12"	12"	72"	6"	78"
	15"	15"	72"	6"	78"

Special sizes made to order. Write for illustrated loose leaf Catalogue.

PRICES—Prices and Estimates will be submitted on request.

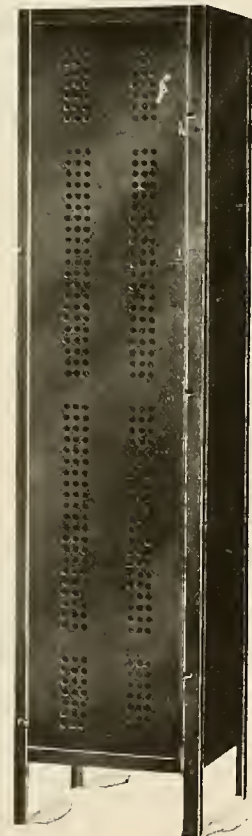


FIG. 2. DURAND STEEL LOCKER
Single Tier Style

NARRAGANSETT MACHINE COMPANY

Outfitters of Gymnasiums

PROVIDENCE, R. I.

PRODUCTS.

We make and install complete equipments for GYMNASIUMS and PLAYGROUNDS, including the GYMNAS TIC APPARATUS, RUNNING TRACK, LOCKERS and BOWLING ALLEYS.

GYMNASIUM CONSTRUCTION.

To furnish information regarding Gymnasium Construction we will send blue prints, showing a section of plan of a typical gymnasium, giving the dimensions desirable for all gymnasiums and methods of constructing the running track gallery, building the concave incline, etc.

ESTIMATES FOR GYMNAS TIC APPARATUS.

On receipt of plans and sections of a gymnasium, we will prepare plans showing the location of each piece of apparatus, or the Running Track, Lockers or Bowling Alleys, with itemized estimate ready for submission to committees, etc.

ESTIMATES FOR PLAYGROUND EQUIPMENT.

We furnish complete estimates for the equipment of Playgrounds or Out-Door Gymnasiums; including either wood or iron frames for the apparatus, swings, etc. If the order for apparatus is placed with us we will furnish plans and specifications for local contractors to build frames. We will contract to erect the apparatus or furnish complete instructions for its erection as desired.

CATALOGUES.

We publish Catalogues of "Gymnasium Apparatus," "Playground Apparatus," "Lockers" and "Bowling Alleys," any or all of which will be cheerfully furnished on request.

SPECIFICATIONS.

The following forms of specifications *for Architects* are used by the United States War Department in equipping Army Post Gymnasiums, and are recommended to Architects to guard against substitution and consequently inferior apparatus:

"Standard" Gymnastic Apparatus as made by the Narragansett Machine Company. "Standard" concave incline Running Track, with either Roberts canvas and felt covering or linoleum covering, as made by the Narragansett Machine Company. Standard Regulation Bowling Alleys as made by the Narragansett Machine Company.



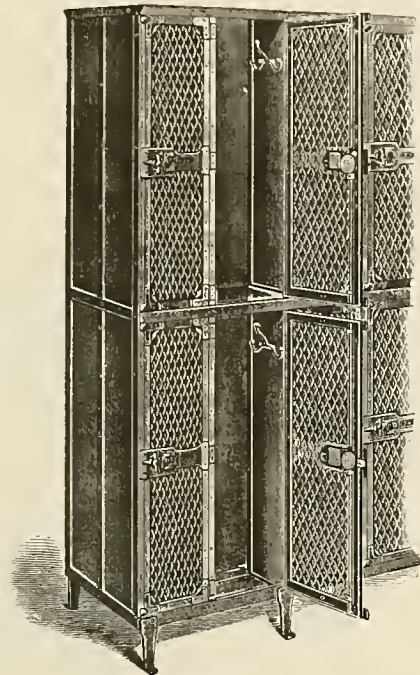
GYMNASIUM OF THE MORRIS HIGH SCHOOL, NEW YORK CITY
Equipped by the Narragansett Machine Co.

LOCKERS.

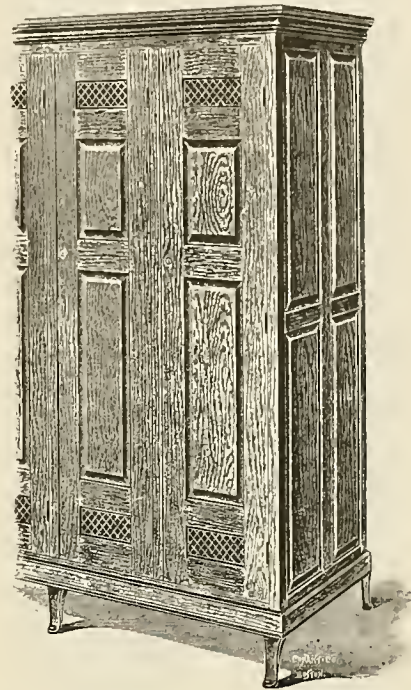
We make lockers of Steel or Wood of standard sizes, with interchangeable parts, and carry them in stock ready for immediate delivery.

We furnish lockers arranged to connect with any system of ventilation, or with adjustable ventilating openings and expanded metal or perforated doors.

Attention is called to the very strong construction of our lockers. The doors have corner and centre plates that form the hinges and stops, which being riveted to the frame make the strongest locker door made. The latch is operated by the T handle, and prevented from turning by the lock.



STEEL LOCKER, TWO TIERS



WOODEN LOCKER, SINGLE TIER

ESTIMATES.

We will submit plans showing the best arrangement of lockers in any given space and give estimates for lockers erected ready for use.

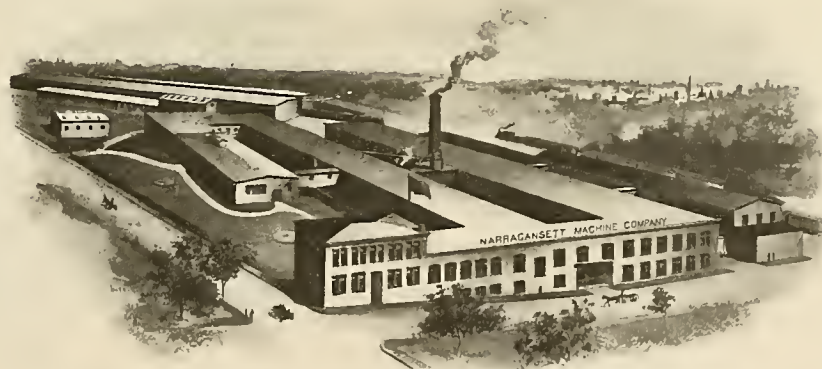
REFERENCES.

We have recently furnished our Steel Lockers to:

- Brown & Sharpe Mfg. Co., Providence, R. I.
- United Shoe Machinery Co., Beverly, Mass.
- Columbia University, New York City, N. Y.
- University of Illinois, Urbana, Ill.

- Sturtevant Blower Co., Hyde Park, Mass.
- Thomas G. Plant Mfg. Co., Boston, Mass.
- University of California, Berkeley, Cal.
- Young Men's Christian Assn., Troy, N. Y.
- Young Men's Christian Assn., Eastern District, Brooklyn, N. Y.

And many others throughout the United States and abroad; references to which we will be glad to give on inquiry.



FACTORY OF THE NARRAGANSETT MACHINE COMPANY, PAWTUCKET, R. I.
Floor Area 80,000 feet. Shed Area 30,000 feet

ECO MAGNETO CLOCK COMPANY

620 Atlantic Avenue

BOSTON, MASS.

BOSTON
TELEPHONE, MAIN 4142

NEW YORK CITY OFFICE
HAVEMEYER BLDG.
TELEPHONE, 4677 CORTLANDT

PRODUCTS.

Manufacturers of the ECO MAGNETO WATCHMAN'S CLOCK.

ENDORSEMENTS.

The *Eco Magneto Watchman's Clock* has been endorsed by all Insurance Boards, and officially entered in the approved list issued by the Underwriters' Laboratories, Chicago.

No other but Magneto type of electric clock is now approved.

ADVANTAGES.

The *Eco Magneto Watchman's Clock* (Fig. 1) is made alone or in combination with a fine Office Regulator. It is placed in the office, and stations are located at such points throughout the building or premises as may be required for the watchman to visit.

These stations are connected with the Recorder by wires, and the rounds of the watchman are accurately recorded, each station in a separate space provided on the paper dial. Any number of watchmen can record at the same time on the same dial, and each man's record be independent of the other.

At each of the stations is placed a small Magneto (Fig. 2), similar to that on a telephone. The watchman carries a crank with him, by which he generates sufficient electricity to operate the Recorder. This method dispenses entirely with a chemical battery, which is, beside the annoyance, a continuous source of expense in replenishing and keeping in working order. With the Magneto System there is no current in the wires, except at the instant the record is being made; consequently, the wire can never be short-circuited or crossed at some convenient point near the Recorder by an unfaithful or indolent watchman.

With a battery system, should the two wires which run to any given station be connected or crossed at any point between that station and the Recorder, the same record would be made as though a man went to the station itself and closed the circuit in the usual way; whereas, with a Magneto system, there being no current in the wires except at the instant the record is being made, this is impossible, and for this reason we claim absolute superiority because a record can be made only at the station.

There is, of course, no comparison be-



FIG. 1. RECORDER IN STANDARD CASE, CLOSED
Dimensions 18 x 14 inches

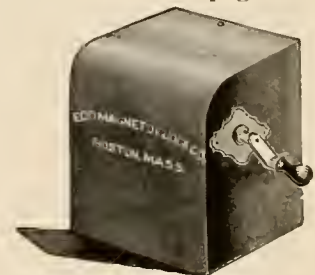


FIG. 2. GENERATOR IN DAMP-PROOF CASE
6 inches high, 4½ inches wide, 3½ inches deep
Also furnished in brass, iron or wood covers or to any special design

tween the Magneto System and mechanical watches or devices of that sort. Plenty of proof is forthcoming where these watches have been opened and the record punched for the entire night, or where they have been carried out of the premises and record made by duplicate keys or other means.

GUARANTEE.

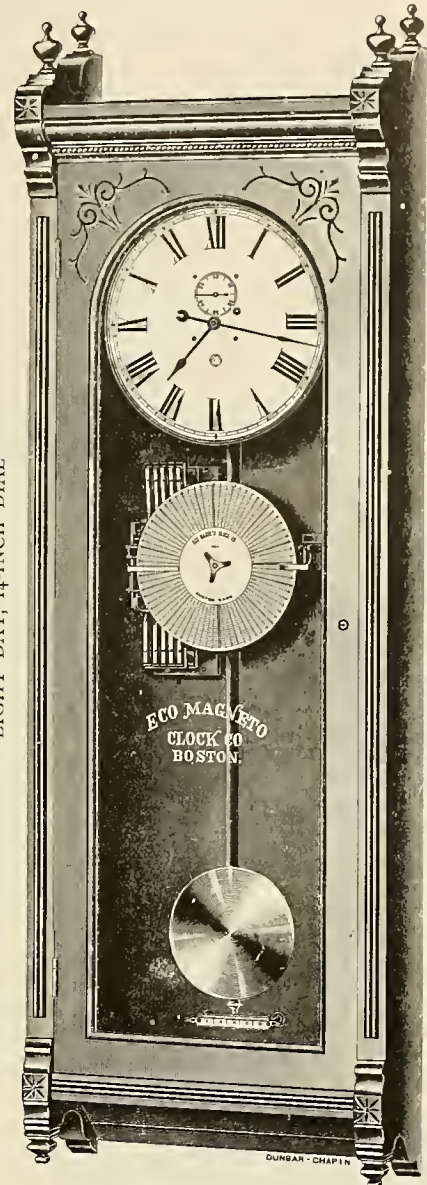
We guarantee all our Magneto Systems to be absolutely without expense for repairs for five years, and as there is always an expense for maintenance of battery systems of from 10 to 25 per cent. of the original cost each year, this item alone will pay for our system in a short time.

STYLES.

We furnish this apparatus in standard case (Fig. 1), which is complete in itself for Watchman's system, or in combination with fine Seth Thomas Office Regulators (Figs. 3 and 4). The cases are made in any finish of wood to match other office furnishings, and are as elegant in finish and design as can be desired. We guarantee Regulators to run closer than one minute per month, and they are in every sense of the word high-grade movements.

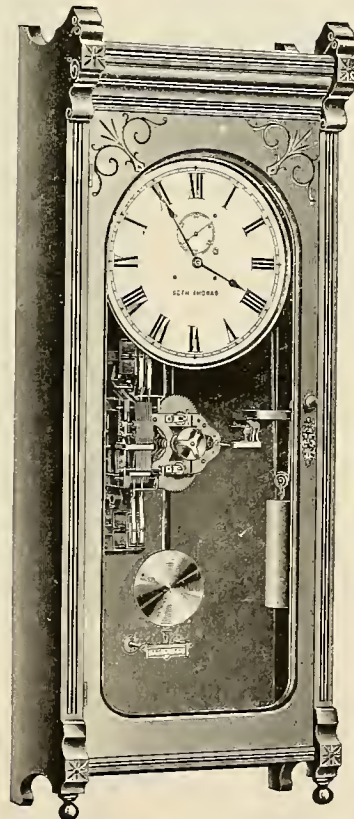
INSTALLATION.

We install our systems complete if required, or any electrical contractor familiar with insurance requirements, as to wiring, etc., can do so. The proper gauge of wire



EIGHT DAY, 14-INCH DIAL

SIXTY BEATS PER MINUTE



EIGHT DAY, 12-INCH DIAL

EIGHTY BEATS PER MINUTE

FIG. 3. RECORDER COMBINED WITH No. 1 OFFICE REGULATOR
70 inches high, 23 inches wide

for indoor work is No. 16, and if encased in iron or brass conduit, should be of rubber covered quality. For open work, weather-proof wire, and for outdoor work, covered iron wire should be used. Mouldings or pipe should protect from a mechanical standpoint, where wires pass down side walls or posts.

Wiring diagrams and full directions for installing will be furnished on request.

Architects should specify "*Eco Magneto Watchman's Clock*, made by the Eco Magneto Clock Company of Boston."

SPECIFICATIONS.

FIG. 4. RECORDER No. 2 COMBINED WITH OFFICE REGULATOR
50 inches high, 20 inches wide

THE E. HOWARD CLOCK CO.

373 Washington Street
BOSTON, MASS.

NEW YORK OFFICE
41 MAIDEN LANE
TELEPHONE, 3148 JOHN

TELEPHONE, MAIN 643

CHICAGO OFFICE
103 STATE STREET
TELEPHONE CONNECTION

PRODUCTS.

Manufacturers of CLOCKS. TOWER CLOCKS, all sizes, with or without striking apparatus, for one or more dials; WATCHMEN'S CLOCKS to record the faithful or unfaithful performance of duty; ELECTRIC CLOCK SYSTEMS for public buildings or municipal use; PROGRAM CLOCKS, for ringing bells at stated periods; MARINE and SHIP BELL CLOCKS; ASTRONOMICAL CLOCKS for Observatories; WESTMINSTER CHIMING CLOCKS; GATE, LODGE and STABLE CLOCKS; SPECIALLY DESIGNED CLOCKS from ARCHITECTS' DRAWINGS; HALL CLOCKS, LIBRARY, SCHOOL, BANK and OFFICE CLOCKS and SIDEWALK and BRACKET CLOCKS.

ADAPTABILITY.

Most of our clocks are made to order as there are no two exactly alike. We have a large factory and the ability to produce all the above at short notice.

SUPERIORITY AND GUARANTEE.

Our clocks are made in the best manner, the wheels being made of hard hammered Brass, the teeth being accurately cut, the arbors and pinions of the best open-hearth steel; the escapements are the Graham Dead Beat or the Denison Gravity. We warrant our clocks to be first-class in every respect and free from all original defects for five years.

WHERE USED.

Thousands of our Clocks are in use all over the United States, in municipal, public and private buildings. We supplied Geo. W. Vanderbilt's Maasion at Biltmore with a Tower Clock and twenty-two secondary Electric Clocks; The Prudential Insurance Company's Building, Newark, N. J., with a Master Clock and thirty-six secondary Electric Clocks; the Lick Observatory's Astronomical Regulator; the New York Life Insurance Company's Building, New York, with a four-dial Tower Clock, and with secondary Electric Clocks throughout the Building; the Union Depot and Ferry House, San Francisco, with the largest four-dial Tower Clock in the United States, etc.

INSTALLATION.

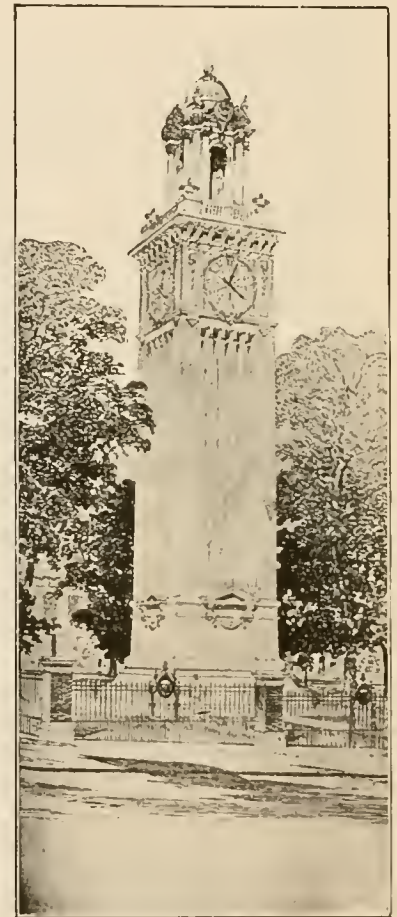
We prefer putting up our own Clocks, and send an experienced person to superintend and assist in performing that work. We will contract for the Clocks delivered and put up, if desired. We can, however, furnish instructions for installation by means of which any competent mechanic can do the work.

AS TIME- KEEPERS.

Our Clocks do not vary more than twenty to thirty seconds per month. A first-class clock if properly made will last fifty years with little or no expense. There is one of our make in the City Hall in Toronto, Canada, that has been running nearly sixty years, and it is apparently as fine a timepiece as ever.

PRICES.

Before we can make an intelligent estimate of the cost of a Tower Clock, it is necessary to fill out a question blank which any of our offices will supply on application. Prices on other clocks will be cheerfully furnished on request; we are unable to quote any prices here, as too many of our clocks are special productions, made to fit certain conditions and requirements.



MEMORIAL CLOCK

This Clock was furnished by us for Brown University, Providence, R. I. Guy Lowell, Architect.

MENEELY BELL COMPANY

177 Broadway
NEW YORK CITY

22 River Street
TROY, N. Y.

PRODUCTS—Manufacturers of BELLS—CHURCH, CHIME, PEAL, SCHOOL, TOWER CLOCK and other BELLS.

INSTALLATION—Our bells can be installed by local workmen, or we will undertake the erection of same in any part of the country.

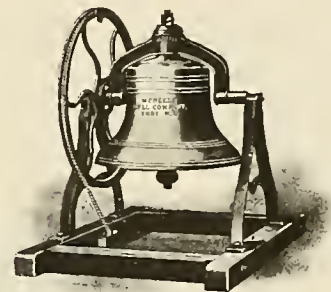
ILLUSTRATIONS—We herewith give illustrations of a few of the principal Bells that we manufacture.



CHURCH BELL



TOWER CLOCK BELL



SCHOOL BELL



PEAL BELLS



CHIME BELLS

SUGGESTIONS FOR THE CONSTRUCTION OF BELFRIES:

Place bell deck level with the window sills, and a wooden ceiling at window tops. Have windows as large and open as possible.

Make suitable provisions for admission of bell. Suburban churches sometimes procure bells measuring 4 or 5 feet across the mouth.

The height of a bell is seven-eighths of the diameter at its mouth.

The average full chime of bells weighs, with its frame-work, from five to ten tons, and occupies a space from 10 to 12 feet square, although, if the occasion demands, it is possible to get along with even less room.

Write us for more detailed information.

PORTAL BED COMPANY

1112 Railway Exchange Bldg.
MILWAUKEE, WIS.

TELEPHONE CONNECTION

- PRODUCTS.** Manufacturers of the PORTAL BED and other household space-saving devices.
- INSTALLATION.** Our beds can be installed by any contractor or local workman. We furnish working plans and details.
- REFERENCES.** We will furnish references to architects and owners of flats, hotels, fire-engine houses, bachelor apartments, dormitories, hospitals and residences, in which we have placed the Portal Bed.
- GUARANTEE.** The Portal Bed is tested and guaranteed in material and workmanship to last as long as the building in which it is placed.
- THE PORTAL BED—ITS ADVANTAGES. SPACE REQUIRED. COMFORT.** As the cuts show, "A parlor in the day-time, a bedroom at night," suggests just what advantage is secured by use of the Portal Bed. Requiring but nineteen inches of wall-space, it saves all space usually taken up by the ordinary bed, thus practically adding one room to the house. Double-woven, close fabric supporting springs secure perfect comfort.



"THE PORTAL" (Closed)
"A Parlor in the Day-time"



"THE PORTAL" (Open)
"A Bedroom at Night"

- SANITARY.** Iron frame, flush joints, simple construction—"easy to get at"—insures cleanliness and absolutely sanitary conditions.
- CONVENIENCE.** It is convenient because it is always ready, and is operated as easily as opening and closing a door. Being perfectly counterbalanced and automatically locked, it is safe from any possibility of accidental opening or closing. It is thoroughly ventilated.
- SAFETY.**
- ADAPTATION.** The Portal Bed can be used in any place where sleeping quarters are desired with economy of space.
- STYLE AND FINISH.** The bed proper is exceptionally made, and can be had in any pattern and degree of ornamentation. A handsome mirror, a rich mantel, a beautiful console, panel front or special design may be ordered to match the room in which the bed is to be located.
- The Portal Bed has accomplished what has been the aim of innumerable devices in space-saving sleeping accommodations.

ATTRACTIVE-
NESS.

There have been upon the market all sorts of constructions, which have fallen short of the needs for one reason or another. They have been heavy, clumsy, unsanitary, uncomfortable, unsightly or dangerous; or they have occupied too much space. The Portal Bed has none of these faults. It is the result of careful, persistent study and the combination of all the good ideas which have developed from many brains, with certain entirely new features illustrated herewith. In perfect concealment of all signs of utility and in attainment of real beauty of ornament and design, the Portal Bed so far excels anything of its kind ever before constructed as to be in a class by itself.

We will send a man to see you, if you desire, or will furnish any additional information needed. Prompt and careful attention is given to all correspondence, and the accurate and satisfactory filling of orders guaranteed.

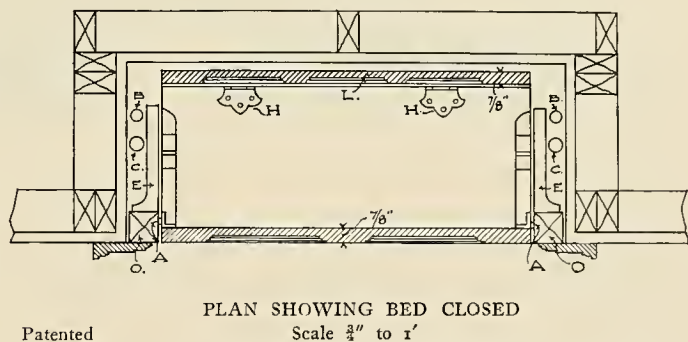
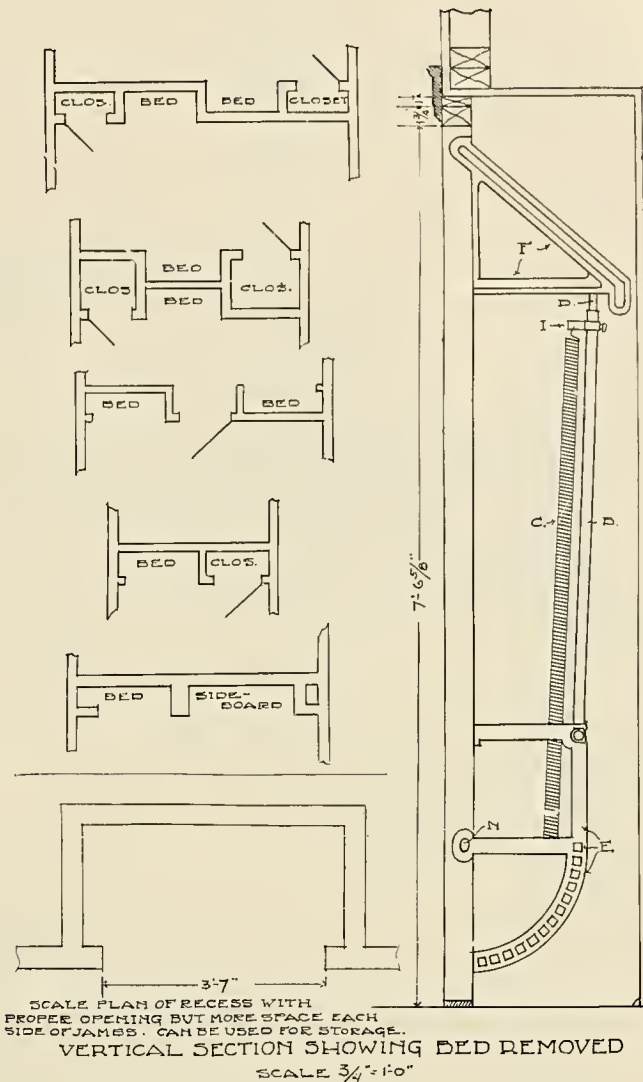
We append scale plans showing possible arrangements where installing the Portal Bed.

ESTIMATES.

On receipt of blue prints or sketches, we stand ready to make suggestions for the adoption of the Portal System to buildings already completed or in the course of construction. Orders may be placed direct with us.

PRICES.

Prices are according to style, finish, degree of ornamentation, etc. Sent upon request, when accompanied by above data.



Patented

PLAN SHOWING BED CLOSED
Scale 3/4" to 1'

THE AMERICAN SANITARY STALL SYSTEM

Sanitary Stables

MINNEAPOLIS, MINN.

S. F. LINDSTAM
Inventor

PRODUCTS. The AMERICAN SANITARY STALL SYSTEM FOR STABLES.

SANITARY
HORSE STABLES.

Through this Invention it is possible to keep a stable absolutely free from all Ammonia Gases and all other obnoxious and injurious gases and liquids. It is the only Perfect Sanitary Stall System in the world.

THE AMERICAN
SANITARY STALL
SYSTEM.

No matter how costly and ornamental a stable is, if the best sanitary arrangements are not installed, the building will be faulty; therefore provision should be made for perfect drainage and ventilation, which is effected by our system.

Fig. 1 is a perspective view, showing construction of the sanitary work in accordance with this system. The engraving also shows how different materials can be used

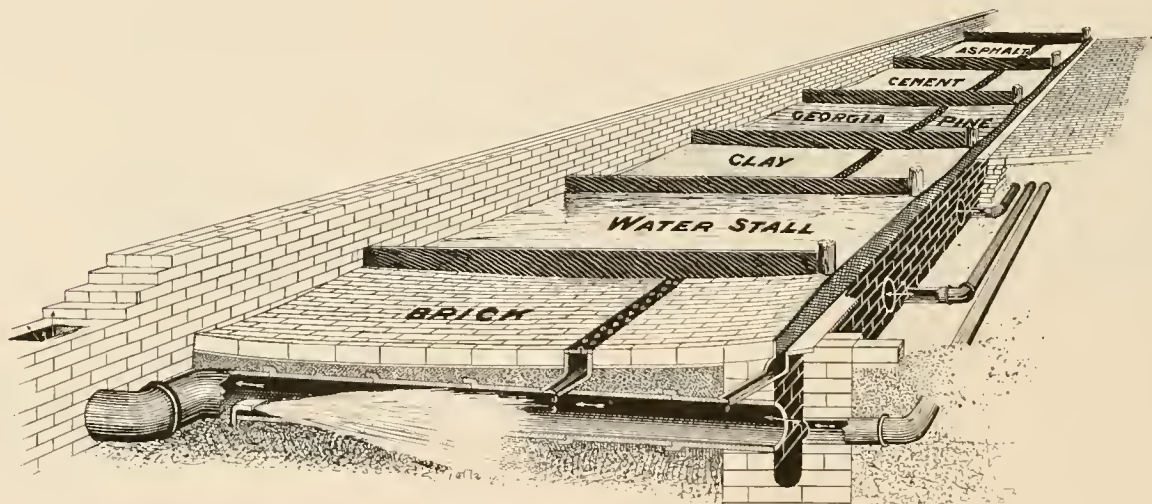


FIG. 1. THE AMERICAN SANITARY STALL
Showing Construction

for the flooring of the stable, such as clay, brick, asphalt, granolithic, wood or the like. It may be added that these stalls are the only ones where a clay facing can be used with any satisfaction.

An idea of the operation of this system may be obtained from Fig. 2, which is a longitudinal section taken through one of the stalls to show the means for draining, flushing and ventilating, beneath the horses. It also shows a longitudinal section taken centrally through one of the partitions between the stalls, showing our method of heating.

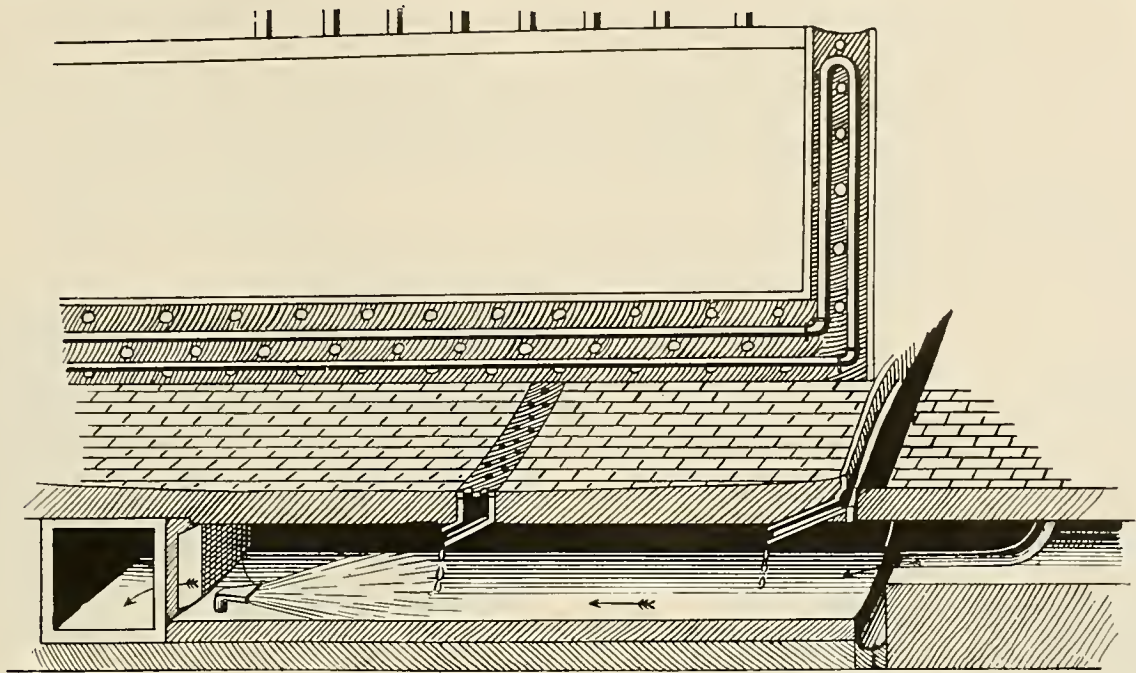


FIG. 2. THE AMERICAN SANITARY STALL
Showing Operation

Fig. 3 is a perspective view of the cess-pool casing and cover which is located in the stalls, as shown in Fig. 2, and which communicates with the longitudinal draining gutter beneath the floor. Owing to the rapid drain through these casings, ninety-eight per cent. of the urine is discharged from the stall floor into the air chamber before the animal has finished urinating, and the gases from the urine are at once caught by the continuous current of fresh air and made to move forward through the ventilating flues to the top of the building, where all injurious gases are liberated. The liquid is made to move in the opposite direction, towards the sewer, as will be seen by the engravings.

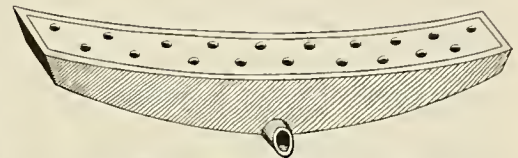


FIG. 3. PERSPECTIVE VIEW OF THE CESS-POOL CASING

WATER OR SOAKING STALLS.

In connection with this system, a water or soaking stall can be constructed, which is of great value, as the horse's feet can be given better care, in less time, and with much more convenience than heretofore known. The water in the soaking stall can be kept at any desired temperature or depth, or the substance in the bottom of the stall can be barely moistened, as may be found necessary.

SPECIFICATION AND CONSTRUCTION.

This system is installed complete in stables, under our own supervision, and turned over to the Architect or owner in a most complete manner. The Architect who desires a perfect sanitary stable should write the "American Sanitary Stall System" in his specifications, outlining a rough diagram, showing size of stable room, number and size of stalls, stating the kind of material to be used for the floors of stall rooms and stalls; also stating if there is a basement under the stable. The diagram and description should be mailed to us; we will then mail the Architect a full specification and a statement of the cost of installing our system.

All contracts figured in this way include everything in the stable complete, such as sewage, flushing, ventilation, all sanitary castings, with the entire floors in stalls and

floor space behind the horses, also 4" cast-iron partition base and post sockets for the wood partitions to be set into.

We also finish up all partition work if the Architect specifies the kind of wood and partition guard desired. No other drawings than those mentioned will be required from the Architect. The time necessary will vary from fifteen to thirty days, according to the size of the contract.

REFERENCES.

The following illustrations show The American Sanitary Stall System installed in private stables, also in Fire Department Engine Houses.

THE HARRINGTON STABLE.

Fig. 4 is an interior view of a portion of the carriage horse stable of Mr. C. M. Harrington, Minneapolis, Minn. This stable was designed by Messrs. Kees & Colburn, Architects, Minneapolis, Minn., and contains several stalls fully equipped.



FIG. 4. STABLE OF MR. C. M. HARRINGTON, MINNEAPOLIS, MINN.

THE LAMB STABLES AND PEAVEY STABLES.

Fig. 5 is a portion of the stable of Mr. C. R. Lamb, Minneapolis Minn., Mr. R. B. Cooper, Architect, of the same city.



FIG. 5. STABLE OF MR. C. R. LAMB, MINNEAPOLIS, MINN.

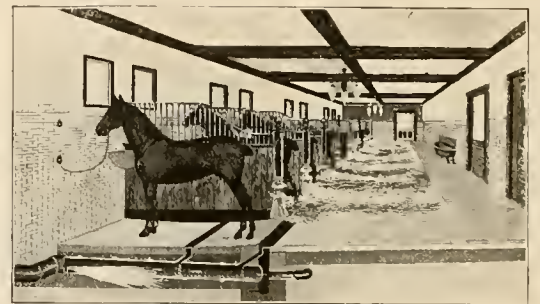


FIG. 6. STABLE OF MR. GEORGE PEAVEY, MINNEAPOLIS, MINN.

Fig. 6 is a portion of the carriage horse stable designed by Mr. Wm. Channing Whitney, Minneapolis, Minn., for Mr. George Peavey, of the same city.

FIRE STATION STABLES.

Figs. 7 and 8 represent portions of Engine house stables equipped with American Sanitary Stalls. Fig. 7 is a portion of a stable at Station A, of the Minneapolis Fire Department, the Architects were F. B. & L. L. Long of that city. We have equipped twelve of the Fire Stations in Minneapolis, with 127 stalls.



FIG. 7. ENGINE HOUSE, STATION A, MINNEAPOLIS FIRE DEPARTMENT



FIG. 8. ENGINE HOUSE, No. 12, OMAHA, NEB.

Fig. 8 shows a portion of Fire Engine House No. 12, Omaha, Nebraska, where two stations are equipped with 21 sanitary stalls; Mr. W. T. Misener, Architect, same city.

THE VEHICLE SPECIALTY COMPANY

Overhead Vehicle Washers

HARTFORD, CONN.

OFFICE, 26 STATE STREET
FACTORY, 32 UNION PLACE

Pres. and Mgr., L. E. RHODES
Sec. and Treas. W. D. JOHNSON

PRODUCTS—We manufacture OVERHEAD VEHICLE WASHERS—a necessary fixture for all Stables or Automobile Garages.

DESCRIPTION—A glance at the illustrations will immediately show what our Overhead Vehicle Washer is. It is made in two varieties, one plain and the other with an illuminating attachment. This is shown in Figure 1. The whole device is secured to the ceiling. It is composed essentially of a support, and a rotating member. To the end of this member is attached the hose, so that the man using the Washer can have free movement to walk about the vehicle while cleaning it. There are only ten feet of hose required.

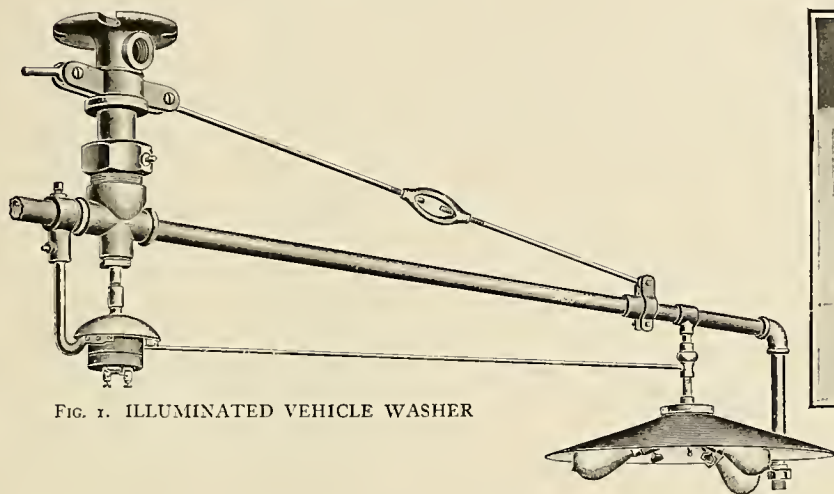


FIG. 1. ILLUMINATED VEHICLE WASHER

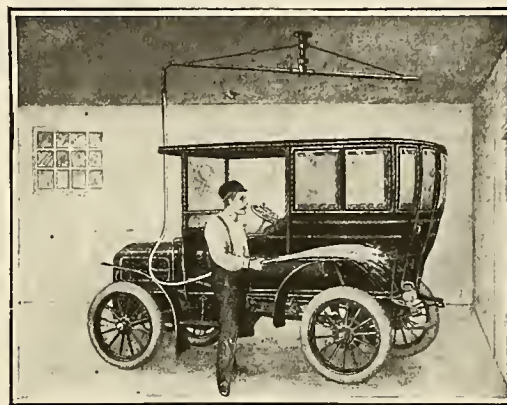


FIG. 2. EXCELSIOR WASHER

ADVANTAGES—The advantages of this device are so obvious that we will merely outline a few of them. In the first place, the hose is always ready for use; it does not get in the way to be trodden upon or run over, but is kept dry, and will therefore last for years. Its use soon saves the cost of the Washer. A man can wash a vehicle better and in one-quarter of the time. No grit sticks to the hose, and this prevents fine carriages from becoming scratched. It is practically a necessity for all owners of a horse or motor carriage, and is especially valuable for washing automobiles.

The illuminating device is very useful for washing carriages at night or in dark places. It throws the light right down on the parts being washed.

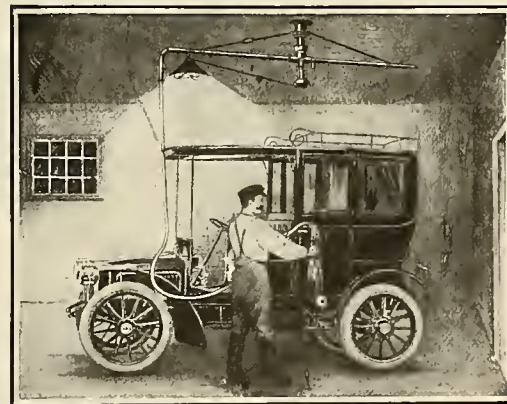


FIG. 3. SUPERIOR WASHER

PRICES—Our Washers with the illuminating device are called "Superior No. 1" for gas, and "Superior No. 2" for electric light. Each costs \$45.00 f.o.b. Hartford, Conn.

Our "Excelsior" Washer (without illuminating device) costs \$20.00 f.o.b. Hartford, Conn.

W. W. SCHOULER

Schouler's Patent Sanitary Stall Floor, Door Guide, Weather Strip for Sliding Doors, etc.

45 Clinton Street

NEWARK, N. J.

TELEPHONE, 11872 NEWARK

DOCK, EAST NEWARK, N. J.

PRODUCTS.

SCHOULER'S PATENT SANITARY STALL FLOOR.

SCHOULER'S PATENT DOOR GUIDE and WEATHER STRIP for SLIDING DOORS.

CONCRETE and CEMENT SIDEWALKS and FLOORS for STABLES, BARNs, FACTORIES, etc.

SANITARY STALL FLOOR.

This system is designed for use in connection with concrete or artificial stone floors. It consists of a series of wooden slats with spaces between, held in position by a patent slat holder. The spaces between the slats are wholly unobstructed by bolts or otherwise, thus giving a free passage for liquids. The slat holders consist of two iron bars imbedded in the floor crosswise, at the head and foot of the stall, each having a row of hooks. These hooks point toward the head of the stall; the slats are fitted with a device on the under side, are placed on the hooks, drawn back and held firmly in place by a locking bar at the head of the stall. An open gutter can be used with a 10-foot stall if desired, but with a 9-foot stall a covered one is preferable. The details are shown in Figure 1.

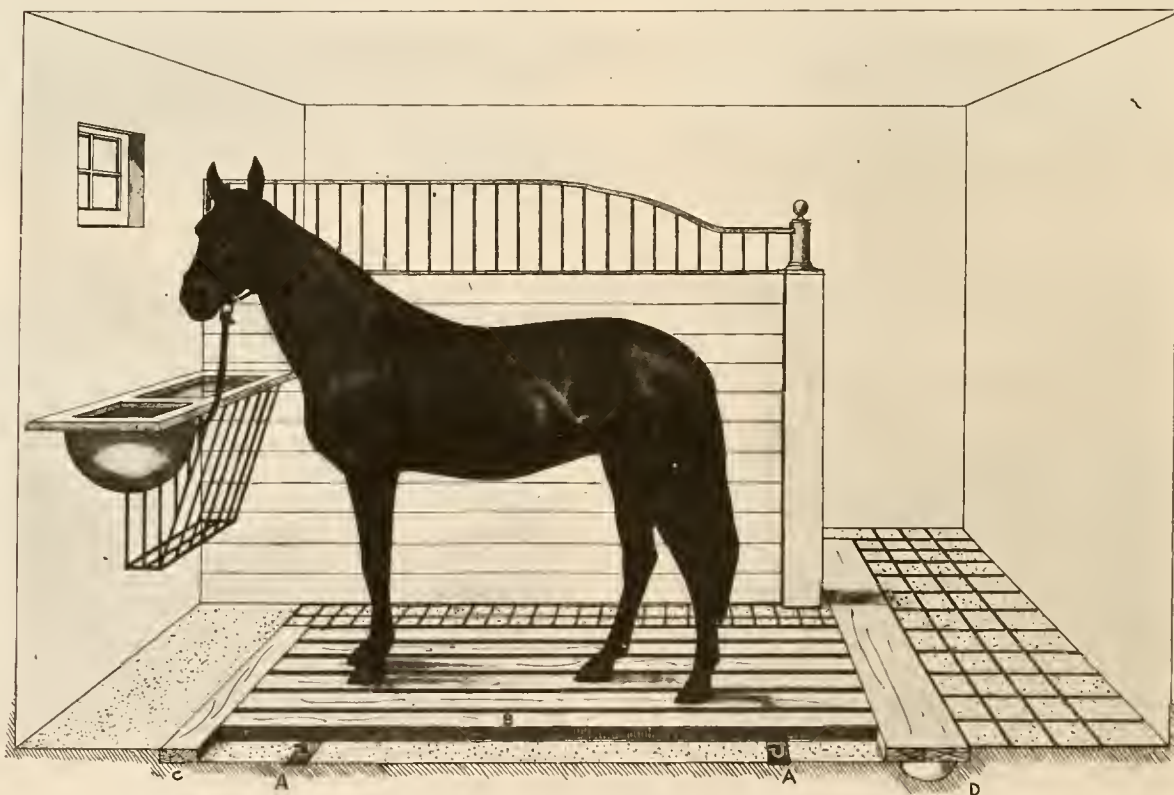


Fig. 1. SCHOULER'S PATENT SANITARY STALL FLOOR

A A, Slat Holders; B, second slat, the first being removed; C, Locking Bar; D, Gutter

Sanitary conditions are more completely assured by this system than by any other. Its economy is unchallenged, both in first cost and in maintenance. The slats being interchangeable, they may be so altered in position as to avoid undue wear on the centre ones.

Price per set F. O. B., Newark: For single stalls, \$10; for box stalls, \$20. These are standard sizes, 7x3 feet, and are kept in stock. Special sizes can be made to order in about ten days. Sets may be ordered direct or through local contractors. Yellow pine is used in regular sets; maple or spruce to order.

SLIDING DOOR
GUIDE AND
WEATHER
STRIP.

This consists of a steel groove imbedded in the floor flush with the surface, in which slides a thin steel plate attached to the bottom of the door. The groove acts as a guide, and the door, sliding smoothly, is kept in place on the overhead track. The door may be hung clear of the sill, to avoid possible obstruction, without danger of wind, rain, snow or dust penetrating the building, as the steel plate acts as a weather strip and effectually closes the space. (See Figure 2.) The opening in the guide runs entirely through to the seepage bed below, thus carrying away all the water.

This device is invaluable in barns, stables, factories, freight stations, and wherever sliding doors are used. It is adapted to any size door and in connection with flooring of concrete, asphalt, brick or wood. It is the only successful appliance for the purpose. It can be installed by any competent workman.

Price F. O. B. Newark, \$1.00 per lineal foot.

REFERENCES.

We refer to the following persons (and many others) who are using Schouler's patent devices:

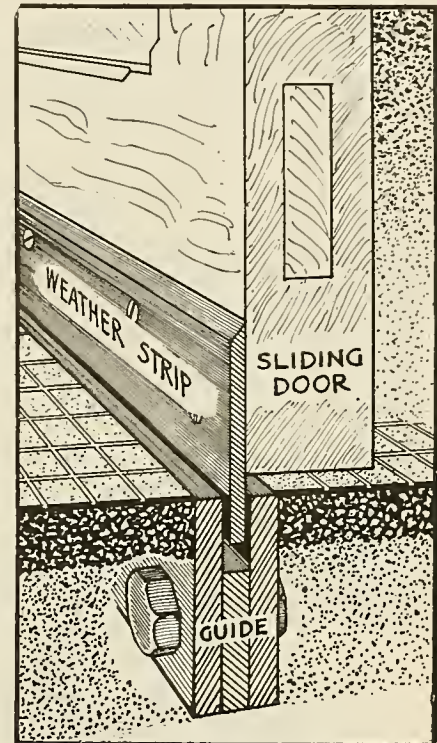


FIG. 2. SCHOULER'S PATENT SLIDING-DOOR GUIDE AND WEATHER STRIP

OWNERS

- F. W. VANDERBILT
- R. VAN CORTLANDT
- R. C. LOUNSBURY
- JAS. E. SPEYER
- J. C. COLGATE
- H. MCK. TWOMBLY
- PERCY R. PYNE
- U. S. NAVAL ACADEMY
- W. D. GUTHRIE
- C. G. GATES
- (PRIVATE STABLE)
- PAUL D. CRAVATH
- JOHN F. DRYDEN
- WM. H. BALDWIN (the late residence of)
- CHAS. HEAD
- N. PLAINFIELD FIRE HEADQUARTERS
- MEADOW BROOK STABLE
- HUGH KINNARD
- NEWARK CITY STABLES

LOCATION

- Hyde Park, N. Y.
- Mt. Kisco, N. Y.
- Bedford, N. Y.
- Ossining, N. Y.
- Bennington, Vt.
- Madison, N. J.
- Bernardsville, N. J.
- Annapolis, Md.
- Locust Valley, L. I.
- 105 East 74th Street, N. Y. City
- Locust Valley, L. I.
- Bernardsville, N. J.
- Locust Valley, L. I.
- Manchester-by-the-Sea, Mass.
- N. Plainfield, N. J.
- Newark, N. J.
- Madison, N. J.
- Newark, N. J.

ARCHITECTS

- BURNET & HOPKINS, New York City.
- BURNET & HOPKINS, New York City.
- BURNET & HOPKINS, New York City.
- BURNET & HOPKINS, New York City.
- BURNET & HOPKINS, New York City.
- BURNET & HOPKINS, New York City.
- BURNET & HOPKINS, New York City.
- BURNET & HOPKINS, New York City.
- C. P. H. GILBERT, New York City.
- CHAS. A. RICH, New York City.
- BABB, COOK & WILLARD, New York City.
- GEORGE B. POST, New York City.
- B. L. GILBERT, New York City.
- H. D. HALE, Boston, Mass.
- CHAS. W. SMITH, Plainfield, N. J.
- T. C. HUGHES, Newark, N. J.
- R. BOTTELLI, Newark, N. J.
- THOS. CRESSY, Newark, N. J.

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PERSONALLY CONDUCTED MANUFACTURING.

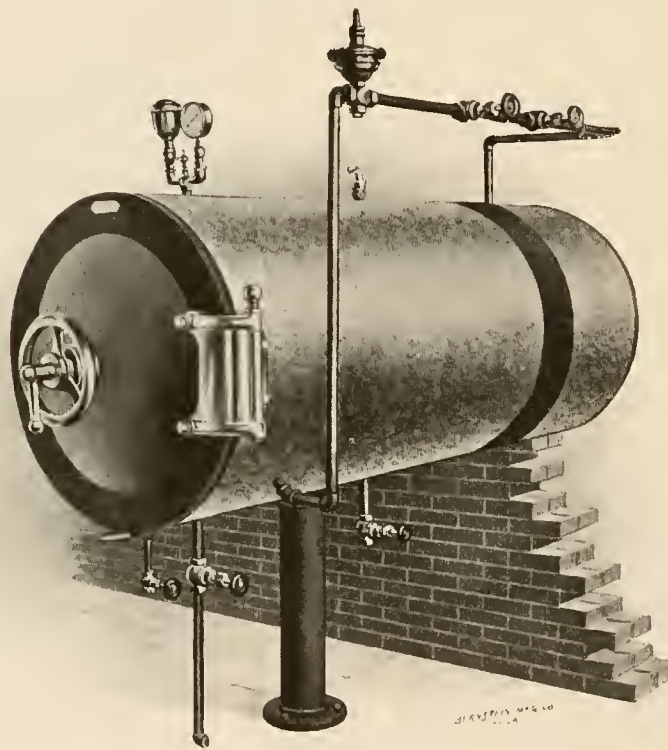
We manufacture our entire product, from the foundation up, in our own Factories, under personal supervision. Our facilities, which are second to none, enable us to execute the largest contracts with promptness and to give equal care to the smallest orders.

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We furnish, when desired, blue prints arranged from Architects' designs, including drawings for the necessary plumbing and steam connections for the placing of Sterilizers, Disinfectors and other permanent fixtures.

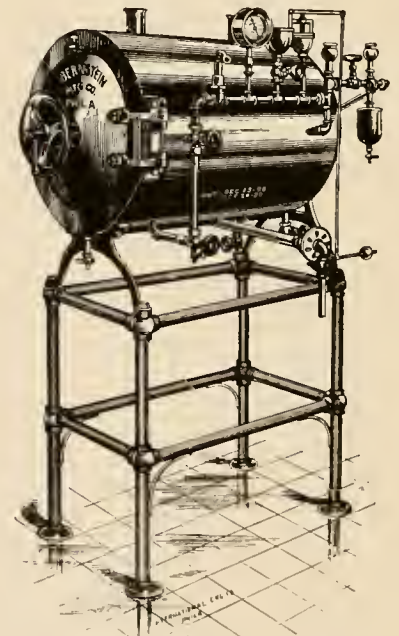
ASEPTIC HOSPITAL SUPPLIES.

We give particular attention to the execution of specially designed Aseptic Hospital Supplies of every description, to meet individual requirements. Our line has been on the market for 25 years, and large quantities of our specialties are in use in many of the prominent Hospitals and Institutions throughout the country, a list of which we will furnish upon application.



THE BERNSTEIN DISINFECTOR

The above illustrates "The Bernstein" latest improved circular Disinfector for the disinfection of bedding under steam pressure in connection with Formalin and Ammonia



SURGICAL DRESSING STERILIZER

Above illustrates "The Bernstein Par Excellence Dressing Sterilizer" for the perfect sterilization of Surgical Dressings under steam pressure

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Architects will feel secure in serving the best interests of their clients by specifying, "supplies to be furnished by The Bernstein Manufacturing Company, Philadelphia, Pa.," when writing specifications for Hospital and Institution buildings.

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WALNUT STREET POTTERY
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GARDEN VASES, STATUARY, FOUNTAINS, BALUSTRADES, RAILINGS, TAZZAS, HERMES, SUN-DIALS, FLOWER-BOXES, ITALIAN FLOWER-POTS, etc.



EXHIBIT AT ST. LOUIS EXPOSITION

Awarded the Grand Prize

St. Louis, U. S. A., September 3d, 1904

Copy of Report of Jurors

“A very extensive and elegant exhibit, showing superior workmanship and great beauty of designs, particularly in Antique, Grecian, Pompeian and Oriental examples, and correct as to cultural advantages.

“It would be difficult to praise this exhibit too highly. Worthy of the Grand Prize.”

“With congratulations of the entire jury.”

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 Group Juror, Washington, D.C.

- M. de VILMORIN, France
- I. VACHEROT, France
- ABEL CHATMAY, France
- WM. A. TAYLOR, Washington, D.C.
- S. R. TAFT, Michigan
- WM. R. SMITH, Washington, D.C.
- FRANK A. KIMBALL
- ROBERT CRAIG, Pennsylvania

Department
 Jurors

Illustrations on Application

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Greenhouse Architects and Builders, Heating Engineers

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PRODUCTS AND SERVICES.

BOILERS.

ARCHITECTS, MANUFACTURERS and BUILDERS of GREENHOUSES; HEATING APPARATUS; VENTILATING APPARATUS for GREENHOUSES, FACTORIES, SHOPS, WARE-ROOMS, STORE BUILDINGS, etc.

The Burnham Sectional Boiler (Fig. 1) for steam or hot water, for heating Residences, Office Buildings, etc., is made in sections with nipple joints and individual bolt tie-ups. They are easy to erect and easy to repair. They have large Combustion Chambers and greatly increased active fire surfaces for every square foot of grate. The fire travels the length of the boiler three times. The Grates used are of the anti-clinker, shaking and dumping type.

Sizes: Water Boilers from 675 to 16,500 cubic feet; Steam Boilers from 400 to 700 cubic feet.

The Burnham Round Boiler (Fig. 2) for steam or hot water, is designed for comparatively small heating plants in greenhouses, conservatories, private residences, etc., where sectional boilers would be too large and expensive.

The boiler above the base is cast in one piece, doing away with joints of any description to rust out or leak. Also making it easy of installation.

The fire surface consists chiefly of a series of arms and a central way, all having an upward rise from the sides to this central waterway, which extends from the lower tier of arms to the top of the boiler; by this arrangement the minimum amount of friction is maintained, insuring a rapid and perfect circulation.

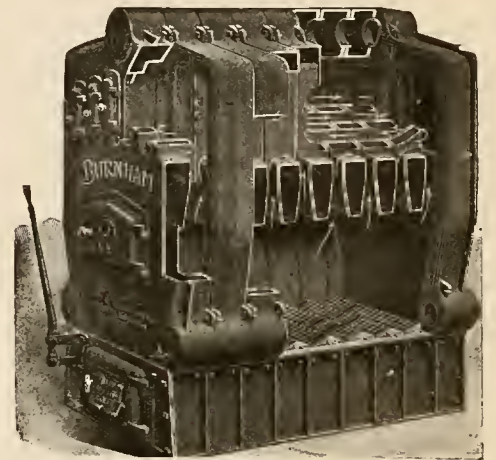


FIG. 1. "BURNHAM" SECTIONAL STEAM BOILER Open View



FIG. 2. ROUND "BURNHAM" WATER BOILER



FIG. 4. SASH LIFTING APPARATUS USED IN R. H. MACY & CO.'S DEPARTMENT STORE, NEW YORK CITY, N. Y.

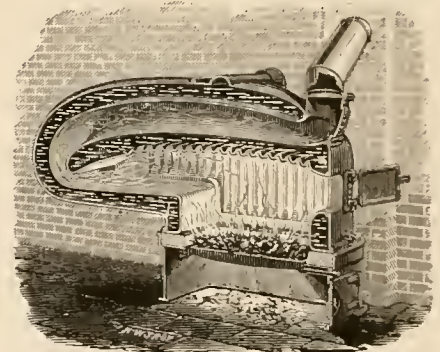


FIG. 3. HITCHINGS CORRUGATED FIRE BOX

BURNHAM TANK HEATERS.

Burnham Tank Heaters, cast-iron; one piece above base for heating water for bathrooms, laundries, swimming pools, hot water supply for houses, etc.

Three sizes: From 200 to 350 gallons.

All surfaces exposed to the flames and gases are surrounded by water, thus eliminating entirely any danger of warping or burning out.

The fire pot is unusually deep, giving large space above the coal for the perfect combustion of the gases, as well as providing ample room for the fuel required to maintain an even temperature during long intervals of inattention.

Sizes: For water, 150 to 1200 cubic feet; for steam, 400 to 700 cubic feet.

HITCHINGS CORRUGATED FIRE BOX.

Hitchings Corrugated Fire Box for greenhouse heating (Fig. 3) with its corrugations, and peculiar rear extension, has extra large fire surfaces and longest possible fire travel. A minimum of coal consumption, an ease of operation and a construction that gives to it long life.

VENTILATION DEVICES.

Our Sash Lifting Apparatus (Fig. 4) for operating Monitors and others sashes in large factories, foundries, power plants, car shops and sheds, churches, pier sheds, armories, etc., is of the simplest possible construction, consisting principally of a worm gear and the necessary joints and bearing to operate from any given point any number of sash; are free from chains, cables and springs (which forms are so persistently out of order). This apparatus is self-locking at any point and can be operated for long or short ranges.



FIG. 5. PALM HOUSE, U BAR CONSTRUCTION

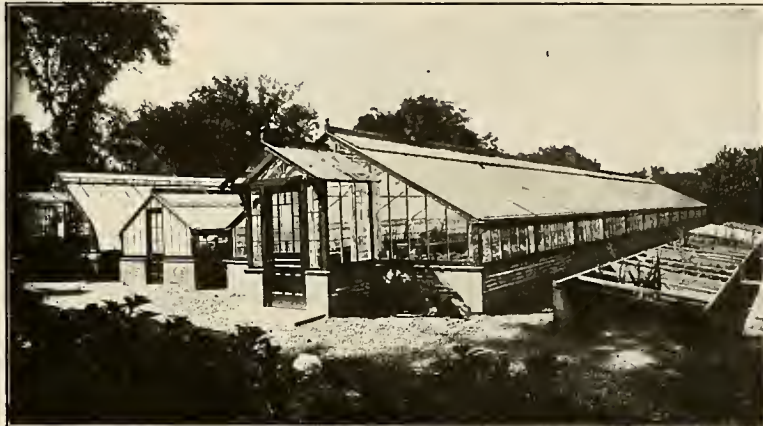


FIG. 6. GREENHOUSES, FLAT IRON RAFTER CONSTRUCTION, WOOD CAPPED

GREENHOUSES.

We build Greenhouses, Conservatories and Solariums of every type. We control the best patents and improvements and use only the highest grades of material.

Our Greenhouses are designed with an idea of their architectural conformity to the other buildings and their relation to the ground scheme.

TYPES OF GREENHOUSES.

Sash Bar, made entirely of wood (Cypress). Half Sash Bar, made of wood with iron supports. Flat Iron Rafters, iron frame with wood cappings.

U Bar, made of U shaped bars of iron filled with wood, doing away with rafters and numerous light obstructing members, employing "all the iron on the inside, all the wood on the outside."

HEATING EQUIPMENT FOR GREENHOUSES.

We control all the approved styles of Heating Apparatus for Greenhouses, and manufacture:

Pipe and Pipe Fittings,
Pipe Headers and Automatic Air Valves,
Pipe Hooks and Chairs,
Expansion Tanks, Cast-iron, Sectional,
Burnham Sectional and Round Boilers,
Hitchings Corrugated Fire Box Boilers.

EQUIPMENT OF GREENHOUSES.

Benches and Tables with iron frames, tile or Cypress bottom,
All wood frames and bottoms,
Wire Moss Banks,

Wire for Graperies and Grapery Frames,
Wiring for Carnations and Roses,

Rustic or Tufa Stone for Fountains, etc.,

Hot Bed Sash and Frames (Cold Frames), 3' x 6' made of heart cypress, Sash strengthened by iron bar. Frames bolted together. Shipped knocked down; does not require mechanic to erect.

CATALOGUES.

Any of the following catalogues will be forwarded on request:

Catalogue S. B. for Boiler.
Catalogue S. V. for Ventilation.
Catalogue S. G. for Greenhouses and Conservatories.
Catalogue S. C. for Cold Frames and Sash.

THE AMERICAN VARNISH COMPANY

CHICAGO, ILL.

PRODUCTS. Manufacturers of ARCHITECTURAL VARNISH SPECIALTIES.

VARNISHES. The following kinds of varnish can be considered standard for general use, for exterior and interior work, and shipping:



DURENE. Durene, as its name implies, is a very durable varnish for the finest interior finish; it can be rubbed or polished, and should be specified where a perfect varnish is required. It is not affected by hot or cold water, and will not crack, blister, or turn white.

FLOORENE. Floorene is the original as well as the only successful floor finish extant. It will resist continuous wear without showing a perceptible mar or scratch. We stand ready to substantiate the above assertion.

IMPERIAL SPAR. Imperial Spar is for finishing woodwork that is exposed to the elements, such as bathrooms, blinds, store fronts, and outside doors. It is very elastic and durable and may be rubbed.

RECOMMENDED SPECIFICATIONS. *Finishing Interior Woodwork*—"Fill all woodwork with American Varnish Company paste filler (specify shade), and finish with three coats of Durene, sanded between coats with fine sand paper or steel wool. The last coat may be rubbed with pumice stone and raw linseed oil to a dull finish, or polished, if desired, with rotten stone and sweet oil."

Finishing Hardwood Floors—"Fill all oak floors with American Varnish Company paste filler (specify shade); when dry apply three coats of Floorene (use no shellac on first coats). Maple and pine floors to be given three coats of Floorene directly on the wood. For rubbed finish, rub with pumice stone and raw linseed oil."

Exterior Varnishing—"Apply three coats of American Varnish Company's Imperial Spar (positively use no shellac or first coats). The last coat may be rubbed with pumice stone and oil."

For Cheaper Work—"Apply American Varnish Company's Granite Finish Interior and Granite Finish Exterior."

TYPEWRITTEN FORMS.

For detailed specifications for the painting, staining and finishing of woodwork in all its phases, send for our complete specifications; yours for the asking. We have an expert on the finishing and staining of woodwork of every description, whose practical advice is at your disposal.

CHICAGO VARNISH COMPANY

ESTABLISHED 1865

35 Dearborn Avenue,

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22 VESEY STREET
TELEPHONE, 2438 CORTLANDT

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PRODUCTS.

Manufacturers of SUPREMIS FLOOR FINISH, FLORSATIN, SHIPOLEUM, DEAD-LAC, EGGSHEL-LAC, IVORY ENAMELITE, CRYSTALITE FINISH, HYPERION FINISH, EXTERIOR WEARING BODY, EXTERIOR QUICK RUBBING, EXTERIOR OAK, NO. 20 SURFACER, NO. 6 RUBBING, ARCHITECTURAL COACH, SUPREME CYPRESS SEALER, WHITE ENAMELITE, EGGSHEL-WHITE, FLAT-LEAD, SUPREME PAINT and VARNISH REMOVER, WOOD-TINTS and ENAMELACQ.

FINISHES.

In nearly every article entering into the construction of the modern dwelling (and visible after its completion) recent years have shown a notable advance artistically, save in coatings used for the preservation of woods, called Finishes. In this line a dead level has been maintained until its monotony has become exasperating. Realizing for years past this stationary condition of things, we have been experimenting at a large expense to discover something which would develop the hidden beauties of the great varieties of natural woods found in our country. We were successful in our search, and two years ago began to put some of these Finishes on the market. They met with such a cordial reception by all artistic people to whom they were shown that we have been spurred to further efforts and have now produced a line of Wood Finishes that has never been equalled in beauty and which are also thoroughly practical both in point of application and durability. We enumerate in part our new productions below, with their adaptations and give specimen specifications, remarking in passing, that we will always supply promptly, complete printed specifications for Architects' and Contractors' use.

DEAD-LAC.

This is a new and surprising Varnish emulsion, which has long been sought but never before attained by any Varnish maker in the world. It perfectly protects the surface and admirably develops the fine grain of woods, but without producing any lustrous effect. When used over our Wood-Tints it does not in the least obscure the grain of the wood nor produce the effect of a varnished surface; in fact, so perfectly does this marvelous Finish do its work that an expert would not imagine that any protecting coat had been applied. To obtain this result all other Varnish requires "rubbing down," which is expensive and removes much of the protecting coat. In many situations and for many uses Dead-Lac is absolutely indispensable and produces most beautiful effects. It is made for interior work only and may be used over old varnished surfaces.

Price, per gallon, \$3.50.

WOOD-TINTS.

We come now to those exquisite Finishes, known as Chicago Varnish Company's Wood-Tints. After many years of experiments and costly failures, we have at length developed a line of Color Finishes, which fairly delight the Artist and Architect. It

would seem almost impossible to secure such charming lights and shades, such rich coloring and such altogether delightful tones and effects, as these Wood-Tints create at the comparatively trifling expense entailed by their use.

All the following have received the most enthusiastic praise of artistic people:

- 250 Weathered Oak Wood-Tint.
- 251 Colonial Oak Wood-Tint.
- 252 Mission Oak Wood-Tint.
- 253 Pollard Oak Wood-Tint.
- 254 English Oak Wood-Tint.
- 360 Bog Oak Wood-Tint.
- 365 Black Oak Wood-Tint.
- 300 Dark Mahogany Wood-Tint.
- 305 Light Mahogany Wood-Tint.
- 310 Dark Brown Wood-Tint.
- 315 Light Brown Wood-Tint.
- 320 Weathered Pine Wood-Tint.
- 325 Baronial Wood-Tint.
- 220 Forest Green Wood-Tint.
- 225 Dark Forest Green Wood-Tint.
- 330 Green Wood-Tint.
- 335 Moss Green Wood-Tint.
- 336 Dark Moss Green Wood-Tint.
- 340 Cherry Wood-Tint.
- 350 Golden Wood-Tint.

Price, per gallon, \$2.50.



OFFICE OF CHICAGO VARNISH COMPANY
Erected in 1895

NO. 20 SURFACER.

No. 20 Surfacer is a superior varnish made especially for use over our Wood-Tints. It is pale in color and makes a very durable undercoat.

Price, per gallon, \$2.25.

FLORSATIN.

Florsatin is the outcome of the large demand that has arisen for a Finish with less lustre than Supremis (see below) and having the dull effect of wax. It is a perfect wax Finish in appearance, but without a particle of wax in its composition. In fact, it is a Varnish emulsion of the highest order, developing great beauty in its application. By simply spreading Florsatin with a varnish brush, a soft satiny lustre is obtained, only found in wax finish, but wholly devoid of the objections to wax, namely, dangerous slipperiness, adherence of dust and disease germs, need of frequent renewal and spotting by water. The ease with which this result is obtained and its excellent wearing qualities, make it a very economical finish. The demand for this material is very large.

Price, per gallon, \$3.00.

EGGSHEL-WHITE.

Eggshel-White to the Architect, as well as to the Decorator, is one of the most pleasing creations we have ever brought out. It is an Enamel of the highest order and produces, simply by spreading with a brush, a delicate eggshell lustre, otherwise only attainable by the most careful rubbing at the hands of a skillful mechanic. Upon mouldings, sharp corners and especially carved work, it is most difficult to obtain this finish without rubbing through in spots to the bare wood, and only by the expenditure of much time. In such locations the saving by the use of Eggshel-White is greater than the cost of the material. It has proven an immense success.

Price, per gallon, \$3.50.

FLAT-LEAD.

Flat-Lead is a most valuable undercoating for enamel finish and should always be used for the three foundation coats beneath Eggshel-White. Many decorators who have until the advent of Flat-Lead, always made their own foundation coats for enamel work, have adopted our material and state that it covers better, works much easier,

"sands" so easily and rapidly, and "bodies-up" so finely that it is much more economical than their own production. It is a thoroughly reliable article.

Price, per gallon, \$2.50.

STAPLE
VARNISHES.

We manufacture a very fine line of staple Varnishes, which stand at the head of the list for beauty and durability.

Varnishes will cover about 600 square feet per gallon.

SUPREMIS
FLOOR
FINISH.

Supremis Floor Finish was the first Varnish put on the market especially for floors. Its excellence and great popularity has produced a host of imitations, but Supremis is still in the lead, because of its easy application, rapid drying and great durability. When rubbed it produces that soft eggshell lustre for which French Polish is so noted, but has not its dangerous slipperiness, and is far more durable. Any one who can handle a paint brush can apply Supremis. Send for our booklet, "The Treatment of Floors."

Price, per gallon, \$2.50.

SHIPOLEUM.

Shipoleum is a remarkable Varnish for the finest interiors and furniture, where paleness is not essential. It is susceptible to a very high polish, and its remarkable record of more than twenty years of most successful use in hospitals, public buildings, bathrooms, and laundries, where exposure to severe usage, ammonia, constant cleaning with soap, etc., would seem to insure early destruction, marks it as the most invulnerable Varnish ever produced where the natural beauty of the wood is desired. It has no equal in durability for interior work, and although used, as first stated, in the highest grade of work, it is invaluable for hospitals, laundries, public buildings, bathrooms and stables. It is very easily applied and dries rapidly.

Price, per gallon, \$2.50.

CRYSTALITE
FINISH.

Crystalite Finish is a very pale Varnish of the highest quality, specially adapted to fine interiors and furniture. It scarcely darkens the most delicate woods and rubs or polishes beautifully.

Price, per gallon, \$3.00.

HYPERION
FINISH.

Hyperion Finish is a pale Varnish for fine interiors, cabinets and other furniture, not so expensive as Crystalite. It has a fine lustre and rubs or polishes handsomely.

Price, per gallon, \$2.50.

FORMS OF
SPECIFICATION.

By using the following forms of specification, architects will be assured of satisfactory results. We will be pleased to supply printed forms of specification, for all styles of work, upon application.

INTERIOR
STANDING
WOODWORK.

For finishing woods in perfectly *Dead Stained Finish*:

"For the following Wood-Tints of Chicago Varnish Company's Manufacture " (fill in names and numbers.)

Apply upon bare wood, following carefully instructions given on container label. Use no filler upon close grain woods. With open grain woods, if a filled surface is desired apply one coat of the best Silex Paste Filler twenty-four hours *after* the application of the Wood-Tint. Twenty-four hours later apply a coat of Chicago Varnish Company's No. 20 Surfacer or shellac (see container label), sandpapering the latter lightly in twenty-four hours, and follow with one coat of Chicago Varnish Company's Dead-Lac.

SPECIFICATIONS
FOR FINISHING
FLOORS.

Use no filler upon close grain woods. Fill open grain woods with one coat of best Silex Paste Filler and follow with three coats of Chicago Varnish Company's Flor-satin, allowing twenty-four hours for drying of filler and each coat of varnish.

BERRY BROTHERS, Limited

Varnishes, Architectural Finishes, Shingle Stains, etc.

FACTORY AND MAIN OFFICE

DETROIT, MICH.

BRANCH OFFICES AND WAREHOUSES

NEW YORK CITY, N. Y., 262 Pearl Street
 BOSTON, MASS., 520 Atlantic Avenue
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 BALTIMORE, MD., 29, S. Hanover Street

CHICAGO, ILL., 15 and 17 Lake Street
 ST. LOUIS, MO., 112 South 4th Street
 SAN FRANCISCO, CAL., 809 Mission St.
 CINCINNATI, O., 420 Main Street

PRODUCTS—Manufacturers of WOOD FINISH, FLOOR FINISH, SHINGLE STAIN, ELASTIC INTERIOR FINISH, ELASTIC OUTSIDE FINISH, SPAR and HARD DRYING VARNISH.

BERRY BROTHERS' LUXEBERRY WOOD FINISH—This finish, made in "Light" and "Dark," was formerly known as "Berry Brothers' Hard Oil Finish" (the original and only genuine Hard Oil Finish ever made). It is designed for general interior work, and is unequalled for producing a handsome and durable finish on all woods. It develops and preserves the grain, and can either be left in the natural gloss or rubbed and polished, as may be desired.



The "White" is very pale and can be used on the lightest woods without discoloring them in the least. This grade is also suitable for Oak, Ash, Chestnut, and similar woods.

Where an especially fine finish is wanted we recommend Luxeberry Wood Finish, "White," on any wood, as it well repays for the additional cost per gallon.

PRICE—"White," \$3.85 per gallon. "Light," \$2.50 per gallon.

LIQUID GRANITE—This is for natural wood floors, and combines the principal requisites in a Floor Finish—elasticity, toughness and durability. It is transparent, and so will not obscure the grain of the wood, but will develop and preserve its beauty. It is superior to wax preparations, owing to the permanency and durability of the Finish, which makes frequent renewals unnecessary.



It is made in two grades, "A" and "B," the former being adapted for new floors, and the latter, which is not so heavy in body, being more suitable for refinishing floors and for use on linoleum. Owing to its great durability, Liquid Granite may be safely specified for any interior work that is subject to unusual wear and tear.

PRICE—\$2.50 per gallon.

SHINGLETINT—The preparations sold under the following trade-mark are offered as the best line of Shingle Stains made. Shingletint is a scientific combination of linseed oil, coloring matter, creosote oils and the necessary drying agents. It performs a double mission, not only imparting an artistic finish to the shingles, but by reason of its great penetrative and preservative qualities, prolongs their life by retarding decay.



Shingletint is supplied in the following colors, which are indicated by number, for convenience in specifying:

No. 10 Buff
 No. 20 Dark Red
 No. 30 Light Green

No. 40 Brown
 No. 50 Red
 No. 60 Dark Green

No. 70 Light Gray
 No. 80 Black
 No. 90 Moss Green

PRICE—60c. per gallon, all colors.

Barrel packages are free, all smaller packages are charged for at the customary price. Always specify by number.

ELASTIC INTERIOR FINISH—This is for interior work that is subjected to harder usage than the ordinary wear and tear. It is somewhat slower drying than the Luxeberry Wood Finish, but possesses

great durability and elasticity, and is specially useful for bathrooms, window sash sills, inside blinds, baseboards, etc.

This Finish resists the action of hot water, soap, etc., longer than any other varnish we know of, and is especially suitable for such portions of the interior woodwork as are to be left with an un-rubbed finish. It dries naturally to a handsome lustre, and can be rubbed to a fine egg-shell gloss, but will not take a piano finish.

PRICE—\$2.50 per gallon.

ELASTIC OUTSIDE FINISH—This is for store fronts, doors and general exterior work, being made with special reference to durability under exposure to the weather. It dries dust-free quickly, and is rather slow in hardening, making a finish of great durability. It dries naturally to a brilliant lustre, but can be rubbed and polished if desired.

An official test made of twenty-four different outside varnishes by the Master House Painters' and Decorators' Association, gave our Elastic Outside Finish the best record for drying and general excellence.

PRICE—\$5.50 per gallon.

BERRY BROTHERS' SPAR VARNISH—This is a high grade varnish for outside woodwork. It is of light color, dries quickly out of the way of dust, and hardens with a handsome lustre; resists sun and water to a remarkable degree.

PRICE—\$3.50 per gallon.

HARD DRYING CHURCH OAK—This is a varnish of great merit for interior work, and is especially adapted for church and school seats. It dries hard and free from tack, and makes a handsome and durable finish.

PRICE—\$2.00 per gallon.

RELIABLE SPECIFICATIONS IN BRIEF—The following condensed specifications will enable the Architect to select and specify suitable finish to meet all ordinary requirements. Special directions will be furnished when desired.

For General Interior Trim—Open grained woods such as Oak, Ash, Chestnut, Mahogany, Cedar, etc., fill with Berry Brothers' Paste Filler to match the color of the wood, or if the wood is stained, to match the color of the stain. Follow with a coat of Shellac and two or three coats of (light or white) Luxeberry Wood Finish. The last coat may either be rubbed or left in the natural gloss if desired.

For an egg-shell gloss, rub the last coat with pulverized pumice stone and raw linseed oil or crude oil; a further rubbing with pulverized rotten stone and furniture polish will make a high polish. For a dull finish, rub with water instead of oil.

Close grained woods such as Pine, Maple, Gum, Redwood, Cherry, Cypress, Whitewood, etc., specify same as above, but omit the paste filler.

Floors and Places that Receive Hard Usage—For floors of bathrooms, window sash and sills, kitchens, stables, etc., specify the same as for general interior trim, but substitute Liquid Granite for Luxeberry Wood Finish. In finishing floors the shellac coat may be omitted, though a thin coat of shellac is desirable.

Outside Work—For open grained woods, one coat of Berry Brothers' Paste Filler to match color of the wood, or if stained, to match the color of the stain, followed by three or four coats of Berry Brothers' Elastic Outside Finish. Close grained woods are treated in the same way, but the paste filler is omitted. The last coat may be left in the gloss, but rubbing with pulverized pumice stone and water, or oil, improves the appearance and adds to the durability of the Finish.

Shingles—One dip coat before laying, and one brush coat after laying, of Berry Brothers' Shingletint. If shingles are laid, specify two brush coats.

COVERING CAPACITIES—One gallon of varnish will cover approximately 600 sq. ft., one coat. A gallon of Shellac will cover from 700 to 750 sq. ft. A gallon of Knottinglac covers about ten per cent. more surface than Shellac. A gallon of Water Stain covers about 650 sq. ft., on open grained woods, and on close grained hard woods 100 sq. ft. more. On soft woods a gallon of Water Stain will cover from 400 to 500 sq. ft.

A gallon of Spirit Stain will only cover about half the area covered by the same quantity of Water Stain. A gallon of Oil Stain will cover about 600 sq. ft. on all woods. A gallon of Paste Filler reduced for use covers about 300 sq. ft. A gallon of Shingletint covers about 160 feet, one coat, if brushed on; $1\frac{1}{2}$ gallons covers the same surface two coats. From $2\frac{1}{4}$ to $2\frac{1}{2}$ gallons will dip 1,000 shingles, and another gallon is enough for a brush coat in addition, after the shingles are laid.

MURPHY VARNISH COMPANY

HEAD OFFICE

NEWARK, N. J.

SALES OFFICES

NEWARK, N. J., Chestnut and McWhorter Streets
BOSTON, MASS., 80 Battery March Street
CLEVELAND, O., 96 St. Clair Street

ST. LOUIS, MO., 309 South Fourth Street
CHICAGO, ILL., 22d and Dearborn Streets

FACTORIES

NEWARK AND CHICAGO

PRODUCTS.

TRANSPARENT WOOD FINISH, Interior (\$2.50 per gallon); TRANSPARENT WOOD FINISH, Exterior (\$4.00 per gallon); TRANSPARENT FLOOR VARNISH (\$2.50 per gallon); PASTE FILLERS, LIQUID FILLERS, CYPRESS SEALER, SHELLACS, DECORATORS' VARNISHES, WHITE ENAMEL FINISH, MARINE VARNISH (Interior and Exterior), etc.

VARNISH FOR HOUSE-WORK.

There is just as much occasion for intelligence on the part of architects concerning varnish for house-work as there is on the part of the carriage or piano maker occasion for intelligence concerning varnish for pianos or carriages.

But carriage and piano makers have the advantage of using varnish intelligently, while architects are apt to undervalue it, and builders know just enough to consult the immediate price per gallon and disregard the consequences.

Pianos and carriages are well or ill varnished, according to the maker's standard of work in general; but houses are almost all badly done.

Proper varnishing keeps a house cleanable, if not clean; while improper varnishing with bad varnish cannot be cleaned and is always in all stages of "going off."

It is therefore worth an architect's while to know the distinction between good varnish and bad, between good work and bad in putting it on, and the consequences of both.

SEVEN FACTS.

First—There is a difference between varnishes for use in building houses. One makes a right finish; another makes a wrong finish.

Second—The right finish is worth its cost, while the wrong finish fails of the purpose of varnish, and costs more when the wrong is made right.

Third—The uses of varnish in house-work are the same as in pianos and carriages: first, preservation; second, decoration.

Fourth—There is no more difficulty in finding out what varnish is best for house-work than there is in finding out what is best for carriages, cars and pianos. The question is different, not more difficult.

Fifth—The best is the most economical, even if the job is not a fine one.

Sixth—Having found the best, next obtain an intelligent user (and one who will consult your interests) to put it on.

NUMBER SEVEN.

Seventh—The varnish for house-work is the Murphy Varnish Company's *Transparent Wood Finish (Interior)*; *Transparent Wood Finish (Exterior)*; and *Transparent Floor Varnish*.

NOTE.

These Varnishes are sold only in sealed and registered cans.

It is your privilege to say what varnish should be used. If you specify a single varnish and inform the Varnish Maker, he will relieve you of the worry of watching the painter. If you give the painter a choice he will play off one salesman against the other, and neither Varnish Maker will have enough interest to watch the job for you. It isn't worth the time.

COST.

Remember the cost of the best varnish—that is—Murphy's—is *less than one-eighth of one per cent. of the cost of the building.*

FORMS OF
SPECIFICATION
FOR WOOD
FINISHING.

The following forms incorporated in specifications, will insure satisfactory results.

MATERIALS TO BE USED

FILLER.	Murphy Varnish Company's Mineral Paste Filler. Murphy Varnish Company's Liquid Fillers and Cypress Sealer.
SHELLAC.	Murphy Varnish Company's Pure Grain Alcohol White or Orange Shellacs.
VARNISH.	Murphy Varnish Company's Transparent Wood Finish, Interior, for inside work, except for sash and window sills. Murphy Varnish Company's Transparent Wood Finish, Exterior, for outside work, inside sash and window sills. Murphy Varnish Company's Transparent Floor Varnish, for floors. Murphy Varnish Company's Decorators' Varnishes, for use on finest inside work. Murphy Varnish Company's Marine Varnish, Interior and Exterior, for use on yachts and vessels. Varnish to be delivered on premises in sealed tin cans and opened only in the presence of the inspector of the work. Only such varnish as is specified for use allowed on the premises. All varnish to be used as delivered without thinning or other manipulation. The right is reserved to take samples of any materials being used.

FINISH

MAHOGANY, OAK, WHITE MAHOGANY, WALNUT, ASH, BUTTERNUT, AND ALL OPEN-GRAINED WOODS.	To be properly filled with Murphy Varnish Company's paste filler. Care being taken to have filler toned to match the natural color of the wood or the color desired by owner or architect; to receive one coat of shellac (except on floors, and in bathrooms and laundries) and three coats of varnish as designated. Shellac coat and first and second coats of varnish to be sand-papered with 00 sand-paper; the third coat of varnish to be carefully rubbed with pumice stone and water to a dead and even surface (finisher to use rubbing felt), then oiled and thoroughly wiped; toning to be done where necessary.
PINE, MAPLE, WHITEWOOD, CHERRY, BIRCH, SYCAMORE, BEECH, HOLLY, AND ALL CLOSE-GRAINED WOODS.	To be finished same as above, except that the filler be omitted. Liquid Filler may be used in place of Shellac, if desired, on Cherry, Redwood, Cedar, and Gumwood.
CYPRESS.	To be finished same as other close grained woods, except that one coat of Murphy Varnish Company's Cypress Sealer is to be used in place of the one coat of shellac.
FLOORS.	All open-grained, hard-wood floors and bathrooms to be properly filled with Murphy Varnish Company's Paste Filler, and receive three coats of Floor Varnish; the last coat to be rubbed lightly with oil and pumice stone. PINE, MAPLE, CHERRY, and all other close-grained woods used for floors to be finished precisely as above, except that filler is to be omitted.
BATHROOMS AND LAUNDRIES.	To be treated same as above except that Transparent Wood Finish, Interior, be used in place of Transparent Floor Varnish.
TREATMENT OF WHITE ENAMEL WORK.	First, give the wood a thin coat of White Shellac, lightly sand-paper when dry, and follow with five or six coats of Murphy Varnish Company's White Enamel Finish, the last coat to be rubbed down to a fine surface with either pumice stone and water or rotten stone and water.

The surface of all woods must be sand-papered smoothly and properly cleaned before finishing.

No shellac to be used on outside work, inside sash, window sills, floors, bath tubs, or other surfaces exposed to great dampness.

Care must be taken to have premises properly heated and free from dampness to secure best possible finish.

When a gloss finish is desired omit rubbing on last coat.

When our products have been specified, it is always advisable to advise us of the fact, as it enables us to make sure that no substitution is made, thus relieving architects from this trouble. We will supply printed post cards for notifying us of such specifications on request.

THE NEW JERSEY ZINC COMPANY

71 Broadway
NEW YORK CITY, N. Y.

TELEPHONE, 8340 CORTLAND

CHICAGO OFFICE
THE MINERAL POINT ZINC COMPANY
1104 MARQUETTE BUILDING

PRODUCTS.

OXIDE OF ZINC, by French and American process, of every grade, under the following brands: "HORSEHEAD," "SELECTED AND XX," "FLORENCE:—RED AND GREEN SEAL" (French Process). We also manufacture LEADED ZINC AND SPELTER—the latter both in the commercial and high grade ("HORSEHEAD BRAND").

PRODUCTION AND CONSUMPTION.

The Plants and Mines of this Company are the largest in the world, thoroughly modern and capable of supplying any demand. We export our products to every part of the world.

Our products are used by practically every paint manufacturer in the United States and Canada, and the various grades can be obtained from them (under individual private brands) either ground in pure linseed oil (bleached or raw), in the so-called "combination white-leads" or in high grade ready mixed paints. We do not ourselves grind OXIDE OF ZINC in oil, nor manufacture paints of any description; but we are prepared to furnish lists of brands and manufacturers of paints based on OXIDE OF ZINC for general or specific use.

INFORMATION FOR ARCHITECTS.

Among the many things required of the architect is a familiarity with paints and their qualities. Upon his acquaintance with this branch of technics depends the beauty and permanence of his "color scheme," and, in a general way, the beauty of his entire work, since defective painting will detract even from beauty of form. His object, therefore, in selecting paints, should be to secure those that will give clear, brilliant and permanent tints and shades, and a durable coating.

The principal white pigments used in house painting are: White Lead, OXIDE OF ZINC, and combinations of these two pigments, or of one or both, with certain inert materials, such as Barytes, Gypsum, Whiting, Silica, etc.

SUPERIORITY OF OXIDE OF ZINC OVER WHITE LEAD.

White Lead is one of the oldest of artificial pigments. As a paint it is very opaque, works easily under the brush, dries naturally, and is, in fact, one of the simplest of pigments to handle; hence it is very popular with painters. It has, however, many defects. It is, first of all, a cumulative poison, and the prevalence of lead colic among painters and lead workers has induced restrictive legislation in many countries. It is the least durable of the white pigments, the paint made with it carrying only about thirty per cent. of oil and converting a portion of that into an unstable lead soap. On exposed surfaces it loses its lustre and within a short time begins to powder off, so that it requires renewal once every five years, or oftener. It destroys the color of many pigments, such as Prussian and ultramarine blues, the iron oxides, the chromes, etc.; and it is itself very susceptible to darkening from the formation of lead sulphide on exposure to the sulphurous gases everywhere present in the atmosphere. OXIDE OF ZINC, on the other hand, is free from all the faults mentioned above. The only practical defect from which it suffers is its great oil-carrying capacity, which renders it slightly less opaque than lead. This so-called defect really enhances its value as a paint, since it increases its durability. When pure OXIDE OF ZINC in pure linseed oil is applied by a competent painter to properly seasoned dry wood in clear, dry weather, it forms the most durable and satisfactory white paint known. Instances are plentiful where such work has stood exposed to the weather ten, fifteen and twenty years, intact and in perfect condition for repainting. Especially is this the case where the zinc has been tinted with earth colors, such as ochre, etc.

FORMS OF
SPECIFICATIONS
FOR
ARCHITECTS.

The following conditions and specifications have been prepared by an architect of national reputation and are intended to cover the requirements of ordinary house painting:

"Thoroughly clean, sandpaper, rub down the work and make sure that all wood is dry before applying any paint. Cover all sap, knots and defects in woodwork which is to be painted, with a good coat of shellac before priming. The color of the paint to be as directed by the architect and all knots and sappy places to have not fewer than two coats of shellac before priming. Contractors shall submit to the architect samples of various colors required and shall color all work in conformity with approved samples. Each coat shall be thoroughly dry before the succeeding coat is applied. All materials shall be the best of their kind and shall be absolutely pure."

DIRECTIONS
AND
SPECIFICATIONS.

OUTSIDE PAINTING—Any of the following combinations may be used at the discretion of the architect. *Combination "A"*—Primer, pure lead; 2nd coat, pure lead; 3rd coat, pure Zinc. The primer may be tinted with not more than one per cent of pure lamp-black ochre or umber in oil. This applies to all combinations, except where the final finish is to be white. *Combination "B"*—Primer, pure lead; 2nd coat, $\frac{1}{3}$ Zinc, $\frac{2}{3}$ lead; 3rd coat, pure Zinc. *Combination "C"*—Primer, pure lead; 2nd coat, $\frac{1}{2}$ Zinc, $\frac{1}{2}$ lead; 3rd coat, $\frac{2}{3}$ Zinc, $\frac{1}{3}$ lead. *Combination "D"*—Primer, $\frac{1}{2}$ Zinc, $\frac{1}{2}$ lead; 2nd coat, $\frac{1}{2}$ Zinc, $\frac{1}{2}$ lead; 3rd coat, $\frac{1}{2}$ Zinc, $\frac{1}{2}$ lead. *Combination "E"*—Straight Zinc, four coat work (white)—Primer, pure Zinc with one pint of turpentine to the gallon of paint; 2nd coat, pure Zinc with $\frac{1}{2}$ pint of turpentine to the gallon of paint; 3rd coat, pure Zinc with one gill of turpentine to the gallon of paint; 4th coat, pure Zinc ground in pure linseed oil (without turpentine). *Combination "F"*—Straight Zinc, three coat work (white) Primer, pure Zinc with $\frac{1}{2}$ pint of turpentine to the gallon of paint 2nd coat, pure Zinc with one gill of turpentine to the gallon of paint; 3rd coat, pure Zinc with all oil. In all the foregoing Combinations, only a sufficient quantity of drier to be used to insure work drying hard in five days. Where tints are desired, add to the foregoing specifications the words: "to be tinted, as directed by the architect, with pure oil colors.

INSIDE PAINTING, WOODWORK—Where dark tones are required the same combinations may be used as are specified for outside work. Where light tones are required, Combinations "B," "E" or "F" may be used; if white or very light, "E" or "F" should be used.

PLASTER PAINTING, INSIDE—Make all plaster work smooth and clean by brushing and sandpapering and washing if necessary, to remove any discoloration which will show through or injure paint. The specifications are the same as the foregoing, except that another coat should be added. This coat should be the same as the primer if tone is dark and the same as the final if the tone is light.

ENAMEL PAINTING ON WALLS OR ON WOODWORK—1st coat, Primer of pure lead and linseed oil; 2nd coat, $\frac{1}{2}$ lead and $\frac{1}{2}$ Zinc; 3rd coat, $\frac{1}{3}$ lead and $\frac{2}{3}$ Zinc with the addition of sufficient varnish to form a proper surface for final coat. Or any of the foregoing formulas may be used with the addition of varnish to the third coat. The above coats to be applied carefully and evenly with brush marks showing as little as possible, and each coat to be lightly sandpapered so that the final coat may be flowed on without showing any brush marks. Final coat to be a first grade of interior varnish with the addition of only sufficient Zinc and color to produce the approved tint and to be carefully flowed on.

STIPPLE WALL PAINTING—1st coat, pure lead; 2nd coat, $\frac{1}{2}$ Zinc and $\frac{1}{2}$ lead (half turpentine and half oil); 3rd coat, shall be of stippling putty mixed with Zinc and hard oil, and to be stippled evenly and lightly; 4th coat, shall be of pure Zinc in oil and turpentine (with such tint as required) to be applied perfectly even and to be only of sufficient thickness to give proper tint and show stippling.

THE NATIONAL LEAD COMPANY

NEW YORK, BOSTON, BALTIMORE, CHICAGO, CINCINNATI, CLEVELAND,
ST. LOUIS

PHILADELPHIA
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(NATIONAL LEAD & OIL CO.)

PRODUCTS. Manufacturers of WHITE LEAD and RED LEAD in the following brands:

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ARMSTRONG & MCKELVY
BEYMER-BAUMAN
BROOKLYN
CORNELL

COLLIER
DAVIS-CHAMBERS
FAHNESTOCK
JEWETT
LEWIS
MORLEY

PHOENIX
RED SEAL
SALEM
SHIPMAN
SOUTHERN
STERLING

We also manufacture the "ATLANTIC," "LEWIS," "ARMSTRONG & MCKELVY" and "COLLIER" Brands of LINSEED OIL, and LEAD PIPE, SHEET LEAD, SOLDER, and TRAPS and BENDS.

WHITE LEAD. Architects will serve their clients best by naming one or more of the above brands in all painting specifications, thereby preventing the substitution of inferior and adulterated lead.

RED LEAD. Red Lead sold under the brands named above is guaranteed purest and best.

As a metal preservative, red lead is unexcelled. Architects and engineers of steel construction are invited to send to us for literature.

LINSEED OIL. Linseed Oil sold under "ATLANTIC," "LEWIS," "ARMSTRONG & MCKELVY" and "COLLIER" brands is guaranteed strictly pure.

Both white lead and red lead must be mixed with strictly pure linseed oil to be satisfactory. Specify "ATLANTIC" or "LEWIS," and thus avoid adulterated oil.

OTHER PRODUCTS. Our Lead Pipe, Sheet Lead, Solder, Traps, Bends, etc., are all of the best quality.

ORDERS. Any reputable dealer can supply any of our products.

SPECIFICATIONS. Painting specifications on separate sheets, covering different classes of work, will be sent free upon request. These directions are complete and thoroughly practical, and were prepared with the co-operation of leading painters in the principal cities.

USEFUL INFORMATION. Our booklet, "What Paint and Why," will be sent free to anyone interested.

JOHN W. MASURY AND SON

House Paint

NEW YORK CITY, N. Y.

CHICAGO, ILL.

PRODUCTS.

Manufacturers of MASURY'S HOUSE PAINTS, ARCHITECTURAL VARNISHES, WOOD FILLERS, NOMAR FLOOR STAINS, etc.

MASURY'S HOUSE PAINTS.

Masury's House Paints have been submitted to every possible test during the past sixty-five years. They have withstood the attacks of extreme heat, extreme cold, moisture and time. When properly applied on the proper surface they invariably give good accounts of themselves. Painters praise them because of their endurance and preservative qualities. Consumers endorse them because, by their use, they are spared the expense of repainting for the longest possible period. Our wonderful success for more than a half century is due to the care with which we select the ingredients used in the manufacture of our paints.

Pure Linseed Oil is used on account of its superior preservative qualities. The pigments ground with it are selected because experience has proved them to be best. In deciding upon paints for original painting or repainting it must be remembered it costs just as much to spread poor paints as it does to spread the best paints, and that in the interests of economy Masury's House Paints should be chosen for the reason that they live the longest and retain their brilliancy of finish long after inferior paints have completely vanished.

ELASTIC SPAR.

A heavy bodied Varnish, light in color; dries well and is of extreme durability. Especially adapted as a finish for the exterior of buildings and the exposed parts of vessels. Dries free from dust in about eight hours.

CRYSTAL SPAR.

A light colored, heavy bodied Varnish for finishing all kinds of interior work; has a brilliant and lasting lustre. Can be rubbed in about twenty-four hours, giving that beautiful, soft, egg-shell finish so much desired. Also a good Floor Varnish.

EXTERIOR FINISHING.

A most durable Finish for outside work, front doors, vestibule doors, store fronts, etc. Medium pale color, good body, works well.

NOMAR FLOOR STAINS.

Nomar Floor Stains are made in the following shades: Light Oak, Rosewood, Dark Oak, Mahogany, Flemish Oak, Walnut, Cherry, Forest Green, Clear or Nomar Floor Finish.

With these the most beautiful grain and color effects of hard and costly woods are reproduced on ordinary woods like Pine, Cypress, Whitewood, Maple, etc., for the reason that Floor Stain is in reality a lacquer, a transparent colored liquid which applies itself in various degrees of intensity according to the nature of the wood, thus obtaining the various tones and shades admired in the most expensive hard woods.

They are adapted for all interior surfaces, trimmings, wainscoting, baseboards, doors, mantels, floors, furniture, toys, and surfaces exposed to water and moisture as for instance, woodwork in kitchens and bathrooms.

DEXTER BROTHERS COMPANY

Shingle Stains

103-105-107 Broad Street

BOSTON, MASS.

TELEPHONE, MAIN 1979

AGENCIES

New York City, N. Y., W. S. Hueston, 24 East 22d Street
 Chicago, Ill., H. M. Hooker Co., 57 West Randolph Street
 Philadelphia, Pa., John D. S. Potts, 218 Race Street
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PRODUCTS.

Manufacturers of DEXTER BROTHERS' ENGLISH SHINGLE STAINS.

ENGLISH SHINGLE STAINS.

The pleasing effects produced by shingle stains cannot be obtained from paints, and in fact no other shingle stains will give the same satisfactory and lasting results as Dexter Brothers' English Shingle Stains, which are made of the very best English Ground Colors and contain no benzine, water, or creosote. None but the very finest pigments obtainable are used in the preparation of these Stains.

ADVANTAGES AND ECONOMY.

Our Stain has been thoroughly tested by many of the leading architects in this country during the past fifteen years, and has always given perfect satisfaction. Their experience with our Stain has proven to them that: It will retain its brightness and full strong color long after other stains have faded and turned black. It does not wash off. It is a splendid preservative. It does not mildew. It has no offensive odor. It is non-poisonous.

It can be used on any kind of surface—smooth surface boards, shingles, lattice work, etc.

The color effects are beautiful, surpassing those secured from painting. The attractiveness of any house is greatly enhanced by having its roof stained as well as the sides.

Shingles dipped in our Stain retain their natural "furze," giving a soft, velvety appearance that is much admired.

It is cheaper than paint for use on roofs and shingled surfaces, and will out-wear paint or any other stain. Paint is bad for the shingles, for the reason that in drying, it forms a skin coat at the base of the shingle which retains the water, thereby causing the shingle to rot from the under or unprotected side.

It is not affected by intense heat, dampness, or salt air, regardless of how thoroughly exposed.

COVERING CAPACITY.

One gallon of our Stain will cover about 125 square feet of shingle surface, when brushed on, or 500 shingles dipped two-thirds their length.

WEATHER-BEATEN EFFECT.

For several years architects have sought for some process which would give the new shingles on a building the silver-gray effect which heretofore time alone has been able to produce. We have been trying for a number of years to invent a stain which would fill these requirements. We have at last succeeded in producing a stain, No. 794, which exactly resembles weather-beaten shingles, making it almost impossible to detect any stain, but at the same time retaining all the preservative qualities required. It is a superior stain in every particular, and we recommend its use on all shingled surfaces where this effect is desired.

PRICES.

Seventy-five cents per gallon, less the freight charges, in lots of thirty gallons and upwards.

PARKER, PRESTON & COMPANY, Incorporated
WATERPROOF SHINGLE STAINS, BRICK STAINS AND FILLERS
NORWICH, CONN.

PRODUCTS.

Manufacturers of HIGH GRADE WATERPROOF and ODORLESS SHINGLE STAINS,
 WATERPROOF FLAT BRICK STAINS and WATERPROOF BRICK and STONE FILLER.

SHINGLE STAINS.

Parker, Preston & Company's Waterproof and Odorless Shingle Stains are of an entirely different composition from any other shingle stains on the market. They are *absolutely free from any objectionable odor*. Other makes of stains penetrate and open the pores of the shingle, allowing the shingle to take in rain and dampness, which, when drawn out by the sun, causes the pores of the wood to open still more, filling the shingle with cracks, creating in a short time a sieve-like condition of surface which becomes a perfect sponge for absorbing dampness, the greatest enemy known to the life of wood.

Parker, Preston & Company's Waterproof and Odorless Shingle Stains fill the pores of the shingle, *making a water shedding surface that prolongs the life of the shingle* and gives it extreme durability. Our shingle stains also possess a Binder character that prevents the colors used in the stains from fading, thus insuring the greatest durability, the most protective and durable shingle stains and the most artistic and lasting colors.

A cabinet containing sample cards, showing beautiful colors we make, furnished free. Special colors made to order. Conscientious architects can safely specify these shingle stains.

COVERING CAPACITY.

For one Brush Coat, 1 gallon to 100 square feet of surface.

For two Brush Coats, 1 gallon to 75 square feet of surface.

For one Dip Coat, $2\frac{1}{4}$ to $2\frac{3}{4}$ gallons to 1000 shingles, $\frac{2}{3}$ the length of a sixteen-inch shingle.

For one Dip Coat and one Brush Coat after shingles are laid, $3\frac{1}{4}$ to $3\frac{3}{4}$ gallons to 1000 shingles.

For one Brush Coat over a painted surface, one gallon to 150 square feet of surface.

The quantity necessarily varies according to the condition of the surface to be stained. If very old and weather beaten, more stain will be required.

FLAT BRICK STAINS.

Our Waterproof Flat Brick Stains are intended for use on all brick surfaces in place of paint. A low cost brick given the appearance of high value brick. Natural in color, "flat" or "dead" finish, and even natural texture preserved. Cost less than paint and more practical for brick buildings, foundation walls, chimneys and open fireplaces.

BRICK AND STONE FILLER.

Waterproof Brick and Stone Filler for the treatment of brick and stone without discoloring the surface, shedding rain, keeping out dampness and preventing disintegration.

J. A. & W. BIRD & CO.

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RIPOLIN ENAMEL—CHARACTERISTICS. Manufactured in Holland. The highest grade enamel paint made. Standard on the European market for twenty years. Comes in two finishes, Gloss and Flat; white and seventy-eight colors. White does not turn yellow. Colors are remarkably permanent. Unaffected by extremes of temperature, chemical or acid fumes. Will not check or crack. Covers thirty per cent. more surface than any domestic enamel.

USES. The easiest enamel in the world to use. Flows freely, leaving no brush marks. Suitable for indoor, outdoor or marine work. Gives beautiful tile effects at one-tenth the cost of tile. Specially adapted to, and will stand on fireproofed wood, alignum or similarly treated materials without cracking or scaling.

PRICES. Slightly higher than the ordinary enamel, but infinitely cheaper in the finished job.

Samples, booklet and specifications sent by mail, free, upon application.

REX FLINTKOTE ROOFING—CHARACTERISTICS. Not a built-up roofing. Made from one solid piece of all wool felt, saturated with a binder which is acid, alkali, water and gas proof. Has undercoating of flint which prevents dry rot or sticking of material in the rolls. Contains absolutely no tar, hence does not soften in summer or become hard and brittle in winter. Most fire resisting prepared roofing made, and endorsed by Boards of Fire Underwriters throughout the country.

USES. Light in weight. Can be used in any climate. Adaptable for all kinds of buildings.

PRICES. Packed in rolls, 72 feet long and 3 feet wide, containing 216 square feet, making two Squares of 100 feet each, and an allowance for 2-inch laps for which we make no charge. Inside each roll are sufficient nails, caps and cement for laying. The weight per square of 100 feet is approximately $\frac{1}{2}$ -ply, 25 lbs.; 1-ply, 35 lbs.; 2-ply, 45 lbs.; 3-ply, 55 lbs.

Samples, descriptive booklet and prices sent by mail free, upon application.

PARADUX ROOFING—CHARACTERISTICS. Can be painted any color. Combines best qualities of canvas duck with backing of absolutely waterproof prepared roofing. Will lie perfectly flat. Comes in four grades.

USES. Adapted for steamer decks, roof gardens, veranda roofs, etc.

PRICES. Packed in rolls one yard wide and twenty-four yards long; half rolls one yard wide and twelve yards long. Prices per square yard: Grade A, 50 cents; B, 42 cents; C, 38 cents; D, 30 cents.

Samples and further information sent by mail free, upon application.

THE HASCALL PAINT CO.

Thermalite and Other Paints

CLEVELAND, OHIO

PRODUCTS. Manufacturers of THERMALITE, a Protective Paint, HASCALL'S CARBON PAINT, HASCALL HOUSE PAINTS, OLD COLONY WHITE LEAD, VARNISHES, ETC.

TERRITORY. We are prepared to ship goods to all points in the United States and Canada. Prompt shipment can always be guaranteed, even for the largest orders.

THERMALITE—A PROTECTIVE PAINT

BASE. This is a heat-resisting paint that is not affected by changes of temperature from 800 degrees above to 40 degrees below zero. It is based on hydro-carbons that chemical analysis proves to be 99.9% pure.

COMPOSITION. The basic material is ground with oil, producing a liquid that will not precipitate—the pigment and oil are chemically combined. The paint contains no coal tar, asphaltum, iron-oxide or other material of like nature. It is absolutely free from acids or other destructive elements.

ANTI-RUST QUALITIES. Thus, being of a strictly neutral composition, and therefore chemically inactive to metal, it arrests as well as prevents corrosion. It destroys rust by amalgamating with it.

HIGH FIRE TEST, QUICK DRYING, ELASTIC. It has been thought by painters that a quick-drying high fire-test paint could not be elastic. With most iron paints the heat soon destroys the cohesiveness of the basic pigment, leaving it brittle and lifeless. THERMALITE is the exception, because the hydro-carbons which form its base are really mineral rubber, and the cohesiveness between the minute particles is so great that no heat under 800 degrees Fahrenheit will destroy it.

ACID AND ALKALI PROOF. Such acids as muriatic, nitric and sulphuric have practically no effect on THERMALITE. It resists the action of brine and is absolutely proof against acetic acid, alkalies, caustic soda, etc.

ODORLESS AND TASTELESS. THERMALITE when dry is absolutely odorless and tasteless. It is therefore suitable for use in many places where other paint would be impracticable.

COVERING CAPACITY. On tin or metal, THERMALITE covers from 200 to 300 square feet to the gallon, according to whether it is brushed out. On shingles, wood, felt, paper, brick, cement etc., it covers about 150 square feet to the gallon.

COLOR. A lustrous permanent jet black. The gloss is not injured by intense heat, and is retained for years on outside surfaces exposed to the weather.

USES. This paint is suitable for use on any kind of material: iron, tin, galvanized iron, wood, cloth, felt, paper, stone, brick, cement, etc. It is a perfect pipe paint, an ideal roof and bridge paint, a fine locomotive and machine paint, a splendid stack and boiler paint, an acid-proof tank, vat, and stand-pipe paint, a perfect coating for containers of fruit preserves, pickles, vinegar, etc., a durable ice mould paint in ice plants, etc. THERMALITE absolutely prevents rust on steel cars and structural iron. It meets every requirement for such use.

PRICE. In barrels, less freight to points east of Missouri River and north of Tennessee, 65c. per gallon; south of Kentucky and between the Missouri River and the Rocky Mountains, 70c. per gallon; west of the Rocky Mountains, 85c. per gallon.

Information and prices on our other products furnished on application. Prompt and careful attention given all inquiries.

WILLIAM MENZEL & SON

Ligni Salvor, Enamel and Iron Paint

68 Broad Street

NEW YORK CITY, N. Y.

TELEPHONE, 1897 BROAD

PRODUCTS.

Sole agents for LIGNI SALVOR, and Eastern agents for E. & S. MARBLE ENAMEL PAINT and E. & S. COMPOUND ELASTIC IRON PAINT.

LIGNI SALVOR WOOD PRESERVER.

Ligni Salvor is a patented antiseptic and disinfecting compound known as "Ligni Salvor Best Wood Preserver (registered)" containing about 60% of crude carbolic acid. This substance will preserve from decay, rot, or fungus growth, all wood treated with it, sinking easily into the wood, leaving the pores open, thereby preventing the form of dry-rot which occurs in some instances when paint, tar, varnish or similar substances are used as a coating.

APPLICATION.

Ligni Salvor is ready for use and must not be diluted with any other substance. It will cover from 300 to 350 square feet of dressed lumber per gallon, and imparts a chestnut brown stain which is very attractive, bringing out the grain of the wood to advantage. Owing to its being so serviceable, cheap and pleasing in effect, it is largely specified by architects for dwellings, half-timber work, railroad depots and sheds, hospitals, fences, docks, boats, shingles and other woodwork. Three coats should be applied at intervals of about 48 hours. A simple paint brush is all that is required to spread the preservative, but shingles and all small work may be dipped if desired.

DURABILITY.

While it may be applied in its natural state in cold weather, it will penetrate more deeply if put on hot. Although the preserver should not be reduced, it may have its "staining durability" largely increased by adding about one per cent. of lamp-black where the wood is exposed to the weather or to strong sunlight.

INTERIORS.

Fine effects may be obtained on interior work by applying Ligni Salvor with a paint brush and then rubbing down the surface with cheese cloth. A second and a third coat, each rubbed down, should be applied, each coat being allowed to dry before being rubbed down.

HARDWOOD.

Hardwood exposed to the weather may be treated with the certainty that it will preserve the wood against decay, also against warping or checking. The odor disappears in time.

TRADE MARK.

Each package of genuine Ligni Salvor will bear a facsimile of the Trade Mark here illustrated.

ORDERS.

All orders, to be promptly filled, must be accompanied by full shipping directions.

ENAMEL PAINT.

The "E. & S. Marble Enamel" is a very serviceable all-around enamel which is cheaper than any other first-class enamel on the market. One gallon will cover about 150 square feet for three coats; which should be applied at intervals of at least three days so as to give the material a chance to harden.

COLOR.

Any special color will be matched on submission of sample, at very short notice.

IRON PAINT.

The standard paint for German government railroad work and fortifications is "E. & S. Compound Elastic Iron Paint" which has held its own against competitors for the past ten years. Its covering capacity is from 1100 to 1200 square feet per gallon.



TRADE MARK

RINALD BROS.

Technical Paints and Specialties

1142-1146 North Hancock Street

PHILADELPHIA, PA.

BOTH TELEPHONES

DISTRIBUTING AGENTS

CHICAGO, ILL., Geo. E. Watson Co.
 ST. LOUIS, MO., Hunkins-Willis Lime & Cement Co.
 BIRMINGHAM, ALA., J. F. Baldwin.
 LOS ANGELES, CAL., Marshall Floor & Supply Co.

SAN FRANCISCO, CAL., Waterhouse & Price
 SEATTLE, WASH., S. W. R. Dally
 ST. PAUL, MINN., Geo. H. Lawes & Co.
 BALTIMORE, MD., Henry Seim & Co.

PRODUCTS.

BESSEMER PAINT, GALVANIC PRIMER, O. & I. SCOTCH ENAMEL, PORCELAIN ENAMEL PAINT, PORCELINE, ARBROS PRESERVATIVE ENAMEL, ACIDPROOF and OTHER PAINT SPECIALTIES.

BESSEMER PAINT.

Where something more durable than Red Lead, Graphite or Metallic Paint is wanted, call for Bessemer Paint, which for many years and in actual use has proved over and over again that "*Bessemer Paint prevents rusting where other paints have failed.*" It should therefore be called for on all structural steel, tin roofs, girders, columns, iron fences, gutters, spouts, etc. Of course, there is a reason—several of them—why Bessemer Paint has outlasted other paints. If interested write for our treatise: "Data on Bessemer Paint."

SPECIFICATION.

Specify—"No priming, two coats of *Bessemer Paint*, one shop coat, one field coat. When a primer is desired on galvanized iron, specify first coat *Galvanic Primer*; second and third coats *Bessemer Paint*."

COST. CAPACITY.

\$1.75 per gallon, f.o.b. Philadelphia in less than barrel lots. One gallon is sufficient for two coat work on 500 sq. feet of flat surface.

O. & I. SCOTCH ENAMEL.

For preserving and enamelling wood, plaster or brick exposed to the weather, our "O(utside) and I(nside) Scotch Enamel" is unsurpassed. It looks, wears and lasts better than white lead, reflects light perfectly, and is easily kept clean on account of its hard, smooth finish. Particularly well adapted for light courts, brick walls, etc.

SPECIFICATION.

Specify—"Primer, one coat White Lead mixed with Pure Linseed Oil; second and third coats O. & I. *Scotch Enamel*."

COST. CAPACITY.

\$3.50 per gallon, f.o.b. Philadelphia, in less than case lots. Covers, on smooth brick, two hundred sq. feet per gallon, two coat work.

PORCELAIN ENAMEL PAINT.

Porcelain Enamel Paint (*White Label*) wears and looks equally well on wood, plaster, metal, brick and stone. It is thoroughly waterproof, steamproof and germ-proof, and is the only aseptic Enamel Paint made. It has the durability and appearance of a genuine porcelain finish. No primer is required. For use indoors, only.

SPECIFICATION.

Specify—"Three or four coats of *Porcelain Enamel Paint*. Do not thin out except when absolutely necessary, in which case use only Special P. E. P. Thinning Fluid."

COST. CAPACITY.

\$4.00 per gallon, f.o.b. Philadelphia, in less than case lots. For three coat work, one gallon is required per two hundred sq. feet. On four coat work figure 150 sq. feet per gallon.

PORCELINE.

Porceline (*Red Label*) is equal to the best varnish enamels made, but inferior to Porcelain Enamel Paint, which is a tiling in liquid form. It is intended chiefly for furniture and woodwork.

SPECIFICATION.

Specify—"Primer, White Lead, second and third coats, $\frac{1}{2}$ White Lead, $\frac{1}{2}$ Zinc; fourth and fifth coats, *Porceline*."

COST. CAPACITY.

\$3.00 per gallon, f.o.b. Philadelphia, in less than case lots. One gallon covers five hundred sq. feet with one coat.

ARBROS PRESERVATIVE ENAMEL.

Arbros Preservative Enamel is principally used as a finish for Calcimine or Cold Water Paint. It combines chemically with the lime in the priming paint, providing a hard, glossy, durable and washable surface. It is the only clean, sanitary, serviceable and low priced finish for factory walls and ceilings.

SPECIFICATION.

Specify—"Primer, Calcimine or Cold Water Paint; second and third coats *Arbros Preservative Enamel*. Primer and Enamel must be of the same shade."

COST. CAPACITY.

\$1.75 per gallon, f.o.b. Philadelphia, in less than barrels. On first coat two hundred, on second coat four hundred sq. feet per gallon.

Write us for sample cards, pamphlets, and further details.

NATIONAL FIREPROOF PAINT CORPORATION

87 Franklin Street

CHICAGO, ILL.

MAIN OFFICE AND FACTORY

JOLIET, ILL.

PRODUCTS.

Manufacturers of FIREPROOF PAINT and of the NATIONAL FIREPROOF TRANSPARENT LIQUID.

FACILITIES.

Our factory is located at Joliet, Ill., and has a capacity of two thousand gallons per day. We are free at all times from strikes and unfavorable labor conditions, thus insuring the prompt shipment and execution of all orders. Our plant is the only one of its kind in the world.

ADAPTABILITY OF PRODUCTS.

The NATIONAL FIREPROOF PAINT is the only successful ready mixed linseed oil, fire-retarding paint on the market. It is used for painting woodwork generally where paint is used, and in addition to protecting and preserving the surface, actually prevents the spread of flames. The NATIONAL FIREPROOF PAINT is made in two grades.

"Best" Grade is used for high class work, and is put up in forty-three colors, ready for use. *It is not a cold water paint.* The No. 1 Oxide is made in five different colors ready for use, at a cheaper price; it is equally fire-retarding, but does not contain lead in its composition. No. 1 Oxide is employed more for high grade work where color is no object. In the manufacture of these goods, we absolutely guarantee that no kerosene, benzine, or turpentine is used.

The fireproofing materials ground together with the paints, under our process, penetrate and enter the woodwork, no matter how fine the grain, preserving it and rendering it an effective opposition to the spread of the flames. The linseed oil and pigment are left on the exterior, and the paint being made without the use of evaporating, inflammable or cheap oils, forms the best protection from the elements of any paint made.

Our products do not deteriorate with age, but on the contrary, the longer they are applied, the better their fire-retarding and preserving features.

LEGAL REQUIREMENTS.

Our products meet all the requirements as to fireproofing of the Building Department of Chicago, as well as many other cities where they have been officially tested. In many cases a lower rate of insurance may be obtained through their use.

Fire applied to woodwork that has been treated with either our NATIONAL FIREPROOF PAINT or with the NATIONAL FIREPROOF TRANSPARENT LIQUIDS, will char at point of contact, but the blaze cannot spread beyond that point (Fig. 2). Even in its "wet" or ready-to-use state, it will resist fire, even up to and including three thousand degrees Fahrenheit.



FIG. 1. TRADE MARK

GUARANTEE
AND COVERING
CAPACITY.

We guarantee that this paint when properly applied will not crack, chalk, or flake off; and will cover gallon for gallon as much surface as any first quality paint now on the market.

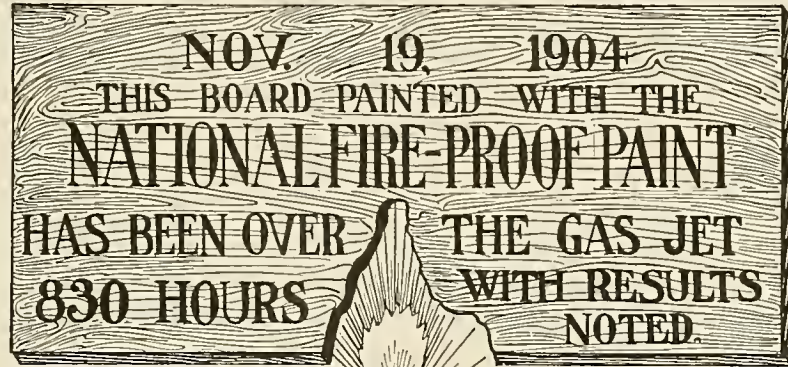


FIG. 2. REPRODUCTION OF EXHIBIT IN OUR WINDOW

We guarantee that in addition it composed of strictly pure linseed paint pigments.

We further guarantee the properly applied, for five years, and agree to forfeit the cost of material and labor in applying same, should there be reasonable cause for dissatisfaction arising therefrom.

Our Best Grade Linseed Oil and Lead NATIONAL FIREPROOF PAINT is made of the purest colors, in combination with Lead, Zinc and Linseed Oil, and is combined with certain chemicals, which have not, and cannot be successfully imitated.

This paint has now been on the market for years, and has long since passed the experimental stage.

- In 1 Gallon Cans, per gallon..... \$1.50
- In 5 Gallon Packages, per gallon..... 1.45
- In Barrels and Half Barrels, per gallon..... 1.40

Special Colors 50c per gallon extra.

All cans, packages and barrels should bear our Trade Mark (Fig. 1).

No. 1 OXIDE NATIONAL FIREPROOF PAINT is the only durable and permanent fireproof paint, composed of pure boiled Linseed Oil and standard mineral paint ingredients, ever placed on the market.

We thoroughly recommend this paint, knowing that when its value is better known, it will be universally used. Nothing better in its line can be obtained at any price.

- In 5 Gallon Packages, per gallon.....\$1.05
- In Barrels and Half Barrels, per gallon..... 1.00

All packages and barrels should bear our Trade Mark (Fig. 1).

This paint will cover approximately 250 square feet (two coats) per gallon, according to the surface to be painted.

- National Fireproof Transparent Liquid, per gallon.....\$.50
- In Barrels and Half Barrels, per gallon..... .40

Architects wishing to guard themselves and clients, so that no substitution can be made for the products of the NATIONAL FIREPROOF PAINT CORPORATION, should incorporate the following words in specifications for our goods:

- "Best Grade National Fireproof Paint."
- "No. 1 Oxide National Fireproof Paint."
- "National Fireproof Transparent Liquid."

PRICES OF
THE BEST
GRADE LINSEED
OIL AND LEAD
NATIONAL
FIREPROOF
PAINT.

PRICES OF
No. 1 OXIDE
NATIONAL
FIREPROOF
PAINT.

PRICES OF
TRANSPARENT
LIQUID.
FORM OF
SPECIFICATION.

THE BLENIO FIREPROOFING COMPANY

MANUFACTURERS OF

Fireproofing Liquids and Preserving Paints

545-547-549 West 22nd Street

NEW YORK CITY, N. Y.

TELEPHONE, 1060 CHELSEA

GUIDO BLENIO, *Vice Pres.*

ABRAHAM GRUBER, *Sec. and Treas.*

WM. H. BONYNGE, *Pres.*

PRODUCTS.

Our products fall into three main classes: 1. FIREPROOF PAINTS. 2. FIREPROOF LIQUIDS. 3. PRESERVING PAINTS (not fireproof).

USES AND CHARACTER OF OUR PRODUCTS.

FIREPROOF PAINTS of our manufacture are adapted for all manner of interior and exterior woodwork. They are supplied in all colors, and are, in every sense, among the finest covering material in the market, in addition to possessing reliable fireproof qualities. In other words, in them we offer to the architect a first-class substitute for the ordinary flammable paint. A considerable proportion of the fires that occur annually would have been prevented by the use of Fireproof Paint. The commencement of a big conflagration is always a small matter, and may, as a rule, be prevented by small preventatives.

The FIREPROOF LIQUID manufactured by us is designed to render fireproof every variety of cloth, plush and velvet, as well as laces, curtains, draperies, portières, bur-lap, denim, building papers, papier-maché, etc., etc. By the use of the Blenio Liquid all of these articles may be made thoroughly fireproof.

Our PRESERVING PAINTS (not fireproof) are intended for the preservation of wood, iron, steel and tin. Our MANDOLA OIL PAINT is, we believe, the best in existence for these purposes. It is a thoroughly damp-resisting paint, which remains always elastic; does not crack, peel or chalk, and renders iron and steel rust-proof. It is, at the same time, both a paint and a preservative for wood.

FACILITIES

Our factory, centrally located, containing the most modern machinery procurable, enables us to meet large orders on short notice and to ship with despatch over the quickest routes.

ADAPTABILITY.

The products of the firm are manufactured to special order. Stock on hand amounts to 1000 gallons. Our paints and liquids are endorsed by the Building Departments of New York and various cities.

INSTRUCTIONS AS TO ORDERS.

Goods may be ordered direct from our factory in New York City, or from our various agencies, which are established in cities through the country. Catalogue and price-list supplied upon application to the home office. Estimates gladly furnished.

APPLICATION.

Our paints and liquids can be applied by any painter. Application is simple. We undertake contracts or furnish material, as desired.

GENERAL INFORMATION.

The products of the Blenio Fireproofing Company are equalled by no others. Every article is tested and guaranteed before it is allowed to leave the factory. Our liquids are the result of years of experimenting, and do not cause the slightest injury to texture, coloring or general appearance. Our paints cannot injure the life of the wood. The patents which we hold allow us to manufacture at acceptable prices. Interests of our patrons are carefully protected. A postal card or telephone call brings full information or a representative to your office.

THE MURALO COMPANY

Manufacturers of Sanitary Cold Water Wall Coatings
and Weatherproof Paints

MAIN OFFICE AND WORKS

New Brighton, Staten Island, New York



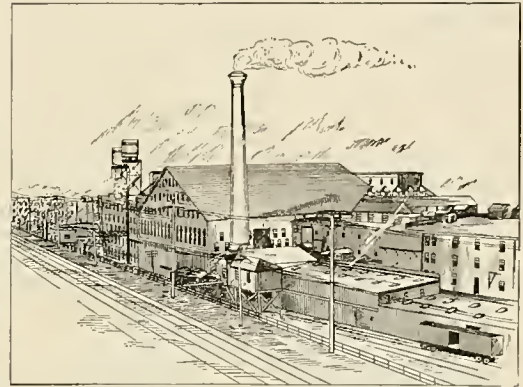
"THE TRADE-MARK OF
THE MURALO COMPANY IS
A GUARANTEE OF QUALITY."

PRODUCTS.

Manufacturers of COLD WATER WEATHERPROOF PAINTS, FIRE RETARDENT COLD WATER PAINTS, KALSOMINES and WALL COATINGS, SOLID WALL COLORS, DECORATORS' WATER COLORS, IMPROVED WHITEWASHES, AIR PRESSURE WHITEWASHING and PAINTING MACHINES, SOLID and ILLUMINATED MURALONYX PEDESTALS for special interior decoration, etc.

FACILITIES.

The plant of the Muralo Company is on the shore of the New York City end of Staten Island. Has $\frac{1}{2}$ mile of docking facilities; can place shipments on cars or boats at its own doors and has a capacity of 1,000 tons of finished product daily.



THE MURALO COMPANY'S WORKS
New Brighton, S. I., N. Y.

TERRITORY.

The products of the Company, such as CALCIMO, CALCIMO DEEP WALL COLORS, CALCIMO FRESCO COLORS, MURALO WALL FINISH, INDELIBLO EXTERIOR WEATHERPROOF PAINT, MARVELO PASTE PAINT for outside use, DUREO INSIDE PAINT, etc., are handled by all leading jobbers and dealers. We can quote prices delivered, your town, anywhere. Branch Warehouses, Buffalo, Chicago, and San Francisco.

ADAPTABILITY OF OUR PRODUCTS.

CALCIMO is for all interior wall and ceiling decorative or tinted effects. All of our outside paints and inside wall coatings are sanitary compounds. Our Indeliblo Cold Water Paint is listed as a fire retardant by the National Board of Fire Underwriters.

The following letter from Armour & Company, indicates how solid the claims are that we make for our products:

THE MURALO COMPANY,
New Brighton, N. Y.:

Gentlemen:

Referring to your favor of recent date, beg to say that we have used large quantities of Indeliblo Fireproof Paint, and are pleased to say that it gives very good satisfaction.

We are now painting the inside of our new Lard Refinery, a building five stories high, 380 feet long by 85 feet deep. We have just finished painting the interior of the Chipping Platforms of our new Ice House at Round Lake, a building 400 feet long by 40 feet high by 60 feet wide.

Heretofore we have used whitewash, but find your Indeliblo gives much better satisfaction, and adheres to the finish a great deal better than any whitewash we have ever used.

In our Felt Works, which burned down a few years ago, the interior was painted with Indeliblo, and the windows were glazed with Wire Ribbed Glass. The Wire Glass held the fire intact for two hours, and the timbers that were painted with Indeliblo were simply charred and not burned through.

We think it a first-class paint for factories, and will give satisfactory service to those using it.

We are using it throughout our entire works.

Yours truly,
ARMOUR & COMPANY,
D. J. SIMPSON,
Purchasing Agent.

GENERAL
INFORMATION.

The following is a brief analysis of the particular features of each of our products:

WEATHERPROOF PAINTS

INDELIBLO

INDELIBLO is a cold water weatherproof outside paint, made as a dry powder to be mixed with water only, and is made in White, Black and 24 Colors. It will cover from 25 to 80 sq. ft. to the pound according to the surface to be covered. Smooth painted boards require least paint, and rough unpainted boards or brick the most. Send for Color Card. Also made in White for interior use. It is particularly adapted where cost must be considered, being a substitute for oil paint or where oil paint is used as a finishing coat, it is superior as a priming coat to the usual cheap oil priming, at $\frac{1}{3}$ the cost. 500,000 lbs. were used on the St. Louis World's Fair Buildings. Put up in 25, 50 and 100 lb. kegs, 200 and 400 lb. barrels. Its covering power exceeds that of oil paint.



"THE TRADE-MARK OF
THE MURALO COMPANY IS
A GUARANTEE OF QUALITY."

MARVELO
PASTE PAINT.

MARVELO is a weatherproof paint in paste form which is thinned with Cold Water for use. It is absolutely non-poisonous, dries with a good, flat surface, and is made in 14 Standard Colors and White. Full color card mailed upon request. It hardens in a few days after application, and is then washable. It is put up in 10 lb. cans; 50 and 100 lb kegs; half barrels and barrels.

INTERIOR WALL COATINGS

CALCIMO.

CALCIMO, the sanitary wall finish, is beyond criticism. It is made for high class decorative effects as well as for ordinary kalsomining and tinting. Requiring nothing but Cold Water to make it ready for use, it economizes time in preparing; possessing extra covering power, it saves time in applying; having a full range of artistic tints, it meets any demand of the decorator; being well bound, it can be re-coated at pleasure, and will not show laps under the brush, while it may be washed off if desired. It is positively sanitary in its nature and has the approval of municipal health departments, school boards and sanitists generally. Send for sample block of tints. It is put up in 25, 50 and 100 lb. kegs, and in 200 and 350 lb. barrels, one pound covering about 60 square feet, one coat. We offer a set of fifty original decorative apartment schemes and effects in colors (pocket or desk edition) to architects, free of charge, on receipt of business card.

CALCIMO DEEP
WALL COLORS.

CALCIMO DEEP WALL COLORS are made from selected materials and are sanitary, durable and non-poisonous. They are properly prepared in a dry powder form, and will give satisfactory results for all interior work where it is desired to give a rich, solid and deep effect. The Wall Colors are ready for immediate use when mixed with Cold Water. They will flow well together, spread easily, and cover well with one coat. These colors may be used pure for deep effects or inter-mixed for special shades. They are put up in all size packages, kegs and barrels.

CALCIMO
FRESCO COLORS.

CALCIMO FRESCO COLORS are for decorators' use, general frescoing or free-hand ornamentation on high grade interiors, such as residences, churches, opera houses, public buildings, etc. They may be safely recommended to any decorator as being rich, pure and lasting colors. They may be purchased anywhere in quantities to suit, from one pint cans up.

WHITECOAT.

WHITECOAT, an improved, factory, fire-retarding wall finish, of exceedingly pure white, for covering large interiors where a good, clean effect is desired at the least possible cost. Any person may apply it, either by brush or with the *Cyclo* Spraying and Whitewashing machine. Will cover thoroughly one coat, and dry out clean and white, making it of unusual value where artificial lighting is an item of cost. Put up in 280 and 400 pound barrels.

MURALO.

MURALO WALL FINISH has won an exceptional reputation in many parts of the country, notably the North-West, throughout Canada, Australia, New South Wales and South Africa. It is a Cold Water Wall Coating having a cementitious base. It absorbs its water of crystallization and becomes as hard as a rock, so that it is quite possible to recoat year after year. It is manufactured in 24 beautiful tints and white, and is put up in packages, kegs, and barrels in same size as Indeliblo.



"THE TRADE-MARK OF THE MURALO COMPANY IS A GUARANTEE OF QUALITY."

DUREO.

DUREO is an interior Cold Water Paint of the same class as Indeliblo with the exception that it is not to be used outdoors. It is fireproof, washable, a good germ destroyer, and perfectly sanitary. Color card showing full line of tints will be sent upon application. Quantities the same as Indeliblo.

PAINTING AND
WHITEWASHING
MACHINES.

CYCLO PAINTING MACHINES are intended for use where large surfaces are to be covered rapidly and cheaply. The No. 0, or smaller machines shown here, will cover as much broken interior surface in a day as ten men would accomplish with brushes, and do it more thoroughly. As the Paint is forced out as a fine spray, it finds its way into every crack and crevice of the interior structure of the apartment. The Machine will do good work on any wall or ceiling up to a height of 20 feet, without the use of ladders or scaffolding. It carries about five gallons of paint.

The No. 2 Machine shown here in barrel form, carries about thirty gallons of paint and will supply two or three operators, requiring only a small boy to maintain the air pressure. These machines are ideal on large contracts.



THE No. 0 CYCLO PAINTING MACHINE



MURALONYX PEDESTAL
No. 60

MURALONYX
PEDESTALS.

We control several mines which produce a finely marked and beautifully colored stone, which we have named MURALONYX, having all the delicate veining and color blending that onyx has, takes a high polish, and may be made into ornamental pedestals of any size required, at about $\frac{1}{4}$ the cost of onyx. The solid pedestals are of themselves very beautiful, but we are now manufacturing under letters patent hollow pedestals for electric lighting, producing a very original and delicate effect which is highly artistic and ornamental. Illustrated catalogue upon application.

INFORMATION
AND ESTIMATES.

We will gladly furnish estimates and information needed by intending purchasers and welcome all inquiries.

SPECIFICATIONS.

In making out your specifications, please order our goods by name, adding to the name these words: "Manufactured by The Muralo Company, New Brighton, Staten Island, New York." In this way you will be sure to get what you have ordered.

THE THOMSON WOOD FINISHING COMPANY

OFFICE

115 North 4th Street
PHILADELPHIA, PA.

FACTORIES

928-30 North 3d Street
Bickley and Clarkson Avenues
PHILADELPHIA, PA.

PRODUCT.

Manufacturers of PORCELITE, SANALOID WHITE, WEATHER PROOF PORCELAIN PAINT, ALBA-VARNI, ZANZIBOLIO FLOOR FINISH, KAURINE PRESERVATIVE, EXTERIOR AND INTERIOR ZANZIBOLIO, ELASTIC SPAR VARNISH, ELECTRIC PRESERVATIVE VARNISH, PALE INTERIOR COACH VARNISH, SANALOID FLOOR FINISH, WHITE-WHITE, ENGLISH WHITE ENAMEL VARNISH, PORCELITE UNDERCOAT, CRYSTAL LIQUID FILLER, PERMANOLA SILEX HARD WOOD FILLER.

ADVANTAGES OF PORCELITE.

Porcelite is the only enamel finish that has stood the test of twelve years' wear and retained its permanent gloss and durable finish, and has not cracked or crazed. Having an impervious washable porcelain surface, which will stand the action of steam, soap, water, acids and antiseptic solutions, it makes a more perfect enamel or china gloss finish with less labor and material than any varnish or enamel made.

SPECIFICATION FOR ENAMEL FINISHING WITH PORCELITE.

"All saps, knots and defects in wood should be given a good coat of Grain Alcohol White Shellac before priming, to prevent sap from striking through. All nail-holes, cracks and defects to be puttied up with White Lead Putty after first coating. All goods should be applied carefully according to the directions on each package. All articles are to be brought to the operation in the maker's original packages unopened.

"*Porcelite for Wood*—New Woodwork. All interior woodwork (state where) shall be painted with three coats of Porcelite undercoat and sandpapered lightly after each coat. If Porcelite is to be a tint, the undercoat should be tinted the same shade. When hard, give two coats of Porcelite (state color), thinning the first coat with about a half pint of Turpentine to each gallon.

"For Rubbed Work. Last coat to be rubbed with pumice-stone and water to a dull finish.

"For Polished Work. Last coat to be rubbed with pumice-stone and water to a smooth surface, and then polished with rotten-stone and water.

"Old Woodwork. All painted work (state where) to be sandpapered to a smooth surface, and cleansed thoroughly with soda and hot water, to remove all grease and dirt. Then give two coats of Porcelite undercoat and two coats of Porcelite, following the same specifications as for new work.

"*Porcelite for Plaster or Brick*. All plaster and brick-work (state where) to be dusted thoroughly and two or three coats of Porcelite undercoat and two coats of Porcelite applied, following same directions as for woodwork. For walls or large surfaces, add about a half-pint of Porcelite thinner to each gallon of Porcelite to make it work easier, without affecting the gloss or durability.

"*Porcelite for Metal*. All metal work (state where) to be given two coats of Porcelite undercoat and two coats of Porcelite, following the specifications as for woodwork. Old bath-tubs, etc., after cleaning, should be rubbed with coarse sandpaper."

NOTE.

The above specifications and directions for Porcelite are for the very best results, but one coat of Porcelite will produce a better enamel finish than two coats of other enamels; therefore where good results, but not the finest finish is required, by adding one quart of Porcelite to the gallon of Porcelite undercoat, on the last coat of undercoat, but one coat of Porcelite will be necessary.

ADVANTAGES OF ZANZIBOLIO FINISHES.

The same care and intelligence that has made Porcelite the best enamel finish, is used in the manufacture of Thomson's Zanzibolio Finishes. They are made of the highest grade of varnish gums, selected for their particular use, and combined with years of experience in the manufacture of high-grade varnishes.

USERS OF OUR SPECIALTIES.

Our specialties have been used in hundreds of buildings and private dwellings, and proof of their satisfactory results can be seen at the following public buildings:

Treasury Building, Washington, D. C.
White House, Washington, D. C.
U. S. Capitol, Washington, D. C.
Waldorf-Astoria Hotel, New York City, N. Y.
Grand Central Depot, 42d St., New York City, N. Y.
New York Life Insurance Co.'s Building, New York City, N. Y.
Post Office Building, Broadway, New York City, N. Y.
Bowling Green Building, New York City, N. Y.
New York Hospital, New York City, N. Y.
Odd Fellows' Temple, Philadelphia, Pa.
Hollenden Hotel, Cleveland, O.
N. Y. C. & H. R. R. Depots, Buffalo and Rochester, N. Y.
West Short R. R. Co., Weehawken Depot, N. Y.
Penn'a R. R. Co., Broad St. Station, Philadelphia, Pa.

The Dufferin, St. Johns, N. B.
Girard Life and Trust Co. Building, Broad and Chestnut Streets, Philadelphia, Pa.
John Wanamaker's, Philadelphia, Pa.
Hotel Walton, Philadelphia, Pa.
Philadelphia Bourse, Philadelphia, Pa.
New Public Buildings, Broad and Market Streets, Philadelphia, Pa.
Mercantile Club, Broad and Master Streets, Philadelphia, Pa.
Boston City Hospital, Boston, Mass.
Boston and Maine R. R. Depot, Boston, Mass.
Geo. W. Jackson's Bath Houses, Atlantic City, N. J.
Hotel Brighton, Atlantic City, N. J.
Galt House, Louisville, Ky.

THE STANDARD TABLE OIL CLOTH CO.

320 Broadway
NEW YORK CITY, N. Y.



TELEPHONE 3443 FRANKLIN

PRODUCTS.

Manufacturers of TABLE, SHELF and STAIR OIL CLOTHS; CARRIAGE ENAMEL OIL CLOTH; UPHOLSTERY FABRICS, and LEATHEROLE and SANITAS WATERPROOF WALL COVERINGS.

TERRITORY.

Our goods will be shipped to any part of the United States and Canada.

We do not apply any of our Wall Coverings; the same is always done by a contractor. Name of local dealer or contractor sent on request.

SAMPLES AND PRICES.

We will gladly furnish suggestions, sketches, samples and prices on application.

LEATHEROLE.

LEATHEROLE is a new and handsome wall covering, embossed in both high and low relief. The variety of its designs and colors affords a range of more than six hundred effects capable of application to the simplest or the most elaborate interior decoration. Leatherole is absolutely sanitary. It can be kept clean with soap and water. This material is made on a cloth foundation. It successfully covers all imperfections in a plaster wall.

Leatherole designs may be ordered finished in any desired color; or it can be procured with a plain ground which may be decorated to suit the individual taste.

SANITAS.

SANITAS is another new wall hanging made by the Standard Table Oil Cloth Co. It is also of cloth and it is printed in oil colors. There are no embossed effects in Sanitas, but there are more than one hundred styles in printed hangings, burlaps, plain colors and tiles. Sanitas affords a much more satisfactory wall decoration than any paper. It can be used wherever paper is used. It lasts many times as long. It is made in unglazed patterns and plain colors suitable for use in any room of a modern home.

Sanitas burlaps are unexcelled for hotels, offices and apartment houses. Sanitas tiles, printed on glazed surface, are used everywhere for bathrooms, nurseries, pantries, kitchens and in hospitals.

The plain tints in this material make an admirable foundation for fresco work. The surface is already tinted and prepared for any after decoration that personal fancy may suggest.

Sanitas, like all the other products of this Company, is waterproof. Its color will not fade. It hides cracks and keeps out cold and damp. Both Sanitas and Leatherole are widely used by the best architects in all the cities and towns of the United States.



SANITAS AS A WALL PROTECTOR

W. H. S. LLOYD CO.
 Importers of Anaglypta and Wall Papers
 26 East 22d Street
 NEW YORK CITY, N. Y.

TELEPHONE CONNECTION

PRODUCTS.

ANAGLYPTA, high and low relief decoration. ENGLISH, FRENCH and GERMAN WALL PAPERS. JAPANESE LEATHERS.

FACILITIES.

We carry the largest stock of fine foreign Wall Coverings in the United States. We also carry an extensive line of samples, orders from which can be imported within four weeks. Our sample books can be seen in nearly every large city. All communications will receive our promptest attention, and samples of any style of Wall Covering will be submitted on request.

ILLUSTRATIONS.

We print below illustrations of two of our hundreds of designs.



No. 379. ANAGLYPTA
 Giving a repeat of 10½ sq. feet



No. 1057. ANAGLYPTA
 Size 23½ sq. feet

ANAGLYPTA.

With a view of meeting the demand for relief decoration, and to secure its general adoption, we are importing from England the inexpensive, and substantial fabric, "Anaglypta."

The difference between "Anaglypta" and all other embossed paper fabrics is the superior method of manufacture. Other fabrics are generally made of ordinary paper, and embossed by a separate process, while "Anaglypta" is embossed from plastic pulp, before it assumes the form of paper.

The parts in relief are thicker, and therefore, they will maintain the relief when pasted for fixing. Even when made into a thin fabric, thin as ordinary embossed paper, "Anaglypta" will not lose its relief when pasted on walls, as it has been embossed when plastic. Embossed paper, on the other hand, has a tendency when dampened to resume its original flatness as soon as it begins to dry, after pasting.

"Anaglypta" furnishes a ready made patterned ground work, upon which an artist can produce an endless variety of color effects. 1½ lbs. of oil paint will properly cover a twelve yard length of "Anaglypta" and unless a very dark shade is required, that is sufficient to finish it. Every gradation of shade can be obtained.

In all cases where relief decorations are used, it is most essential that "Anaglypta" or other mouldings should be used below friezes, and chair rails above all dados.

A substantial relief decoration once fixed on walls or ceilings may be entirely changed in appearance by simply redecorating the fabric, thus saving the expense of new material.

From an economical point of view, if a strong and, at the same time inexpensive fabric be chosen, it furnishes a very desirable form of decoration.

THE PANTASOTE COMPANY

Imitation Leather

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NEW YORK CITY, N. Y.

TELEPHONE, 2542 BROAD

CABLE ADDRESS, "PANTASOTE"

- PRODUCTS.** PANTASOTE LEATHER, PANTASOTE SHADE and CURTAIN MATERIALS, PANTASOTE MACKINTOSHED MATERIALS.
- DESCRIPTION.** Pantasote is a coined word from Greek derivation, meaning "to serve all purposes."
- Pantasote Leather is manufactured for upholstery purposes.
- It consists of two fabrics united firmly together with an intermediate coating of Pantasote gum, the surface coated with Pantasote and embossed, which gives it a finish resembling hide leather.
- This material can be, and is, finished with ordinary leather grains in a great variety of colors, or with high relief embossing, either decorated or plain, for all purposes which leather can serve.
- Pantasote Shade and Curtain Material consists of a great variety of printed and woven fabrics of different textures and qualities, coated in the same manner as the upholstery goods.
- QUALITY.** Pantasote is unaffected by any climatic conditions. By the nature of its composition it does not stretch or bag; it does not dry up or oxidize as leather does; it is absolutely water-proof and germ-proof; the Pantasote surface is non-flammable; it can be washed or cleaned at any time and will outwear any hide leather, except a few of the most expensive varieties of skins.
- For Shade and Curtain Purposes it is the most durable and therefore the most inexpensive material known; it is opaque and the Pantasote surface protects the decorated fabric on the inside from the rotting effect of the heat of the sun through window panes, from fading, and from rain when windows are open, thereby enabling the use of delicate and artistic silk fabrics, which could not be used for shade purposes in any other way.
- ADAPTABILITY.** For all classes of upholstery, for wall decoration, screens, vestibules.
- For Shades for residences, hospitals, yachts, railway cars and electric cars, for automobile canopy tops, seat upholstery and lap-ropes.
- DURABILITY.** Pantasote materials were placed on the market in 1891 and have been in continual use in the United States and foreign countries ever since, with a regularly increasing demand, and have been adopted as standard for shades and upholstery purposes on all the principal steam railroad and traction lines in the United States and many foreign countries. This proves its durability and economy.
- It will outlast leather and costs one-third as much.
- PANTASOTE MACKINTOSHED MATERIALS. PRICES.** For tents, awnings, sportsmen's, campers', explorers' and army equipments.
- Samples and prices on application.

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OFFICE AND FACTORY

609-611-613 North American Street

PHILADELPHIA, PA.

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CABLE ADDRESS, QUADRANT

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LOUIS BLOOM, *General Manager*

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Reproducers of ARTIFICIAL MARBLE, ARTIFICIAL ONYX and ARTIFICIAL CAEN STONE. CASTINGS and MOULDINGS in KEENE'S CEMENT. SOLE AGENTS for IMPORTED VICTORIA KEENE'S CEMENT in Philadelphia and vicinity.

ARTIFICIAL MARBLE.

Artificial Marble is well known to Architects and to the general Building Trade, as a scientific reproduction of fine natural marbles in colored Keene's Cement. It is not to be confounded with the old-fashioned scagliola or scafiata, which are made of colored plaster of Paris and are very fragile. The principal constituent of our artificial marble is the expensive white English Keene's Cement—Cafferata Brand—mixed with colors to reproduce the various tints, veins, grainings and even the imperfections and irregularities found in natural marble and onyx. Our reproductions are not to be distinguished from the original marble.

In comparison with its moderate cost, Artificial Marble is recognized as a most decorative material for its many purposes, and it possesses advantages even over the original. We make it in sizes larger than can be obtained in natural stone—a great advantage, especially in producing large columns. Our Artificial Marble is stronger and more homogeneous than most real marble, requiring none of the wax filling and stopping which is absolutely necessary even in the most perfect foreign and native stones. Such fillings are liable to fall out at any time. The lighter weight of our marble is an advantageous feature also, from an architectural view-point.



ACKER'S QUALITY SHOP, PHILADELPHIA, PENN.
ARNOLD H. MOSES, A.A.I.A., Architect

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The American Art Marble Company received the First Prize and two Gold Medals at the St. Louis Exposition.

THE FIRST AWARDS IN THE UNITED STATES FOR THESE PRODUCTS.

IMPORTED KEENE'S CEMENT.

No. 2 VICTORIA KEENE'S CEMENT is a grayish-pink in color; adapted for gauging in lime mortar for ordinary plastering, and is also used as a wall finish.
 No. 1 VICTORIA KEENE'S CEMENT for use as a white finish of walls plastered with No. 2 mortar.

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Our products meet all the requirements of the building and municipal laws, and also with the requirements of the National Board of Fire Underwriters.

INSTALLATION.

We furnish expert workmen to erect and finish our work when necessary, thereby assuring uniform satisfaction. The setting of slabs in panel work can be accomplished by any ordinary carpenter or skilled mechanic. Definite instructions in regard to setting are given with all work.

FOREIGN SHIPMENTS.

We make a specialty of slabs, mouldings and bases, packed with the greatest care for shipment to foreign countries, and easily set by skilled mechanics.

PROMPTNESS.

Our factory is the largest and most complete, and our staff and equipment the most modern and efficient in the country, enabling us to execute all orders of whatever extent with the utmost promptness and accuracy. As we keep at all times a large stock of Keene's Cement in our warehouse, there is no vexatious delay in delivering the finished product.

REFERENCES.

From our long list of satisfied customers we refer to the following work executed by us:

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- MUNICIPAL BUILDING
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- REALTY BUILDING
- CITY DEPOSIT BANK
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- Show Room, Philadelphia, Pa.
- Clearfield, Pa.
- Philadelphia, Pa.
- Richmond, Va.
- Atlantic City, N. J.
- Syracuse, N. Y.
- New York City, N. Y.
- Buffalo, N. Y.
- Pittsburg, Pa.
- Washington, D. C.
- Richmond, Va.
- Atlantic City, N. J.
- Trenton, N. J.
- Trenton, N. J.
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- Pittsburg, Pa.
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COST AND ESTIMATES.

We reproduce the most expensive and ornamental foreign and native marbles at prices lower than those asked for even poorer grades of natural marble.

Estimates and sketches will be submitted and any further information furnished promptly on request.

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In order to protect themselves and their clients from the substitutions of plaster of Paris and other inferior material in their artificial marble and stone work, architects should use the following form of specification:

"The artificial marble work to be made of imported Victoria Keene's Cement. The face to be of Superfine and the body of Coarse. No work to be less than one inch in thickness. No Portland Cement, Plaster of Paris or King's Windsor Cement to be used in its manufacture.

"The artificial marble work to be set in place and held with brass wire, well doweled and bedded. No screws to be used. Cafferata's Coarse Keene's Cement only to be used for setting. No plaster to be used in connection with this work.

"The work to be stoned and honed until a true, smooth surface has been obtained and then rubbed to a high and durable polish.

"All the artificial marble work to be furnished and set by the American Art Marble Company of 609, 611 and 613 North American Street, Philadelphia, Pa., or its equal."

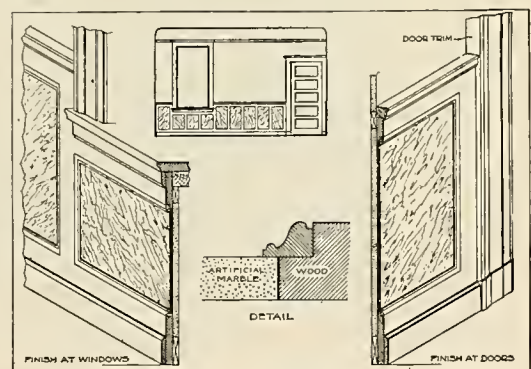


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J. R. TOWLE, President

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Interior Decorative Marble
(IMPROVED SCAGLIOLA)

413 East 91st Street
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TELEPHONE CONNECTION

FACILITIES.

The factory of the company is the largest in existence, and is capable of taking care of the largest contract.

TERRITORY.

The operations of the company cover the entire United States and Canada.

INSTALLATION.

Artificial Marble is installed the same as the natural marble, and a greater latitude is allowed the Architect, in the selection of mouldings and carvings, and every member is produced according to details; all joints are carefully mitered and fitted.

GENERAL INFORMATION.

By our process of manufacture, we can imitate perfectly any marble or stone in existence, and have repeatedly installed our material in the same room with the natural marble. In the making of columns, a very large saving can be made, when compared with the cost of the natural marble.

Our work is applied around iron or steel columns, and at once relieves the Architect's mind as to how he will decorate an isolated column; pilasters are treated in the same manner.

REFERENCES.

Some of the most important buildings in New York City and elsewhere contain our Improved Scagliola. A list of a few is appended:

N. Y. ATHLETIC CLUB, 59th St. and 6th Ave.
U. S. MILITARY ACADEMY, West Point, N. Y.
HARVARD UNIVERSITY, Cambridge, Mass.
LIBERAL ARTS BLDG., World's Fair, St. Louis.
LAFAYETTE HOTEL, Portland, Me.
BUTTERICK PUBLISHING CO. BLDG., New York City.
NEWARK CITY HALL, Newark, N. J.
GERMAN SAVINGS BANK, New York City.
CASCO NATIONAL BANK, Portland, Me.
CHAMBER OF COMMERCE, New York City.
BANK BUILDING, Pittsburg, Pa.
BOWERY SAVINGS BANK, New York City.
DUNWOODIE SEMINARY.
ST. VINCENT HOSPITAL, New York City.
MT. ST. VINCENT ACADEMY.
ALL SAINTS CHURCH, Brooklyn, N. Y.
CHURCH OF THE ASCENSION, New York City.
ST. JOSEPH'S CHURCH, 87th St., near 1st Ave., N. Y. City.
ST. ROSE'S CHURCH, Carbondale, Pa.
SYNAGOGUE, 70th St. and C. P. W., New York City.



EXAMPLES OF ARTIFICIAL MARBLE

CHURCH OF OUR LADY OF LOURDES, Brooklyn, N. Y.

MAJESTIC THEATRE, Boston, Mass.

PARK THEATRE, Brooklyn, N. Y.

YORKVILLE THEATRE, New York City.

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SHERRY'S HOTEL, 5th Ave. and 45th St.

HERALD SQ. HOTEL, 34th St. near Broadway.

LORRAINE HOTEL, 5th Ave. and 45th St.

SAVOY HOTEL, 59th St. and 5th Ave.

COLLINGWOOD HOTEL, 45 W. 35th St.

CRITERION HOTEL, Broadway and 41st St.

METROPOLE, Broadway and 42d St.

ST. HUBERT HOTEL, 120 W. 57th St.

WEBSTER HOTEL, 40 W. 45th St.

ESSEX HOTEL, Boston, Mass.

MRS. GRAMBRILL'S RESIDENCE, Providence, R. I.

DE HIRSCH HOME, New York City.

CHILD'S RESTAURANTS:

New York City Newark, N. J.

Providence, R. I. Philadelphia, Pa.

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ESTABLISHED 1887

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Manufacturers of MARBLE in imitation of all the imported colored decorative varieties.

MYCENIAN MARBLE SCAGLIOLA.

The highest grade of manufactured Marble, and the only artificial Marble that imitates the natural. It is made only by the Mycenian Marble Co., the owner of the process, no other concern having succeeded in equaling it in any respect, by any other process, ancient or modern.

These Marbles are made into Architectural Designs, Slabs of any size, Mouldings of any form, Columns no matter how large, Pilasters, Pedestals, Wainscotings and Church Altars, in every case producing the precise decorative effect for which the natural stone is so highly prized.

EXAMPLES OF WORK.

Examples of our work are to be found in almost all the most notable modern buildings, but as it is intended to pass for the natural stone which it so closely resembles, we think the publication of the list will be deemed inconsistent.

We are always pleased to furnish information and estimates. We carry no made up stock.



TWO OF THE SEVENTY-SIX COLUMNS ERECTED BY US IN A MODERN HOTEL

COLUMNS.

An important branch of our work is encasing structural steel and iron columns, thus converting them into marble monoliths.

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WORKS, 1936-1938 PARK AVENUE

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A CORNER IN THE MAIN HALL OF THE SCHUYLER ARMS HOTEL, NEW YORK CITY, N. Y.
Artificial Pavonazzo Marble Columns, Pilasters, Mantels, Wainscoting, Newel-Posts and Balustrade executed by us

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We have one of the best equipped plants in the United States for the manufacture of artificial marble. The most skillful craftsmen only are employed. The advantages enable us to fulfill orders of any size with unusual promptness and dispatch.

We have executed some of the best and most artistic work in this country; write us for a list of the buildings.

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216-218 East 42d Street

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General Contractors for DECORATIVE INTERIOR WORK in PLASTER, STONE and WOOD. MODELERS and CARVERS in Stone and Wood. MEMORIAL WORK, MAUSOLEUMS. ALTARS a specialty.

FACILITIES.

In addition to its Modeling Studios in New York and Philadelphia this company operates one of the largest and most complete Steam Marble Works in the country.

TERRITORY.

We are able to carry out large contracts in any part of the country, and solicit correspondence on important work in any territory.

WHERE OUR WORKMANSHIP AND MATERIAL MAY BE SEEN.

The following are some of the prominent buildings upon which we have applied our workmanship and materials:

GOVERNMENT BUILDINGS

U. S. Mint, Philadelphia
National Export Exposition Buildings, Philadelphia
Philadelphia Building, Charleston Exposition, Charleston, S. C.
U. S. Naval Academy, Cadet Quarters Building, Annapolis, Md.
U. S. Naval Academy, Chapel Building, Annapolis, Md. (Under Way)
U. S. Post Office, Camden, N. J.
U. S. Post Office and Custom House, San Francisco, Cal.
U. S. Post Office, Joliet, Ill.
U. S. Post Office, Elmira, N. Y.
Capitol Building, Harrisburg, Pa., Bronze Doors

BANKS AND OFFICE BUILDINGS

Real Estate Trust Building, Philadelphia
U. G. I. Building, Philadelphia
New York Life Building, Philadelphia
Baptist Publication Building, Philadelphia
Mariners & Merchants Building, Philadelphia
R. E. Title Ins. and Trust Building, Philadelphia
Stephen Girard Building, Philadelphia
Girard Bank Building, Philadelphia
Commonwealth Trust Building, Philadelphia
Broad St. Station, Penn'a R. R., Philadelphia
Oriental Hall (Masonic Temple), Philadelphia
Philopatrian Hall, Philadelphia
University Law Building, Philadelphia
Dormitories U. of P., Philadelphia
Medical Laboratories, U. of P., Philadelphia
Horticultural Hall, Philadelphia
Carnegie Library, Pittsburgh, Pa.
Stevens High School, Lancaster, Pa.
Woolworth Building, Lancaster, Pa.
Watt & Shand Building, Lancaster, Pa.
Four Washington University Buildings, St. Louis, Mo.
Trinity College, Washington, D. C.
Dodge Memorial Hall, Princeton University, Princeton, N. J.
Princeton University Gymnasium, Princeton, N. J.
First National Bank, Scranton, Pa.
Wilkes-Barre Sav. Dep. & Trust Co., Wilkes-Barre, Pa.
Rockefeller Hall, Bryn Mawr College
New John Wanamaker Store, Philadelphia
St. Joseph Academy, Philadelphia

THEATRES

Garrick Theatre, Philadelphia
Keith's New Theatre, Philadelphia
Auditorium Theatre, Baltimore, Md.
Academy of Music, Atlantic City, N. J.
Folly Theatre, Brooklyn, N. Y.
Opera House, Lancaster, Pa.

CLUBS

Rittenhouse Club, Philadelphia
Union League Club, Philadelphia
Ivy Club, Princeton, N. J.
Elks Club, Philadelphia (Under Way)

CHURCHES

St. Paul's Cathedral, Pittsburgh
St. Peter's Cathedral, Wilmington, Del.
St. Patrick's Cathedral, Harrisburg
Martin Maloney Chapel, Spring Lake, N. J.
St. Catherine's Chapel, Reybold, Del.
St. Luke's Episcopal Church, Gtn., Philadelphia
St. Luke's Episcopal Church, Scranton
Episcopal Church of the Advocate, Philadelphia
Church of the Epiphany, Philadelphia
St. James Episcopal Church, Philadelphia
St. Peter's Church, Philadelphia
St. Mary's Chapel, Philadelphia
St. Mark's Episcopal Church, Philadelphia
Fourth Presbyterian Church, Pittsburgh

HOTELS

Bellevue-Stratford Hotel, Philadelphia
Hotel Marlborough, Atlantic City, N. J.
Hotel Luray, Atlantic City, N. J.
St. Charles Hotel, Atlantic City, N. J.
St. James Hotel, Philadelphia
Bingham Hotel, Philadelphia
Hotel Flanders, Philadelphia
New Maryland Hotel, Baltimore

RESIDENCES

George C. Boldt, Thousand Islands
Ogden Mills, Staatsburg on Hudson
P. A. B. Widener, Ashbourne, Pa.
Wm. L. Elkins, Ashbourne, Pa.
James W. Paul, Jr., Radnor, Pa.
John Grebble, Jenkintown, Pa.
R. K. Cassatt, Rosemont, Pa.
Col. James Guffey, Pittsburgh, Pa.
J. S. Morgan, Princeton, N. J.
M. Taylor Pynes, Princeton, N. J.
Dr. Magie, Princeton, N. J.
Mr. Savadge, Princeton, N. J.
Chas. J. Field, New York
George A. Armour, Princeton, N. J.
George Crocker, Ramsey, N. J. (Under Way)
C. Hartman Kuhn, Radnor, Pa.
James Sullivan, Radnor, Pa.
J. Roger Maxwell, Glen Cove, L. I.
J. W. Winthrop, Westbury, L. I.
Mr. Martin, Great Neck, L. I.
Jas. B. Markee, Philadelphia
Robert M. Janney, Philadelphia
Wm. H. Wanamaker, Philadelphia
Francis L. Potts, Philadelphia
J. Franklin McFadden, Haverford, Pa.
Samuel Heilner, Spring Lake, N. J.

H. L. Pratt, Brooklyn, N. Y.

GRAND RAPIDS CARVED MOULDING CO.

Front and Myrtle Streets

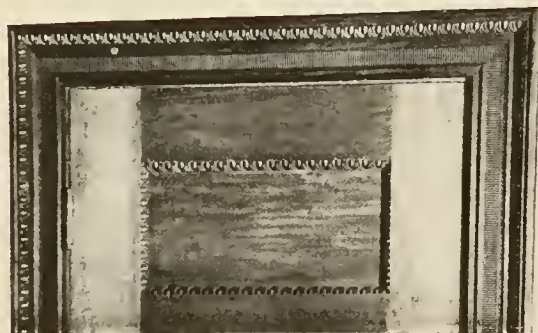
GRAND RAPIDS, MICH.

PRODUCTS. Manufacturers of MACHINE CARVED MOULDINGS, NEWEL POSTS, STANDARDS, etc.

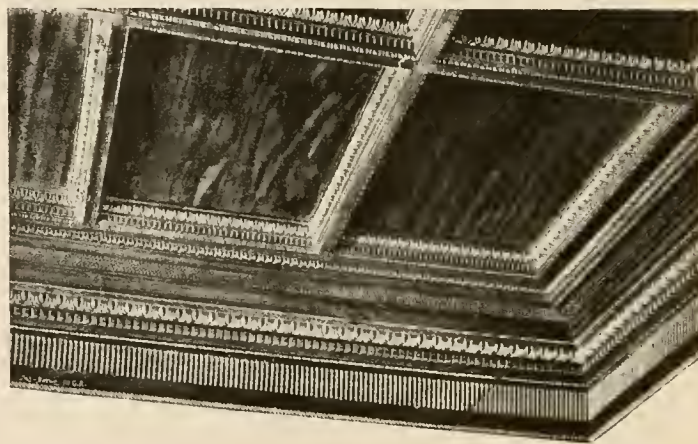
MATERIAL. We make our mouldings out of Oak, Maple, Walnut, Cherry, Sycamore, Ash, Pine, Mahogany, Gum and Cypress.

MACHINE CARVED MOULDINGS. Machine Carved Mouldings are in demand by every architect and builder. We can make nearly every style that can be suggested, besides handling a very beautiful line of stock patterns.

These Mouldings should not be classed with pressed work. They are made on very different machines; the grain of the wood is not mashed and expressionless, but as



No. 22 B, 3-INCH, AND No. 7 RED, 1/2-INCH



PANELED CEILING AND CORNICE

clear and effective as in hand work. This is an advantage in an age which must be served promptly and which demands the artistic and the beautiful in the simplest work of utility.

CATALOGUE. Our illustrated catalogue and price-list will be furnished on request. We will submit samples of any style desired.

STUDIOS OF THE ARTISTS AND CRAFTSMEN CO.

Designers and Art Workers

24 and 26 East 21st Street

NEW YORK CITY, N. Y.

TELEPHONE, 3123 GRAMERCY

SERVICES.

ART STAINED GLASS, MURAL PAINTING, MOSAICS, TAPESTRIES, MEMORIAL WINDOWS, EMBOSSED LEATHER, FAIENCE, WALL HANGINGS, FRESCOES, FURNITURE and FIXTURES.

FACILITIES.

We are prepared to furnish estimates and designs for all kinds of interior decoration. The Members of the Association are Artists and Craftsmen who have produced some of the most important examples of decoration in the country. We have our own workshops where the artist can supervise the work of the craftsman—and our object is to produce results of the highest character only.



EXECUTED DESIGN FOR A STAINED
GLASS WINDOW

EXAMPLES.

Examples of recent work designed and executed by our members:

Cadillac Hotel
Saratoga Club
Court House
N. Y. State Building

Residence, J. Marsden Perry
Residence, R. W. Coldwell, Jr.

Hofbrau Haus
Residence, Arthur Horgan

New York City, N. Y.
Saratoga, N. Y.
Fort Wayne, Ind.
St. Louis, Mo., 1904

Providence, R. I.
Montclair, N. J.

New York City, N. Y.
Deal, N. J.

And many others.

Art Glass Domes
Art Glass Domes, Figure Windows
Mural Paintings
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Art Glass Windows
Art Glass Windows

W. & J. SLOANE

ESTABLISHED 1843

Broadway, 18th and 19th Streets

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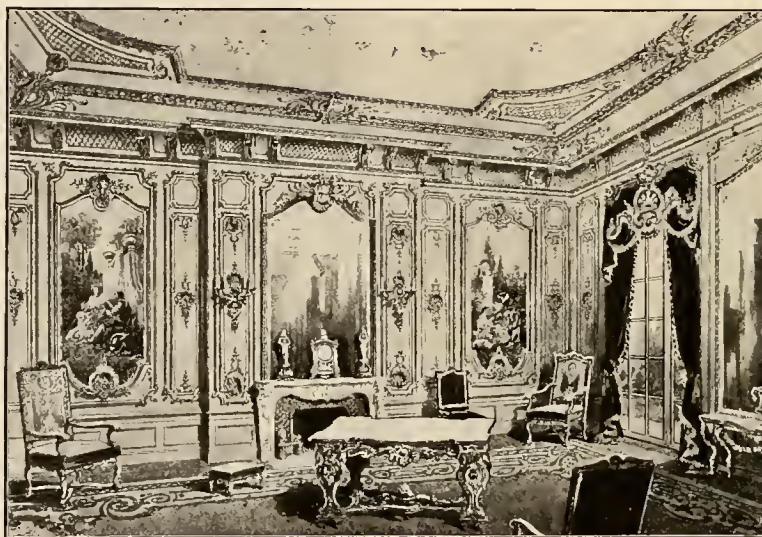
NEW YORK CITY, N. Y.

PRODUCTS.

INTERIOR DECORATIONS, HARD WOOD TRIM, FRESCO WORK, ORNAMENTAL PLASTERING, LEADED GLASS, SPECIAL DESIGN FURNITURE, HAND-MADE TAPESTRIES, UPHOLSTERING FABRICS, DRAPERIES, LACE CURTAINS, IMPORTED AND DOMESTIC CARPETS, FINE ORIENTAL RUGS, DOMESTIC RUGS, MATTINGS, LINOLEUMS, OIL CLOTHS, CORK CARPETS, etc.

FACILITIES.

The firm of W. & J. Sloane is, in an especial sense, thoroughly equipped to undertake the execution of contracts for the interior decoration of buildings from designs received from architects or drawn by their own artists. They are recognized as authorities in interior decoration, and they are experts as to the goods in which they deal, being often called upon by the Government for expert testimony. Their close association with the most prominent manufacturers in Europe and America enables them to place at the command of their patrons the highest grade of Furniture, Fabrics, Carpets, Rugs and all other Furnishings required for handsomely furnished homes.



DRAWING ROOM, PREDOMINATING STYLE, LOUIS XIV.

INTERIOR DECORATIONS.

W. & J. Sloane have their own corps of designers and decorators, skilled painters, plasterers, fresco workers, carvers, cabinet makers and other artisans to whom any undertaking, whether simple or elaborate, is capable of satisfactory execution. They have their own Wood Working Factory where they make to order Special Design Furniture, as well as Wood Trim of the highest class. They are also prepared to design fine Aubusson and Beauvais Tapestries and execute special orders for the same in size, design and color to conform with the decoration of the room which the Tapestry is to adorn. Lace Curtains and Fabrics also made to order.

CONTRACT WORK.

In no other branch of W. & J. Sloane's business do their facilities stand out more prominently than in their ability to execute contracts for such furnishings as are required for Offices, Steamboats, Yachts, Private Cars, Clubs, Hotels, Apartment Houses, Theatres, Libraries, Hospitals and Public Buildings of every character.

WHOLE
CARPETS.

In the furnishing of fine houses the question of appropriate floor coverings is often a difficult problem to solve. Perhaps the outline of the room is irregular and no suitable Carpet or Rug can be found of the required size. In just such cases as this a Whole Carpet will meet all the requirements. We make a specialty of weaving these Carpets in one piece and are prepared to execute orders for them in the following qualities: French Aubusson and Savonnerie, English Hand Tufted and Scotch Chenille Axminster, India Berlin and Turkish Weaves. The designs are prepared by W. & J. Sloane's artists to suit the decorations of the room in which the Carpet is to be used, and from these designs the Carpet is woven by hand to fit any space no matter how irregular. Whole Carpets have no seams and the beauty of the design and coloring is thus retained in its perfection.

ORIENTAL
RUGS.

Purchasers of Oriental Rugs occupy a most peculiar position in that they are likely to have a limited knowledge as to the quality or value of the Rug, and must rely upon the integrity of the merchant. Other floor coverings have a fixed value, which can easily be determined, but Oriental Rugs in the hands of unscrupulous dealers have often been the means of defrauding the public. These are reasons why it is wise to buy Oriental Rugs from reputable firms, who have nothing to gain but everything to lose by a suspicious transaction.

The Rugs offered by W. & J. Sloane are selected by their representatives in the Orient; they import them direct and carry the largest stock in this country, all of the best qualities. Their salesrooms are large and well lighted, affording a most convenient place for leisurely selection.



"INVISIBLE" STAIR RODS

SLOANE
"INVISIBLE"
STAIR RODS.

The "Invisible" Stair Rod, of which W. & J. Sloane are the sole patentees and owners, has entirely supplanted the old fashioned rods that were fastened over the surface of the Carpets. This modern device, which may be applied to wood, iron or stone steps of any width, is concealed behind the Carpet and grips the fabric firmly without revealing its presence and not doing the slightest injury to the texture. See illustration herewith. They are carried in stock in 27 and 36 inch widths and special sizes will be made to order without delay.

PROMINENT
CONTRACTS
EXECUTED.

Doors and Hardwood Trim in more than 300 rooms in the world famous St. Regis Hotel, New York City; Furnishings in the home of Mr. Andrew Carnegie, also in the country home of President John A. McCall of the New York Life Ins. Co.; Carpetings in the White House at Washington, D. C.; Carpetings or Rugs in New York Yacht Club; Sherry's, New York; New Hotel Astor, New York; University Club, Metropolitan Club; Metropolitan Opera House; the Hippodrome, Delmonico's, Café Martin, all of New York. This firm has just been awarded the contract for all the Carpetings and Furnishings to be used in the new Hotel Belmont, New York City, one of the largest hotels in the world.

JAMES McCREERY AND COMPANY

Decorators and Contractors

Twenty-third Street
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TELEPHONE, 5409 GRAMERCY

SERVICES.

We are manufacturers and Importers of RICH UPHOLSTERY GOODS, LACE CURTAINS and FABRICS suitable for WALL and FURNITURE COVERINGS, LACE and SILK DRAPERIES, ORIENTAL and DOMESTIC RUGS.

At our showrooms, we carry a complete collection of foreign materials, including Silk and Linen Velours, Brocades, Brocatelle, Silk and Satin Damask, etc.

We have rooms suitably fitted up, showing pure styles of Interior Decorations with the correct materials, woods and hangings employed for their construction, one of which is illustrated below.

We are the New York distributors for the Craftsmen Furniture and carry a large line always in stock. We also have a complete line of Filing Cabinets for professional and commercial purposes.



VIEW OF ROOM SHOWING TYPE OF CRAFTSMEN'S DECORATION

CONTRACT DEPARTMENT.

We are fully prepared to undertake contracts for the complete furnishing of Hotels, Clubs, Yachts and Private Dwellings.

ESTIMATES.

We shall be glad to furnish sketches and estimates and will forward samples of any of our materials upon application.

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Importers and Makers of Persian and Turkish Rugs and Carpets

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(*Fireproof*)
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CONSTANTINOPLE,
TURKEY

PRODUCTS. PERSIAN and TURKISH RUGS and CARPETS.

A maintained stock of high quality, superior weaves and variety of color schemes, designs and sizes, enables us to meet exacting demands.

MAIL ORDERS. Selections from stock shipped to all parts of the United States on approval. Prompt attention paid to mail orders.

SPECIAL ORDERS. We submit, or receive, designs for special rugs of the finest texture to be made on our own looms in Tabriz (Persia), or Hereke (Turkey).

STORAGE. We store and care for rugs, tapestries, and objets d'art in our own fireproof warehouse.

CLEANING. Our Warehouse is equipped with every modern facility for the cleaning of rugs and carpets.

REPAIRING. Expert attention given to the repairing of damaged rugs and carpets.

RESTORATIONS. Special department for the restoration of Antiques.

PERSIAN RUG MANUFACTORY

(ESTABLISHED 1884)

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(TEMPORARY ADDRESS 139 FIFTH AVENUE)

PRODUCTS.

HIGH CLASS RUGS and CARPETS woven to order only, in one piece without seams, any size or shape, design or color, from sketches prepared by architects or decorators, from our own stock designs, or specially prepared sketches by our designers to harmonize with the interior furnishing of the room. Fabrics made and imported by us include Chenille Axminster, Hand-tuft, Berlin, Aubusson and Savonnerie.

ADAPTABILITY.

These floor coverings are eminently suitable for residences, hotels, clubs, banks, offices, yachts and private cars, and are especially adaptable for irregular shaped rooms, halls and stairs.

MATERIAL.

Only the very best wools and worsteds dyed with vegetable dyes are used in these fabrics, thereby insuring fast color and durability.

FACILITIES.

We are able to execute large or small orders at our various factories as follows: Axminster in New York City, Hand-tufted and Berlin in Vienna, Aubusson and Savonnerie in Paris.

PRICES.

From \$8.00 per square yard up, according to quality, thickness and design.

FIGURING.

When writing for information give approximate sizes, state if plain or designed, period desired, for what use rugs are intended, etc., that we may have sufficient data for estimating.

REFERENCES.

Our goods have been furnished in the following representative buildings:

BUILDING	CITY	ARCHITECT	DECORATOR
Aetna Insurance Co.	Hartford, Conn.	Benj. W. Morris	
National Park Bank	New York City, N. Y.	Donn Barber	
Knickerbocker Trust Co.	New York City, N. Y.	McKim, Mead & White	
Union Club	New York City, N. Y.	Gilbert & DuFais	Herter Bros.
Harmonie Club	New York City, N. Y.	McKim, Mead & White	The Hiss Co.
Augusta R. R. Bank	Augusta, Ga.	Mowbray & Uffinger	
City Club	New York City, N. Y.	Lord & Hewlitt	Mrs. C. S. Davidge
Miss Bliss	New Canaan, Conn.	Robertson & Potter	Philip Hiss Co.
R. W. Patterson	Washington, D. C.	McKim, Mead & White	
John S. Kennedy	New York City, N. Y.		Edw. T. Cockcroft
C. Ledyard Blair	Peapack, N. J.	Carrère & Hastings	Chas. C. Cottrell
Spencer Kellogg	Buffalo, N. Y.	Green & Wickes	L. Marcotte & Co.
Murray Guggenheim	West End, N. J.	Carrère & Hastings	L. Alavoine & Co.
A. C. Burrage	Boston, Mass.	Chas. Brigham	Herter Bros.
John R. Drexel	New York City, N. Y.	Horace Trumbauer	Allard & Sons
Thomas Wanamaker	Philadelphia, Pa.	McKim, Mead & White	John Wanamaker
R. W. Patterson	Lenox, Mass.	Robertson & Potter	John H. Hutaff
Capt. Delamar	New York City, N. Y.	C. P. H. Gilbert	John H. Hutaff
John D. Spreckels	San Francisco, Cal.	Reid Bros.	Herter Bros.
Daniel Hanna	Cleveland, O.	Jarvis Hunt	Brooks Household Art Co.
C. F. Hoffman	Newport, R. I.	Hoppin & Koen	Hamilton Bell & Co.
W. K. Vanderbilt, Sr.	Oakdale, L. I.	Hunt & Hunt	L. Marcotte & Co.
J. P. Taliaferro	Florida		Tiffany Studios
George Lauder, Jr.	Greenwich, Conn.	Henry C. Pelton	John H. Hutaff
Clarence H. Mackay	Jamestown, N. C.	McKim, Mead & White	
J. B. Ford	Detroit, Mich.	A. W. Chittenden	
C. C. Glover	Washington, D. C.		Philip Hiss Co.
Mrs. Wm. Astor	New York City, N. Y.	Richard N. Hunt	

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