UNITED ENGINEERING & FOUNDRY COMPANY

PITTSBURG, PENNA. U.S.A.

ROLLING MILL MACHINERY

United Engineering and Foundry Company

Pittsburg, Pa., U. S. A.

Composed of

McGill & Company Department

Lincoln Foundry Company Department

The Lloyd Booth Company Department

Chilled Roll Foundry Company Department

Frank-Kneeland Machine Company Department

Officers

ISAAC W. FRANK	President	CHARLES E. SATLER	Secretary
C. H. BOOTH	First Vice-President	EDWARD KNEELAND	Treasurer
F. A. CAMPBELL	Second Vice-President	OTIS H. CHILDS,	Chairman Executive Committee
	T. J. BRAY, Jr.		Chief Engineer

UNITED ENGINEERING AND FOUNDRY COMPANY

PITTSBURG, PENNSYLVANIA, U. S. A.

Engineers, Founders and Machinists

Sand, Chilled and Steel Rolls, Iron, Steel and Tube Works Machinery, Including

Blooming Mills
Universal Mills
Plate Mills
Slabbing Mills
Sheet Mills
Tin Mills
Guide Mills
Structural Mills
Skelp Mills
Muck Bar Mills
Continuous Mills
Hydraulic Shears
Lever Shears
Guillotine Shears
Vertical Shears
Plate Shears
Squaring Shears
Doubling Shears
Punches
Straightening Machines
Roll Lathes
Hot Saws

Cold Saws
Squeezers
Ore Mills
Accumulators
Ash Cars
Slag Cars
Billet Cars
Ingot Cars
Hydraulic Cranes
Corrugating Machines
Ingot Strippers
Ingot Tilters
Mill Tables
Traveling Tables
Tilting Tables
Conveyors
Intensifiers
Manipulators
Plate Bending Rolls
Sand Rolls
Chilled Rolls
Steel Rolls

Miscellaneous Iron and Steel
Castings
Special Machinery
Bar Pullers
Skelp Bending Machines
Charging Troughs
Coupling Benders
Coupling Expanders
Coupling Tappers
Coupling Rolling Machines
Cross Rolls
Mandril Extractor
Pipe Cutters
Pipe Straighteners
Scarfing Machines
Size Rolls
Clipping Shears
Coupling Iron Shears
Skelp Slitting Shears
Pipe Testing Machines
Welding Rolls
Threading Machines

And all classes of Tube Works Machinery

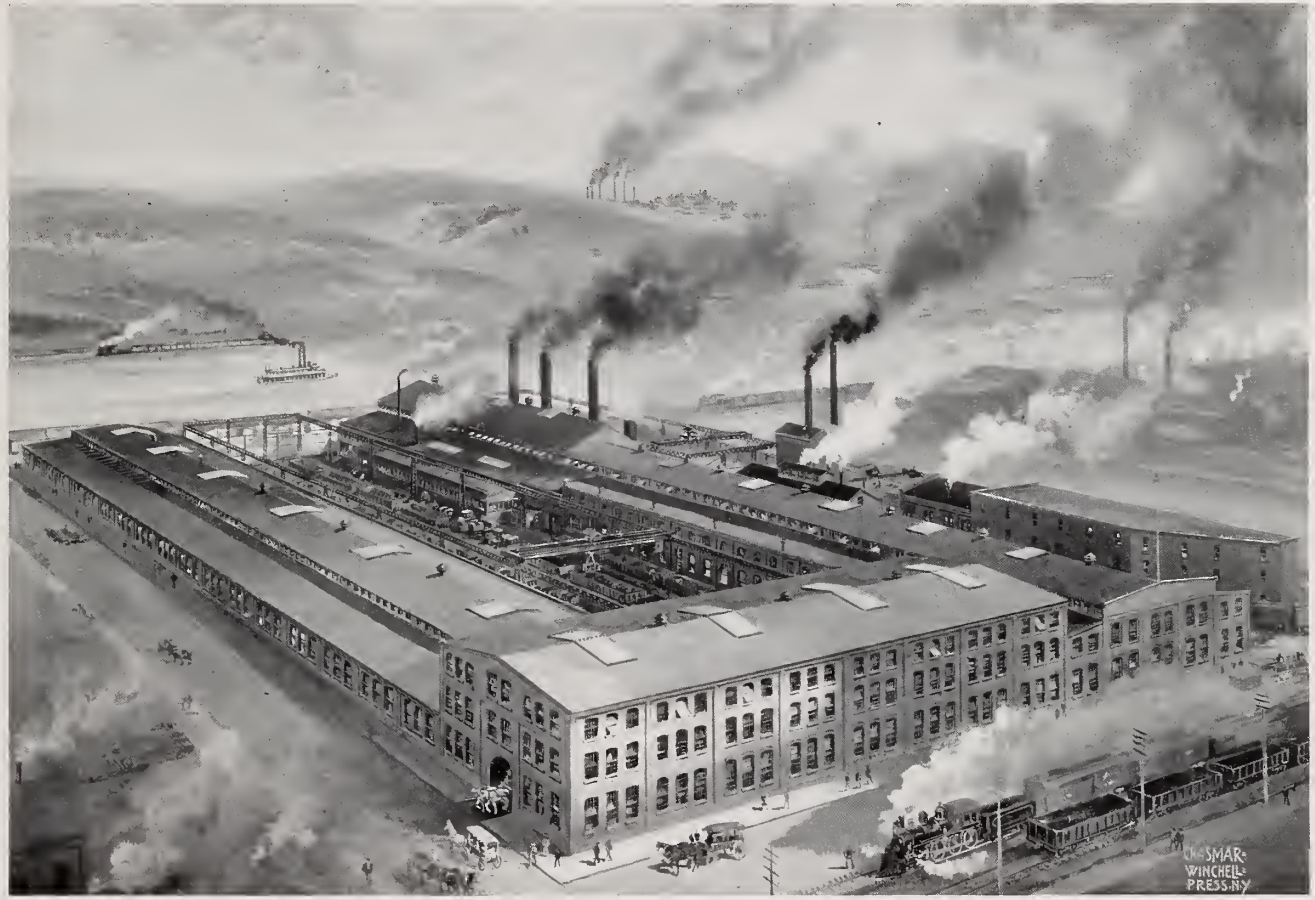
Dedication

TO OUR FRIENDS AND PATRONS, TO WHOM OUR SUCCESS IS DUE, WE RESPECTFULLY DEDICATE THIS CATALOGUE.

Table of Contents

LINCOLN FOUNDRY DEPARTMENT
OF UNITED ENGINEERING AND FOUNDRY COMPANY
PITTSBURG, PA.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

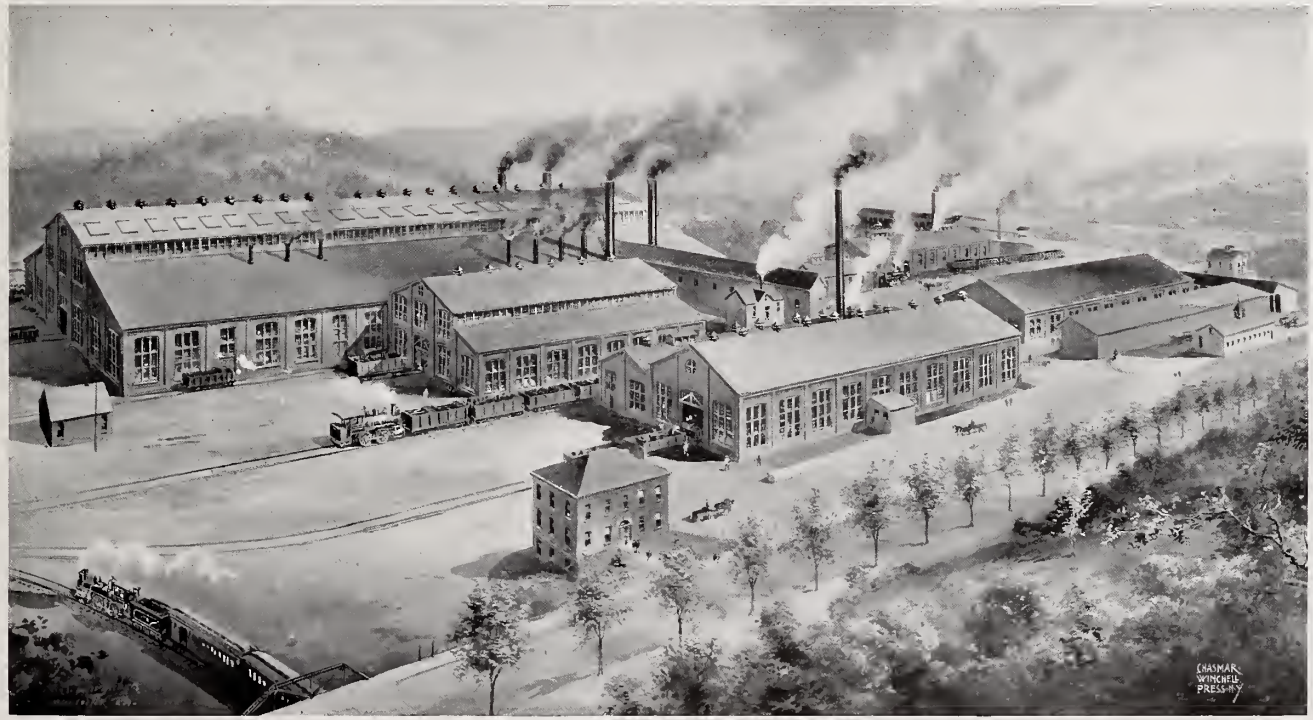


FRANK-KNEELAND MACHINE DEPARTMENT
OF UNITED ENGINEERING AND FOUNDRY COMPANY
PITTSBURG, PA.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

THE LLOYD BOOTH DEPARTMENT
OF UNITED ENGINEERING AND FOUNDRY COMPANY
PITTSBURG, PA.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.



CHILLED ROLL FOUNDRY DEPARTMENT
OF UNITED ENGINEERING AND FOUNDRY COMPANY
PITTSBURG, PA.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

INTRODUCTION

OWING to changed conditions in the iron and steel manufacturing industry, growing out of the consolidation of these interests in the past five years, it was deemed good business policy to unite several manufacturers in the roll and machinery line into one organization, where duplication of designs, patterns, chemical and metallurgical investigation could be avoided, and at the same time increase the efficiency of the united plants. Therefore this company was formed, and consists of the Lloyd Booth, Frank-Kneeland, Lincoln, McGill and Chilled Rolled Foundry Departments. Each of these departments had its distinct reputation as roll and machinery makers. Each department is to-day, as of old, under the same shop management, while the engineering and sales departments have been consolidated in spacious and well equipped offices in the Farmers Bank Building, Pittsburg, Pa.

Since the organization of this company the several plants have been enlarged and improved in many ways, and we invite visits from our customers to inspect our splendid facilities for producing every kind of heavy machinery.

ENTRANCE TO GENERAL OFFICES

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

PRESIDENT'S AND DIRECTORS' ROOM

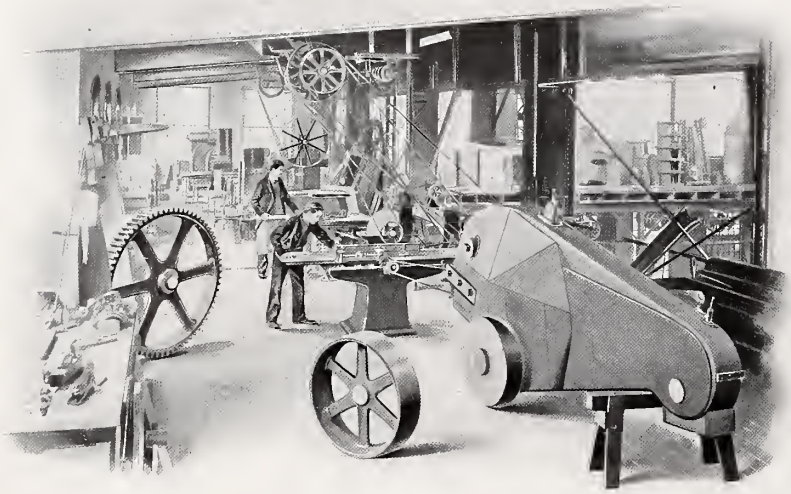
Utility, character and excellence of design, best material and workmanship are the prime objects which have won success for us.

Complete records of all designs are kept in fire-proof vaults, and parts can be duplicated at any time.

Our engineering department is prepared to design and insure the operation of individual machines or complete plants for the production of any of the rolled products of iron or steel, including complete pipe mills. They also design special machinery for other purposes.

AUDITING DEPARTMENT

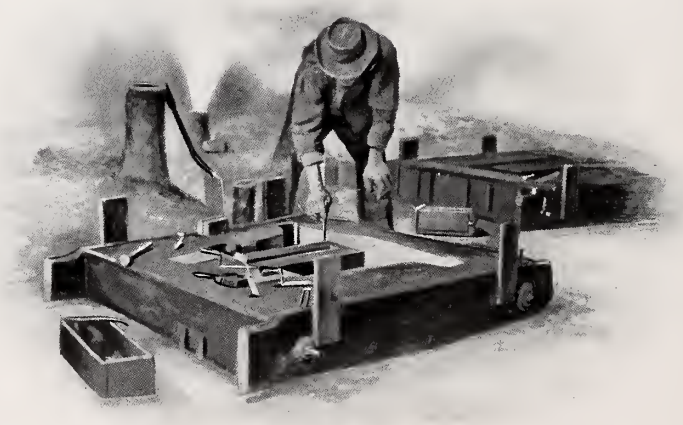
United Engineering and Foundry Company



Each one of our plants has a modern pattern shop, equipped with improved machinery for the class of work intended to be done.

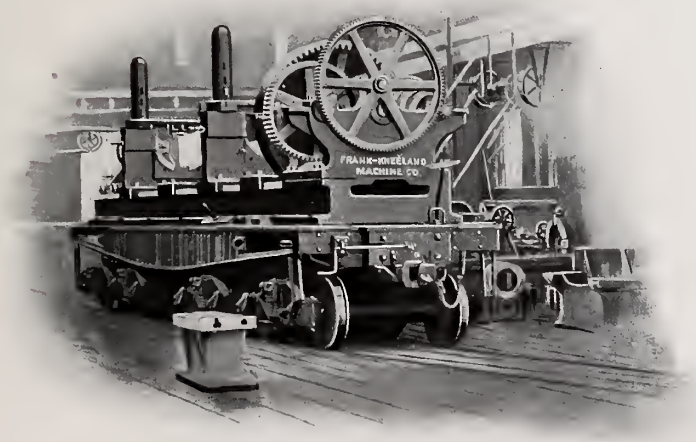
We also have large storage buildings for patterns at each plant where our own and our customers' patterns are kept for future use.

Our foundries are well equipped with electric traveling cranes of large capacity; these, with ample floor space, melting capacity, large core-drying ovens, etc., put us in a position to make the largest and highest grade of iron and steel castings produced.



United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

Our machine shops are well equipped with the most modern tools built, and are of such size that we can finish the heaviest castings or forgings made. In connection with each machine shop we have a large erecting shop with ample floor and crane capacity, for assembling all machinery so as to insure perfect fitting and operation of all parts before shipment is made.



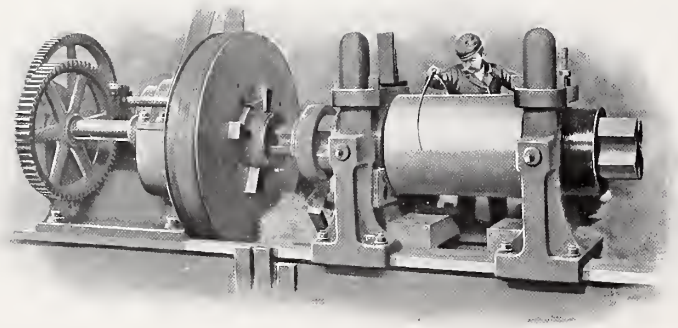
60-INCH LATHE ON CAR

Railroad sidings are run through the center of all departments, giving perfect shipping facilities, and all handling of material is done by electric traveling cranes.

Our plants located in Pittsburg are on the river front, so that we can ship by water when necessary.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

Roll Department

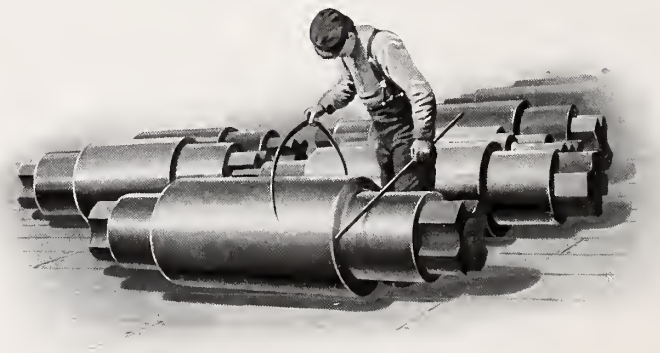


We are prepared to design rolls for rolling all classes and sizes of material, from the rough to the finished product.

As we are "the largest roll makers in the world and make the largest rolls," we naturally have had the most experience in this line.

Four of our plants are equipped for the manufacture of all kinds and sizes of rolls.

We believe we have developed the science of roll making to a greater degree and can furnish rolls better suited for particular use than any other manufacturer.



United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

METHOD OF MEASURING DEPTH OF CHILL ON ROLLS

This represents $\frac{9}{16}$ inch clear chill

When depth of chill is designated, it is assumed to mean clear chill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

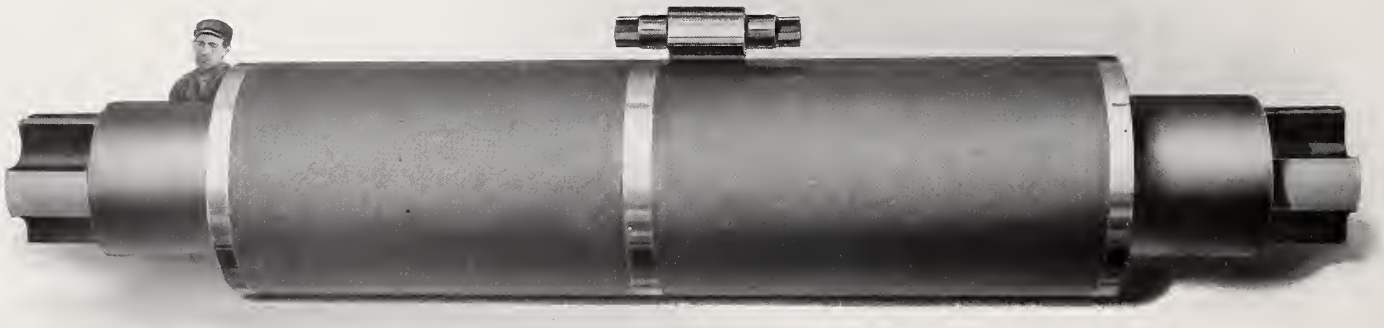


Illustration No. 339

42 x 152 Inch and 8 x 10 Inch Chilled Rolls

Largest roll makers in the world. Makers of the largest as well as the smallest iron, steel and chilled rolls in use for any purpose.

United Engineering and Foundry Company
Pittsburgh, Pa. U.S.A.

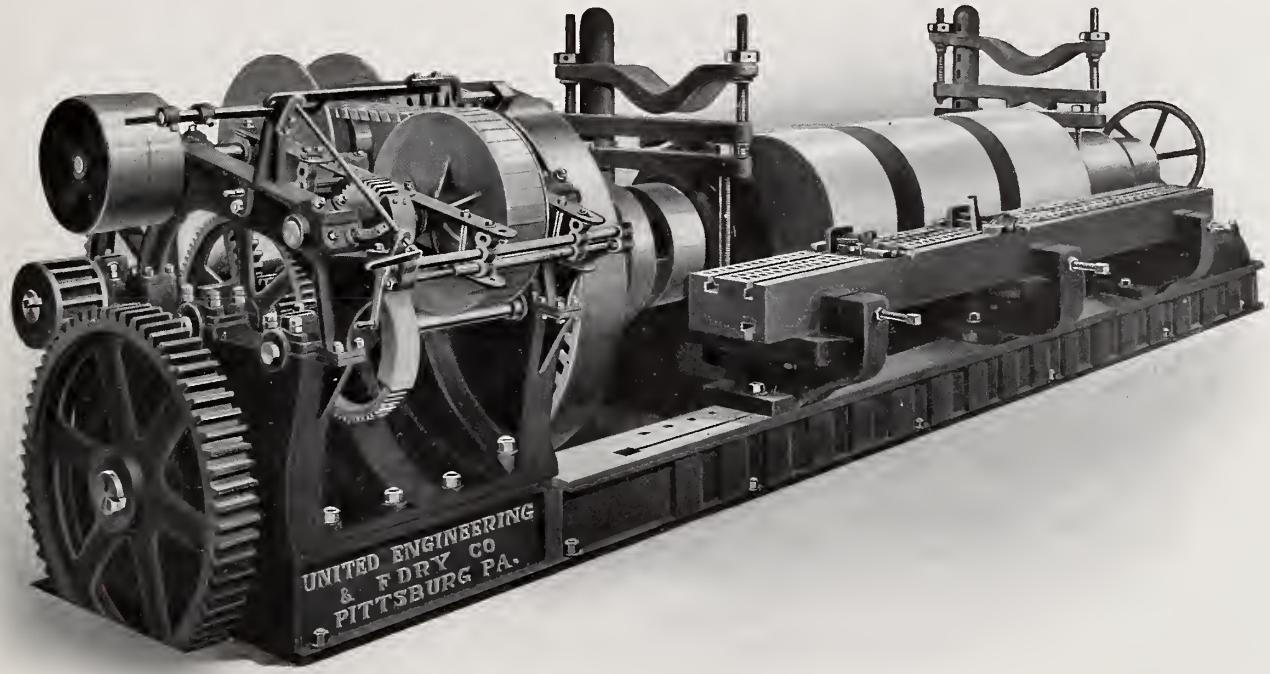


Illustration No. 342

42 x 152 Inch Roll and 50 Inch Roll Lathe

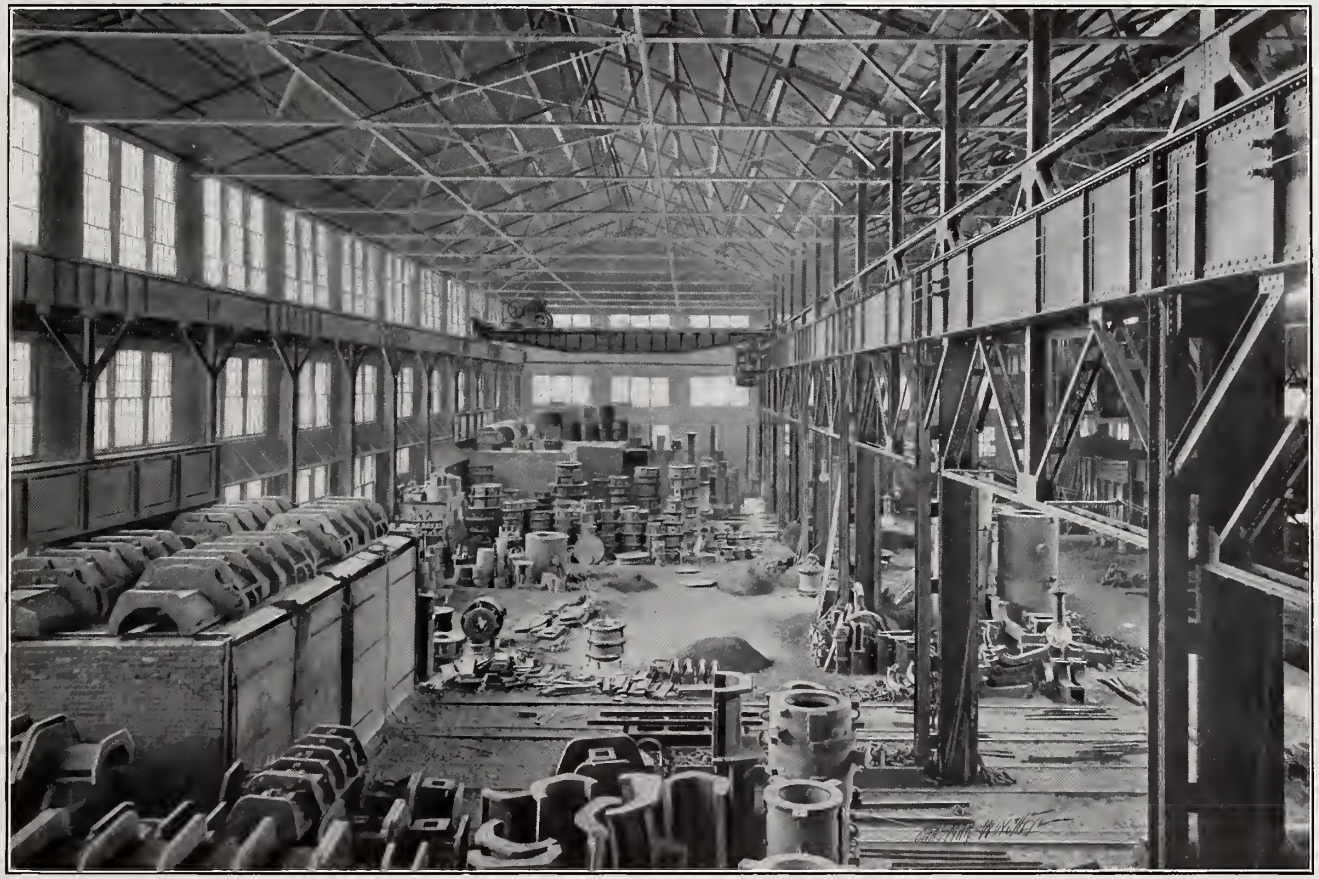
This illustration shows our 50-inch Roll Lathe, belt-driven and equipped with a variable speed countershaft. See description on page 120.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

SCRAP YARD

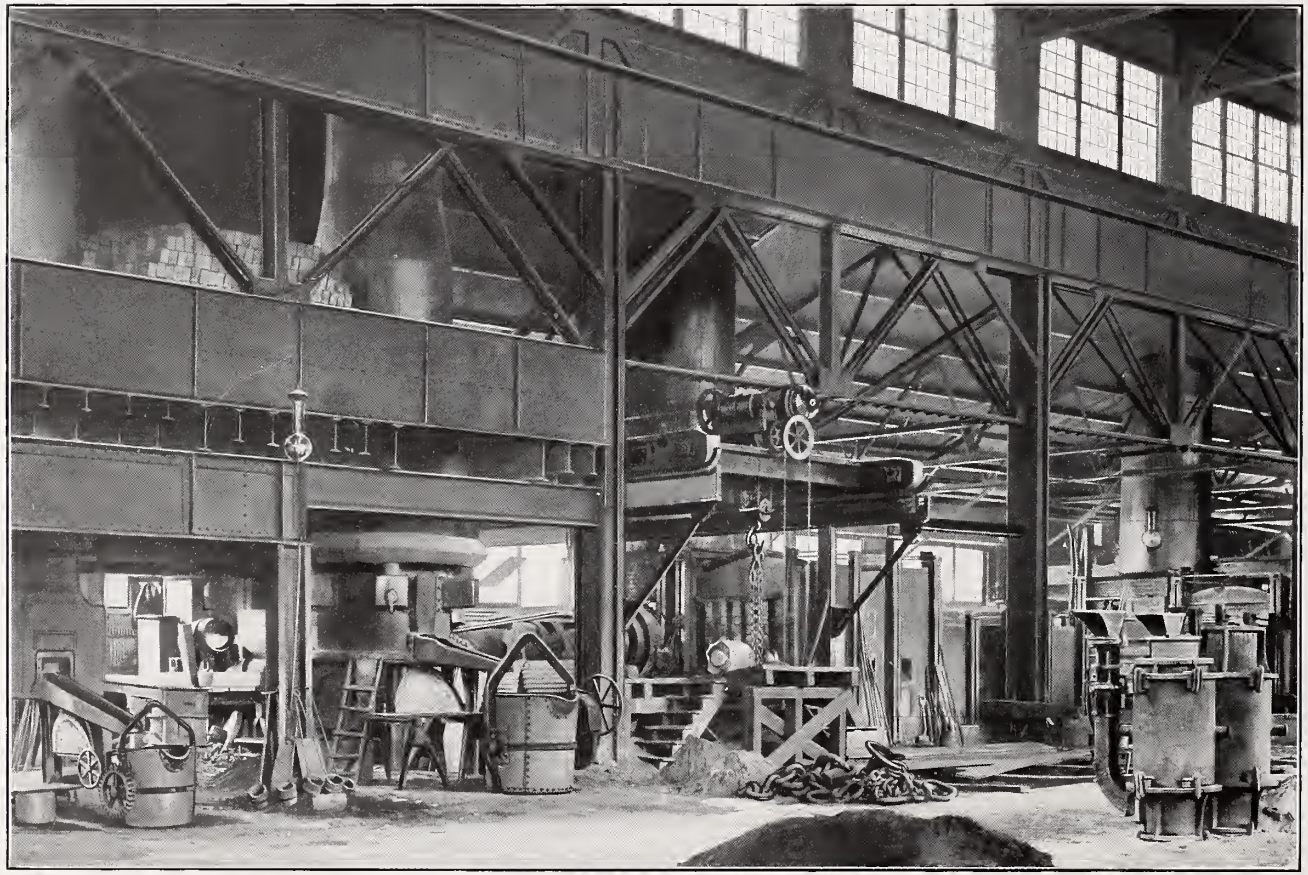
LINCOLN FOUNDRY COMPANY DEPARTMENT

United Engineering and Foundry Company



CORE OVENS AND MOLDING FLOOR
LINCOLN FOUNDRY COMPANY DEPARTMENT

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.



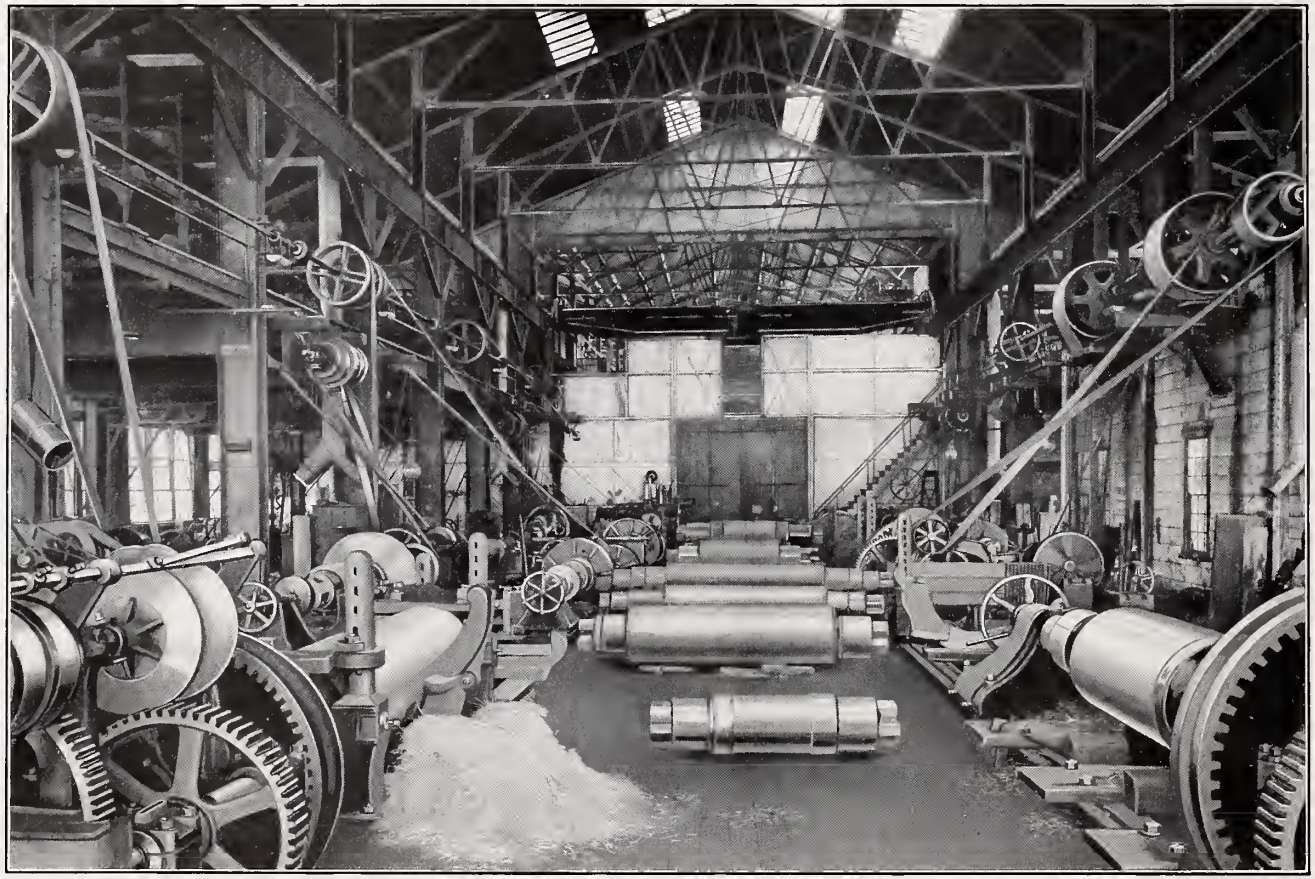
CUPOLA AND AIR FURNACES
LINCOLN FOUNDRY COMPANY DEPARTMENT

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

ROLL CASTING PIT

LINCOLN FOUNDRY COMPANY DEPARTMENT

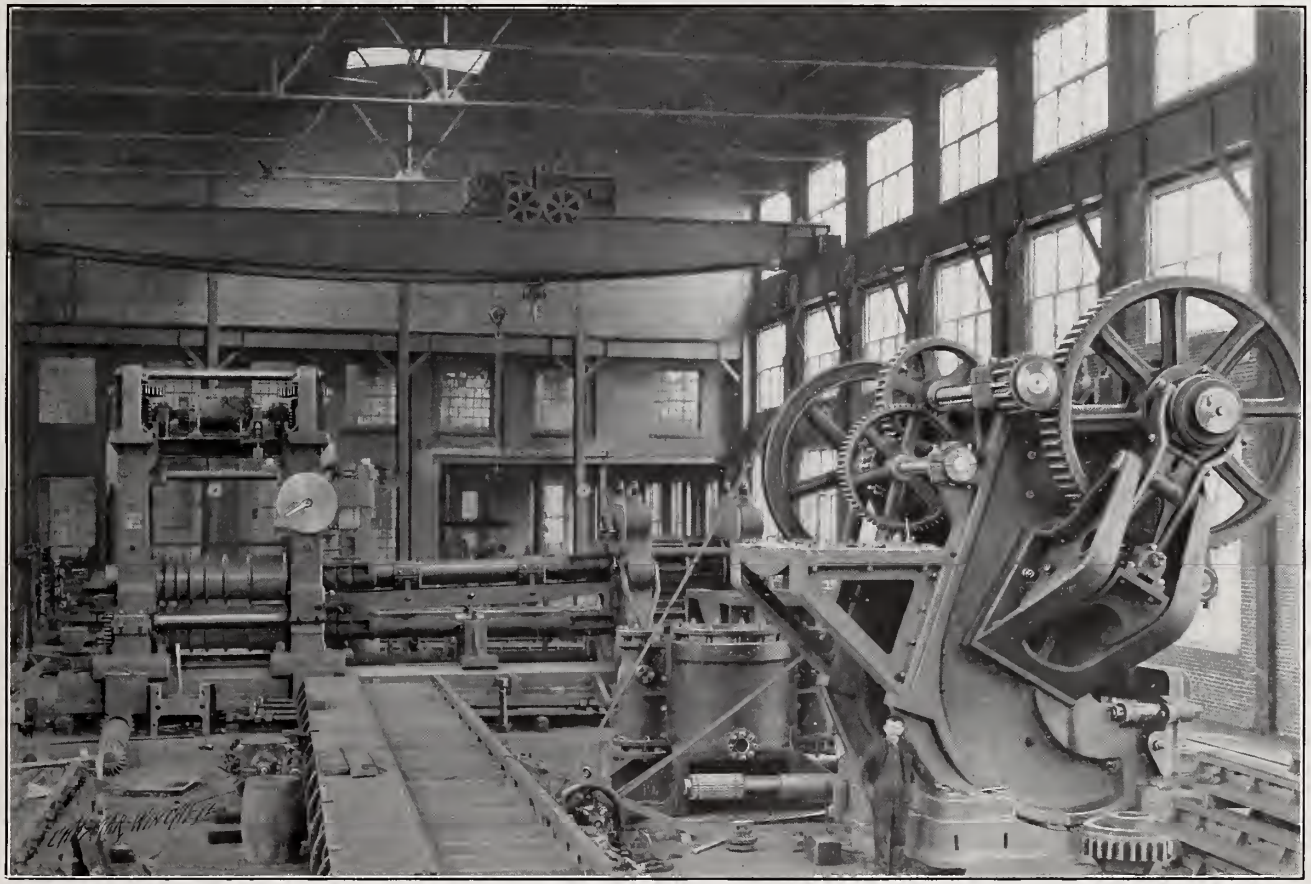
United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.



ROLL TURNING SHOP

LINCOLN FOUNDRY COMPANY DEPARTMENT

United Engineering and Foundry Company



ERECTING SHOP

FRANK-KNEELAND COMPANY DEPARTMENT

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

DRAFTING ROOM

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

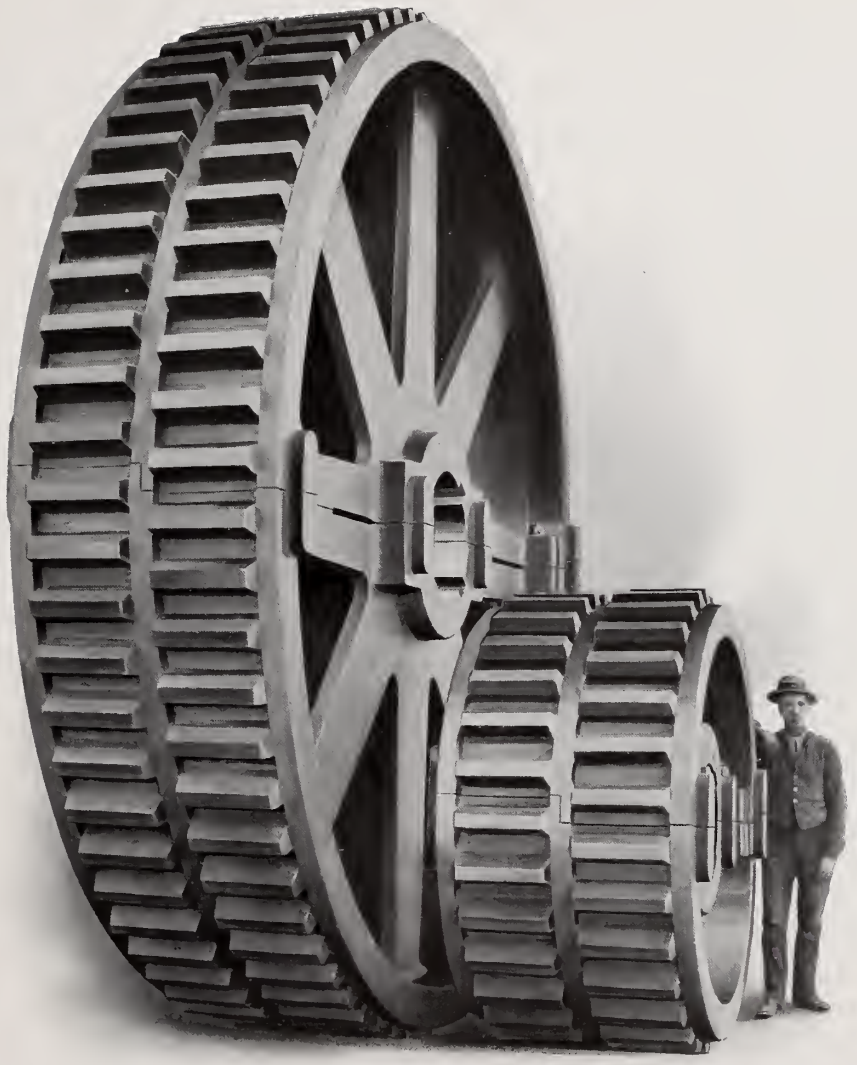


Illustration No. 331

A Pair of Our Large Gears

We are prepared to furnish all sizes of gears, either in iron or steel, besides other classes of heavy miscellaneous iron and steel castings.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

LEVER SHEARS

General Description of Pitman Shears

THE lever or crocodile shear, though probably the oldest type, is the most suitable machine for many kinds of shearing. The wide range of work these shears can handle, little necessity of attention, and simplicity of construction, are important factors when general merchant mill or scrap-yard work is to be done; but even in these simple machines the design and workmanship are capable of much variation, and we therefore desire to point out some of the notable features.

In most of our shears the lever is operated by a pitman connecting the crank and lever tail in such a manner as to prevent the possibility of the lever sticking, and reduce friction and wear to a minimum.

The pitman takes a babbitted knuckle bearing in the lever tail, and a pin passes through the lever and pitman to insure the return stroke of the lever. The pitman is operated by a cast steel crank-shaft which carries the driving wheel on an enlarged wheel fit, the diameter of which is more than twice the crank throw. This enlarged wheel fit is inside the bearings, and gives ample bearing for the wheel, with large leverage for the key, so that there is no danger of breaking at this point.

The main pin is secured to the lever by a feather, and oscillates in the bearings of the housings, where the wear can be taken up by the adjusting wedges. The cutting edges of the knives are central with the bearings, so as to throw equal loads on the bearings and prevent tipping of the lever.

In the cam connected lever shears, the pitman is replaced by a cam arranged for quick return and sliding on a wearing plate in the tail of the lever. Beyond this there is little difference in the general features of the two types, and although we build large numbers of the cam type, which gives good service, we recommend the pitman connection as giving less friction and repairs and greater certainty of operation.

Our ratings for the capacities of all these shears are very conservative, being based on the continuous operation of same.

These shears may be driven by belt power or by direct-connected engine or electric motor, as indicated in the detailed descriptions.

No. B 7 Lever Shear

Capacity, 1 x 1 inch cold soft steel.

Knives, usually 8 inches long, with four cutting edges.

Speed, 55 to 80 cuts per minute.

Pitman connected.

When belt driven the pulleys are on the crank-shaft and the shear has the following dimensions:

Weight, 3,600 pounds.

Floor space, 3 feet 6 inches x 6 feet 3 inches.

Two fly-wheels, 3 feet 6 inches diameter.

Pulleys, tight and loose, 24 inches diameter x 6¼ inches face.

When engine or motor driven, the shear is geared in ratio of 5.27 to 1, the legs are omitted and the engine or motor is connected directly to an extension of the bed (see No. B 6 Lever Shear).

The engine and motor driven shears have the following dimensions:

Weight, with engine, 4,500 pounds; with motor, 4,800 pounds.

Floor space, 2 feet 6 inches x 6 feet 3 inches.

Two fly-wheels, 24 inches diameter.

Engine, 5 x 5 inches vertical.

Motor, 4 horse-power.

This shear is designed for high speed and is very desirable for use in connection with 7 and 8 inch roll trains, or for cutting small bar and hoop iron.

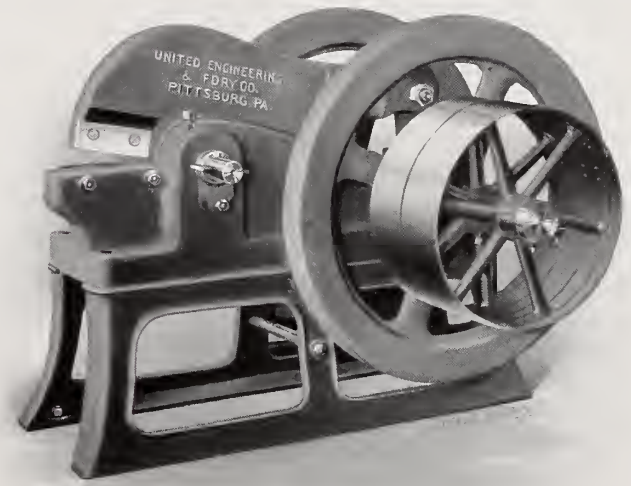


Illustration No. 155

BELT DRIVEN, RIGHT HAND

United Engineering and Foundry Company

No. 1 Lever Shear

Capacity, 1¼ x 1¼ inch cold soft steel.

Knives, usually 8 inches long, with four cutting edges.

Speed, 50 to 80 cuts per minute.

Pitman connected.

When belt driven, the pulleys are on the crank-shaft and the shear has the following dimensions:

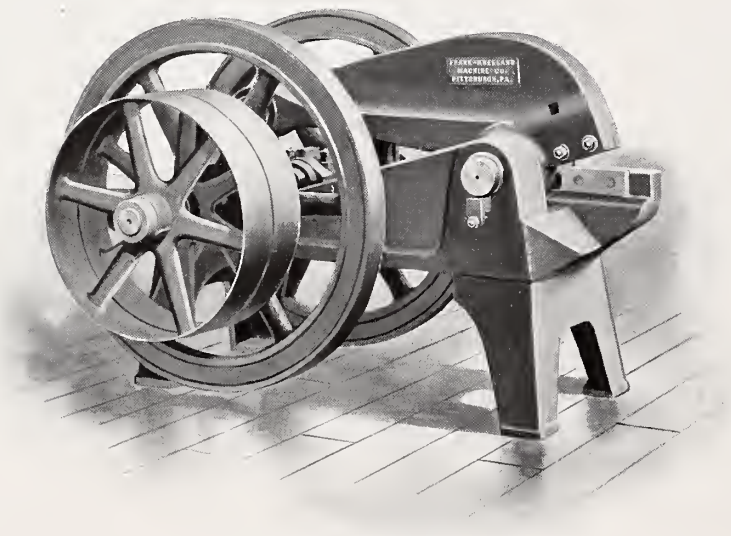


Illustration No. 109

Weight, 5,300 pounds.

Floor space, 4 x 6 feet 5 inches.

Two fly-wheels, 48 inches diameter.

Pulleys, tight and loose, 24 inches diameter x 6½ inches face.

When engine or motor driven, the shear is geared in ratio of 4 to 1, the legs are omitted and engine or motor is attached to extension of bed (see No. B 6 Lever Shear) giving the following dimensions:

Weight, with engine, 5,200 pounds; with motor, 5,400 pounds.

Floor space, 3 feet 9 inches x 7 feet 9 inches.

One fly-wheel, 36 inches diameter.

Engine, 6 x 6 inches.

Motor, 5 horse-power.

United Engineering and Foundry Company
Pittsburg, Pa. U.S.A.

No. B6 Lever Shear

Capacity, 1½ x 1½ inch cold soft steel.
Knives, usually 8 to 12 inches long, with four cutting edges.
Speed, 45 to 70 cuts per minute.
Pitman connected.
When belt driven, the gearing is omitted.
The shear is set on legs (see No. B7 Lever Shear) and has the following dimensions:
Weight, 5,300 pounds.
Floor space, 4 x 6 feet.
Two fly-wheels, 3 feet 9 inches diameter.
Pulleys, tight and loose, 36 inches diameter x 6¼ inches face.
When engine or motor driven, the shear is geared in ratio of 5½ to 1, and has the following dimensions:
Weight with engine, 5,200 pounds; with motor 5,400 pounds.
Floor space, 2 feet 9 inches x 7 feet 6 inches.
Two fly-wheels, 2 feet 10 inches diameter.
Engine, 6 x 6 inches.
Motor, 7½ horse-power.

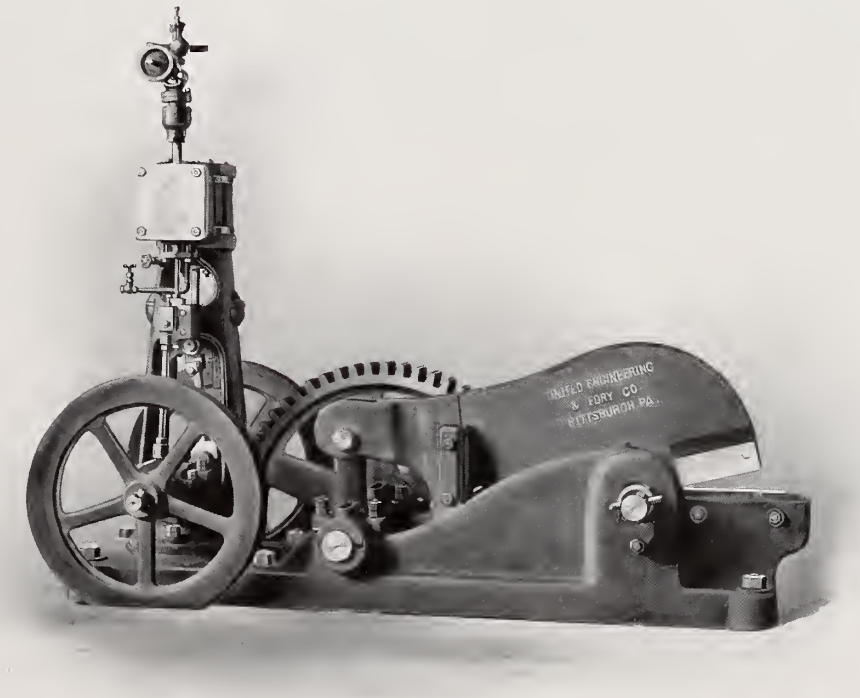


Illustration No. 167

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

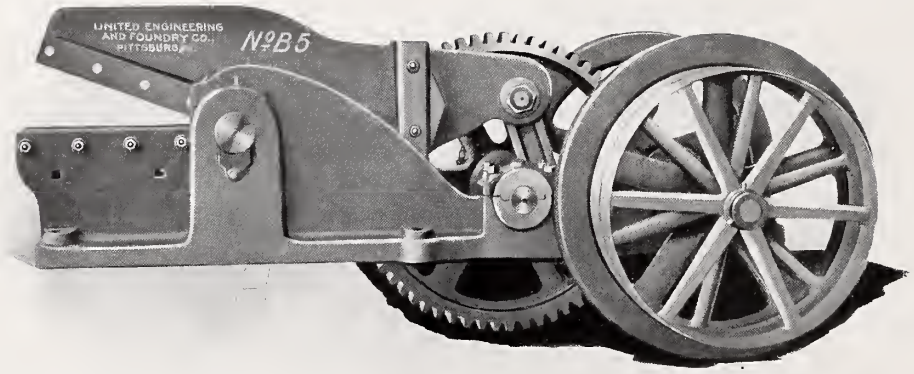


Illustration No. 139 A

No. B 5 Lever Shear

Capacity, 1¾ x 1¾ inch, or 5 x 1 inch cold soft steel.

Weight with 5 x 36 inch pulleys, 10,000 pounds.

Weight with 8 x 10 inch engine, 12,000 pounds.

Weight with 11½ horse-power electric motor, 12,500 pounds.

Floor space, 5 feet 3 inches x 8 feet 9 inches.

Speed, 31 cuts per minute when fly-wheel shaft runs 164 revolutions per minute.

Gearing, 6-inch face; ratio, 5.17 to 1.

This shear is used largely for busheling light scrap, and is usually equipped with knives 24 inches long for cutting sheets, boiler stacks, etc.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

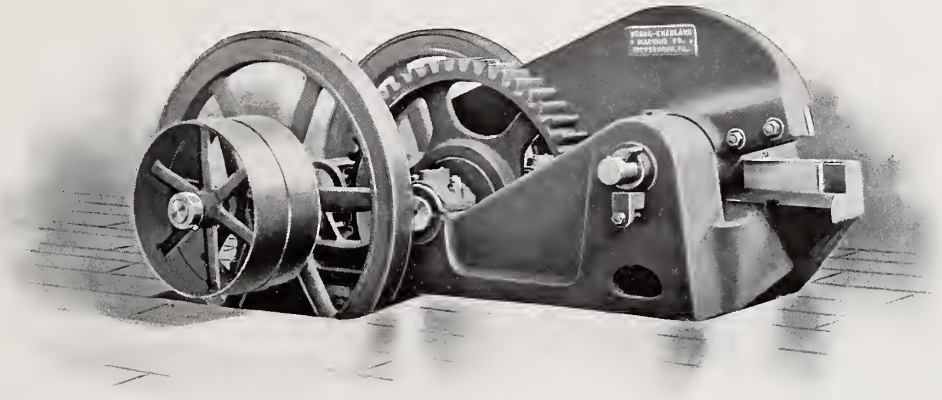


Illustration No. 110

No. 2 Lever Shear

Capacity, 2 x 2 inch or 1 x 6 inch cold soft steel.

Weight with 6½ x 24 inch pulleys, 10,000 pounds.

Weight with 8 x 10 inch engine, 12,000 pounds.

Weight with 12½ horse-power electric motor, 12,700 pounds.

Floor space, 5 x 8 feet 6 inches, belt driven.

Speed, 25 to 30 cuts per minute when fly-wheel shaft runs 125 to 150 revolutions.

Gearing, 6-inch face; ratio, 5 to 1.

This shear is largely used in connection with 10 or 12 inch roll trains.

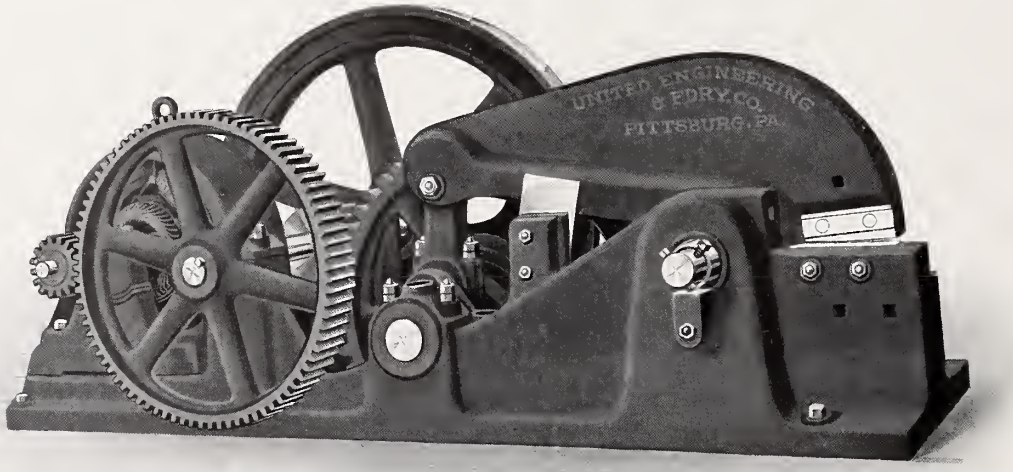


Illustration No. 63

No. 2 Lever Shear

Motor Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

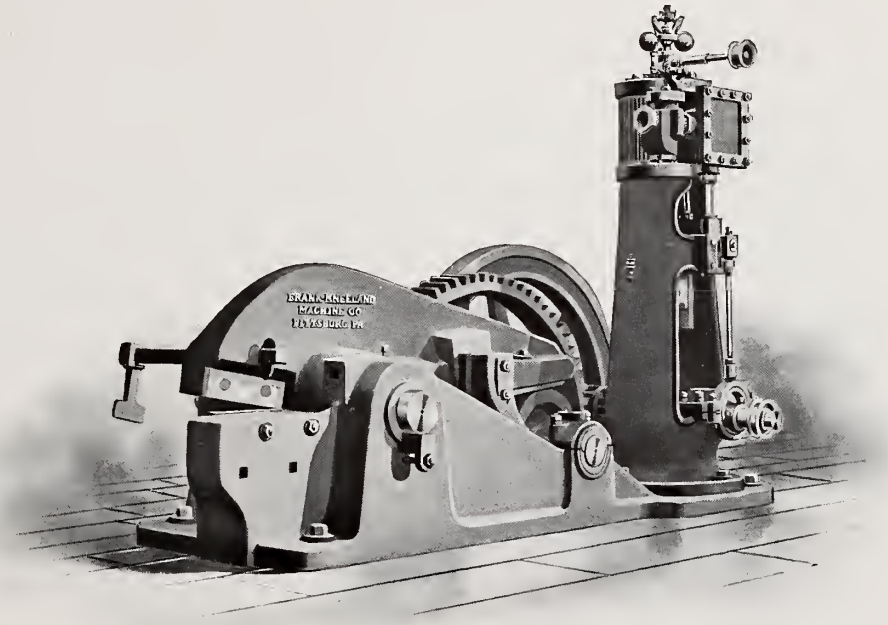


Illustration No. 113

No. 3 Lever Shear

Capacity, 2¼ x 2¼ inch or 1 x 7 inch cold soft steel.
Weight with 8 x 32 inch pulleys, 14,000 pounds.
Weight with 10 x 10 inch engine, 16,500 pounds.
Weight with 15 horse-power electric motor, 17,000 pounds.
Floor space, 7 feet 10 inches x 11 feet, belt driven.
Speed, 25 to 30 cuts per minute when fly-wheel shaft runs 175 to 210 revolutions per minute.
Gearing, 6-inch face; ratio, 7 to 1.
This shear is built with cam and quick return as shown, or with crank and pitman, the latter being somewhat higher in price.
This shear is largely used for cutting puddled sheets or tin plate bars.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

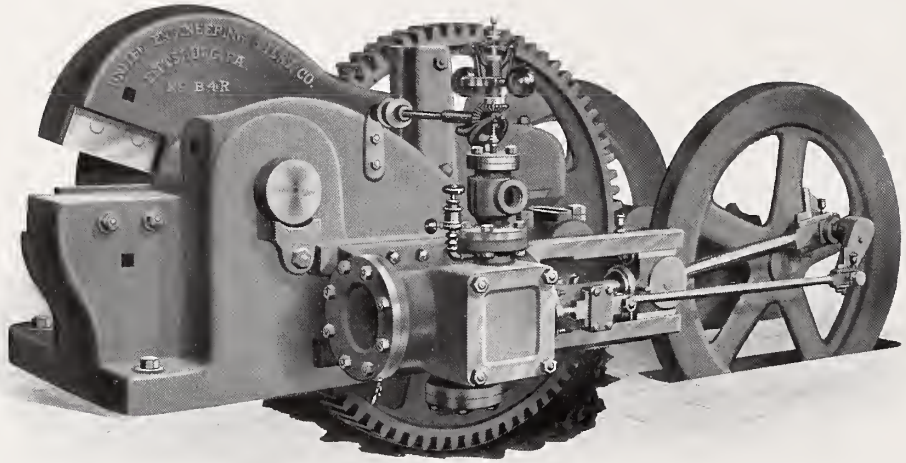


Illustration No. 136

No. B4 Lever Shear

Capacity, 2¼ x 2¼ inch or 1 x 7 inch cold soft steel.
Weight with 8½ x 36 inch pulleys, 14,500 pounds.
Weight with 8½ x 12 inch engine, 17,000 pounds.
Weight with 15 horse-power electric motor, 17,000 pounds.
Floor space, 5 feet 9 inches x 10 feet, belt driven.
Speed, 30 cuts per minute when fly-wheel shaft runs 200 revolutions per minute.
Gearing has 6-inch face; ratio, 6.54 to 1.
This shear is made with cam and quick return, as shown, or with crank and pitman, the latter being somewhat higher in price.
This shear is used largely for cutting puddled sheet or tin-plate bars.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

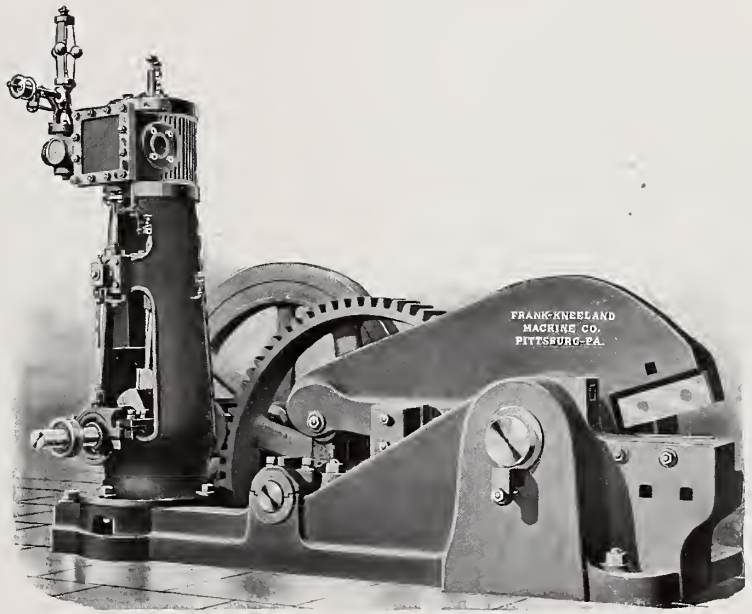


Illustration No. 15

No. 4 Lever Shear

Capacity, 2¾ x 2¾ inch or 1½ x 8 inch cold soft steel.
Weight with 8 x 32 inch pulleys, 22,000 pounds.
Weight with 10 x 10 inch engine, 24,500 pounds.
Weight with 20 horse-power electric motor, 24,500 pounds.
Floor space, 6 feet 4 inches x 11 feet 6 inches, belt driven.
Speed, 20 to 25 cuts per minute when fly-wheel shaft runs 130 to 162 revolutions per minute.
Gearing, 8-inch face; ratio, 6½ to 1.
This shear is used in connection with 16 and 18 inch roll trains.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

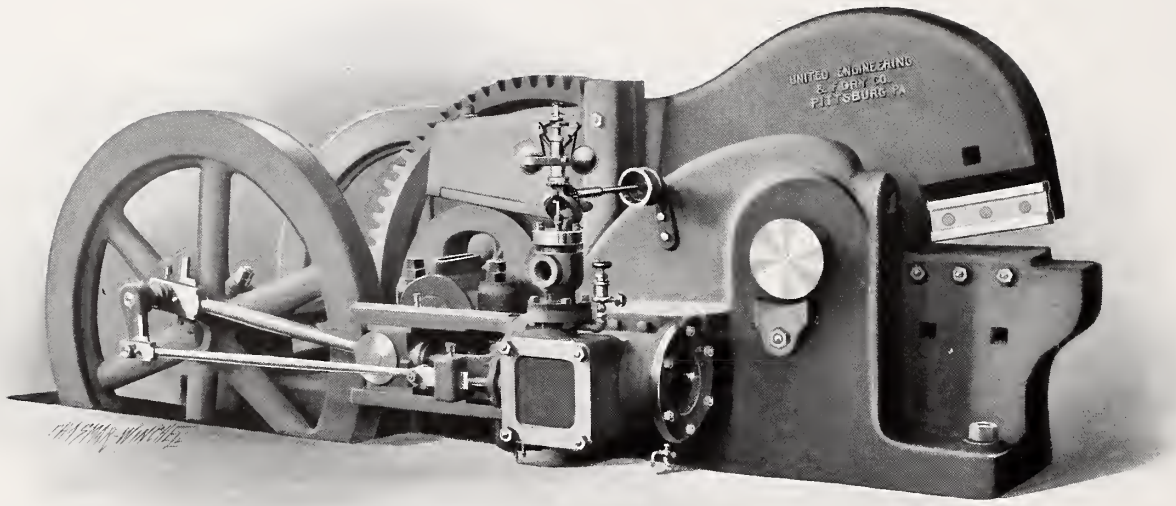


Illustration No. 134

No. B 3 Lever Shear

Capacity, 2¾ x 2¾ or 1½ x 8 inch cold soft steel.
Weight with 10 x 36 inch pulleys, 25,500 pounds.
Weight with 8½ x 12 inch engine, 27,000 pounds.
Weight with 20 horse-power electric motor, 28,000 pounds.
Floor space, 6 feet 3 inches x 12 feet 2 inches.
Speed, 28 cuts per minute when fly-wheel shaft runs 177 revolutions per minute.
Gearing, 8-inch face; ratio, 6.45 to 1.
This shear is used for cutting steel billets in connection with 16 to 20 inch roll trains.
See also illustration No. 138, page 37.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

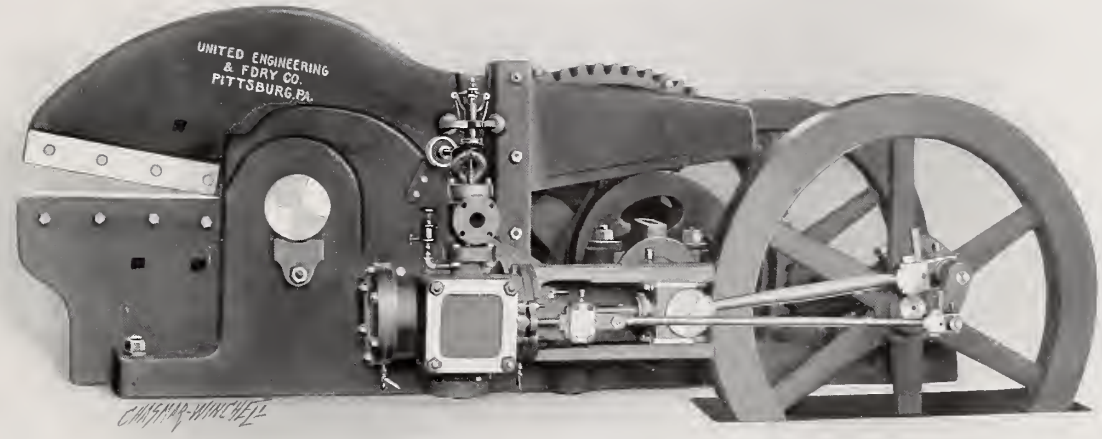


Illustration No. 138

No. B3 Lever Shear

Engine Driven

Arranged with long knives for cutting scrap. For description, see page 36.

United Engineering and Foundry Company
PITTSBURGH PA. U.S.A.

No. B2 Lever Shear

Capacity, 3½ x 3½ inch or 4½ inch round cold soft steel.

Weight with 12 x 42 inch pulleys, 36,000 pounds.

Weight with 12 x 12 inch engine, 41,000 pounds.

Weight with 30 horse-power electric motor, 43,000 pounds.

Floor space, 7 feet 6 inches x 14 feet, belt driven.

This shear has cam connection to lever with quick return.

Speed, 22 cuts per minute when fly-wheel shaft runs 170 revolutions per minute.

Gearing, 10-inch face; ratio, 8.1 to 1.

This shear is used largely for cutting billets and rounds, and is also built with long knives for cutting scrap.

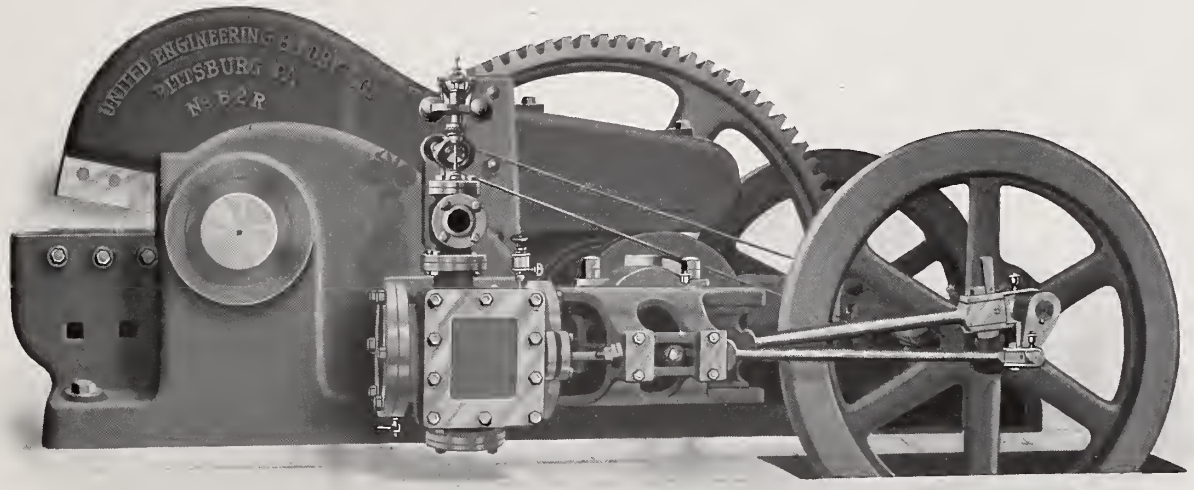


Illustration No. 125

No. B 2 Lever Shear

Engine Driven

See description on page 38.

United Engineering and Foundry Company

No. 5 Lever Shear

Capacity, 3¾ x 3¾ inch or 1¾ x 14 inch cold soft steel.

Weight with 12 x 50 inch pulleys, 44,000 pounds.

Weight with 11 x 12 inch engine, 47,000 pounds.

Weight with 30 horse-power electric motor, 49,000 pounds.

Floor space, 7 feet 6 inches x 15 feet 4 inches.

Speed, 18 to 24 cuts per minute when the fly-wheel shaft runs 126 to 168 revolutions per minute.

Gearing, 9-inch face; ratio, 7 to 1.

This shear is largely used for cutting billets and rounds, and is also built with long knives for cutting scrap.

See illustration No. 3.

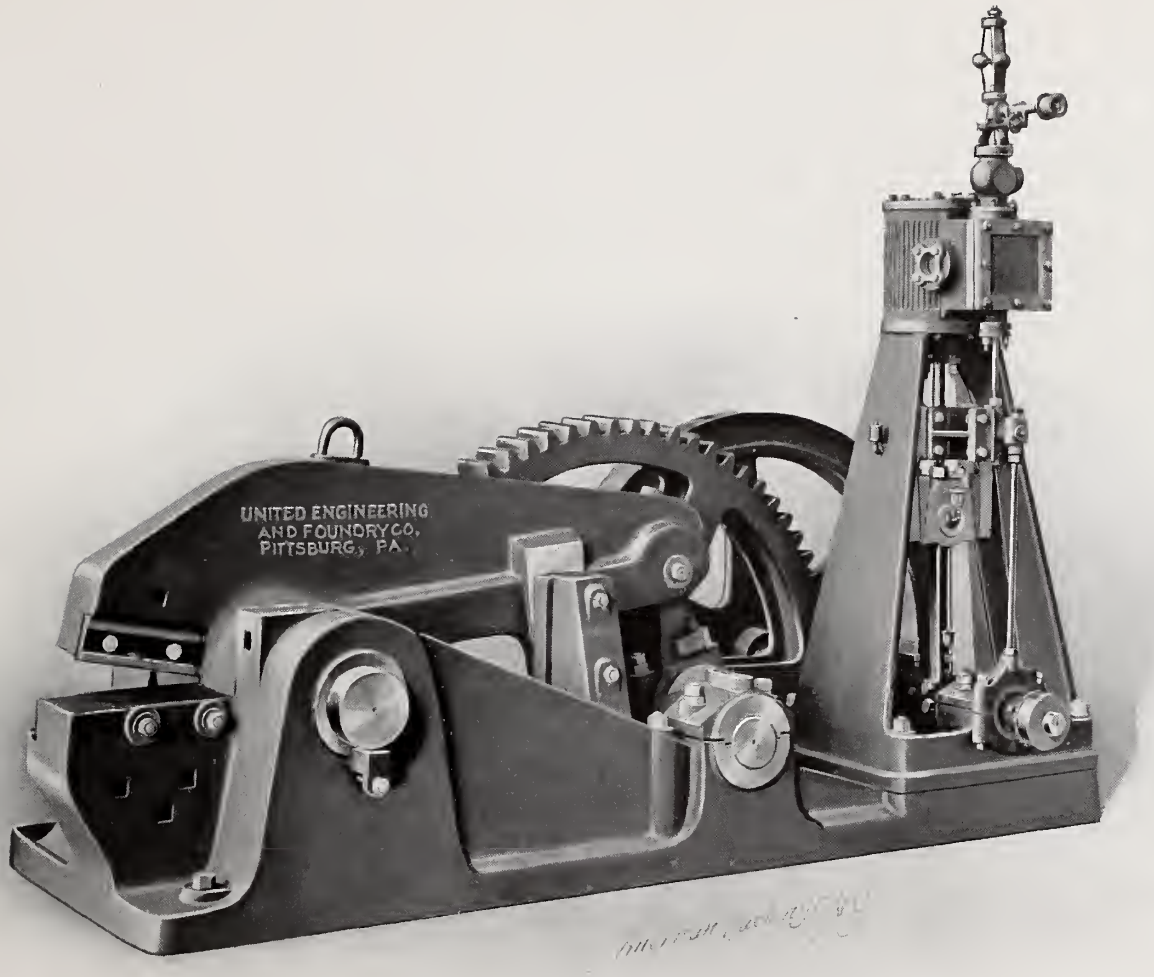


Illustration No. 3

No. 5 Lever Shear

Engine Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

No. B1 Lever Shear

Capacity, 4 x 4 inch or 5-inch round cold soft steel.

Weight with 12 x 48 inch pulleys, 51,500 pounds.

Weight with 11 x 16 inch engine, 54,000 pounds.

Weight with 50 horse-power electric motor, 57,000 pounds.

Floor space, 10 x 16 feet 4 inches, belt driven.

Speed, 18 cuts per minute when fly-wheel shaft runs 140 revolutions per minute.

Gearing, 10-inch face; ratio, 7.72 to 1.

This shear is largely used for cutting billets and rounds, and is also built with long knives for cutting scrap.

See illustrations Nos. 274, 122 and 122 A.

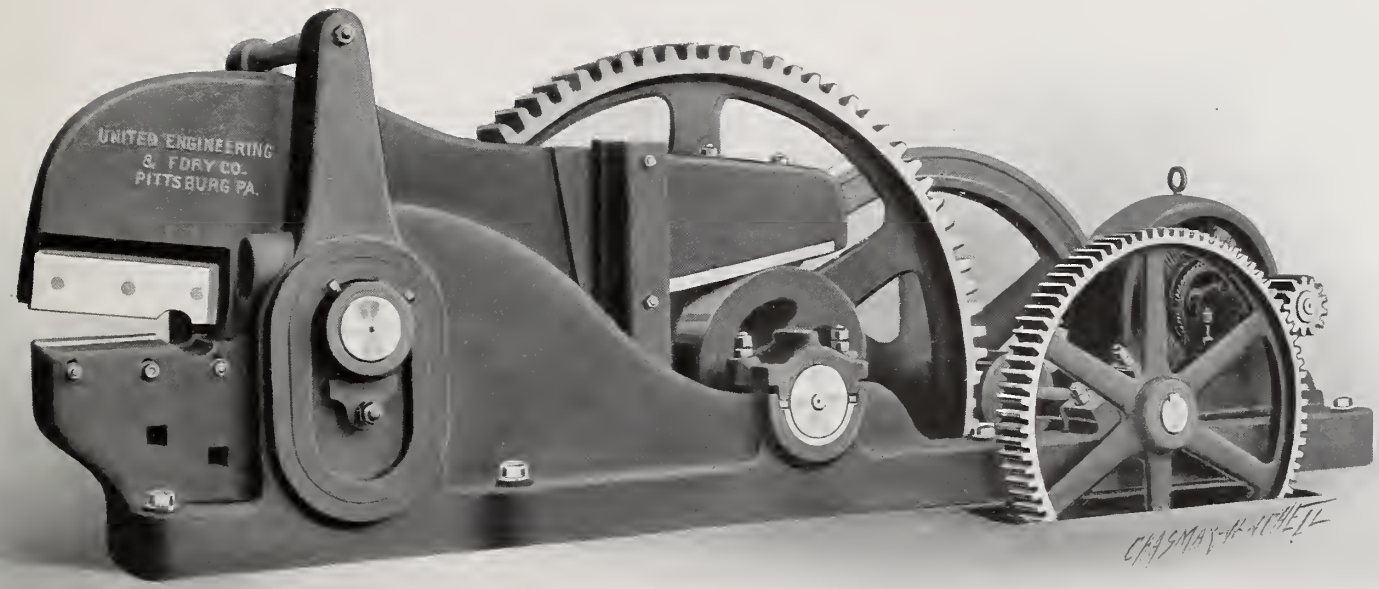


Illustration No. 274

No. B1 Lever Shear

Motor Driven

Showing special knives for cutting rounds.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

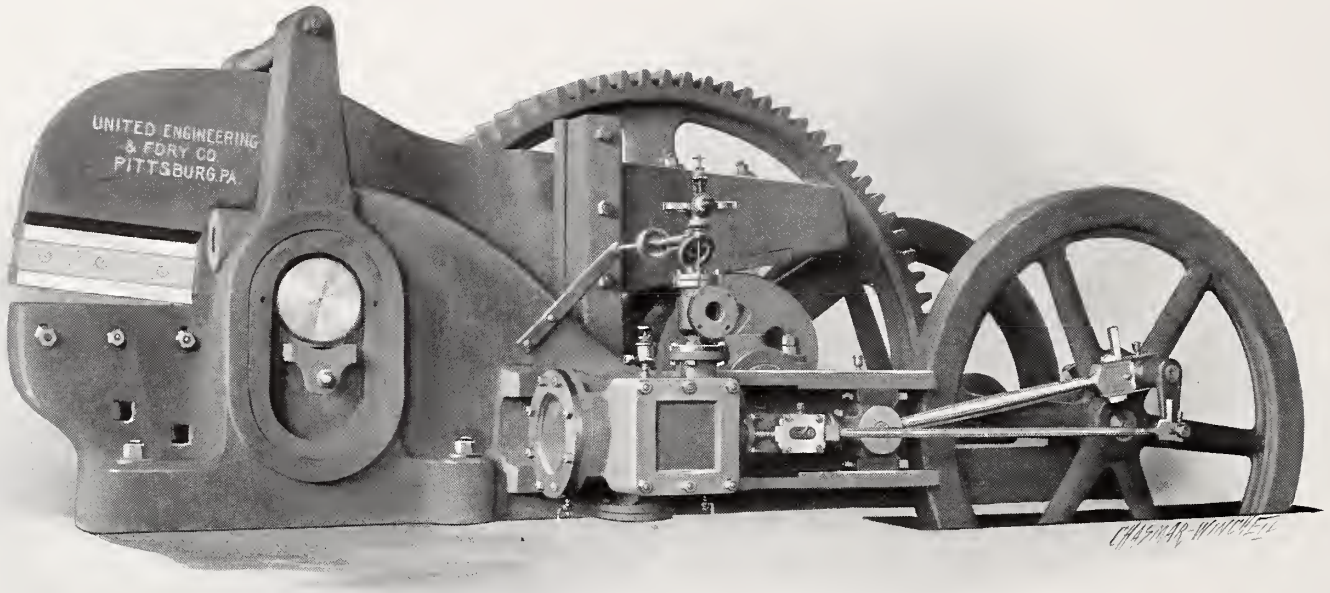


Illustration No. 122 A

No. B1 Lever Shear

Engine Driven

Arranged with long knives for cutting scrap.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

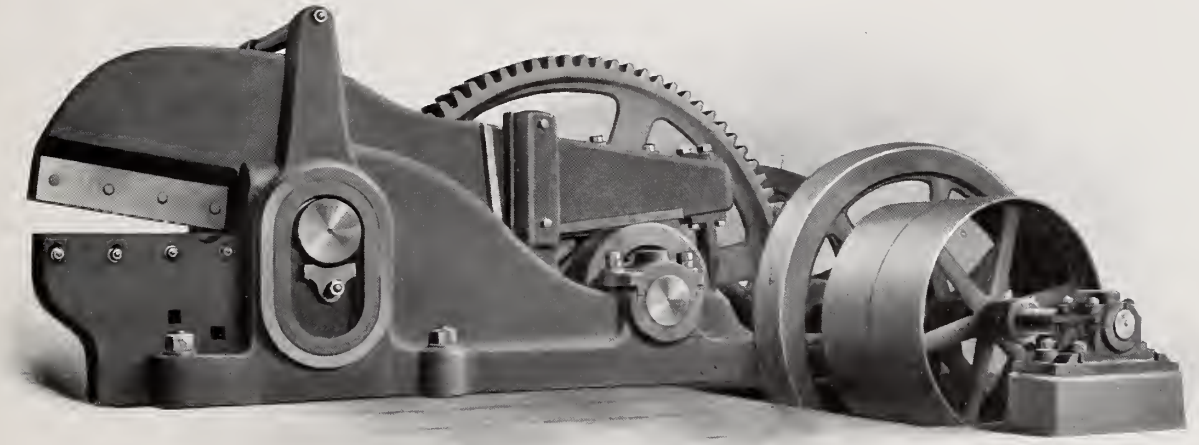


Illustration No. 122

No. B1 Lever Shear

Belt Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

No. 6 Lever Shear

Capacity, 5 x 5 inch or 3 x 12 inch cold soft steel.

Weight with 16 x 60 inch tight pulley, 91,000 pounds.

Weight with 14 x 16 inch engine, 100,000 pounds.

Weight with 75 horse-power electric motor, 105,000 pounds.

Floor space, 9 feet 9 inches x 19 feet 9 inches, belt driven.

Floor space, 8 feet 6 inches x 19 feet 9 inches, engine driven.

The engine used in connection with this shear is of extra heavy design, so as to withstand severe shocks.

Speed, 18 to 24 cuts per minute when the fly-wheel shaft runs 130 to 178 revolutions per minute.

Gearing has 12-inch face with shrouding; ratio 7.2 to 1.

This shear is used mostly for cutting large billets and heavy scrap.

When arranged for cutting scrap the top edge of the lower knife is raised to the level of the top of the housing, as shown by illustrations Nos. 11 and 90 A, so as to give greater freedom in cutting irregular plates, etc. We recommend this shear for all heavy work up to its capacity, and especially for scrap-yard purposes.

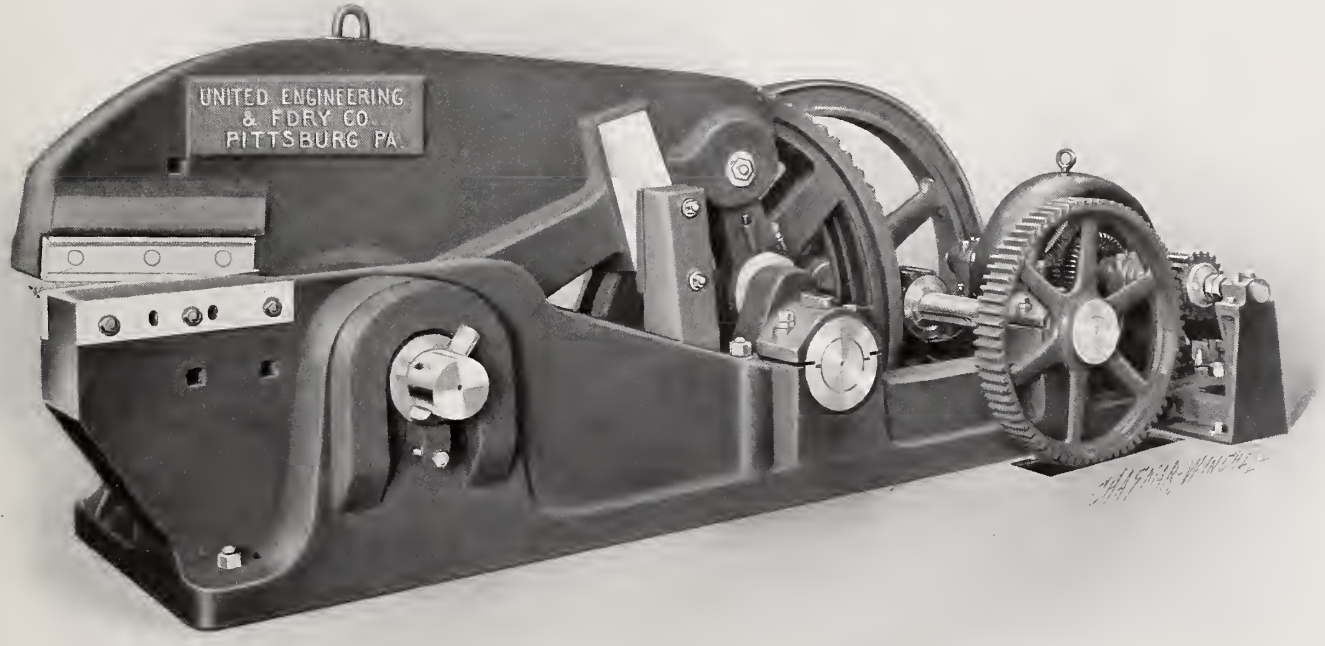


Illustration No. 11

No. 6 Lever Shear

Motor Driven

Arranged with high knife for cutting scrap.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

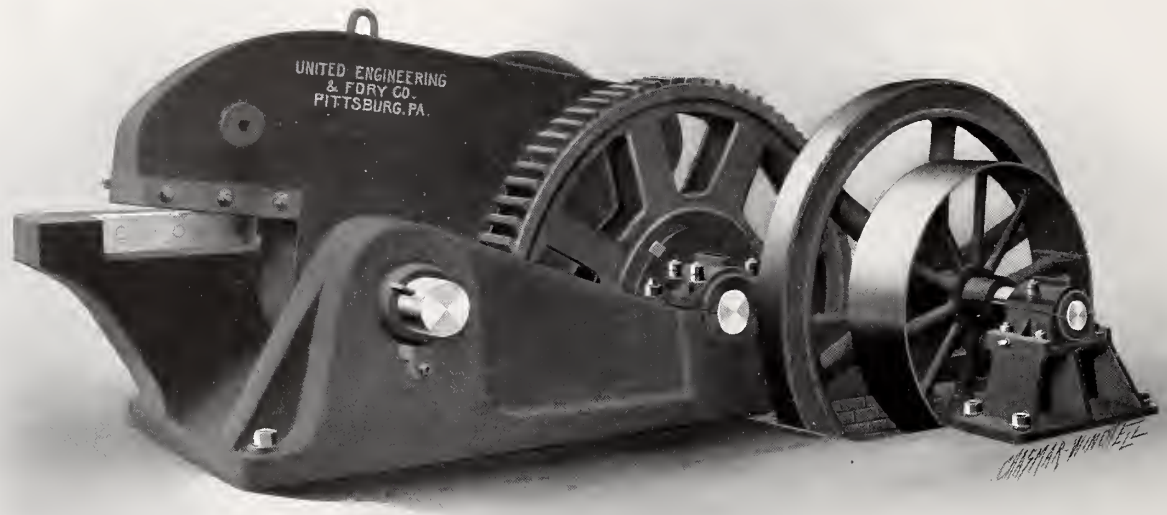


Illustration No. 90 A

No. 6 Lever Shear

Belt Driven

Arranged with high knife for cutting scrap.

United Engineering and Foundry Company
PITTSBURG, PA. U. S. A.

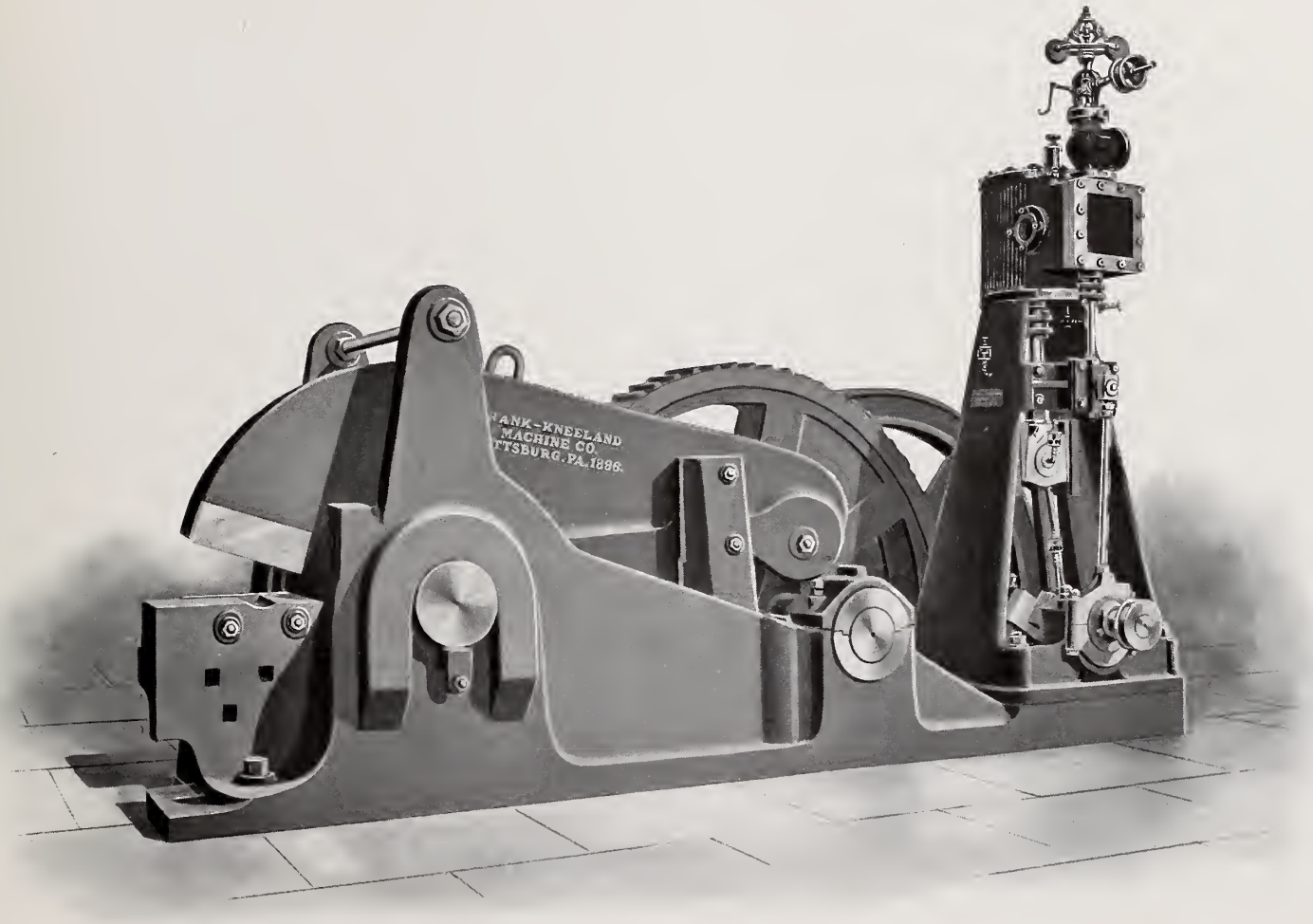


Illustration No. 114

No. 6 Lever Shear

Engine Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

No. 7 Lever Shear

The Most Powerful Lever Shear Ever Built

In one of our former catalogues we said of our No. 6 Shear: "This shear has been designed to cut as heavy as is practicable before crushing the knives." The light of increased experience has, however, induced us to "try again," with the result of producing a shear, the weight and capacity of which far exceed any previous attempt. No trouble has been found from crushing of knives, and the shear has cut to its rated capacity without apparent effort. We hesitate to speak of the possibilities of the future, but firmly believe that for many years this shear must stand the giant of its kind.

Detailed description of the shear is as follows:

Pitman connected.

Capacity, 6½ x 6½ inch cold soft steel and miscellaneous extra heavy scrap.

Knives, 24 inches long, with four cutting edges.

Weight with 15 x 16 inch specially designed heavy duty piston valve engine, 171,000 pounds.

Weight with 125 horse-power electric motor, 180,000 pounds.

Floor space, 10 feet 3 inches x 23 feet.

Speed, 16 cuts per minute when fly-wheel runs 120 revolutions per minute.

This shear could be driven by belt when it would have 20 x 60 inch tight pulley, but we consider this inadvisable and recommend either engine or motor drive.

Illustration No. 300

No. 7 Lever Shear

Engine Driven

Showing shear erected at Worth Bros. Company.

United Engineering and Foundry Company

VERTICAL SHEARS AND PUNCHES

General Description

FOR certain classes of work, such as cutting and punching plates and bars, the type of machine illustrated on the following pages is indispensable. It is also much used where floor space is a consideration. We manufacture these machines for any reasonable duty. The machines are all constructed on the same general plan, strong, durable, adjustable and simple. The main shafts are forged steel, and are turned accurately round. The housing has bronze bushing for front and back end of the shaft, as has also the pitman which operates the head, the bearing in the front plate, and also the wheel when the machine is made with a stop clutch. The wear on the sliding head is taken up by a wedge, and a steel liner is put in to take the side thrust of the head. A pitman is used for operating the head in preference to the cheaper construction of a vibrating brass. The lower end of this pitman takes a bearing in a bronze step, which is also adjustable for wear.

We adapt these machines to varying conditions, making them with movable or fixed knife holders, or for punches, straightening presses, broaching or forging machines, as the wants may arise, and design each machine for the special duty it may perform.

No. 1 Vertical Shear

Has capacity to shear 1¼ x 1¼ inch, or ½ x 3 inch cold soft steel, or punch ¾ inch hole in ½ inch plate.

Gearing, 5-inch face; ratio, 5¼ to 1.

Tight and loose pulleys, 24 inches diameter for 6-inch belt.

Speed, 25 to 40 cuts per minute when fly-wheel shaft runs 130 to 210 revolutions per minute.

Floor space, 7 x 4 feet.

Weight, belt driven, 8,000 pounds.

Can be built right or left hand with knives, as shown, or at right angle. Any of these shears may be equipped with clutch and stop motion if desired.

We also build this shear with direct-connected engine or electric motor.

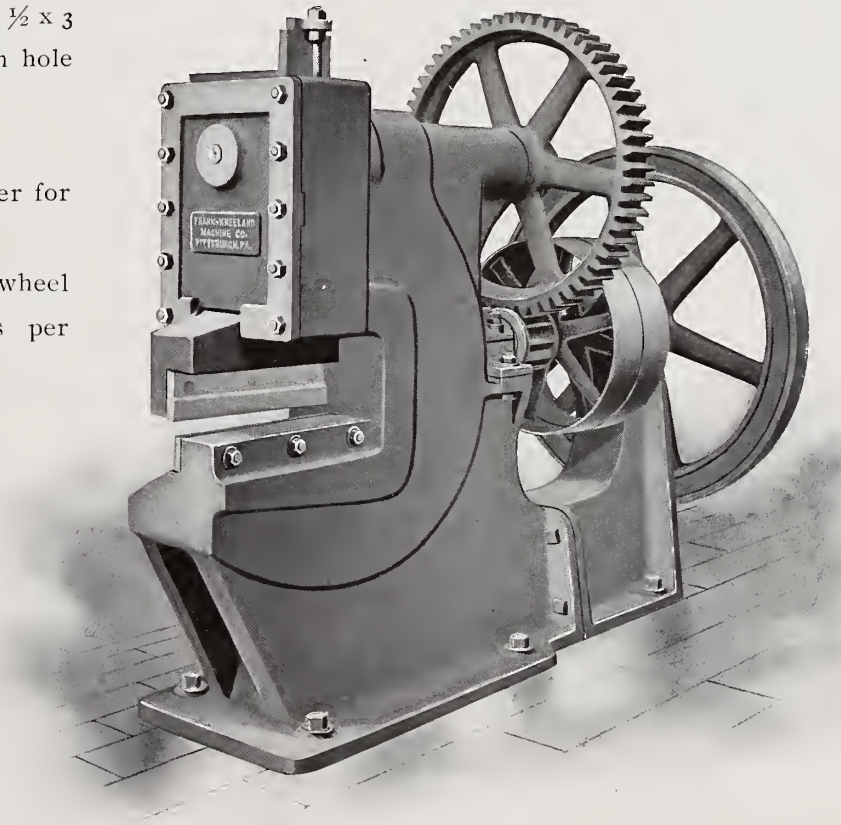


Illustration No. 302

United Engineering and Foundry Company
PITTSBURG PA U.S.A.

No. 2 Vertical Shear

Has capacity to shear 1⅝ x 1⅝ inch or ¾ x 6 inch cold soft steel, or to punch 1-inch hole in ¾-inch plate.

Weight with 6 x 30 inch pulleys, 13,600 pounds.

Weight with 8 x 8 inch engine, 13,000 pounds.

Weight with 10 horse-power electric motor, 14,000 pounds.

Floor space, 8 feet 3 inches x 5 feet.

Speed, 25 to 35 cuts per minute when fly-wheel shaft runs 175 to 245 revolutions per minute.

Gearing, 6-inch face; ratio 7 to 1.

This shear can be built right or left hand, or with knives at right angle. It is suitable for cutting skelp or sheet bars, and when equipped with feed rollers, as shown by illustration No. 179, is very convenient for cutting long lengths of bars.

This shear is usually equipped with a stop motion.

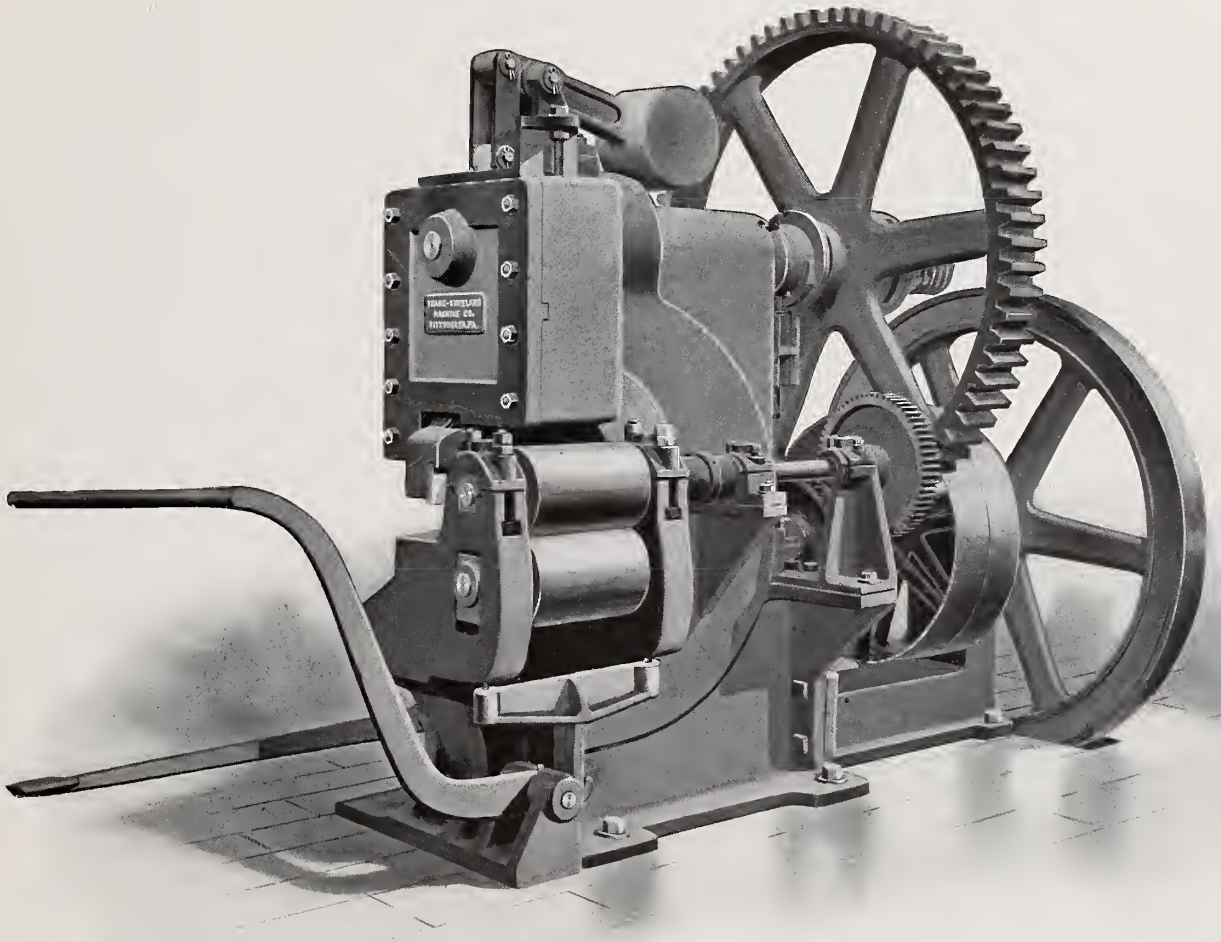


Illustration No. 179

No. 2 Vertical Shear

Belt Driven, with Feed Rollers

United Engineering and Foundry Company
PITTSBURG, PA U.S.A.

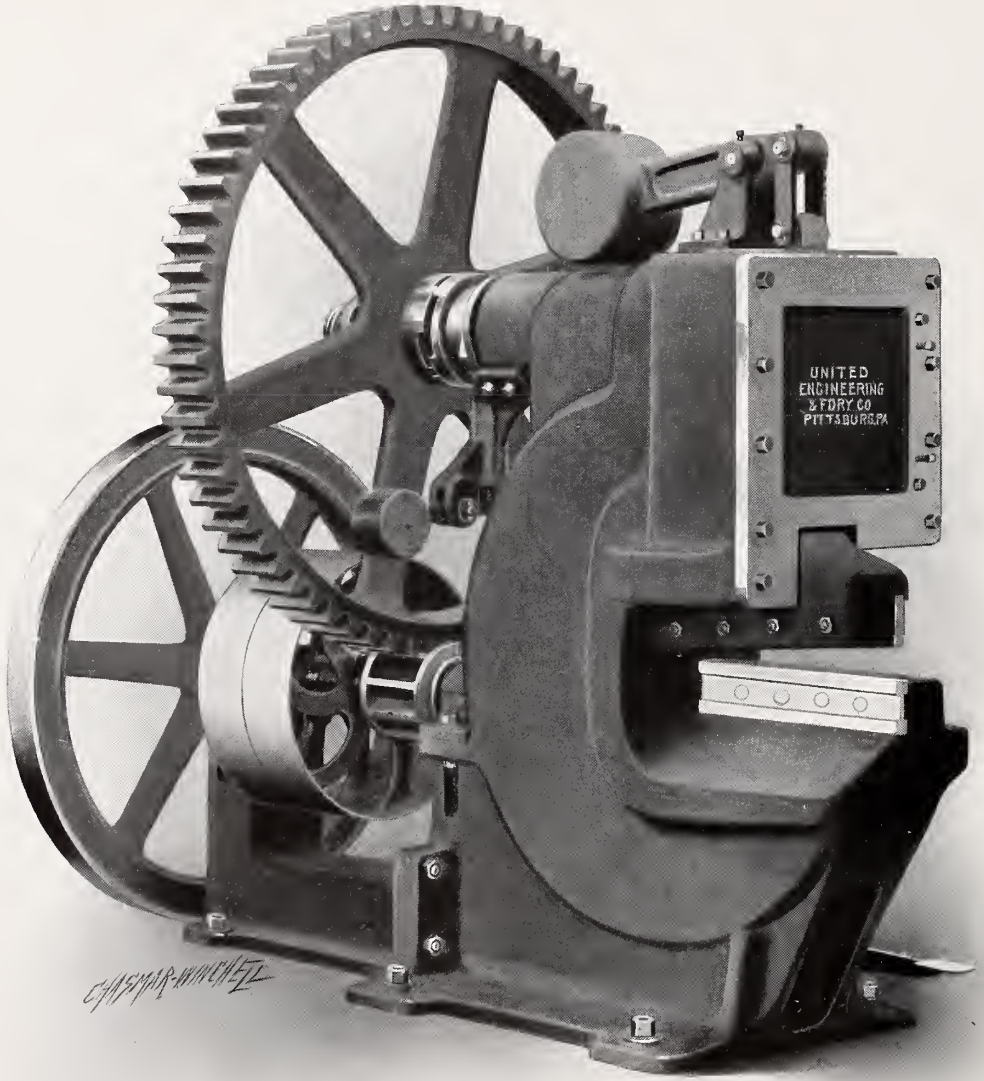


Illustration No. 12

No. 2 Vertical Shear

Belt Driven, without Feed Rollers

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

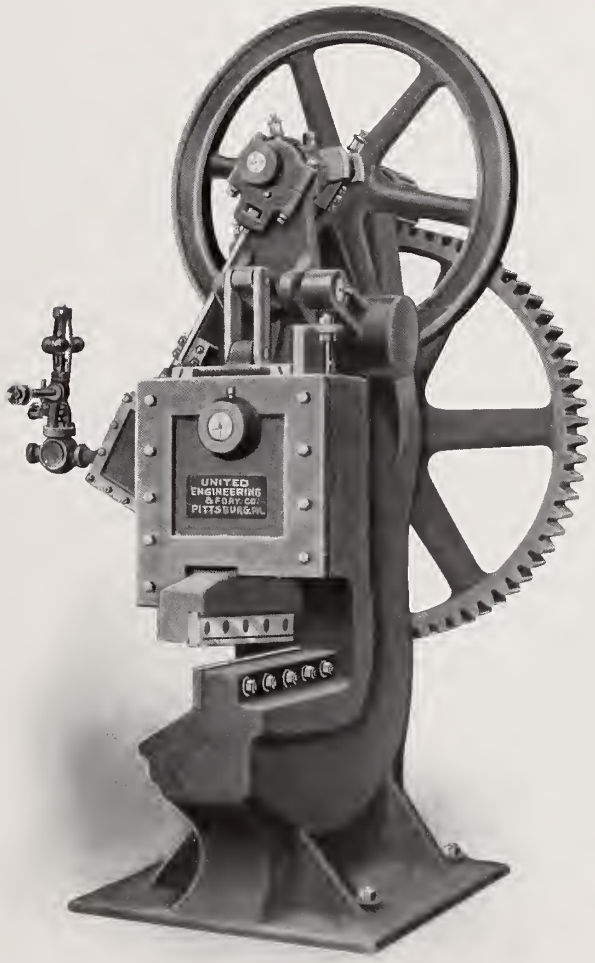


Illustration No. 66

No. 2 Vertical Shear

Engine Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

No. 3 Vertical Shear

Has capacity to shear 2½ x 2½ inch or 1½ x 8 inch cold soft steel, or to punch 2-inch hole in a 1-inch plate.

Gearing, 8-inch face; ratio, 6½ to 1.

Weight with 8½ x 32 inch pulleys, 17,000 pounds.

Weight with 9 x 12 inch engine, 19,000 pounds.

Weight with 15 horse-power electric motor, 20,000 pounds.

Floor space, 9 feet x 5 feet 6 inches.

Speed, 20 to 30 cuts per minute when fly-wheel shaft runs 130 to 195 revolutions per minute.

Can be built right or left hand with knives, as shown, or at right angle.

We also build this shear equipped with feed rollers for cutting skelp and sheet bars of long lengths, and it is usually equipped with a stop motion.

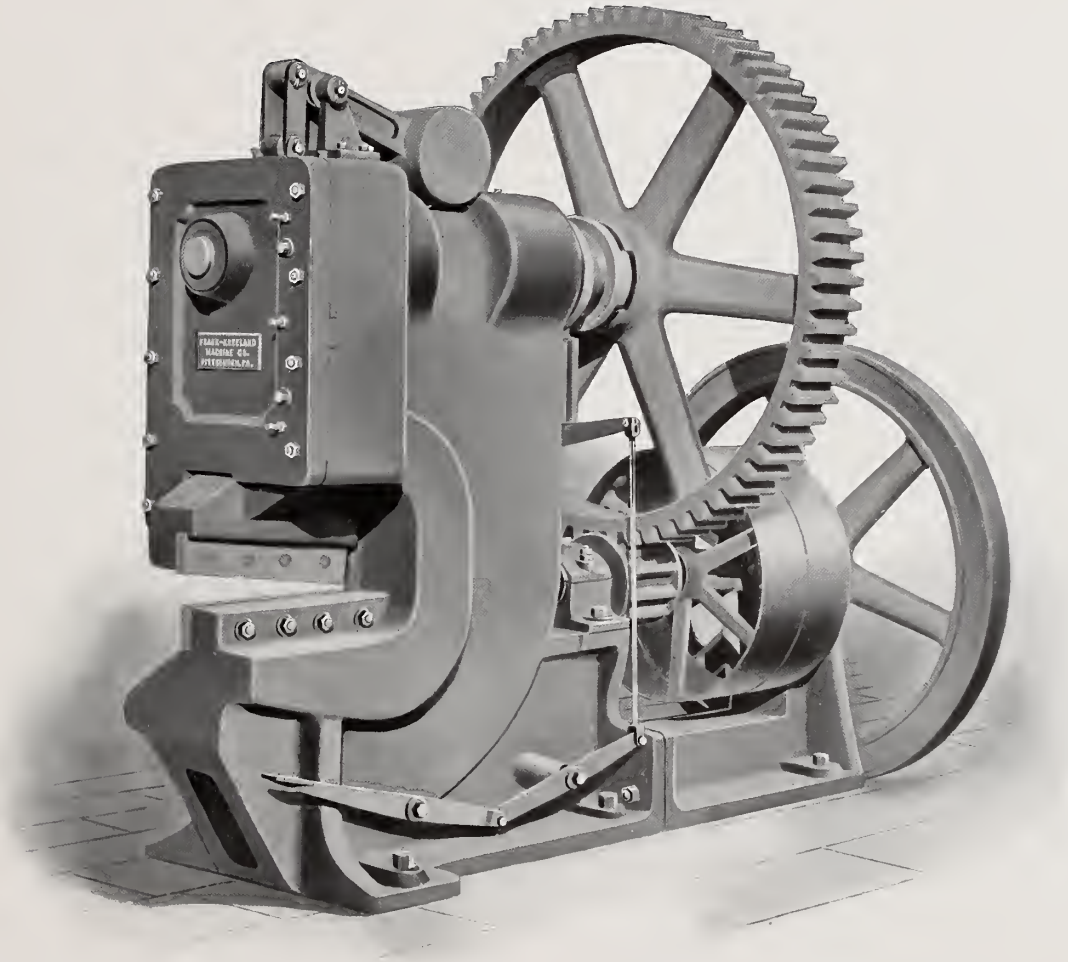


Illustration No. 111

No. 3 Vertical Shear

Belt Driven

United Engineering and Foundry Company

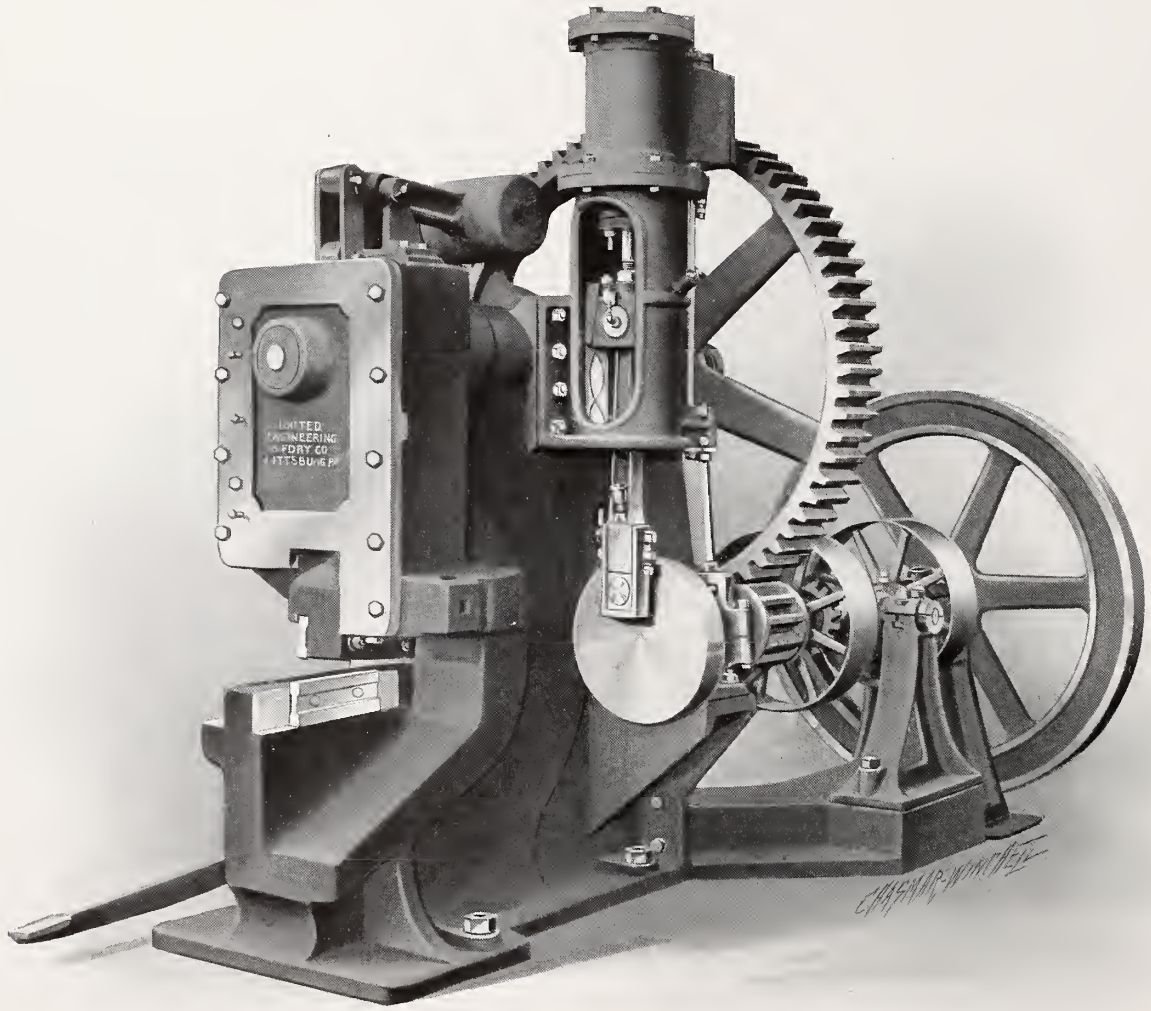


Illustration No. 38

No. 3 Vertical Shear

Engine Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

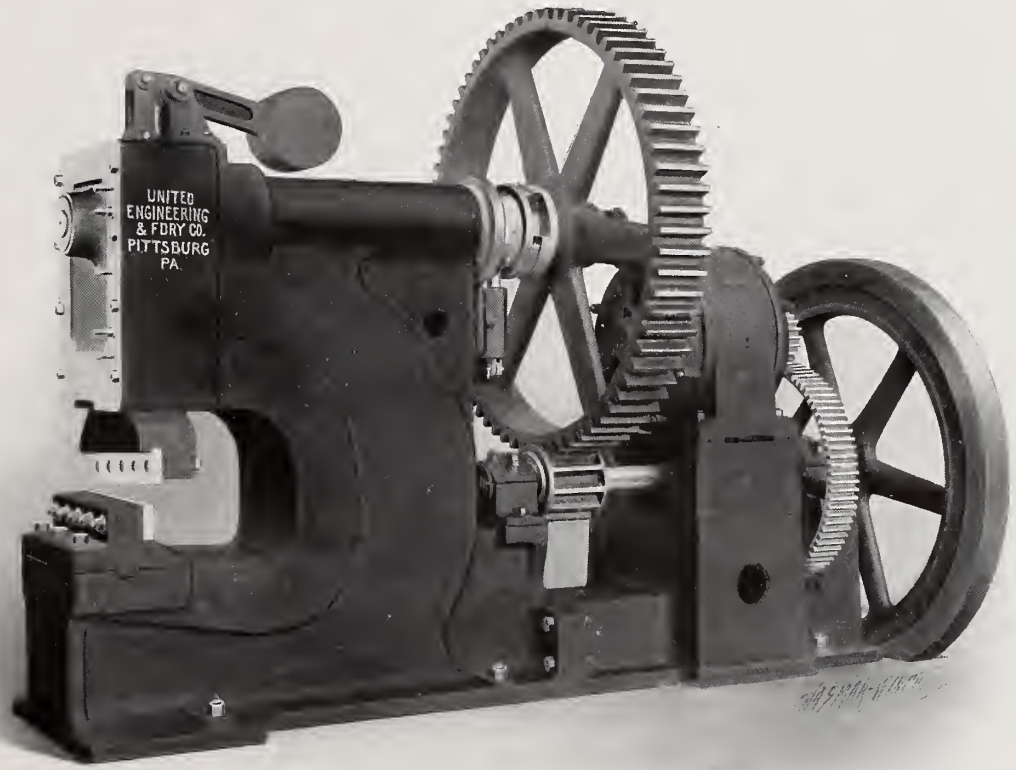


Illustration No. 95

No. 3 Vertical Shear

Motor Driven

United Engineering and Foundry Company

No. 3½ Vertical Shear

Has capacity to shear 2¾ x 2¾ inch or 1½ x 12 inch cold soft steel, or to punch a 2½ inch hole in a 1-inch plate.

Weight with 9 x 36 inch pulleys, 31,000 pounds.

Weight with 9 x 12 inch engine, 31,000 pounds.

Weight with 20 horse-power electric motor, 33,000 pounds.

Gearing, 8-inch face; ratio, 6½ to 1.

Floor space, 5 feet 6 inches x 11 feet 6 inches.

Speed, 30 cuts per minute when fly-wheel shaft runs 195 revolutions per minute.

This shear is somewhat different from our Nos. 3 and 4 Vertical Shears, having a sliding brass instead of a pitman for operating the knife head, see illustration No. 99. It is also built with 30-inch knives and 30-inch gap arranged for slitting plates up to ⅝-inch thick. The slitting shear with 8 x 10 inch engine weighs 24,000 pounds. See illustration No. 95, which shows similar arrangement.

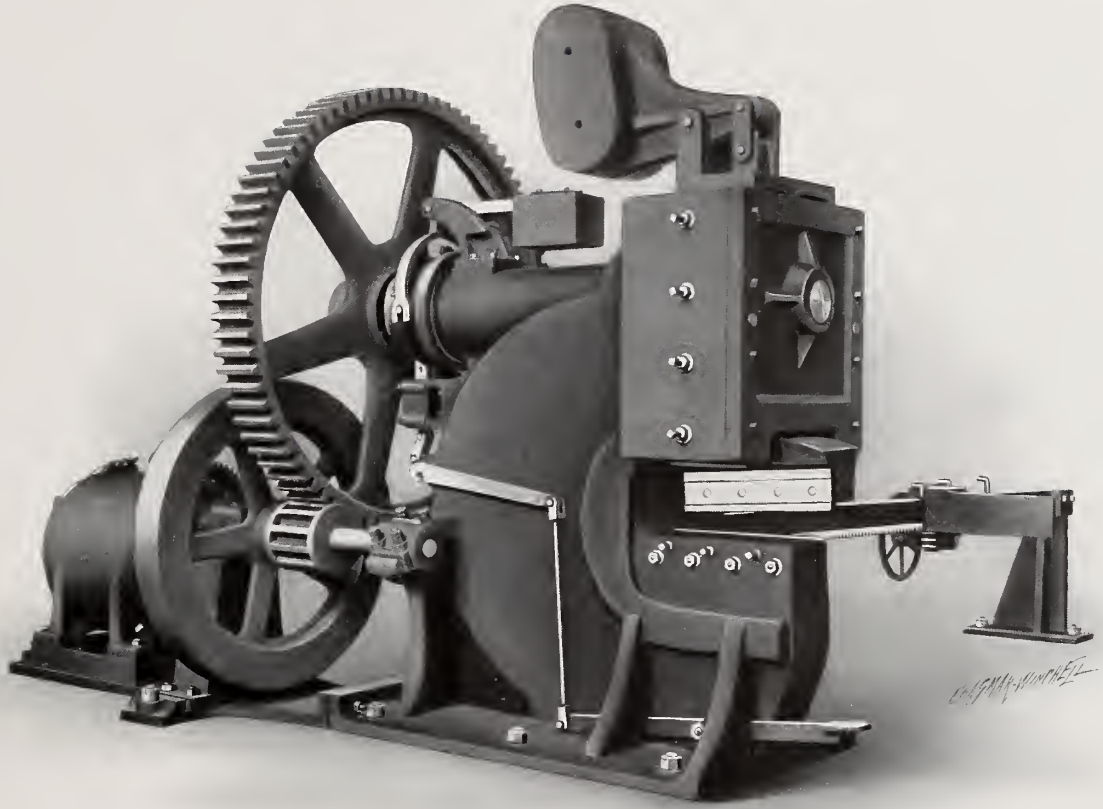


Illustration No. 99

No. 3½ Vertical Shear

Motor Driven

Arranged with stop gauge. Has capacity to cut 1½ x 12 inch soft steel.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

No. 4 Vertical Shear

Has capacity to shear 3½ x 3½ inch or 1½ x 24 inch cold soft steel, or to punch a 4-inch hole in a 1-inch plate.

Weight with 10 x 36 inch pulleys, 42,000 pounds.

Weight with 11 x 12 inch engine, 45,000 pounds.

Weight with 30 horse-power electric motor, 45,000 pounds.

Floor space, 6 feet x 11 feet.

Speed, 25 to 30 cuts per minute when fly-wheel shaft runs 160 to 195 revolutions per minute.

Can be built right or left hand with knives, as shown, or at right angle.

Illustration No. 88 shows this shear engine driven, equipped with approach table, feed rollers and conveyor, making a suitable arrangement for cutting long plates, billets, etc., with a minimum amount of labor.

The approach table, feed rollers and conveyor are all driven by the engine or electric motor which drives the shear, the whole operation being controlled by one man.

Illustration No. 251 shows this shear arranged as a double shear, one side being used for cross-cutting and the other for slitting. This arrangement is very desirable where it is necessary to economize in space.

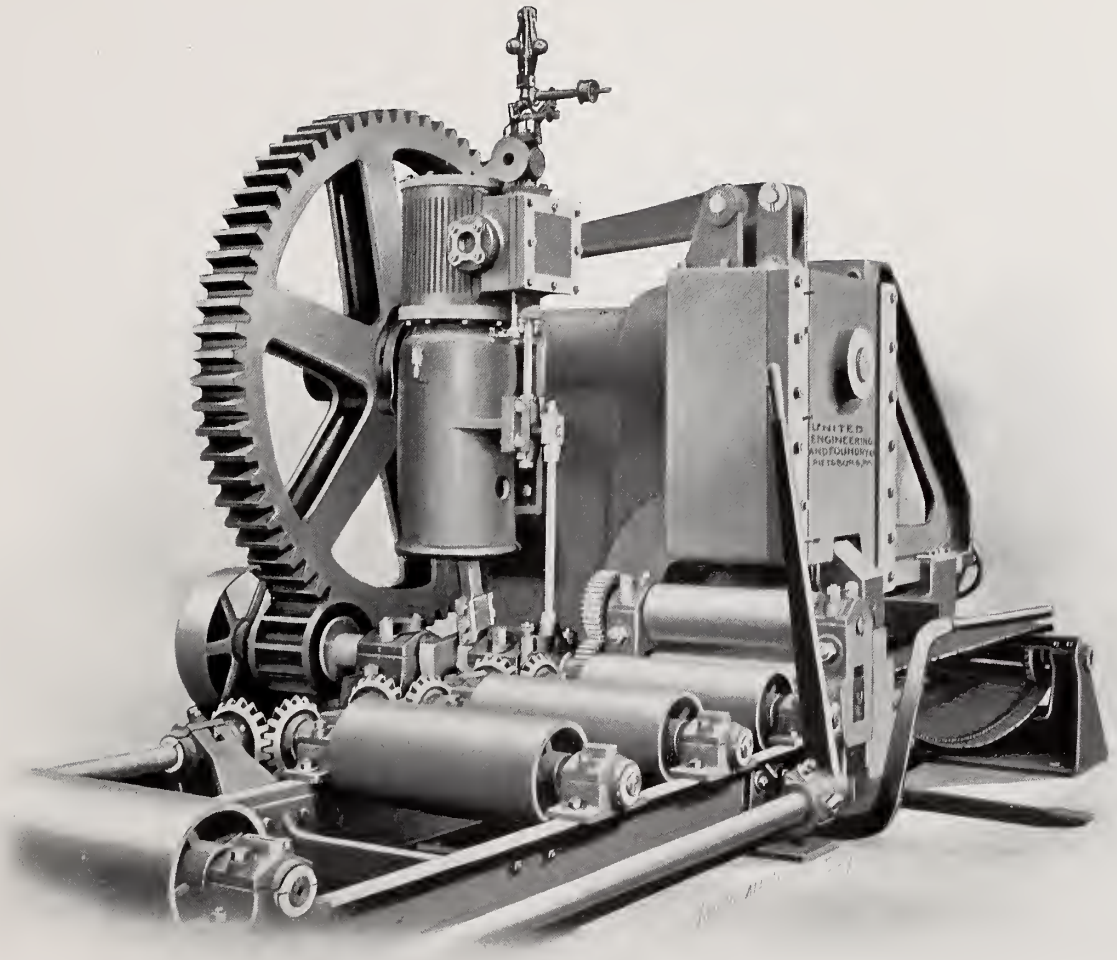


Illustration No. 88

No. 4 Vertical Shear

Engine Driven, Left Hand, with Pinch Rollers

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

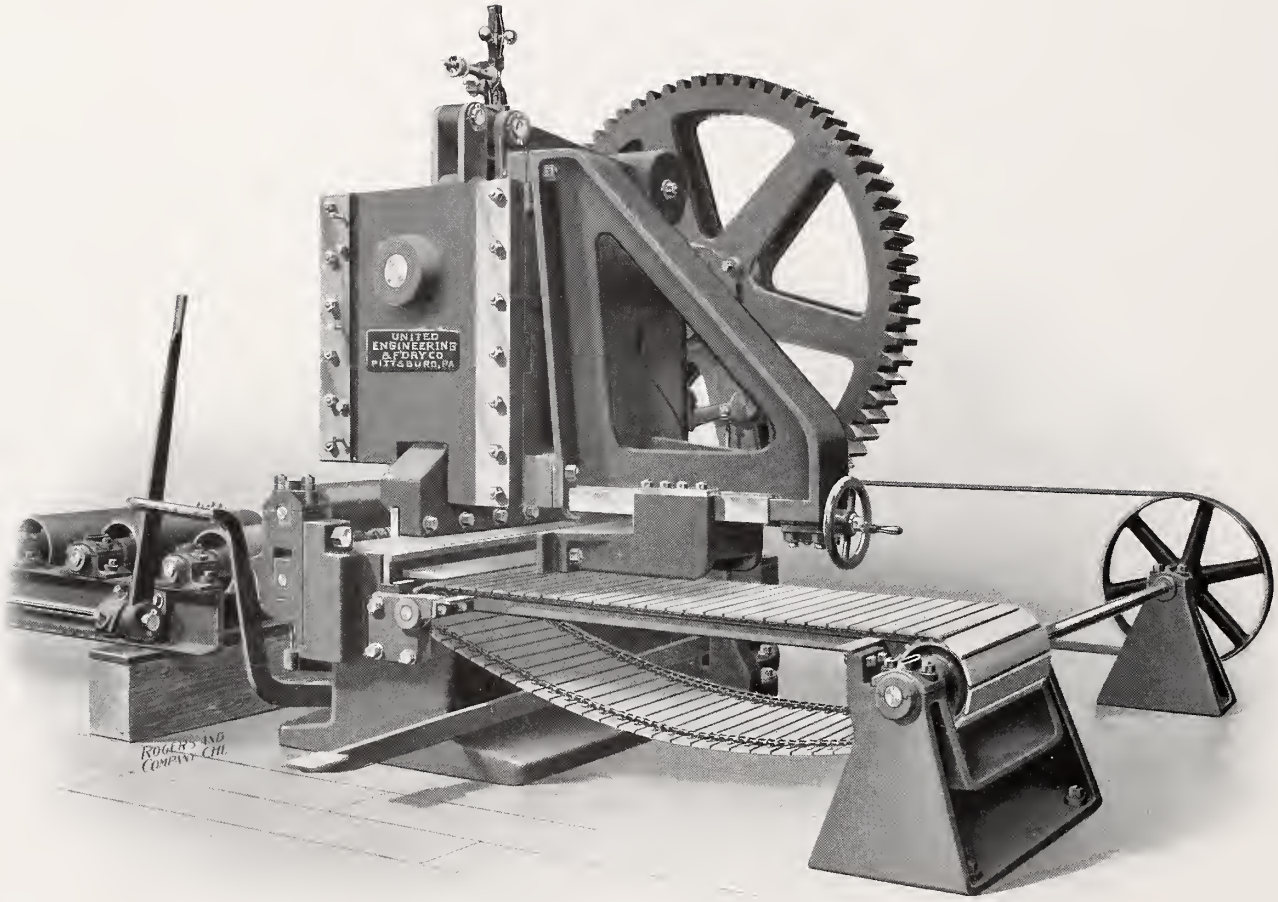


Illustration No. 88 A

No. 4 Vertical Shear

Engine Driven, with Pinch Rollers

United Engineering and Foundry Company
PITTSBURG, PA U.S.A.

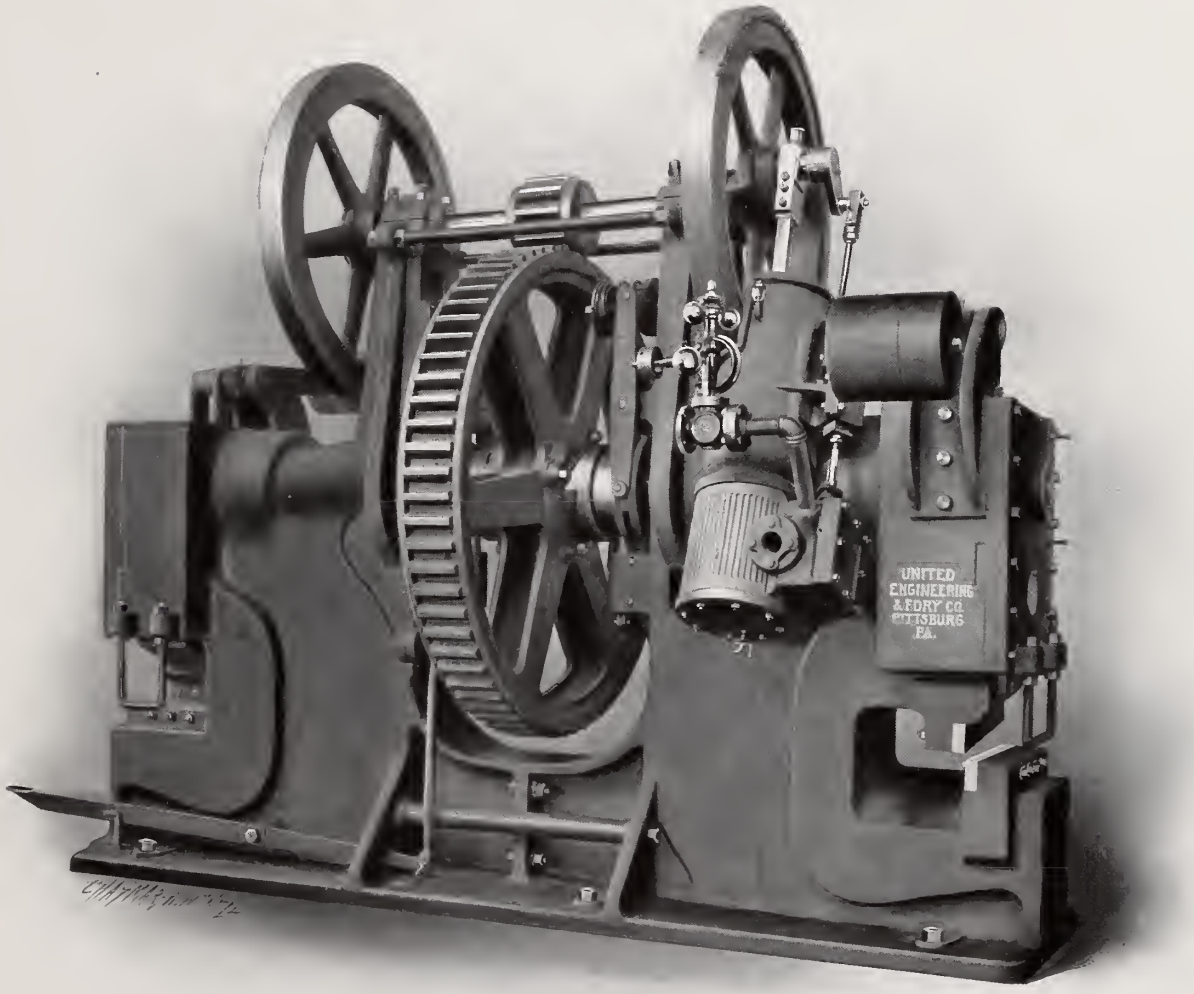


Illustration No. 251

No. 4 Double Vertical Shear

Engine Driven

United Engineering and Foundry Company

No. 0 Vertical Punch and Shear

Has capacity to punch a 2½-inch hole through a 1-inch soft steel plate.

The throat is 18 inches deep. Stroke of head is 3¼ inches.

Speed, 25 cuts per minute when fly-wheel shaft runs 200 revolutions per minute.

Weight with 9 x 12 inch engine, 30,000 pounds.

Weight, with 12 x 42 inch pulleys, 28,000 pounds.

This combination punch and shear is very suitable for structural shops.

See illustration No. 133.

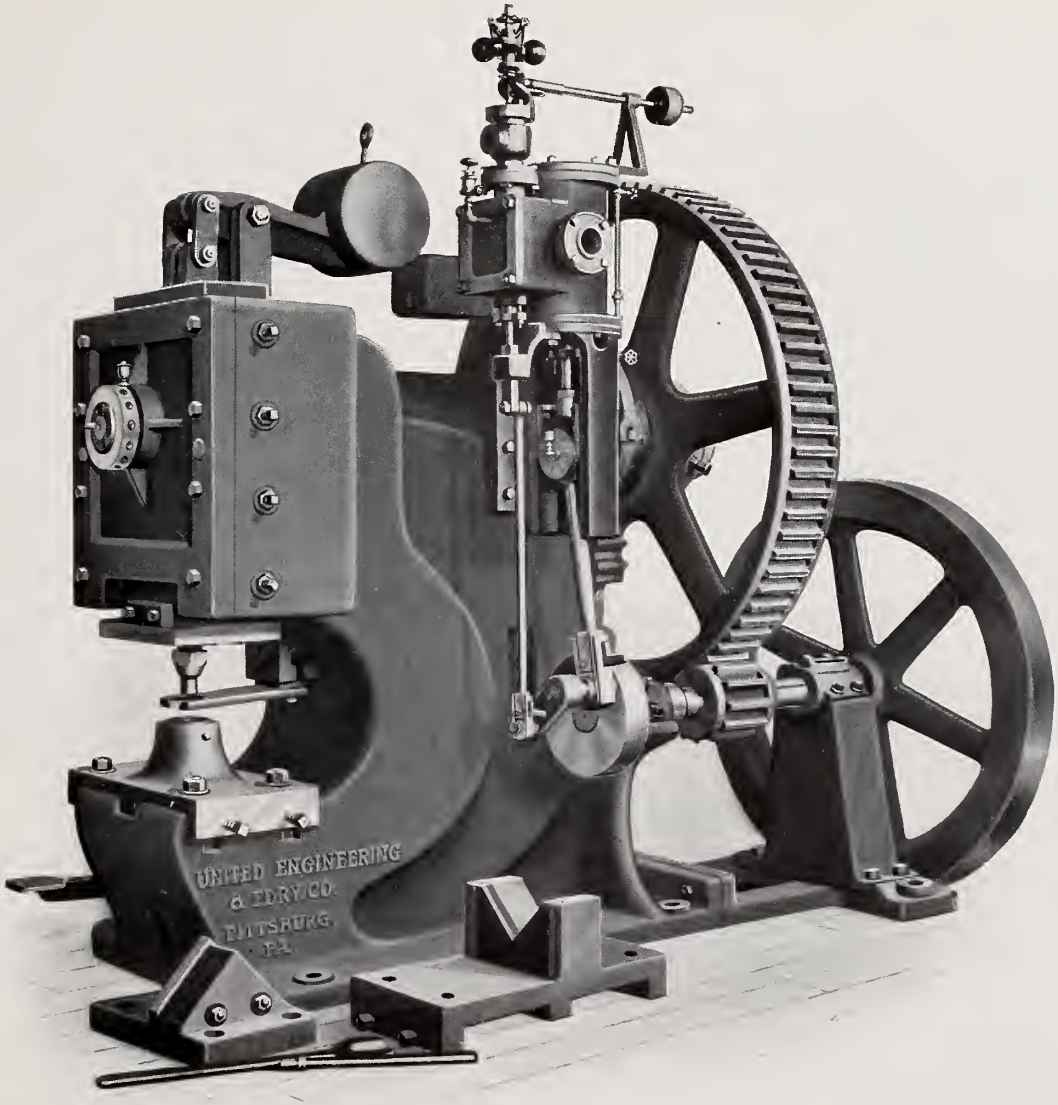


Illustration No. 133

No. 0 Punch

Engine Driven, with Removable Knife

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

NO. 4 VERTICAL RAIL STRAIGHTENER

CAPACITY to straighten any standard "tee" or girder rail.

Weight with 8 x 36 inch pulleys, 76,000 pounds.

Weight with 8 x 8 inch engine, 77,000 pounds.

Weight with 10 horse-power electric motor, 77,000 pounds.

Floor space, 6 feet 6 inches x 8 feet.

Speed, 50 strokes per minute when fly-wheel shaft runs 350 revolutions per minute.

Gearing, 9-inch face; ratio, 7 to 1.

We also build a lighter machine of similar design capable of straightening up to 60-pound "tee" rails.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

No. 4 Vertical Rail Straightener

Motor Driven

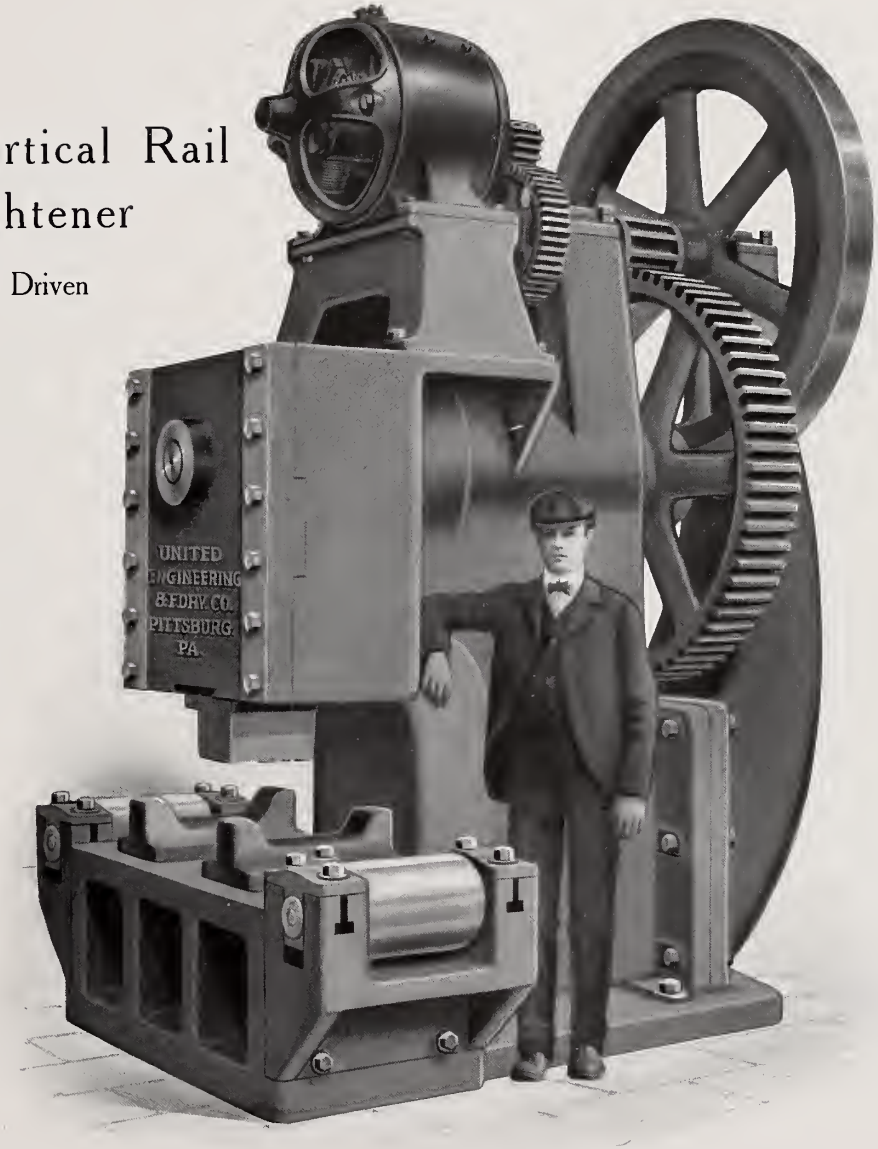


Illustration No. 89

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

GUILLOTINE SHEARS

FOR cutting sheets or plates where continuous rapid work is desired, and where the cuts exceed 24 inches, the guillotine type of shear is most desirable.

We manufacture geared shears of this type to cut from $\frac{1}{16}$ to 2-inch plates from 24 inches to 132 inches wide, also for cutting hot steel billets and blooms up to 14 x 14 inches, and hot steel slabs 6 x 30 inches.

The general designs of these shears are shown by the following illustrations. The feature of having a pitman to transmit the pressure is retained in all of them.

These shears are built with tight and loose pulleys, or direct-connected engine or electric motor.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

3-8 x 24 Inch Plate Shear

Belt Driven

Capacity, 3/8 x 24 inch cold soft steel.

Weight, with 6 x 24 inch pulleys, 6,000 pounds.

Gearing, 6-inch face; ratio, 5.5 to 1.

Floor space, 4 x 5 feet.

Speed, 35 cuts per minute.

Length of knives, 24 inches.

Stroke of head, 3 inches.

This shear is very desirable for cutting skelp and light plates.

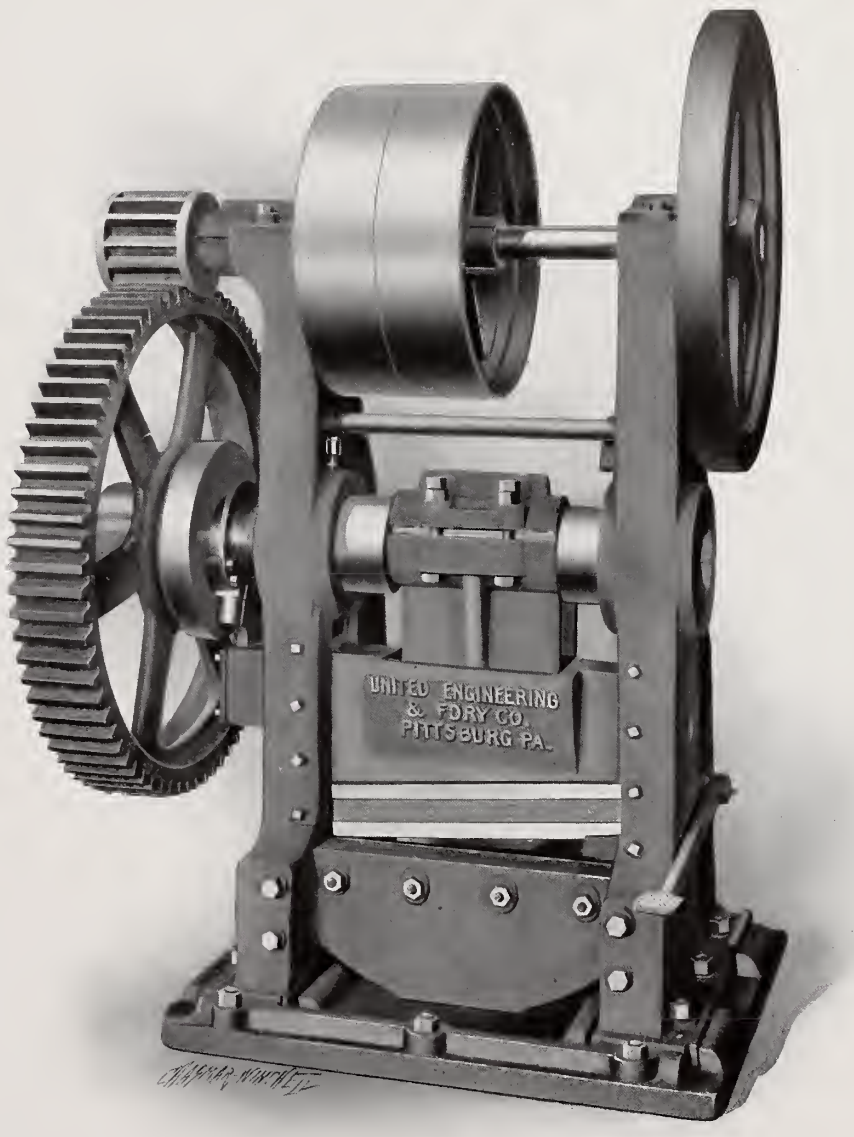


Illustration No. 154

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

1 x 24 Inch Plate Shear

Capacity, 1 x 24 inch cold soft steel plates.
Weight with 10 x 36 inch pulleys, 20,000 pounds.
Weight with 8½ x 12 inch engine, 22,000 pounds.
Gearing, 8-inch face; ratio, 7.35 to 1.
Floor space, 8 feet x 6 feet 4 inches.
Speed, 20 cuts per minute.
Knives, 24 inches long, with four cutting edges.
Stroke of head, 3 inches.
See illustration No. 149.

United Engineering and Foundry Company
PITTSBURG PA U.S.A.

1 x 24 Inch Plate Shear

Engine Driven

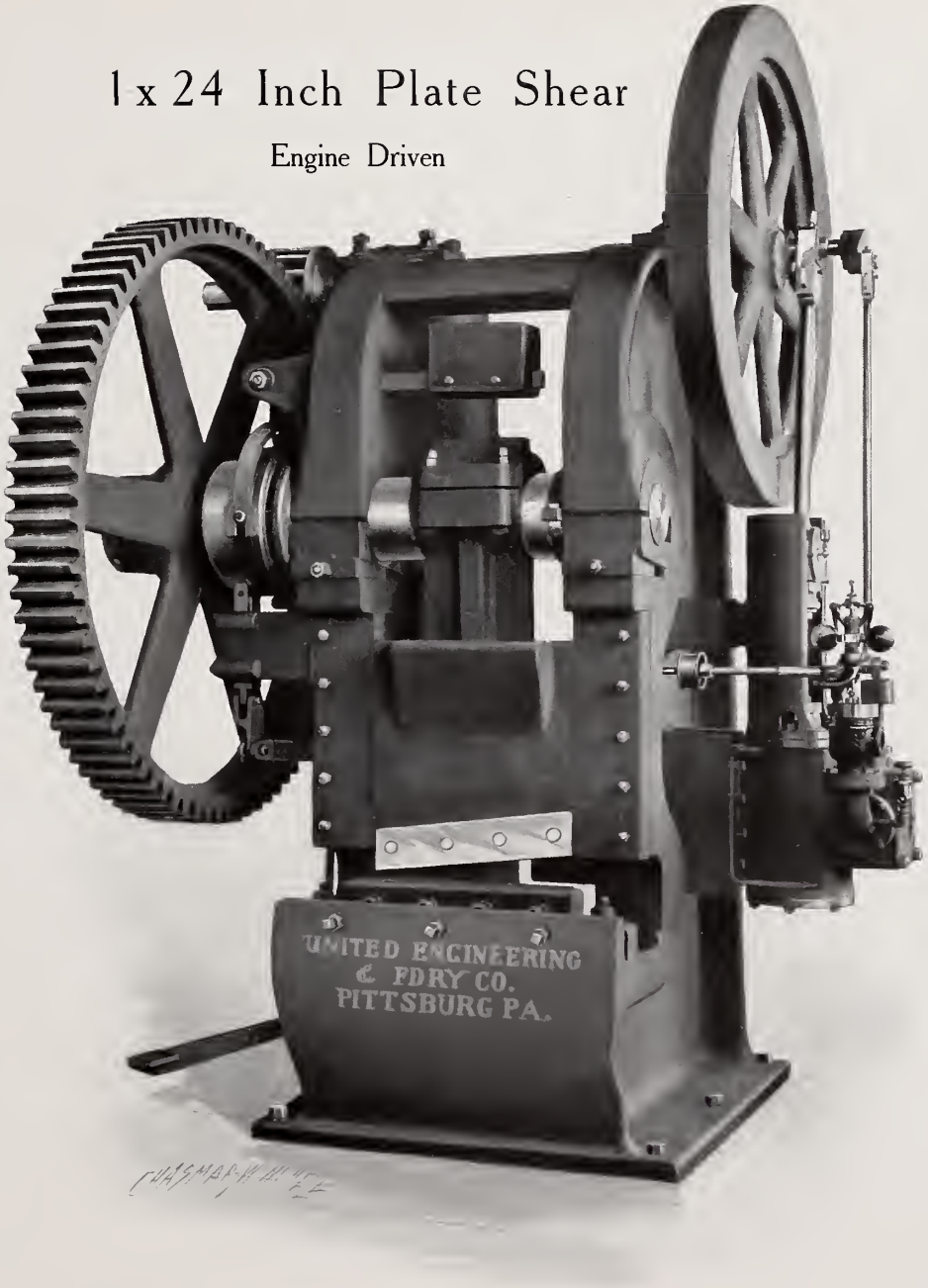


Illustration No. 149

United Engineering and Foundry Company

42-inch Plate Shear

Capacity, 1½ x 42 inch cold soft steel plates.

Weight with 8½ x 36 inch pulleys, 53,000 pounds.

Weight with 11 x 12 inch engine, 58,000 pounds.

Weight with 75 horse-power electric motor, 60,000 pounds.

Gearing, 8-inch face; ratio 15 to 1.

Floor space, 6 feet x 8 feet 8 inches.

Speed, 12 to 18 cuts per minute when fly-wheel shaft runs 180 to 270 revolutions per minute.

Knives, 42 inches long, with four cutting edges.

Stroke of head, 4½ inches.

See illustrations No. 182 and No. 96.

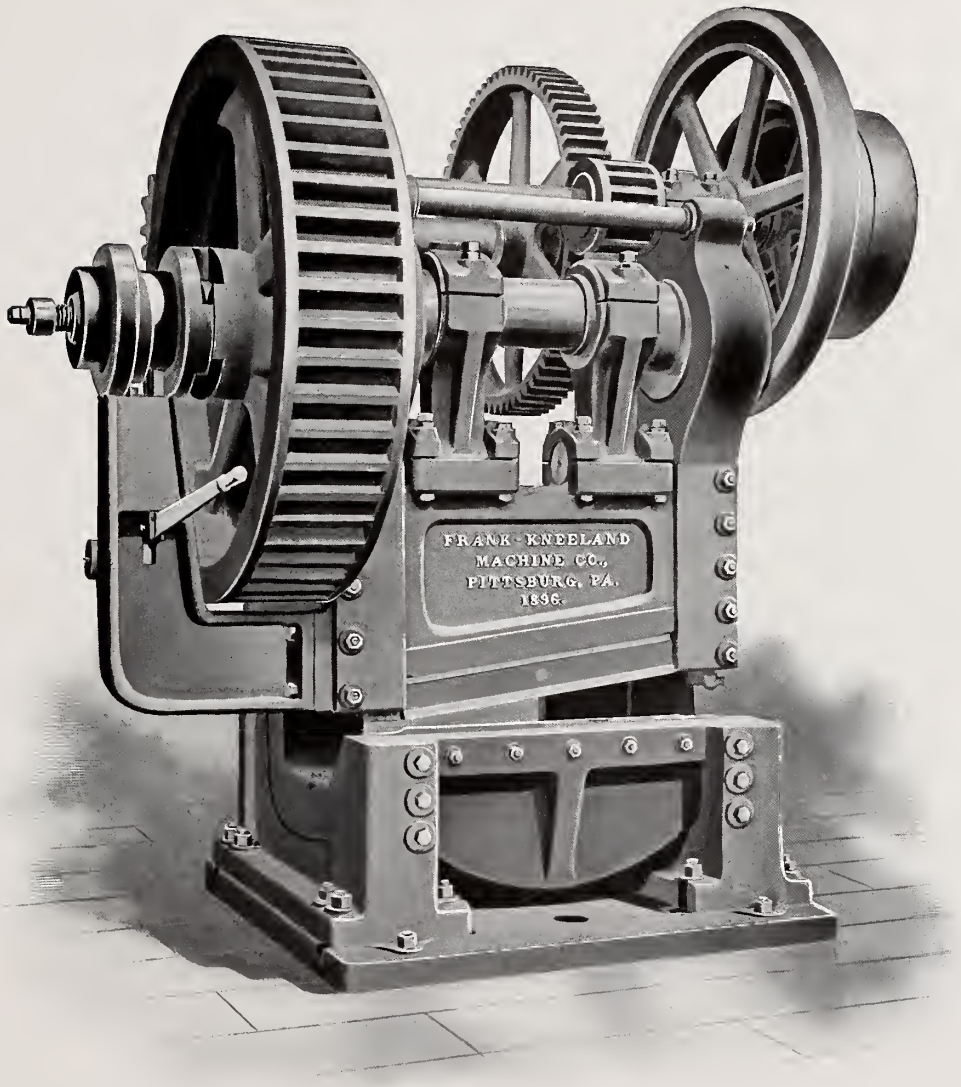


Illustration No. 182

42-inch Guillotine Shear

Belt Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

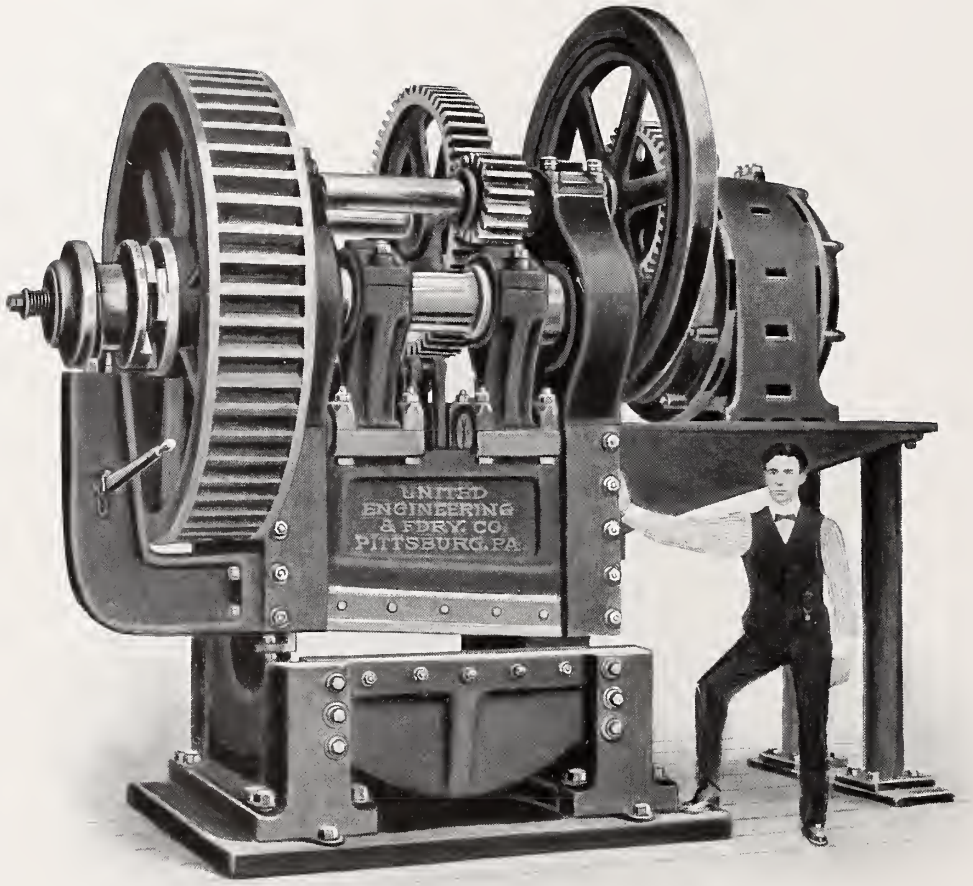


Illustration No. 96

42-inch Guillotine Shear

Motor Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

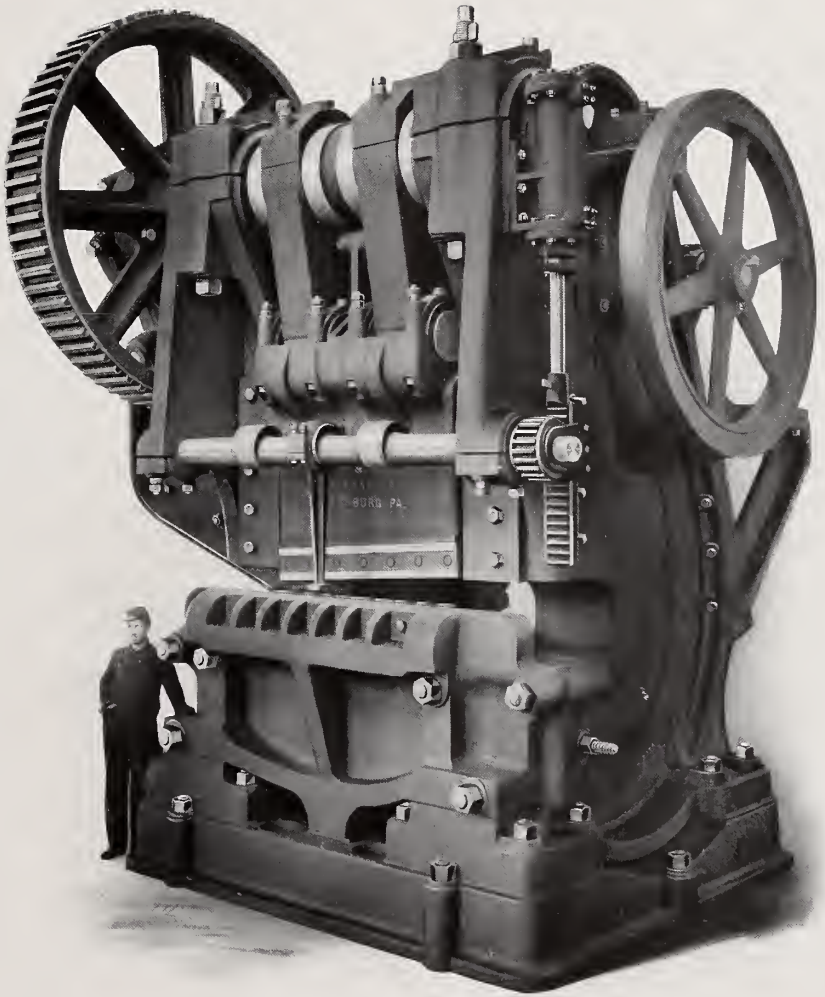


Illustration No. 343

60-inch Plate Shear

Motor Driven

Write for prices and description.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

100-inch Plate Shear

Motor Driven

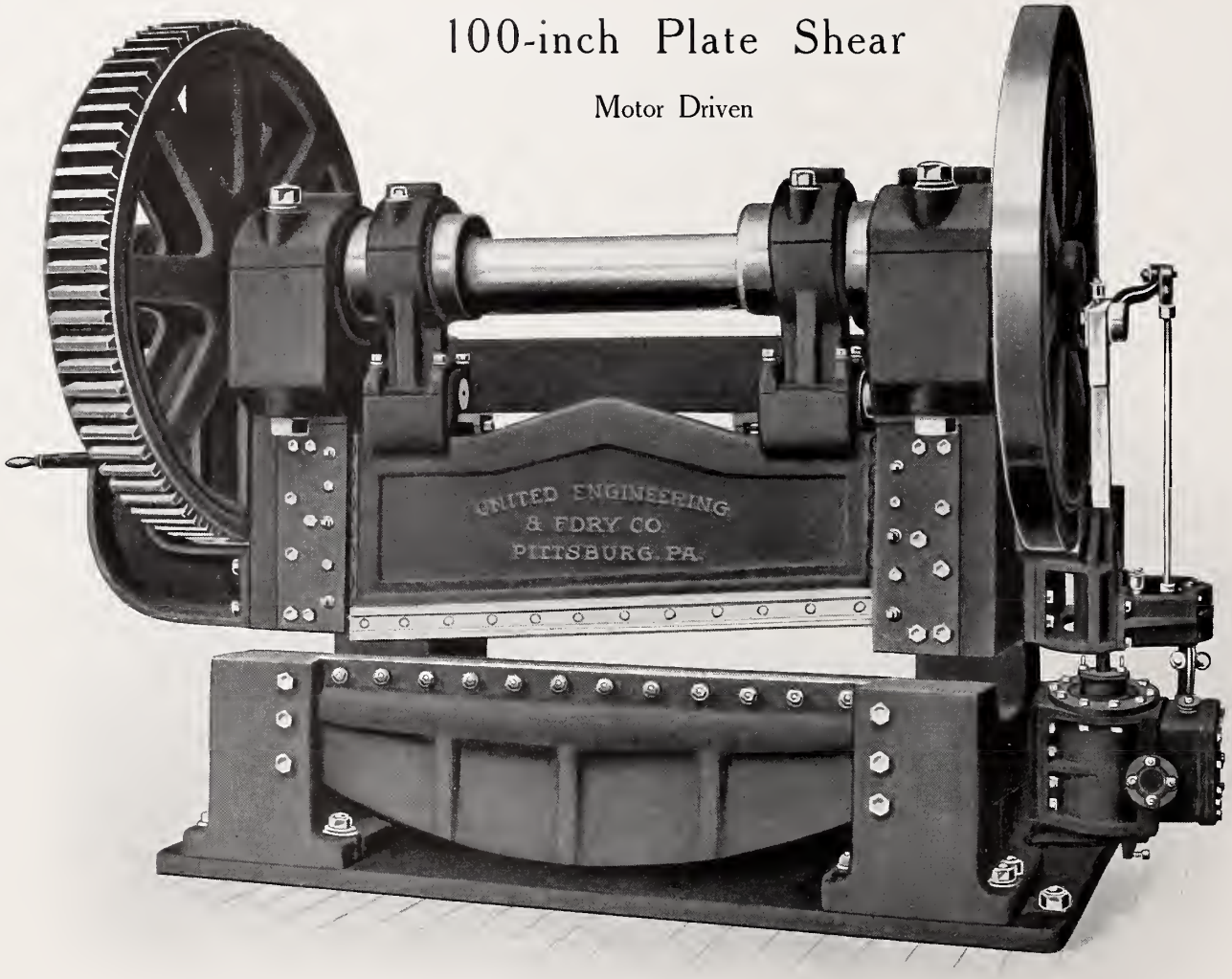


Illustration No. 69

Write for prices and description.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

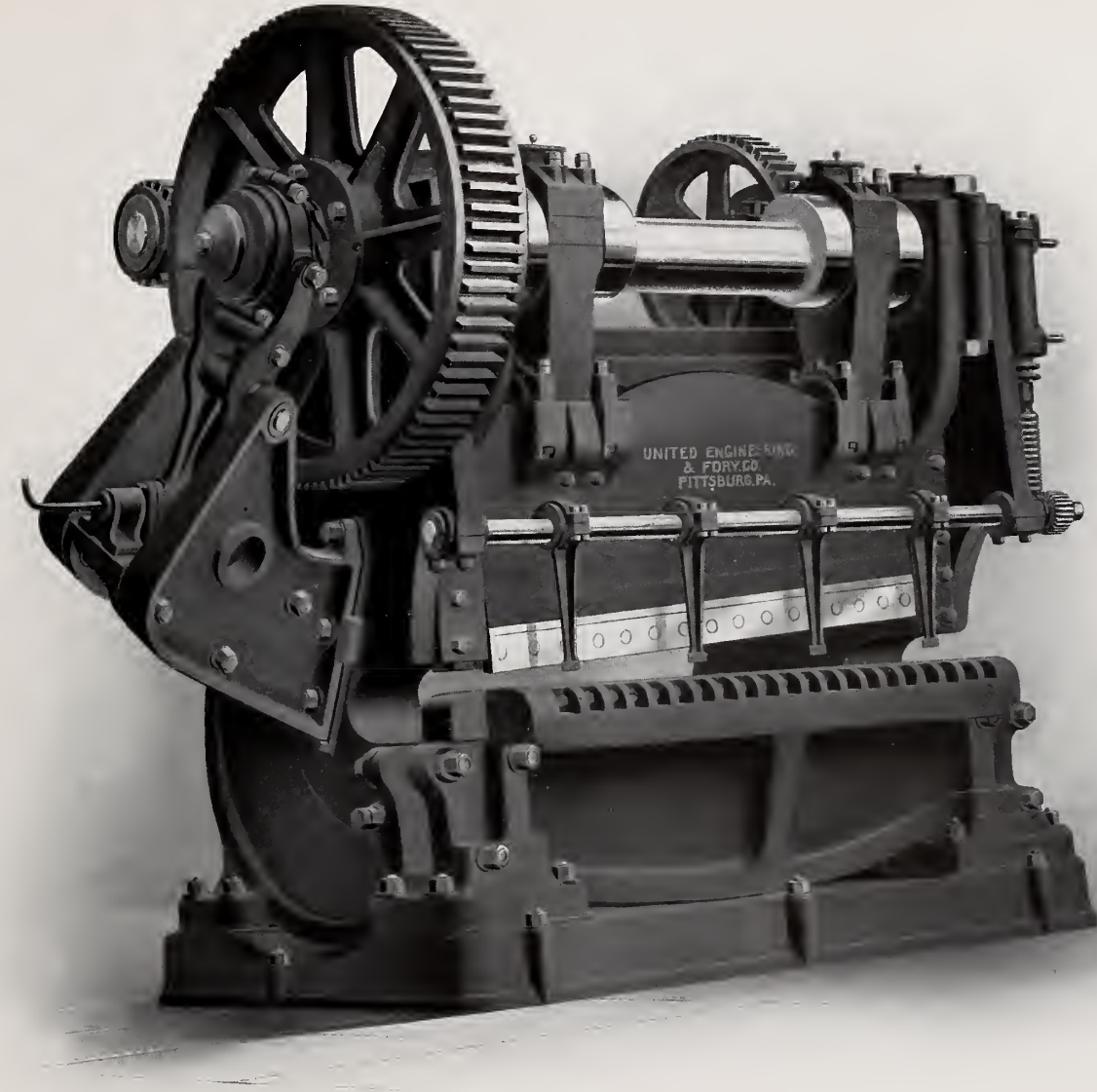


Illustration No. 344

132-inch Plate Shear

Engine Driven

Write for prices and description.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

6 x 6 Inch Bloom Shear

Capacity, 6 x 6 inch hot soft steel.

Weight with 8½ x 36 inch pulleys, 36,000 pounds.

Weight with 11 x 12 inch engine, 40,000 pounds.

Weight with 30 horse-power electric motor, 41,000 pounds.

Gearing, 6-inch face; ratio 21 to 1.

Speed, 10 to 14 cuts per minute when fly-wheel shaft runs 210 to 294 revolutions per minute.

Floor space, 8 feet x 6 feet 6 inches.

Knives, 24 inches long with four cutting edges.

Stroke of head, 8 inches.

See illustrations No. 22 and No. 74.

6 x 6 Inch Bloom Shear

Belt Driven

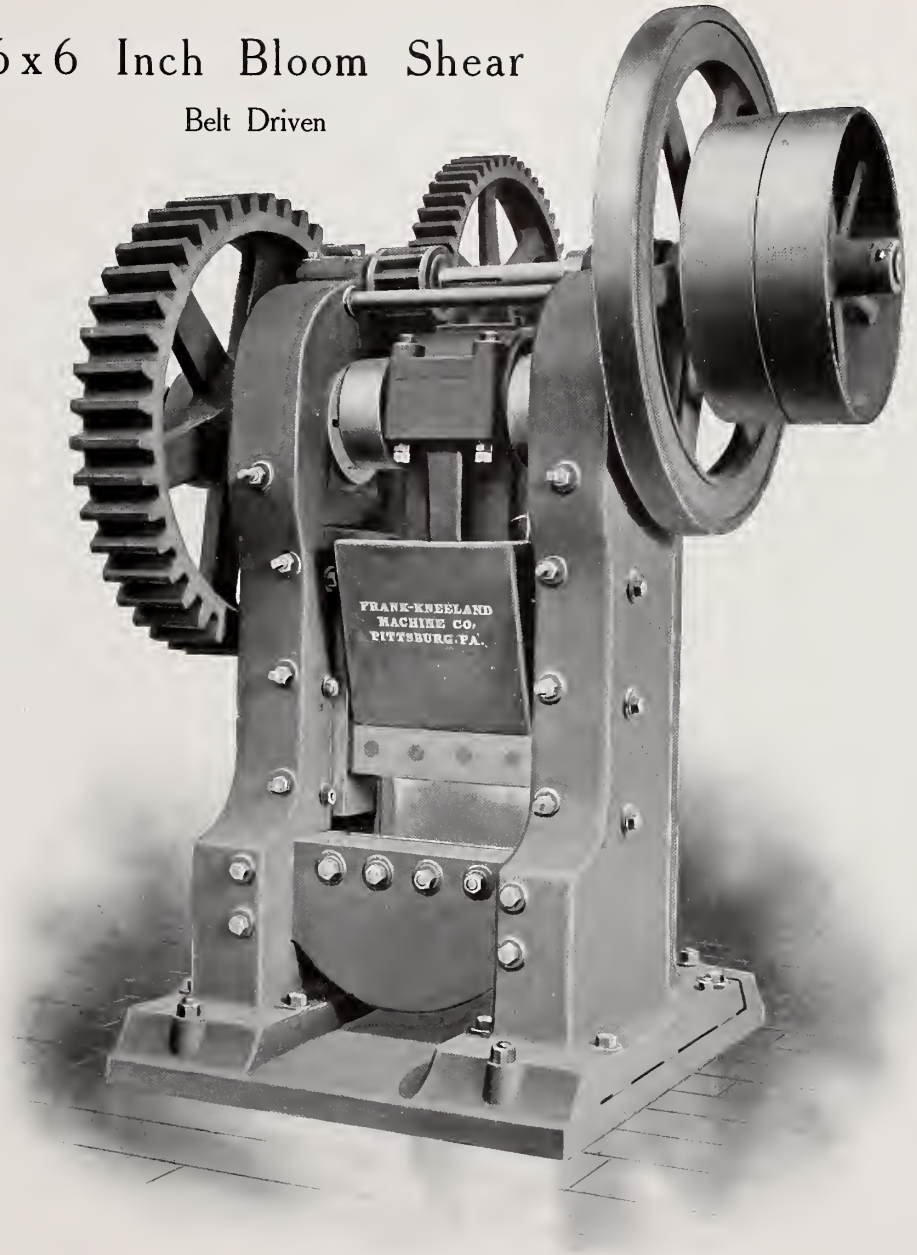


Illustration No. 22

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

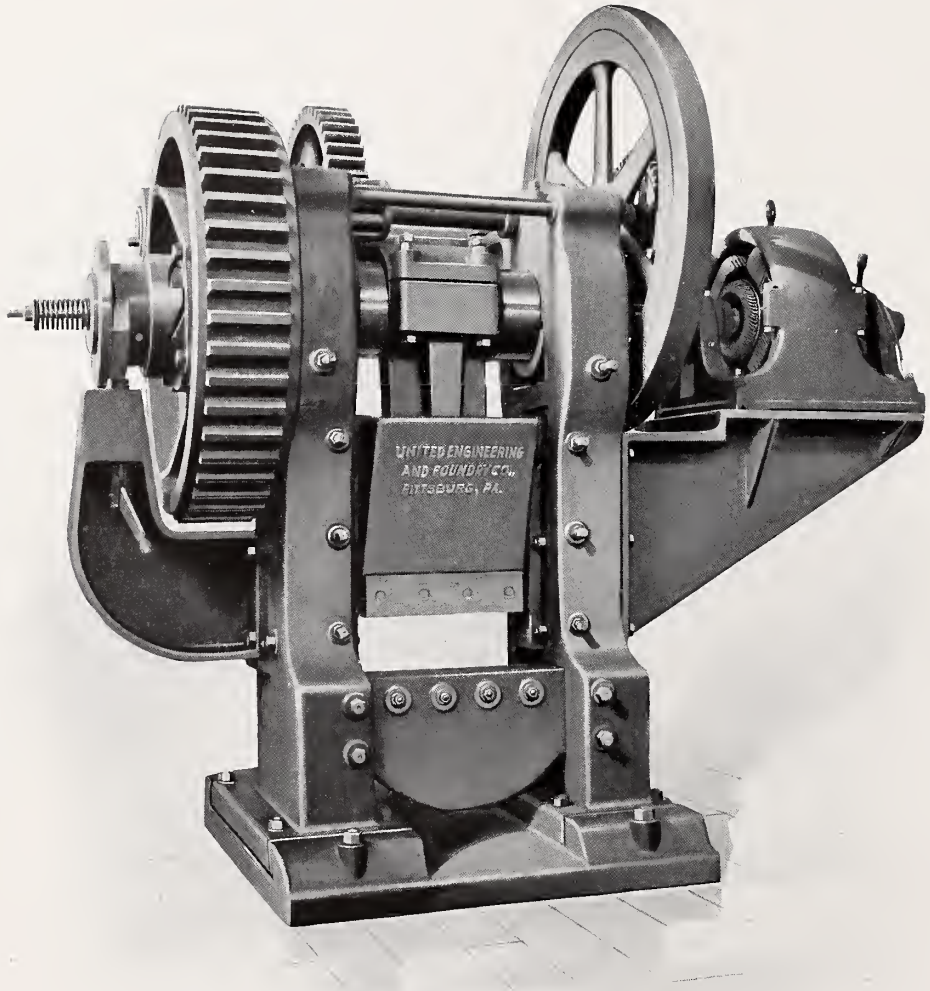


Illustration No. 74

6 x 6 Inch Bloom Shear

Motor Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

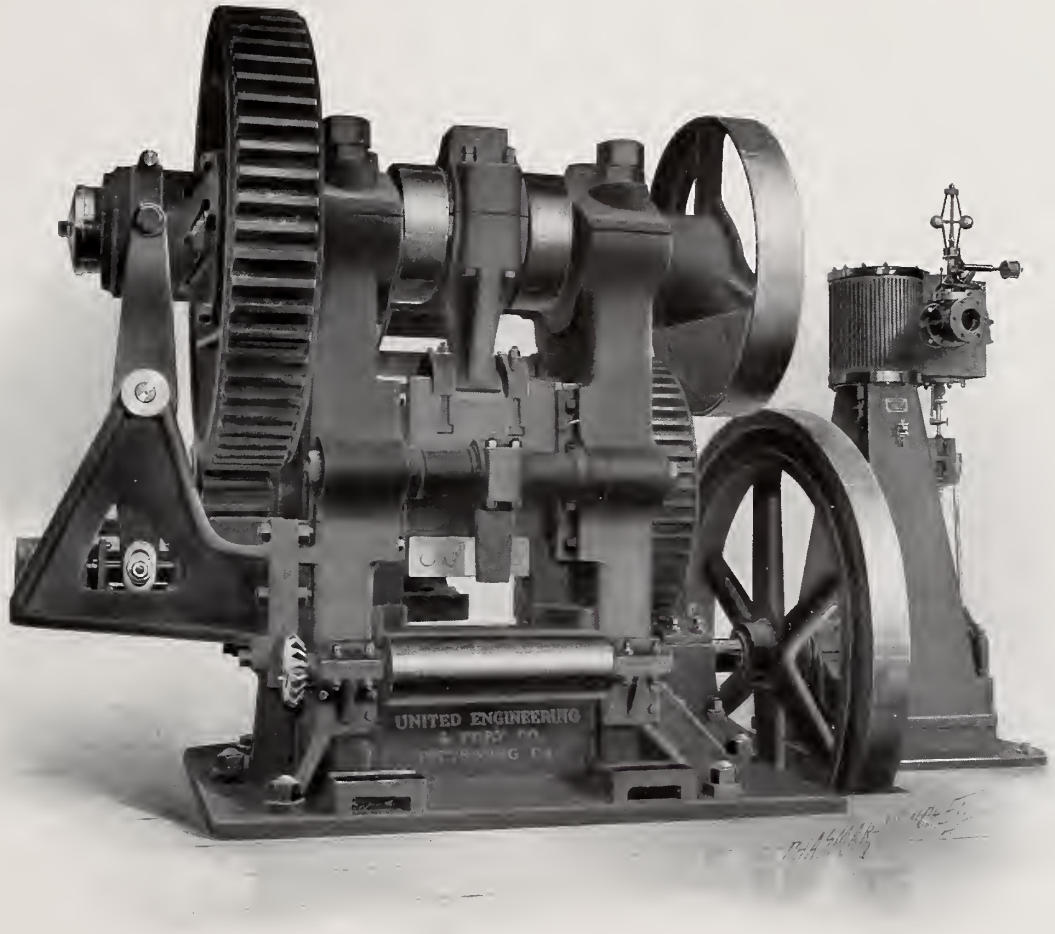


Illustration No. 65

10x10 Inch Hot Bloom Shear

Engine Driven

Write for prices and description.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

TIN PLATE SQUARING SHEARS

THESE machines are made in the following sizes: 36, 48, 54, 72, 126 and 154 inches.

The 36 and 48 inch and one type of the 54 inch shears, shown by illustrations Nos. 180 and 181, are directly driven without gearing, while the larger sizes are geared. These shears are all equipped with positive stop motion, and the gauges are arranged so that they can be set conveniently.

The larger sizes are equipped with balance weights for the knife head, thus insuring a quiet, easy running machine.

These shears will work equally well on single sheets or packs up to their rated capacity, and we build them with tight and loose pulleys or with direct-connected engine or electric motor.

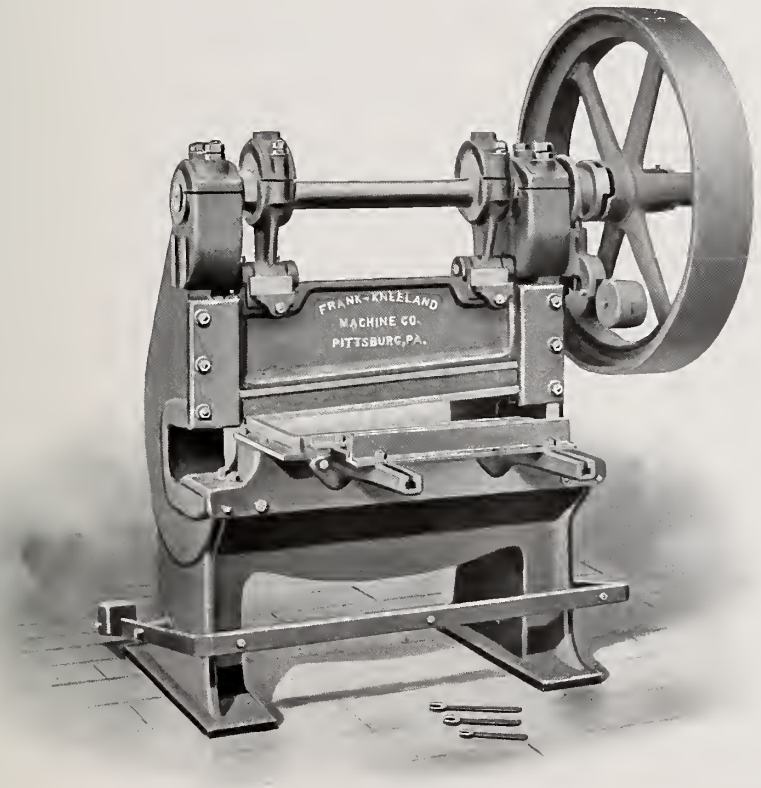


Illustration No. 180

36-inch Squaring Shear

Belt Driven

Capacity, ⅛-inch packs.

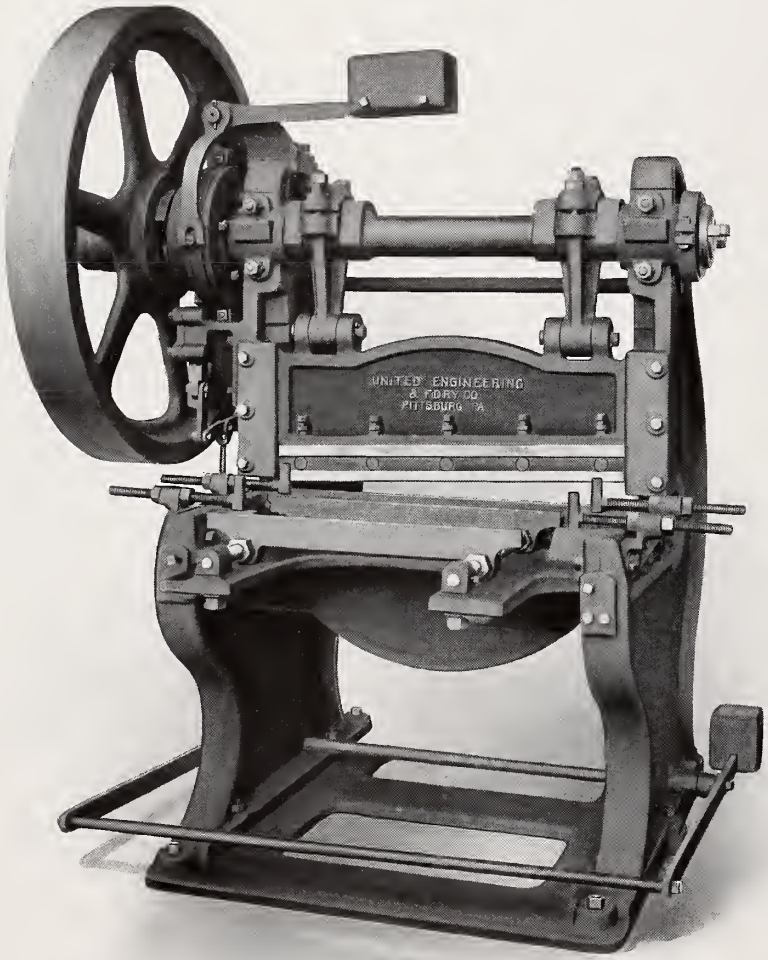
Weight with 8½ x 48 inch band wheel, 6,000 pounds.

Speed, 35 to 50 cuts per minute.

Floor space, 4 feet x 5 feet 6 inches.

Knives are 36 inches long.

This shear is directly driven without gearing.



B36-inch Squaring Shear

Belt Driven

Capacity, ⅛-inch packs.

Weight with 8½ x 48 inch band wheel, 5,500 pounds.

Speed, 35 to 50 cuts per minute.

Floor space, 5 feet 6 inches x 5 feet 9 inches.

Knives, 36 inches long.

This shear is directly driven without gearing.

Illustration No. 141

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

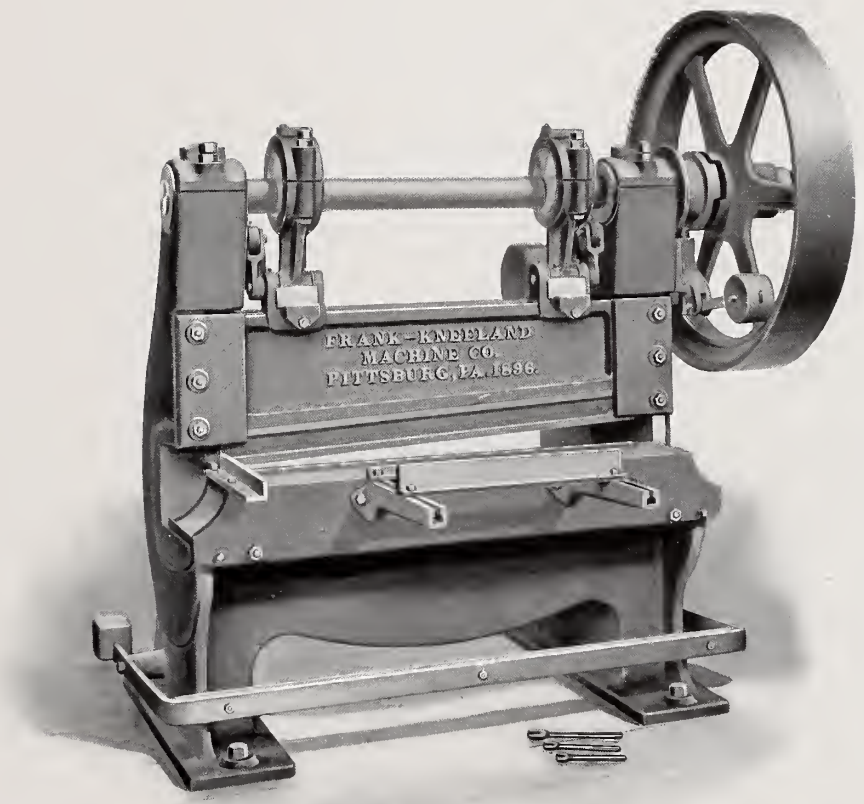


Illustration No. 181

54-inch Squaring Shear

Belt Driven

See page 90 for description.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

54-inch Squaring Shear

Capacity, $\frac{3}{16}$-inch packs.

Weight with 8½ x 48 inch band wheel, 8,200 pounds.

Speed, 35 to 50 cuts per minute.

Floor space, 4 x 7 feet.

Knives, 54 inches long, with four cutting edges.

Illustration No. 181 shows the 54-inch shear without gearing and also the 48-inch shear, which is the same design.

Illustration No. 60 shows the 54-inch shear geared and also the 72-inch shear, which is the same design.

The 48-inch shear, with an 8½ x 48 inch band wheel, weighs 7,000 pounds, and the 72-inch shear, with a 5½ x 36 inch band wheel, weighs 10,000 pounds.

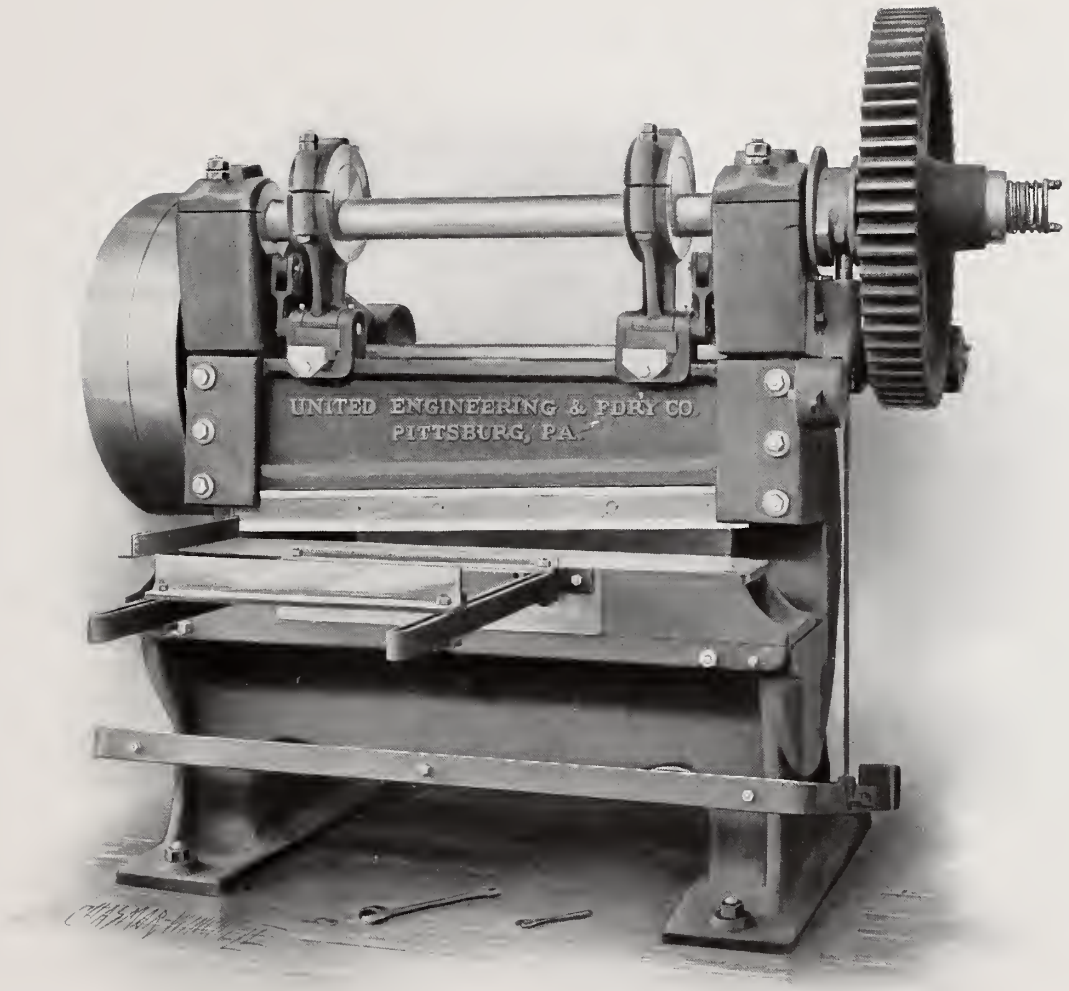


Illustration No. 60

54-inch Geared Squaring Shear

Belt Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

126-inch Squaring Shear

We build several sizes of these shears having capacities ranging from 1/4 to 3/8 inch packs.

These shears weigh from 18,000 to 34,000 pounds.

Knives, 126 inches long, with four cutting edges.

Speed, about 20 cuts per minute.

All the gears are made very heavy with large ratios.

Some of these shears are built with a scrap shear attached as shown by illustration No. 156 A.

See illustrations No. 142, No. 156 A and No. 94.

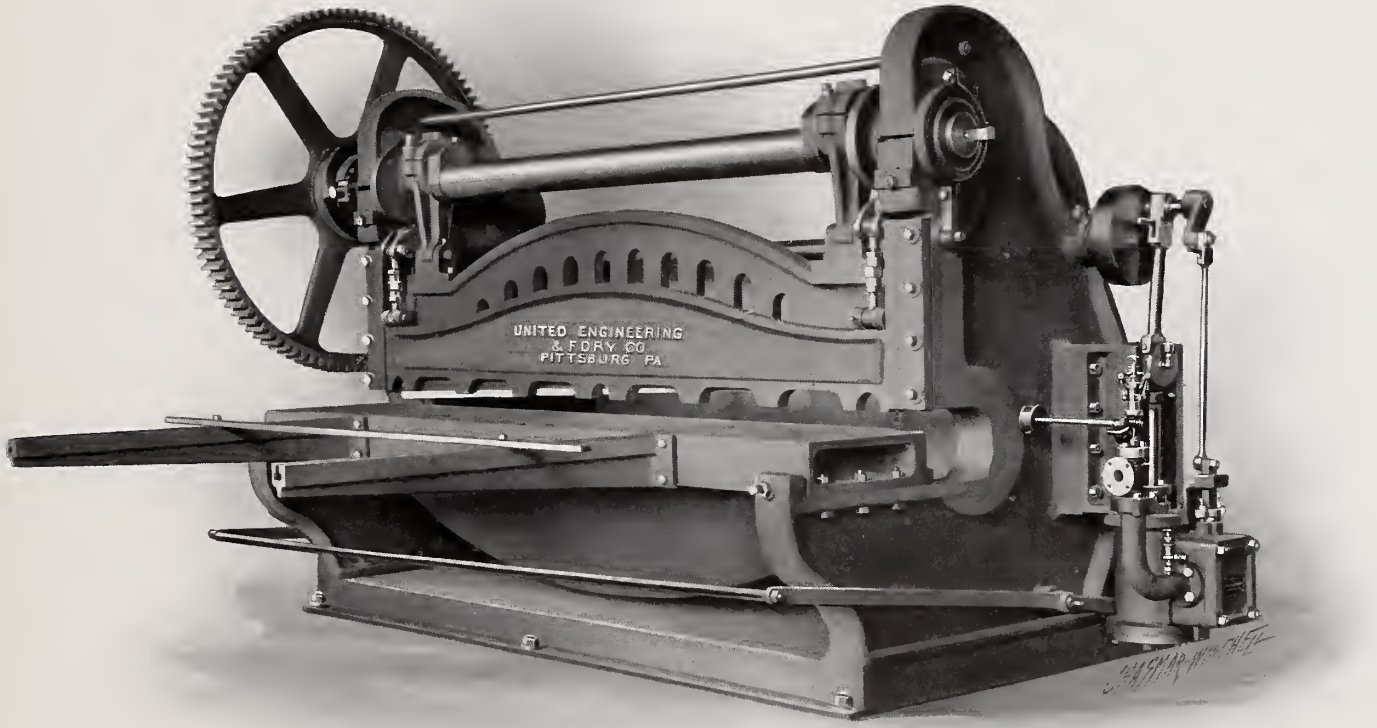


Illustration No. 142

126-inch Squaring Shear

Engine Driven

United Engineering and Foundry Company
PITTSBURG PA U.S.A.

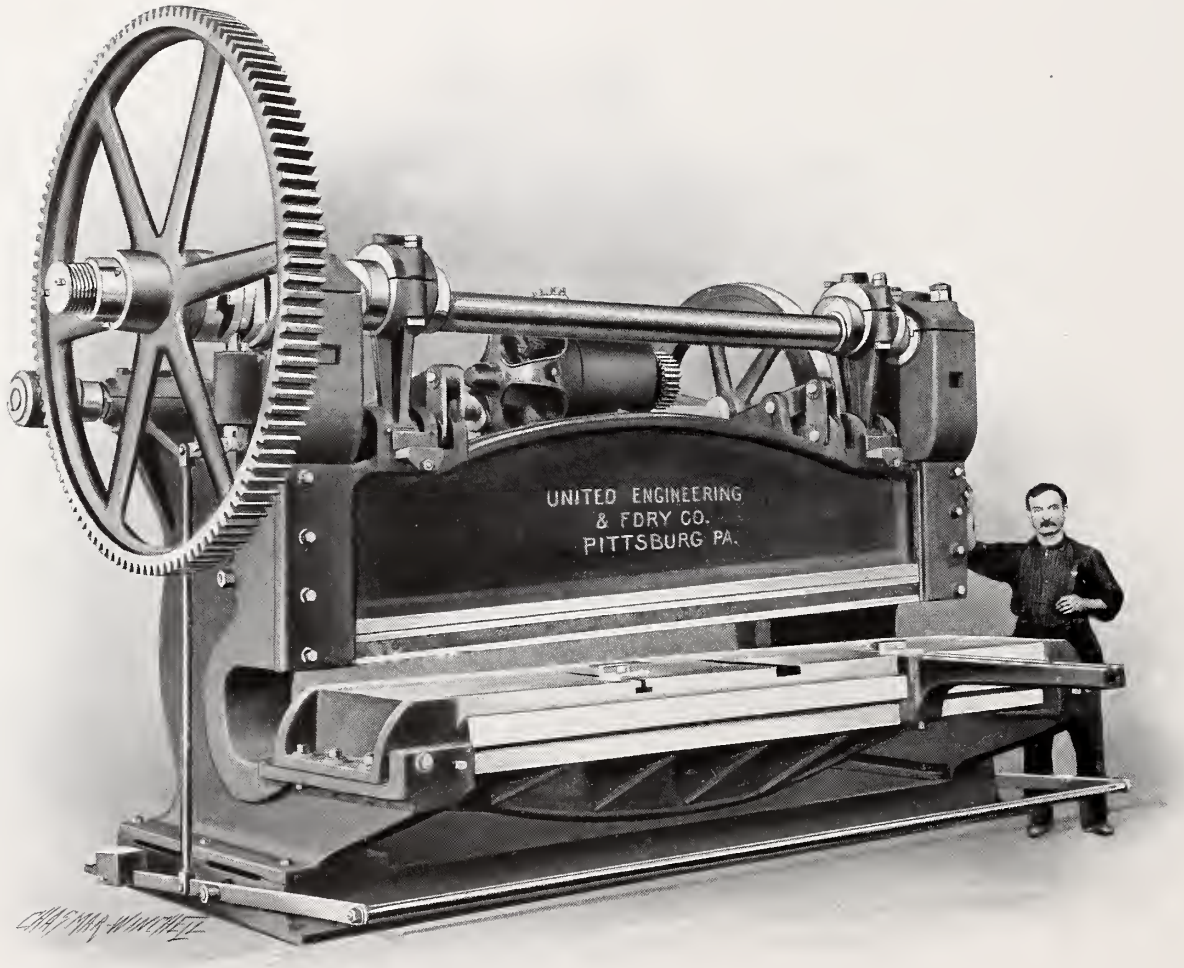


Illustration No. 94

126-inch Squaring Shear

Motor Driven

United Engineering and Foundry Company
PITTSBURGH PA. U.S.A.

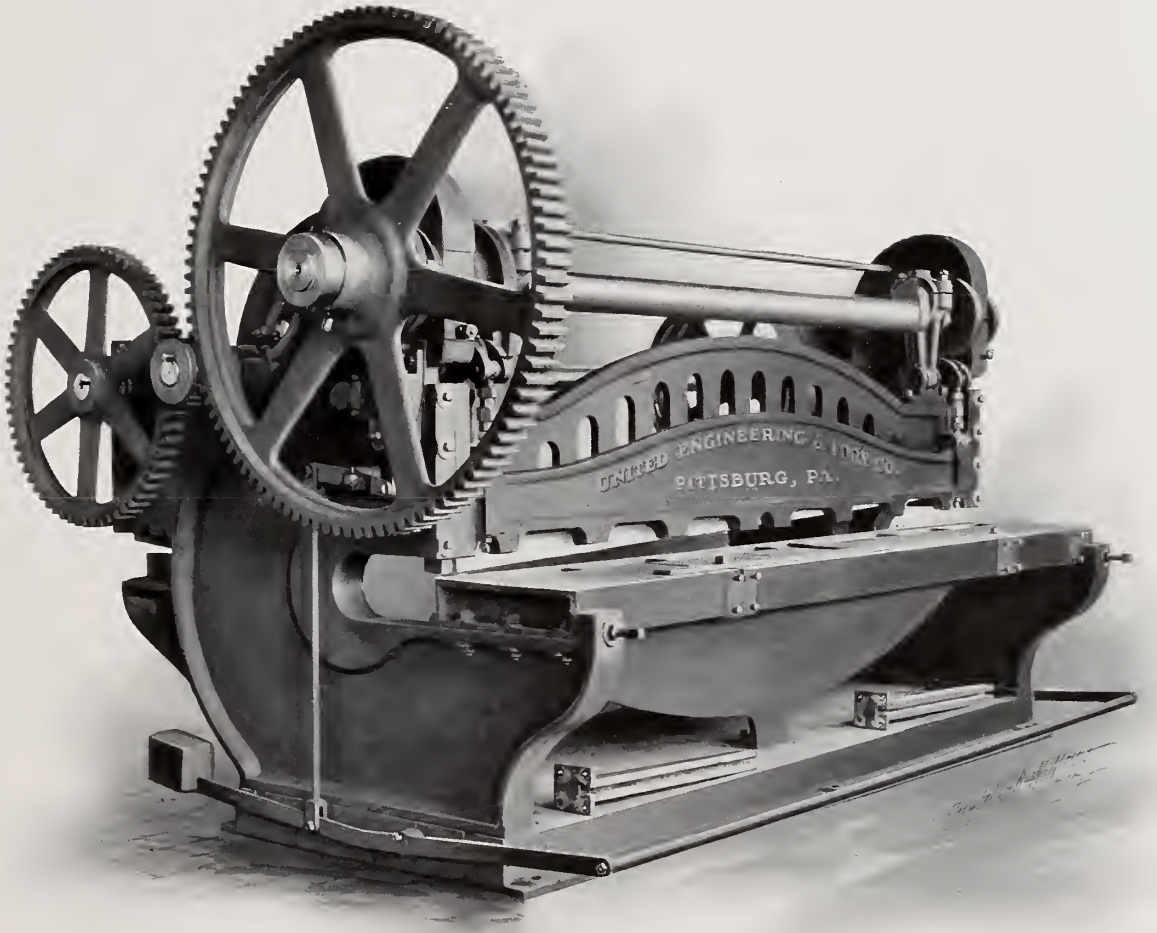


Illustration No. 156 A

126-inch Squaring Shear

With Scrap Shear and Hold-down. Belt Driven

United Engineering and Foundry Company

TIN PLATE DOUBLING SHEARS

THESE shears are built with tight and loose pulleys or direct-connected engine or electric motor. They are built right and left hand with knives having four cutting edges, from 32 inches to 44 inches long.

Illustration No. 183 shows our 32-inch shear, which is rigid and effective.

All parts are adjustable for wear. The usual speed is 30 to 35 cuts per minute.

Floor space, 4 feet x 5 feet 6 inches for the small size to 5 feet 6 inches x 10 feet 6 inches for the large size.

Weight with engine, 6,800 to 10,500 pounds.

The body, table, tail piece and outer bearing for the lever are cast in one piece, which makes the machine very rigid and free from springing.

The lever pin is non-rotating, and the lever has bronze bushings and bronze collar for taking up the wear. It also has an adjustable slide at the doubling end. The doubling arm is adjustable for different thicknesses of sheets.

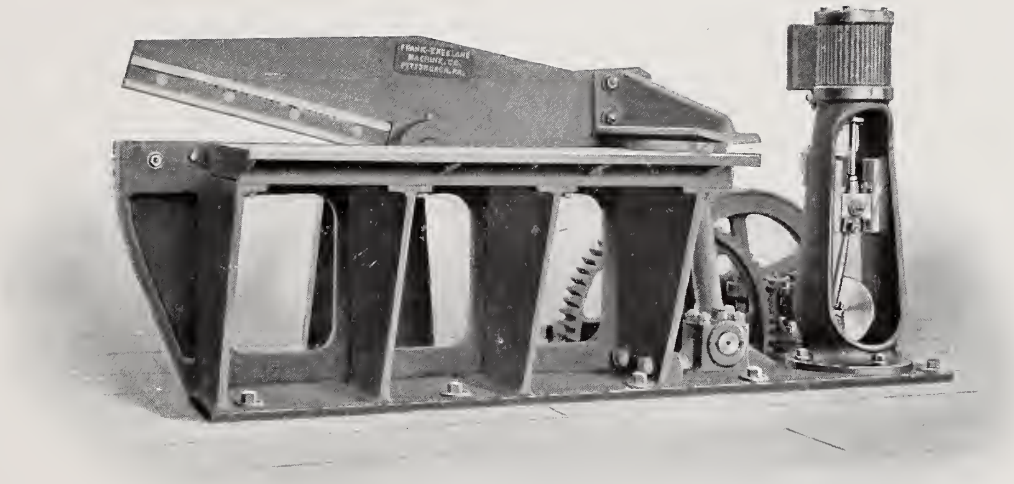


Illustration No. 183

Tin Plate Doubling Shear

Engine Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

HYDRAULIC SHEARS

THIS type of shear is well adapted for use in cases where it is necessary to economize in space, or where it is not convenient to use any other kind of power.

We build these shears in all sizes from small tin bar shears up to the heaviest bloom and slab shears, to be operated with hydraulic pressure from 250 to 5,000 pounds per square inch. These shears are designed throughout to give the greatest possible strength and rigidity, and are easily controlled by the operator.

They are especially desirable shears for use in connection with universal, slabbing or blooming mills, as they will stand rough usage with the minimum amount of care, being simple in design and having no complicated parts which are liable to break. The following illustrations show only a few of the various types of these shears which we build. We are prepared to submit estimates and designs on shears of this type for any purpose within their limits.

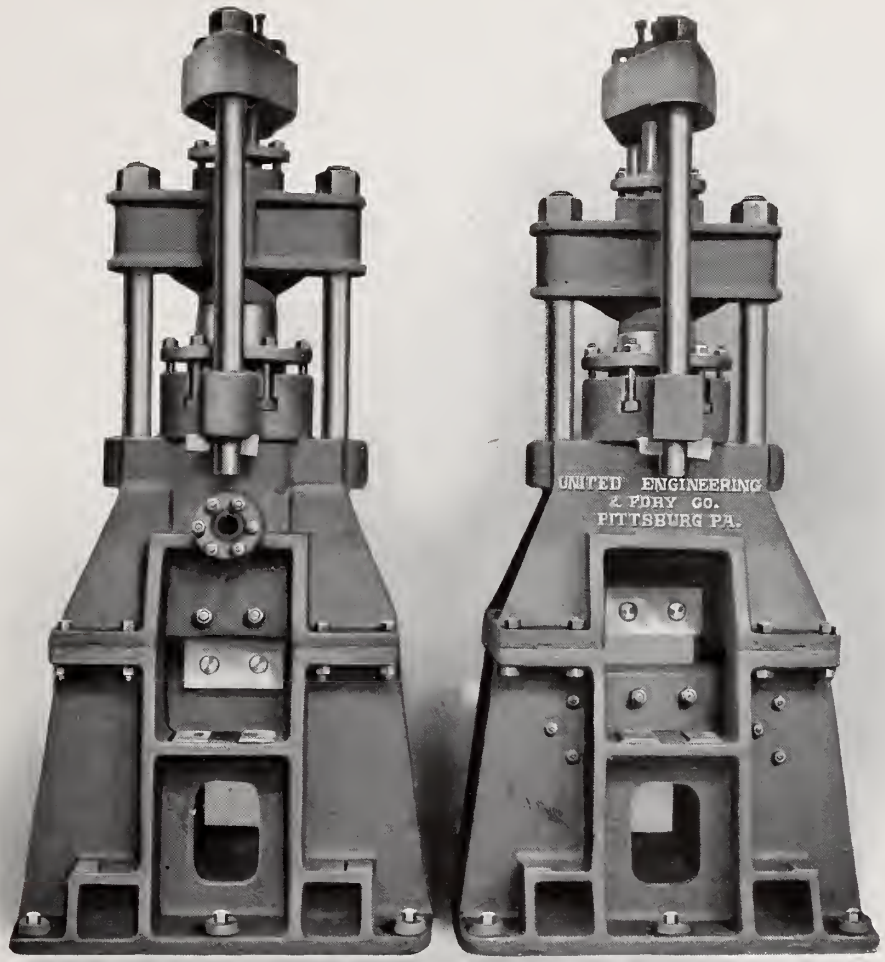


Illustration No. 192

10-inch Hydraulic Tin Bar Shear

United Engineering and Foundry Company

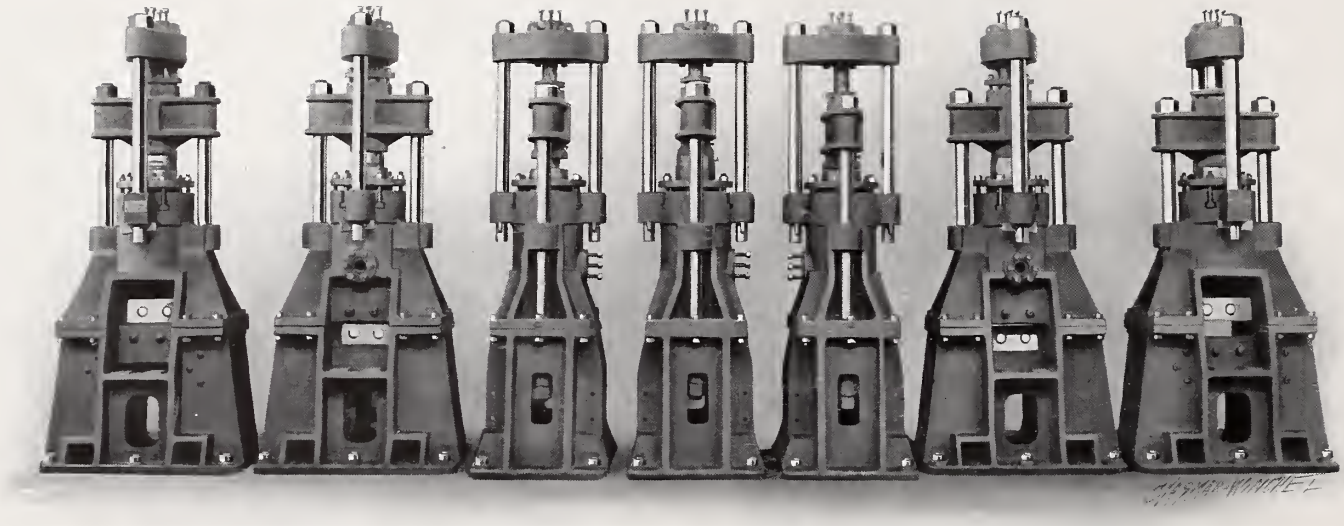


Illustration No. 194

Row of 10-inch Hydraulic Tin Bar Shears

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

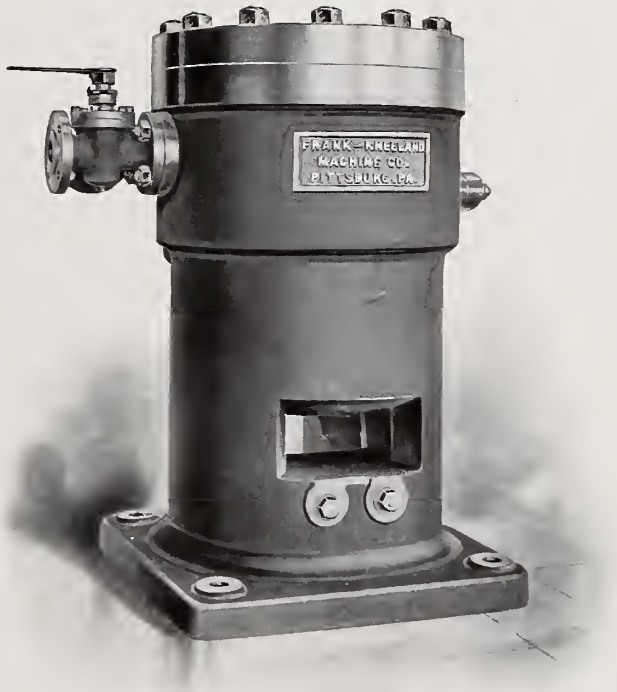


Illustration No. 191

16-inch Hydraulic Shear

Capacity, 2 x 4 inch hot steel.

We also build a 21-inch shear of similar design. Capacity, 6 x 6 inch hot steel.

United Engineering and Foundry Company

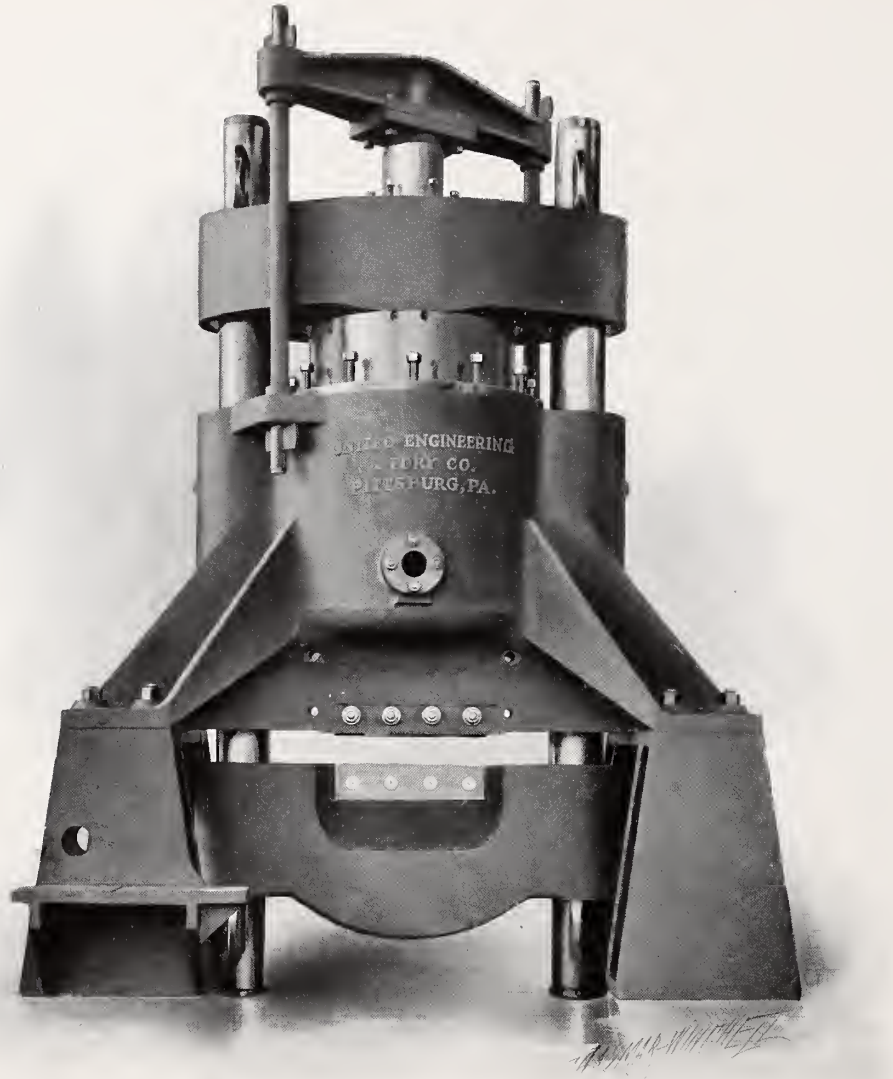
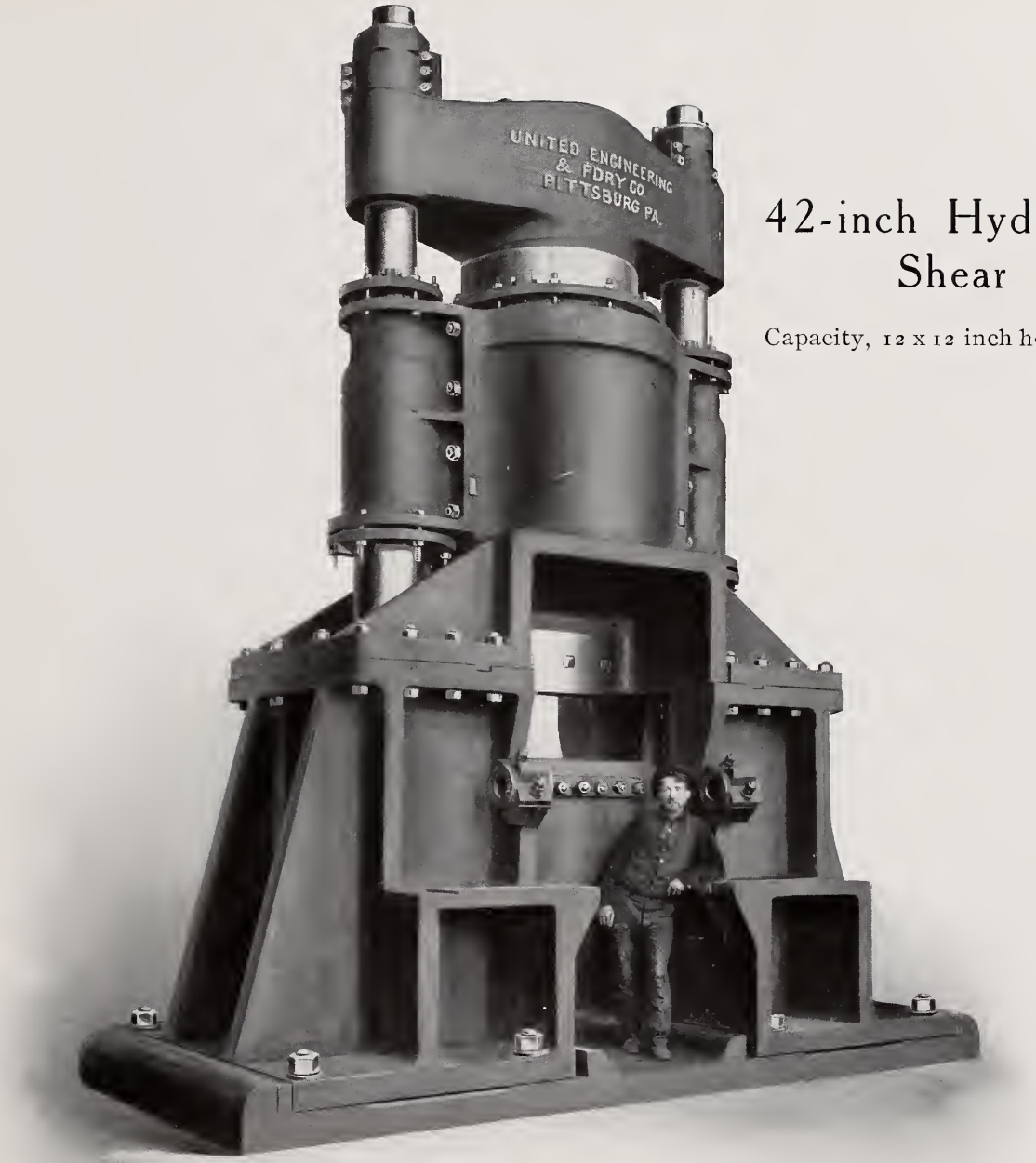


Illustration No. 143

Up Cut 37-inch Hydraulic Shear

Capacity, 12 x 12 inch hot blooms.

United Engineering and Foundry Company



42-inch Hydraulic Shear

Capacity, 12 x 12 inch hot blooms.

Illustration No. 306

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

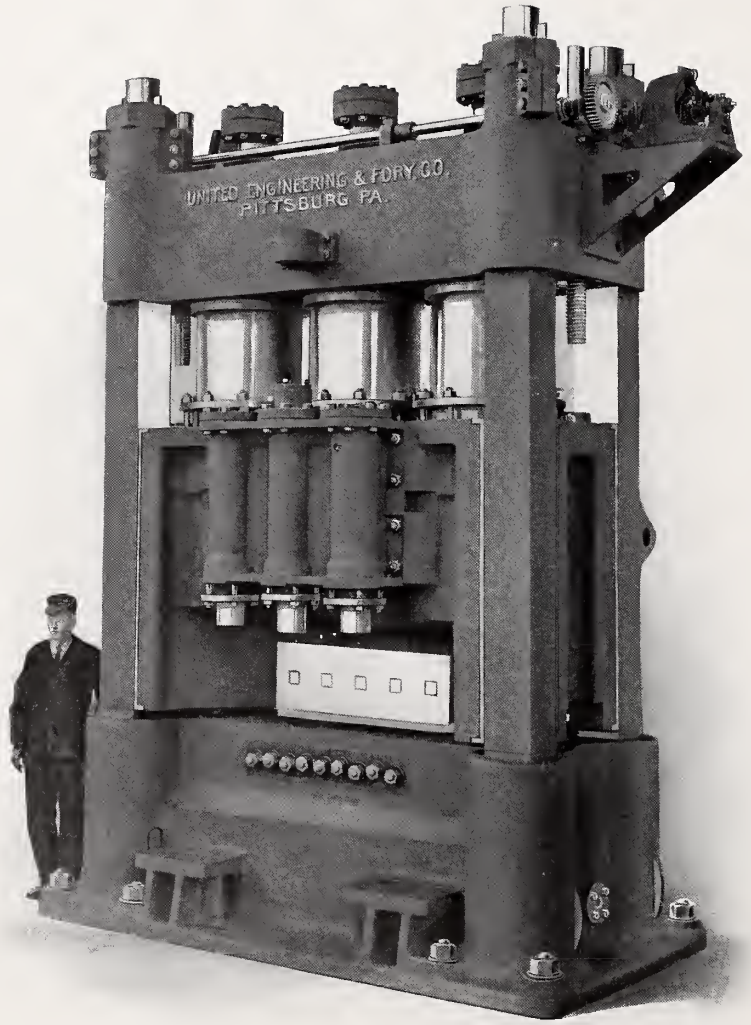


Illustration No. 337

3-cylinder Hydraulic Bloom Shear

Capacity, 10 x 30 inch hot blooms.

United Engineering and Foundry Company

750-ton Hydraulic Shear

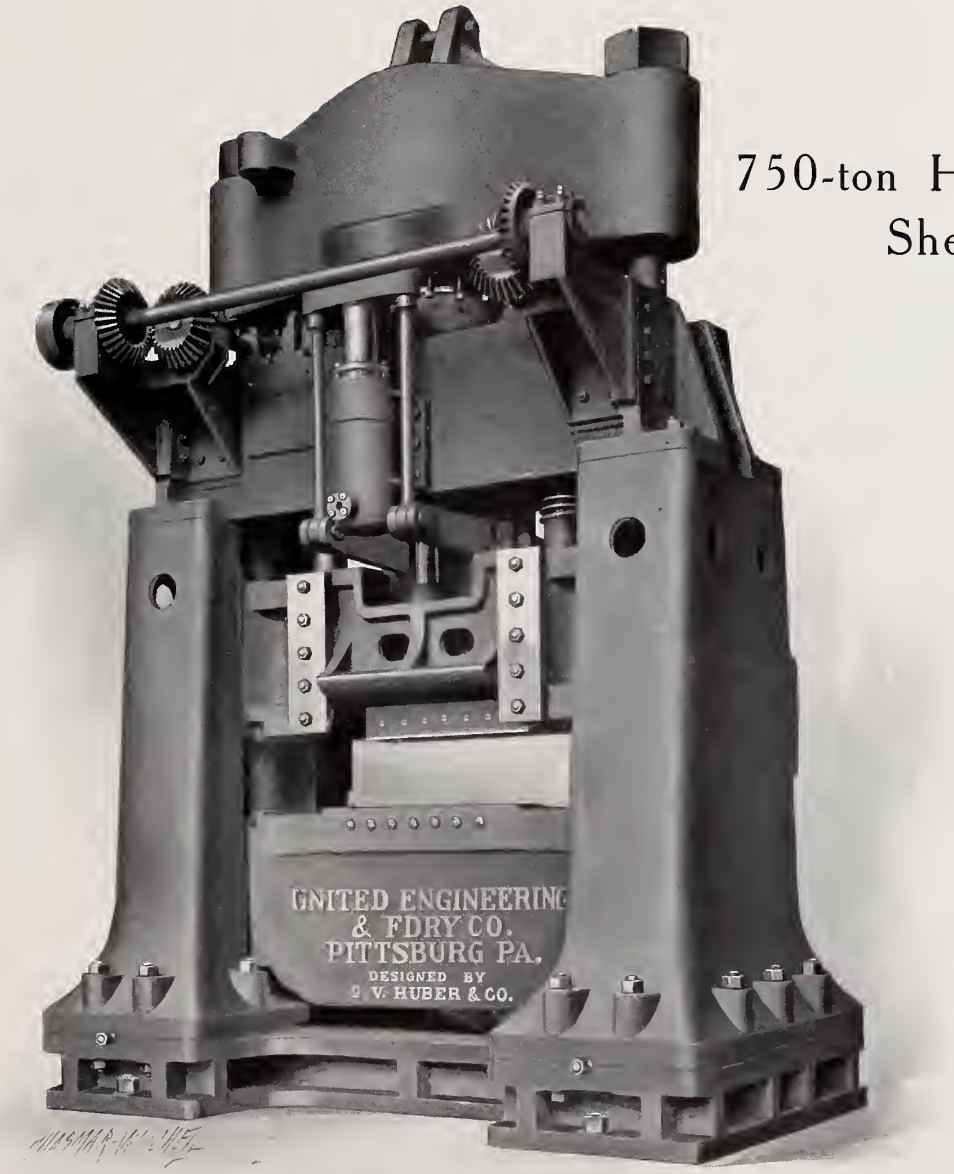


Illustration No. 120

Capacity, 12 x 30 inch hot slabs. Designed by S. V. Huber & Co.

United Engineering and Foundry Company

HOT AND COLD METAL SAWS

WE build all types of hot and cold metal saws. The following illustrations show only a few of these machines which we are prepared to furnish.

In cases where such material as rails, beams, channels and miscellaneous structural material is to be cut in accurate lengths, there is nothing that will do the work as well as a saw. We build these machines for this purpose, arranged in groups so that two, three or four saws can be operated at once for gang cutting. When the saws are arranged this way they are usually equipped with roller tables for conveying the material from the finishing mills to the saws and then to the straightening or hot beds.

Illustration No. 295 shows a short section of table and one saw arranged in this manner.

Illustrations No. 73 and No. 170 show the smallest type of hot and cold saws which we build. Our 42-inch hot saw is of very simple design and well adapted for use in connection with small merchant or structural mills. The 42-inch cold saw we recommend for use in structural shops and mills where it is desirable to cut this material cold.

Illustration No. 101 shows a heavy plate saw which we built for the Carnegie Steel Company.

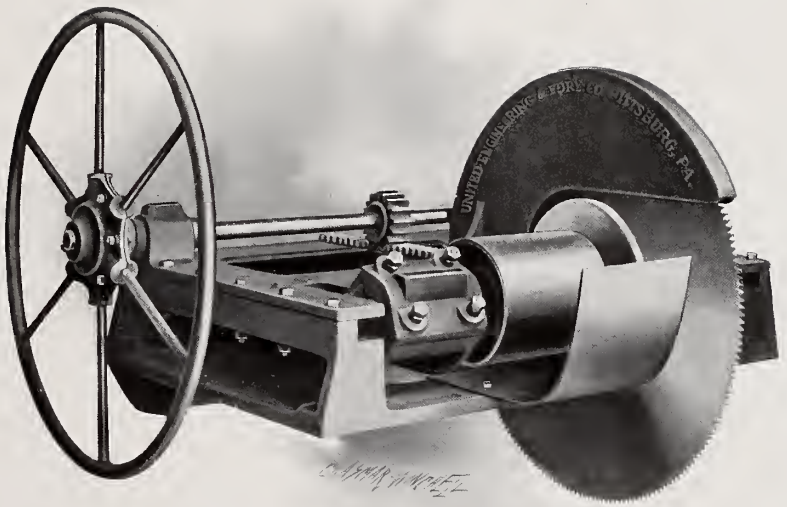


Illustration No. 73

42-inch Sliding Frame Hot Saw

Capacity up to 4-inch round. Stroke, 14 inches Belt driven with hand power feed.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

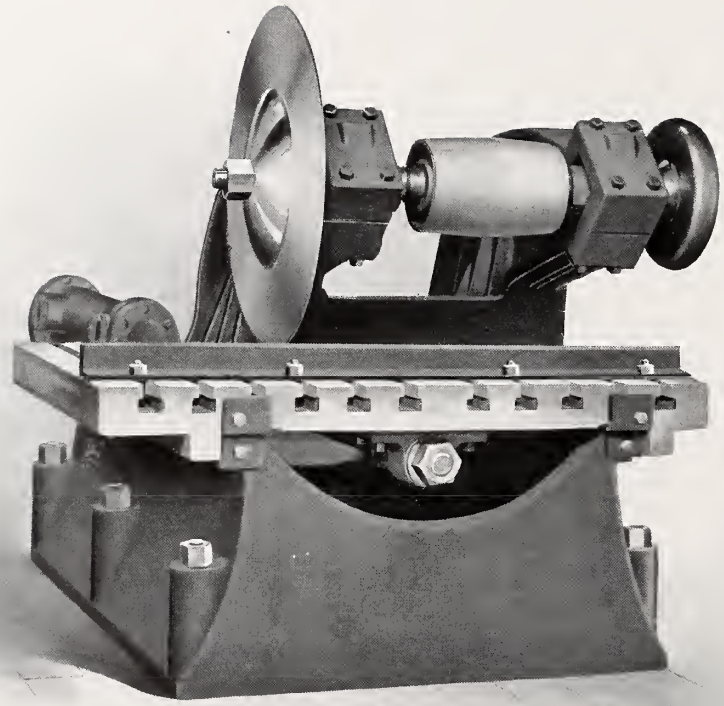


Illustration No. 170

42-inch Sliding Cold Saw

Capacity, 7-inch round or 20-inch beams and channels. Stroke, 30 inches. Belt driven with hydraulic feed.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

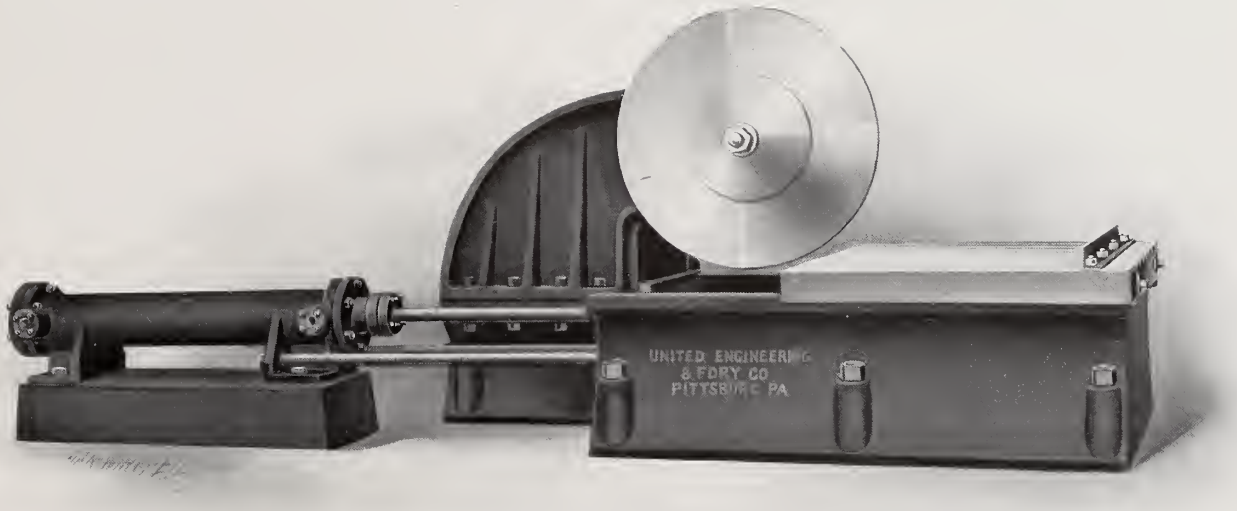


Illustration No. 170 A

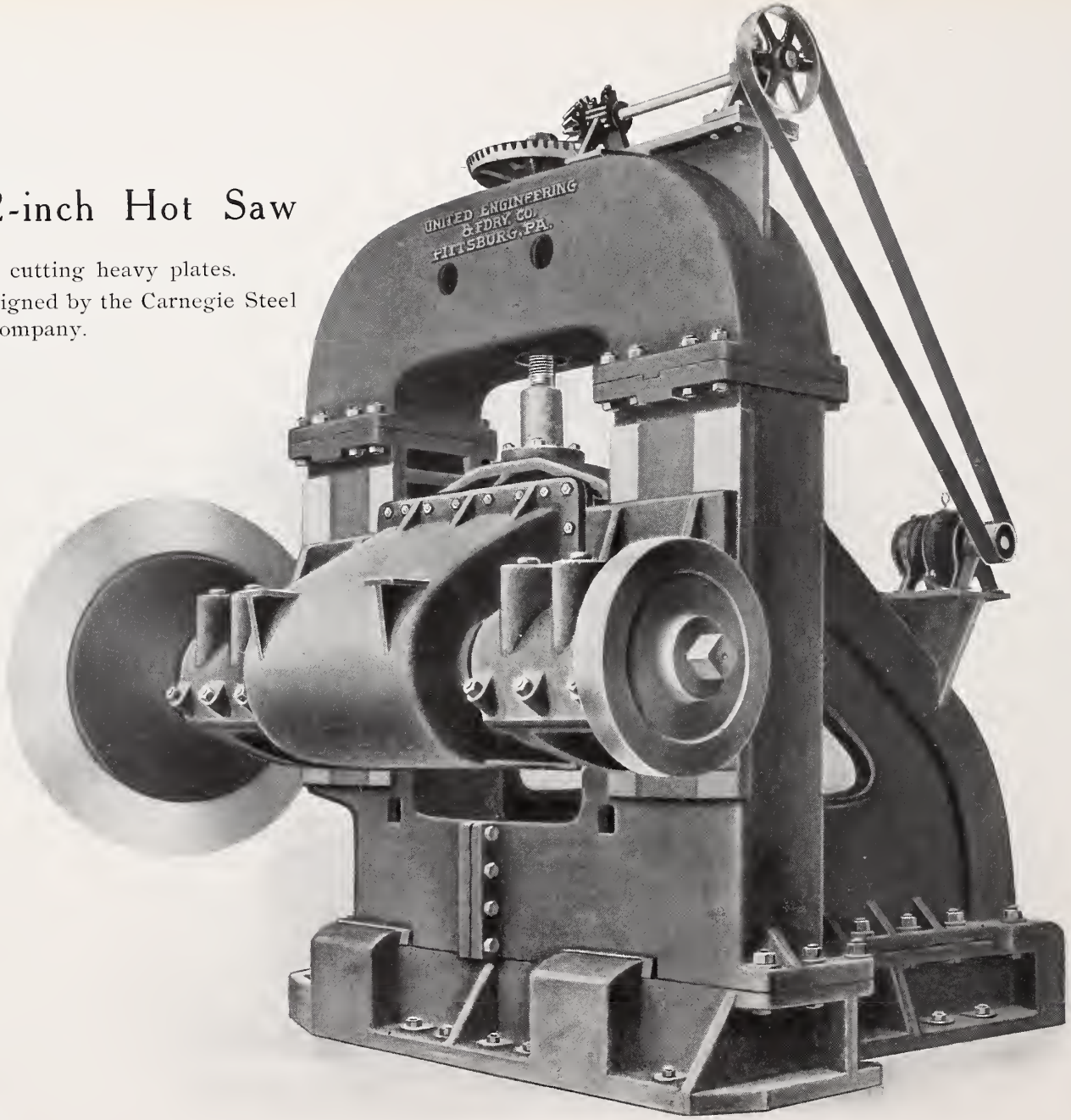
42-inch Sliding Cold Saw

Another view of illustration No. 170.

72-inch Hot Saw

For cutting heavy plates.

Designed by the Carnegie Steel Company.



United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

Illustration No. 101

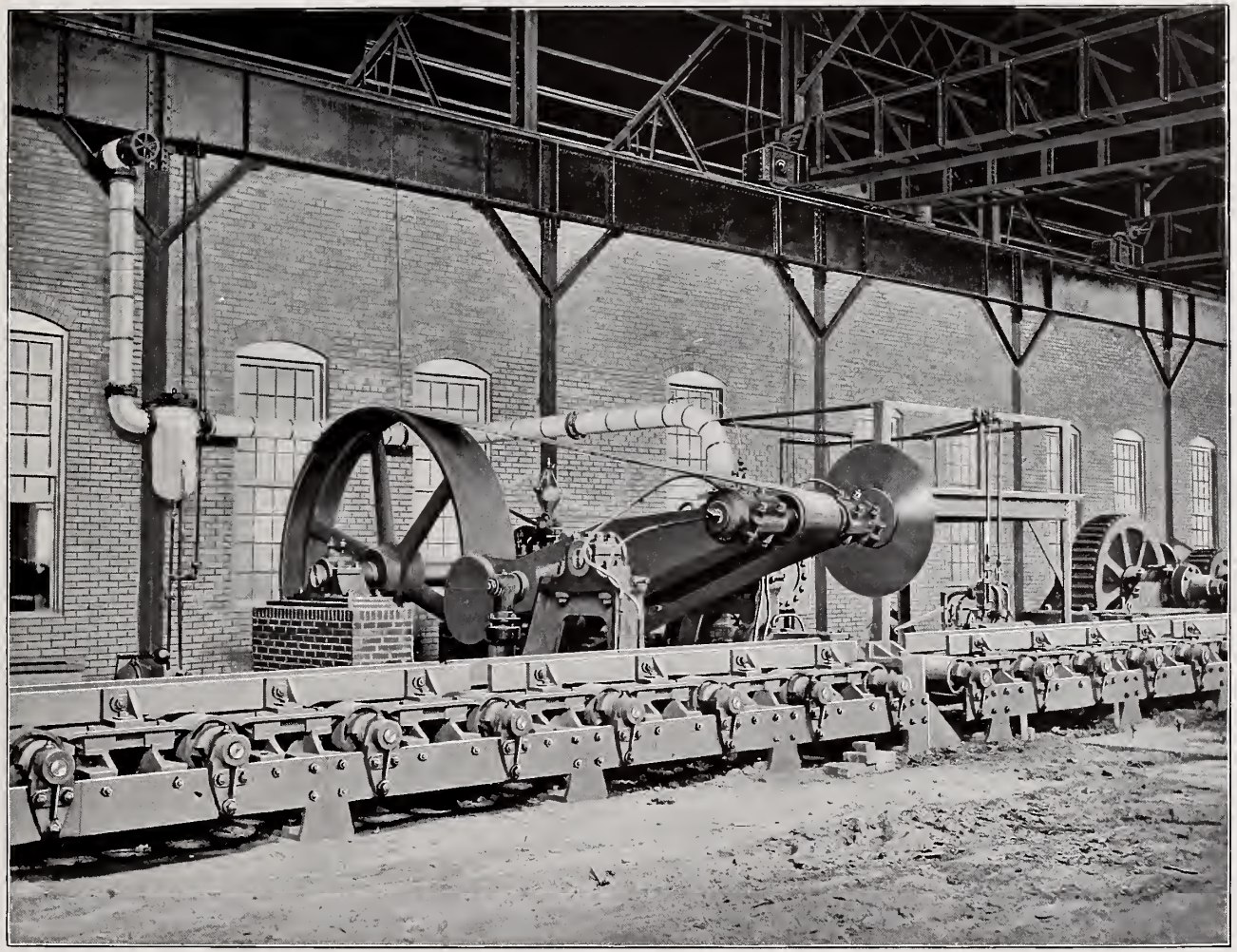


Illustration No. 295

Saw and Tables

Apollo plant. American Sheet Tin Plate Co. Julian Kennedy, engineer.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

ROLL TURNING LATHES

TO be of greatest utility must have the following essential qualities: Great power, massive construction, smoothness and convenience of operation. All these qualities are embodied in our lathes, together with correct mechanical construction and excellence of workmanship, they having been designed and new patterns made after years of experience in the use and building of lathes.

We manufacture them in various sizes, which range from 16 to 60 inches, which designate the size of roll or collar that will swing over the necking rest plate, or between the piano rest and center.

The general construction of all sizes is similar. The two sides of the beds are box section to secure great stiffness. The headstock is cast in one piece, and is made extraordinarily heavy to resist vibration. The main shaft has a taper fit in the front end of the head and extends to the rear end. All the gear wheels are keyed to their respective shafts, excepting the internal face wheel, which is a running fit with bronze bushing on the dead spindle. This construction is very desirable, as most lathes are built with the intermediate gear loose on its shaft, which, after a short time, causes a chatter. The gearing is substantial, the first pinion and wheel being cut, and the succeeding ones are carefully moulded. The housings, piano rest, tailstock and necking rest are convenient and heavy. We have made the cones of large diameter and for wide belt, which run comparatively slow, thus reducing the tendency to chatter and excessive wear. We also build these lathes with direct-connected electric motors, the variation in speed being controlled by a variable speed countershaft, or we can furnish them with variable speed electric motors where that system is used, thus eliminating the countershaft.

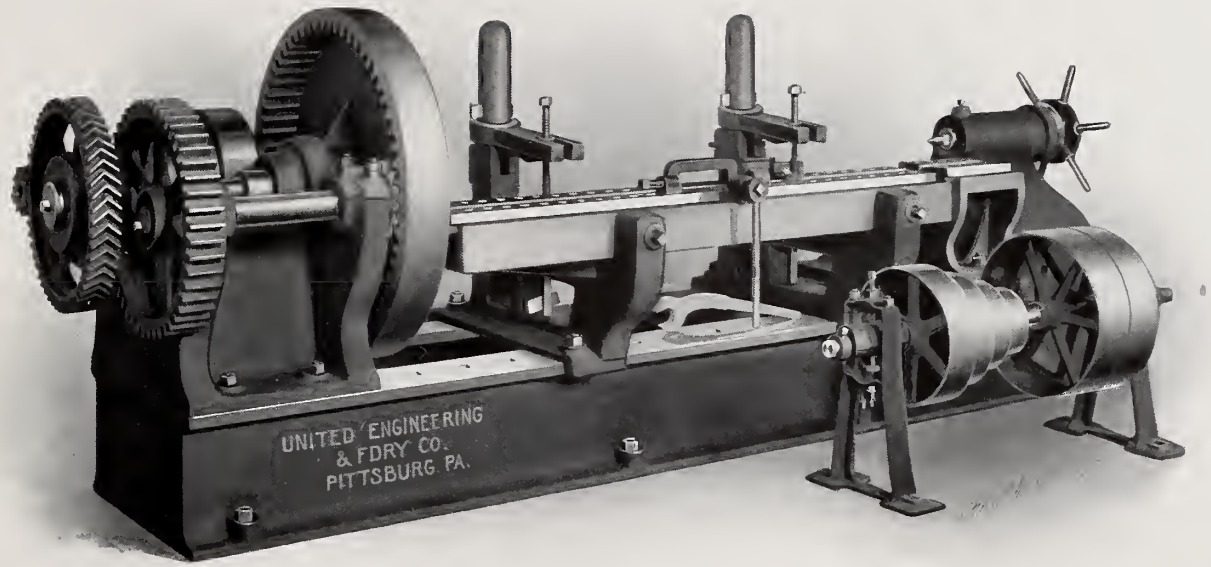


Illustration No. 166

16-inch Roll Turning Lathe

Belt Driven

This lathe is suitable for guide and bar rolls for 12-inch trains and under.
Ratio of gearing, 88 to 1.
Cones have four steps, 8 to 16 inches diameter, for 4-inch belt.
Usual length of bed, 12 feet.
Weight, 10,000 pounds.
Size of motor for electric drive, 3½ horse-power.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

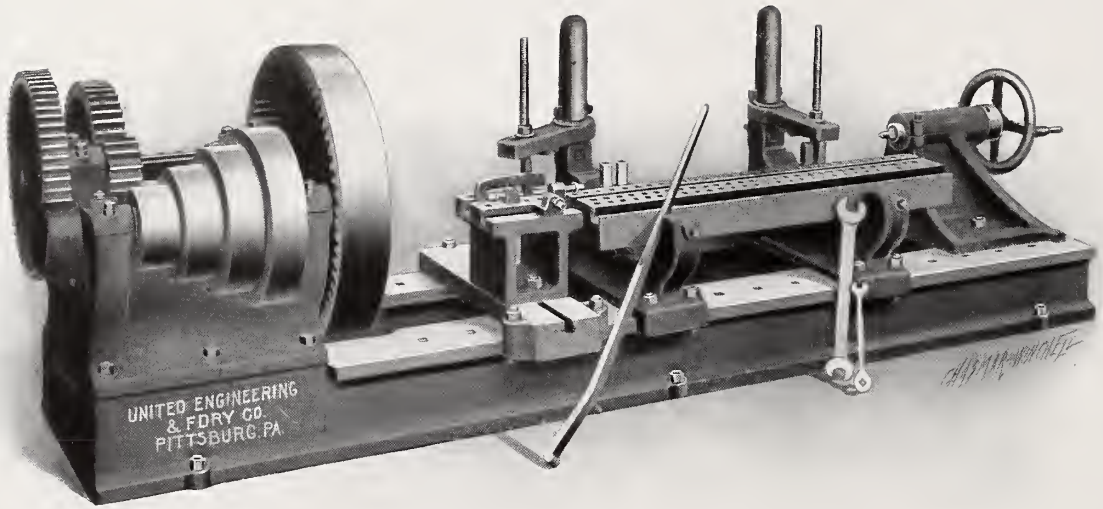


Illustration No. 76 A

18-inch Roll Turning Lathe

Belt Driven

This lathe is suitable for guide and bar rolls for 14-inch trains and under.
Ratio of gearing, 87 to 1.
Cones have four steps, 10 to 22 inches in diameter, for 4-inch belt.
Usual length of bed, 13 feet.
Weight, 11,000 pounds.
Size of motor for electric drive, 3½ horse-power.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

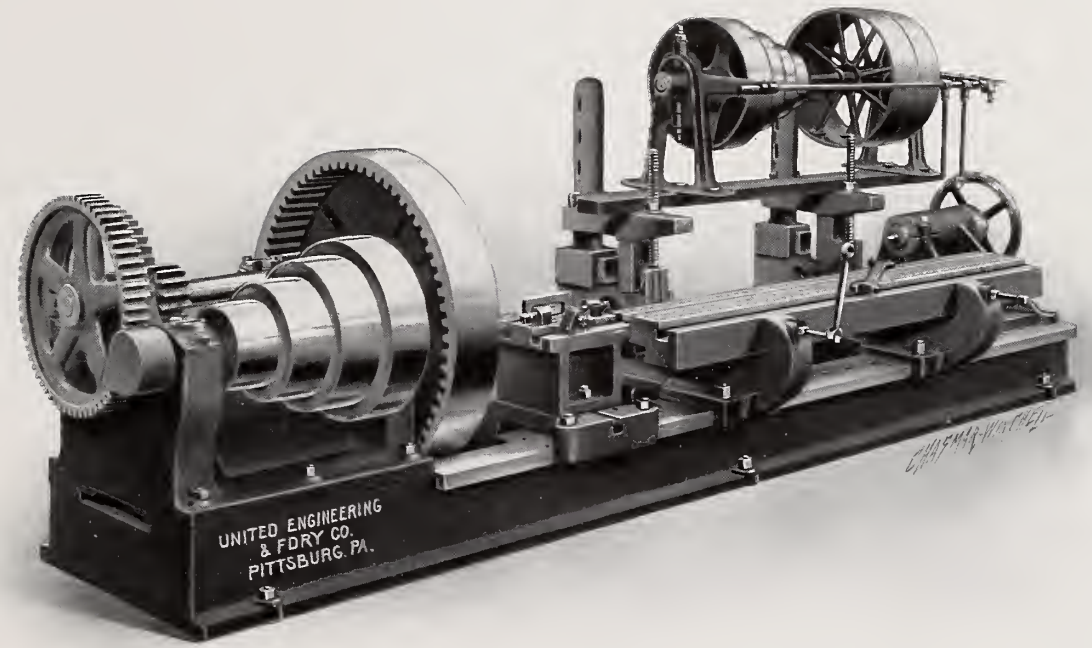


Illustration No. 85

26-inch Roll Turning Lathe

Belt Driven

This lathe is suitable for guide and bar rolls for 20-inch trains and under.
Ratio of gearing, 104 to 1.
Cones have four steps, 10 to 22 inches in diameter, for 5-inch belt.
Usual length of bed, 15 feet.
Weight, 15,200 pounds.
Size of motor for electric drive, 5 horse-power.

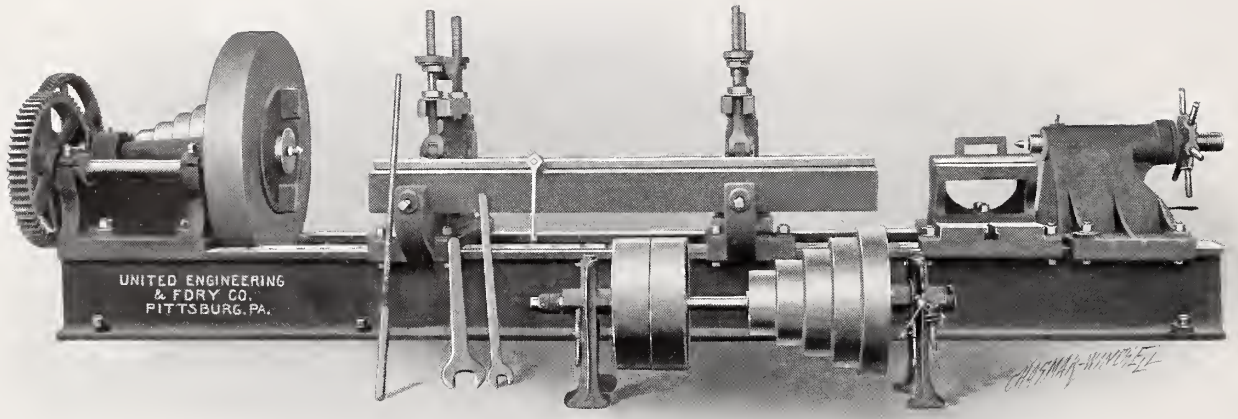


Illustration No. 164

34-inch Roll Turning Lathe

Belt Driven

This lathe is suitable for bar, tin and skelp rolls for 24-inch trains and under.
Ratio of gearing, 160 to 1.
Cones have five steps, 12 to 28 inches in diameter, for 5-inch belt.
Usual length of bed, 20 feet.
Weight, 28,000 pounds.
Size of motor for electric drive, 7½ horse-power.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

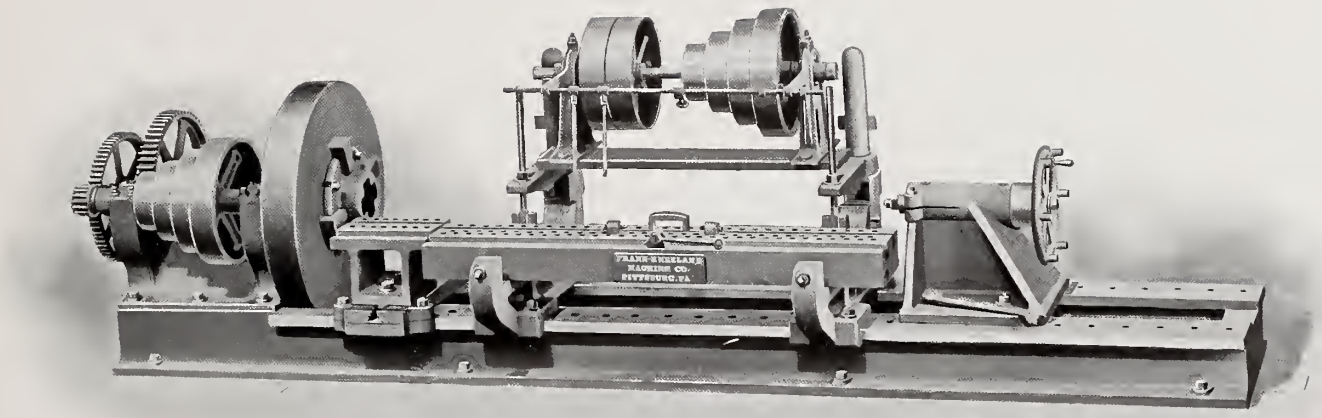


Illustration No. 112

34-inch Roll Turning Lathe

Belt Driven

This lathe is suitable for bar, tin and skelp rolls for 24-inch trains and under.
Ratio of gearing, 116 to 1.
Cones have four steps, 12 to 27 inches in diameter, for 5-inch belt.
Usual length of bed, 20 feet.
Weight, 27,000 pounds.
Size of motor for electric drive, 7½ horse-power.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

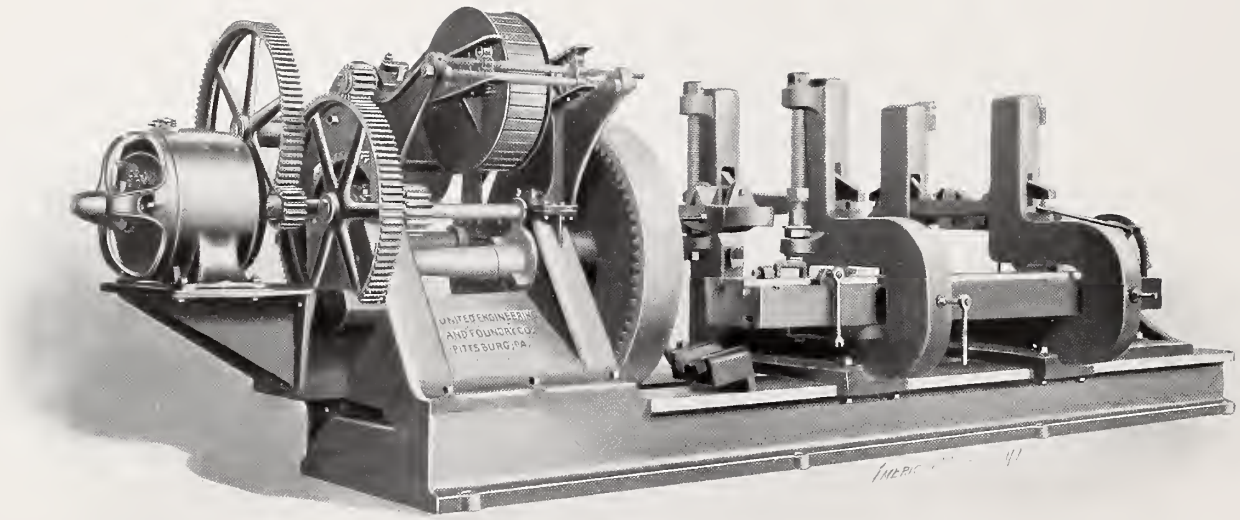


Illustration No. 83

42-inch Roll Turning Lathe

Motor Driven

This lathe is equipped with variable speed countershaft and goose neck type of housings. It is a suitable lathe for sheet plate, rail and structural rolls for 30-inch trains and under.

Ratio of gearing, 155 to 1.

Usual length of bed, 20 feet.

Weight, 41,000 pounds.

Size of electric motor, 10 horse-power.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

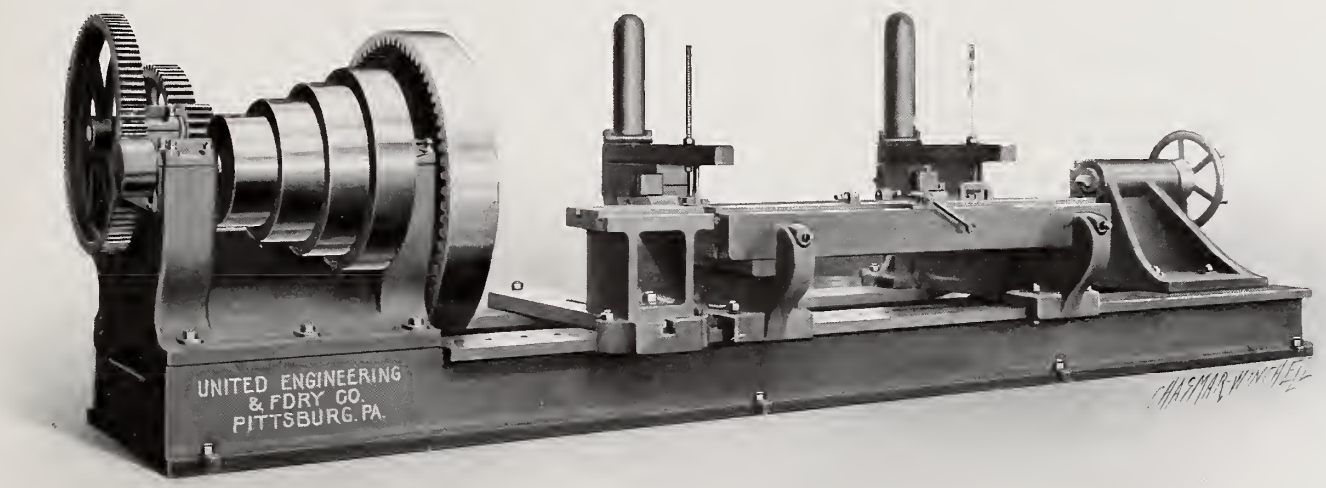


Illustration No. 61 A

42-inch Roll Turning Lathe

Belt Driven

This lathe is suitable for sheet, plate, rail and structural rolls for 30-inch trains and under.
Ratio of gearing, 155 to 1.
Cones have four steps, 17 to 32 inches in diameter, for 6-inch belt.
Usual length of bed, 20 feet.
Weight, 34,000 pounds.

United Engineering and Foundry Company

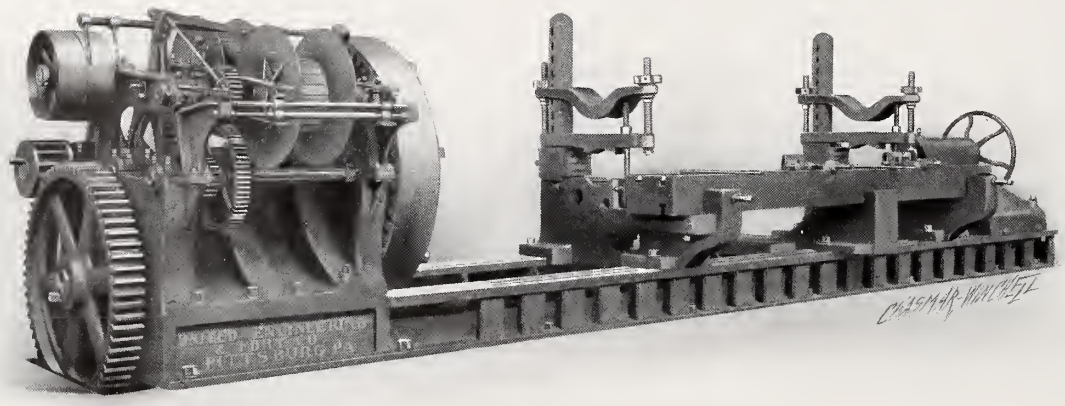


Illustration No. 119

50-inch Roll Turning Lathe

Belt Driven

This lathe is suitable for large plate, beam or blooming mill rolls for 48-inch trains and under.

Ratio of gearing, 275 to 1.

Cones have five steps, 11½ to 28 inches in diameter, for 6-inch belt. Usual length of bed, 30 feet.

Weight, 65,000 pounds. Size of motor for electric drive, 15 horse-power.

The above illustration shows this lathe equipped with a variable speed countershaft.

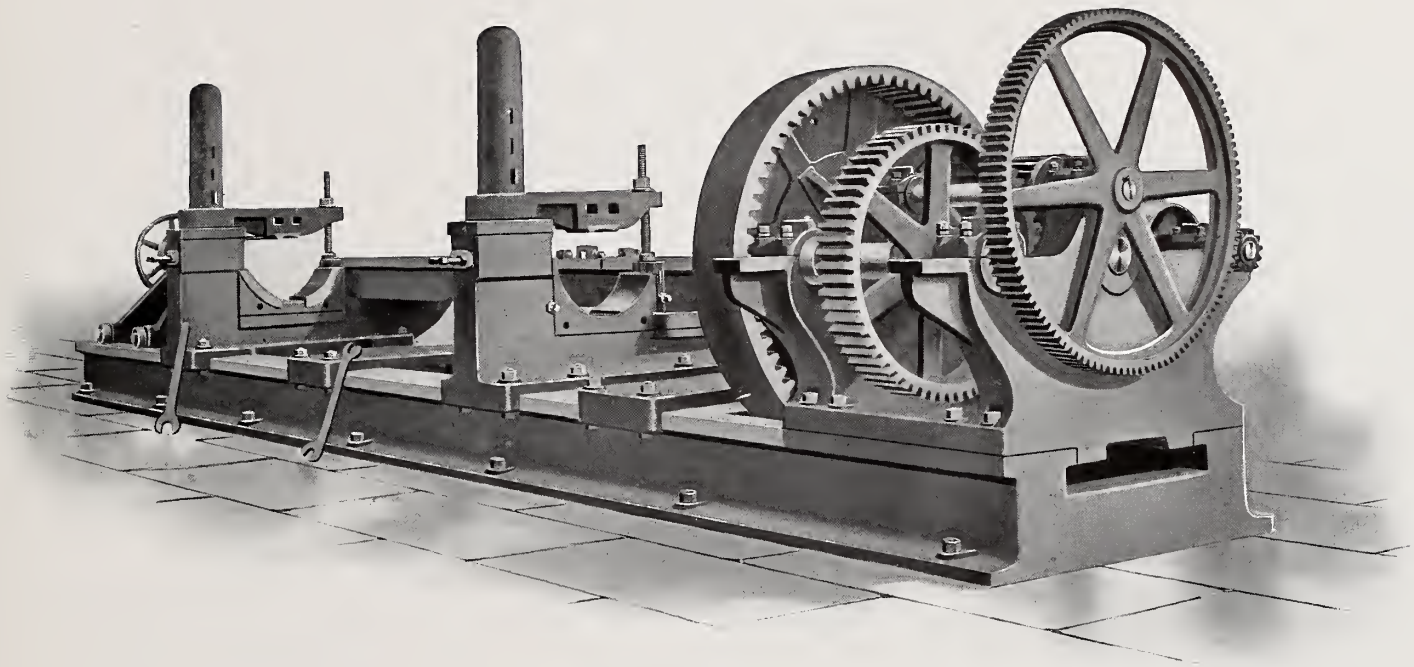


Illustration No. 178

60-inch Roll Turning Lathe

Belt Driven

This lathe is suitable for large plate, beam, armor or blooming mill rolls for 48-inch trains and under.
Ratio of gearing, 202 to 1.
Cones have five steps, 17 to 37 inches in diameter, for 6-inch belt.
Usual length of bed, 30 feet.
Weight, 82,000 pounds.
Size of motor for electric drive, 20 horse-power.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

60-inch Roll Turning Lathe

This lathe is equipped with direct-connected electric motor, variable speed countershaft and goose neck type of housings. Otherwise it is the same as the lathe shown by illustration No. 178.

Weight with 20 horse-power electric motor, 100,000 pounds.

See illustration No. 103.

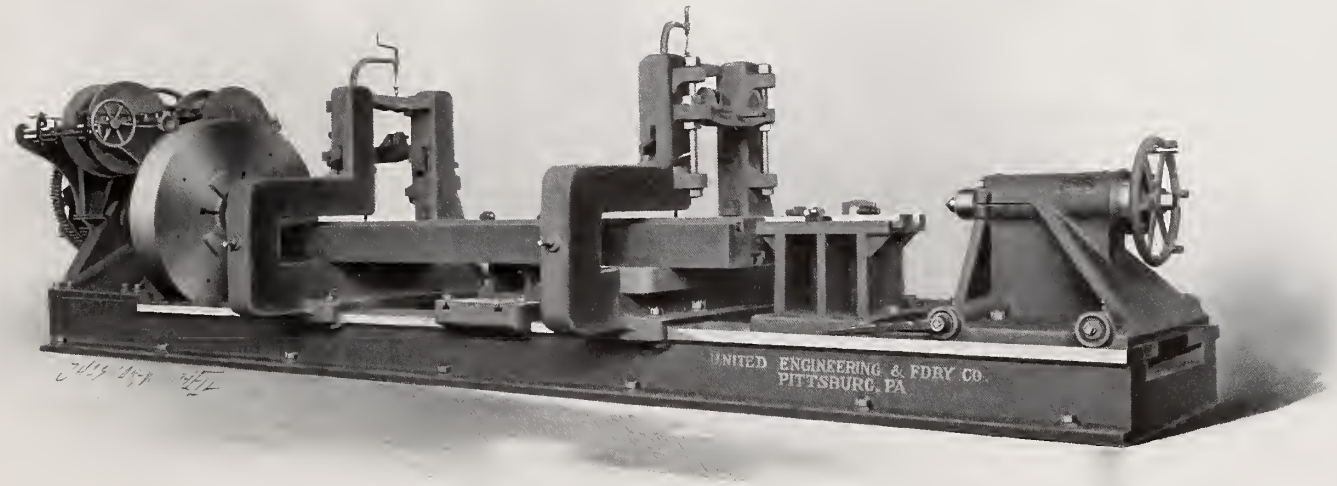


Illustration No. 103

60-inch Roll Turning Lathe

Motor Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

HYDRAULIC ACCUMULATORS

WE manufacture these machines in all sizes, with cylinders from 6 to 30 inches in diameter, having a stroke of 5 feet up to 12 feet, for any pressure up to 5,000 pounds per square inch.

These accumulators are all made with steel tanks, which are usually filled with steel punchings to act as a counterbalance.

They are all self-contained, with working parts easy of access.

The base plates are of strong and heavy design, being amply large to give a good solid bearing on the foundation and insure stability.

The cylinders are made of cast iron for light pressures and cast steel for heavy pressures.

See illustration No. 71.

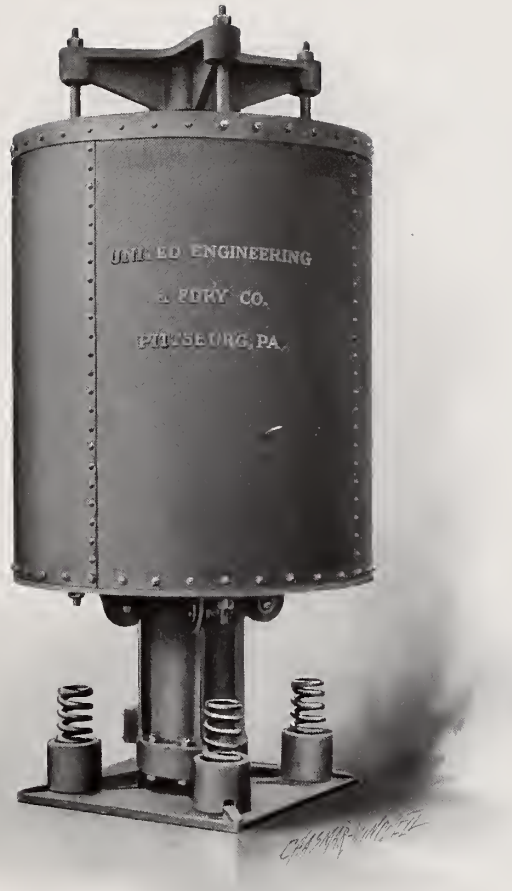


Illustration No. 71

Accumulator

All Pressures

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

HYDRAULIC CRANES

WE manufacture hydraulic cranes to suit almost any service or capacity. We have designs and patterns for ladle, ingot or billet cranes up to 20 tons capacity.

The special feature of the jib crane, as shown by illustration No. 176, is that the crane load rests entirely upon the pivot on top of the lifting ram, permitting the crane to swing with ease either when at its lowest, highest or intermediate position. The cylinder rests upon a ring packing in the base plate, which forms the water inlet, and is held from rotating, as is also the ram; the advantage of the latter is that the packing can be easily maintained.

Our ladle cranes are all equipped with structural masts and beams and with heavy cast steel top and bottom pintals. The cylinders in most cases are of cast steel, with the stuffing boxes easy of access.

See illustrations Nos. 175 and 176.

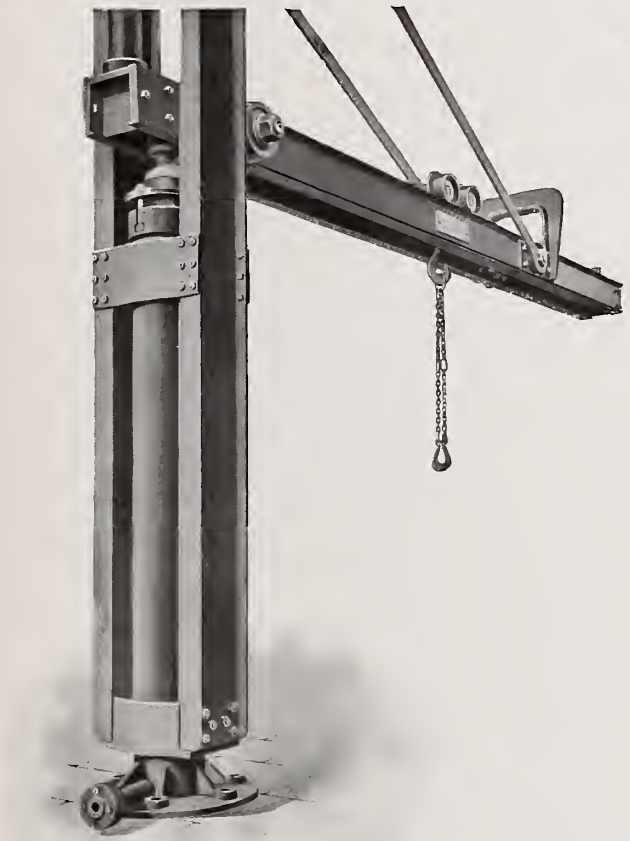


Illustration No. 175

Hydraulic Jib Crane

Illustration No. 176

Hydraulic Whip Crane

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

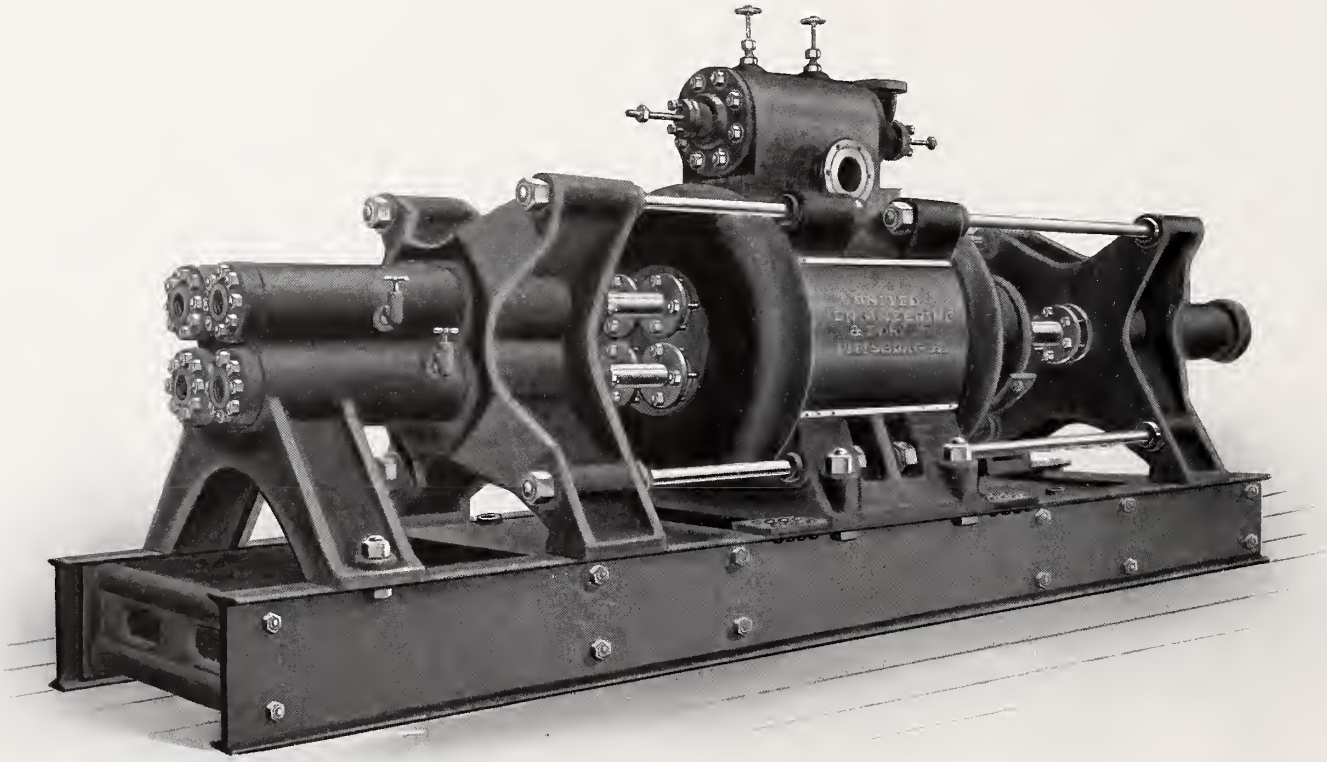
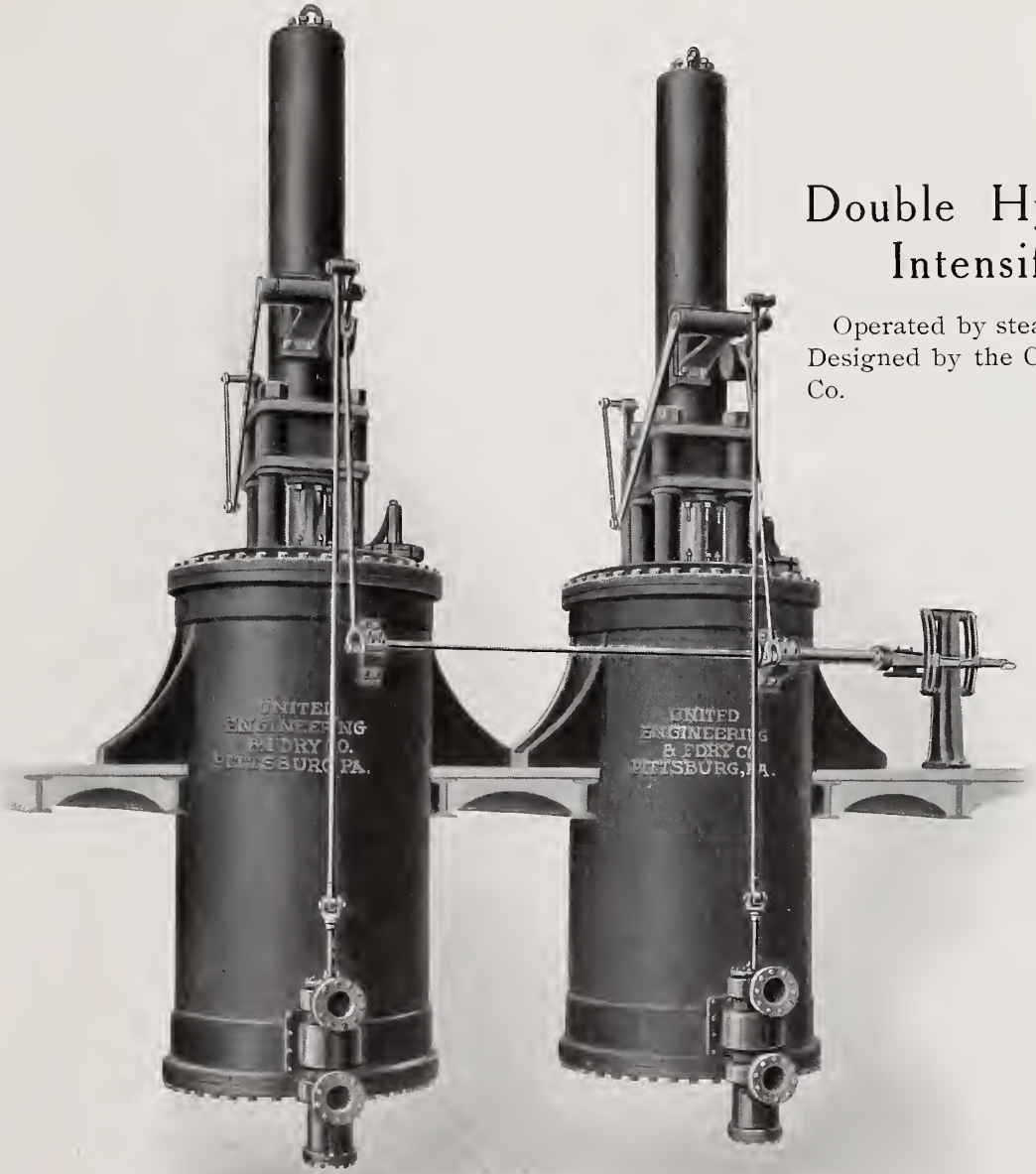


Illustration No. 75

Compound Hydraulic Intensifier

Operated by Steam Cylinder

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.



Double Hydraulic Intensifier

Operated by steam cylinders. Designed by the Cambria Steel Co.

Illustration No. 104

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

ROLLING MILLS

WE are equipped to furnish any type of rolling mill required, from an 8-inch guide mill to the largest plate, blooming, slabbing, universal or continuous mills.

We have large numbers of these mills in operation in this and foreign countries which have been thoroughly tested in every respect, giving us an almost unlimited accumulation of data and shop experience.

Our patterns and designs are being continually revised to keep abreast of modern advancement, the various types of mills being built to suit the material to be rolled and tonnage required.

Housings, bed plates and other important castings are always made from carefully mixed air furnace iron, and the composition of steel castings and forgings is also carefully watched.

Our sheet and tin mills range in sizes from 12-inch cold mills up to the heaviest 28-inch hot mills.

We are also prepared to design and furnish in connection with these mills substantial roller tables driven by either direct-connected engine or electric motor, also all classes of manipulators, transfers, ingot tilters, etc., etc. Some of our plate mill tables are shown by illustrations Nos. 261 and 292.

Rolling Mills—Continued

We have built a large number of blooming mills, ranging in various sizes from 24 to 44 inches. Among these we mention the following, which we have furnished complete:

Washburn Wire Company	24-inch mill
Colonial Steel Company	26-inch mill
Portsmouth Iron and Steel Company	28-inch mill
Carnegie Steel Company, Ohio Works	34-inch mill
National Enameling and Stamping Co.	34-inch mill
American Sheet and Tin Plate Company, Apollo Works	34-inch mill
American Steel and Wire Company, Worcester Works	34-inch mill
American Tube and Stamping Company	34-inch mill
American Steel and Wire Company, Schoenberger Works	36-inch mill
Alabama Steel and Wire Company	36-inch mill
Carnegie Steel Company, Homestead Works	38-inch mill
Lorain Steel Company	38-inch mill
Carnegie Steel Company, Sharon Works	38-inch mill
Republic Iron and Steel Company, Bessemer Works	40-inch mill
Monterey Iron and Steel Company, Monterey, Mexico	40-inch mill
Illinois Steel Company	40-inch mill
Tennessee Coal, Iron and Railroad Company	44-inch mill

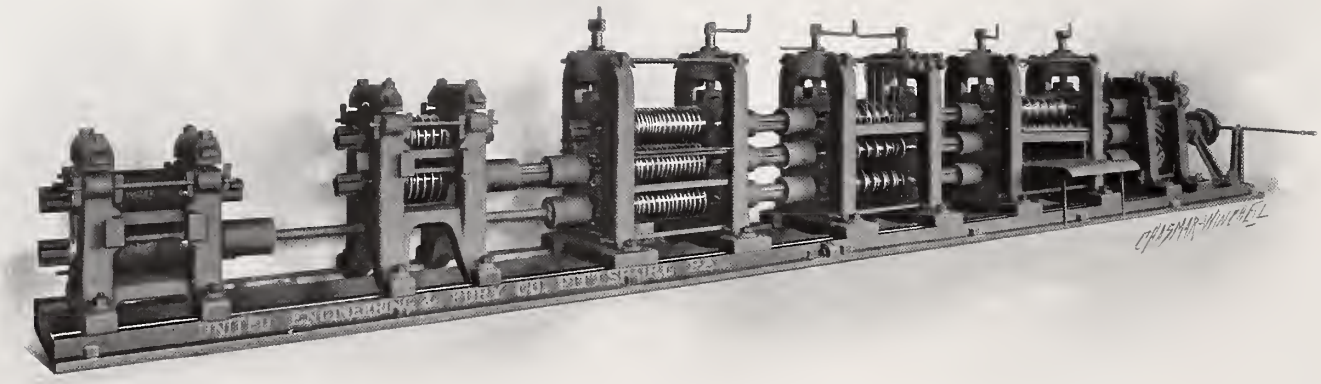


Illustration No. 132

10-inch Guide Mill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

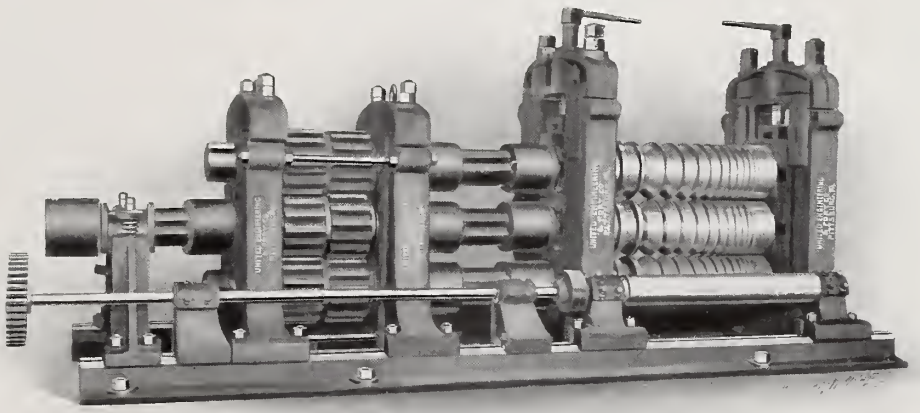


Illustration No. 245

16-inch Merchant Mill

Roughing Stand

United Engineering and Foundry Company

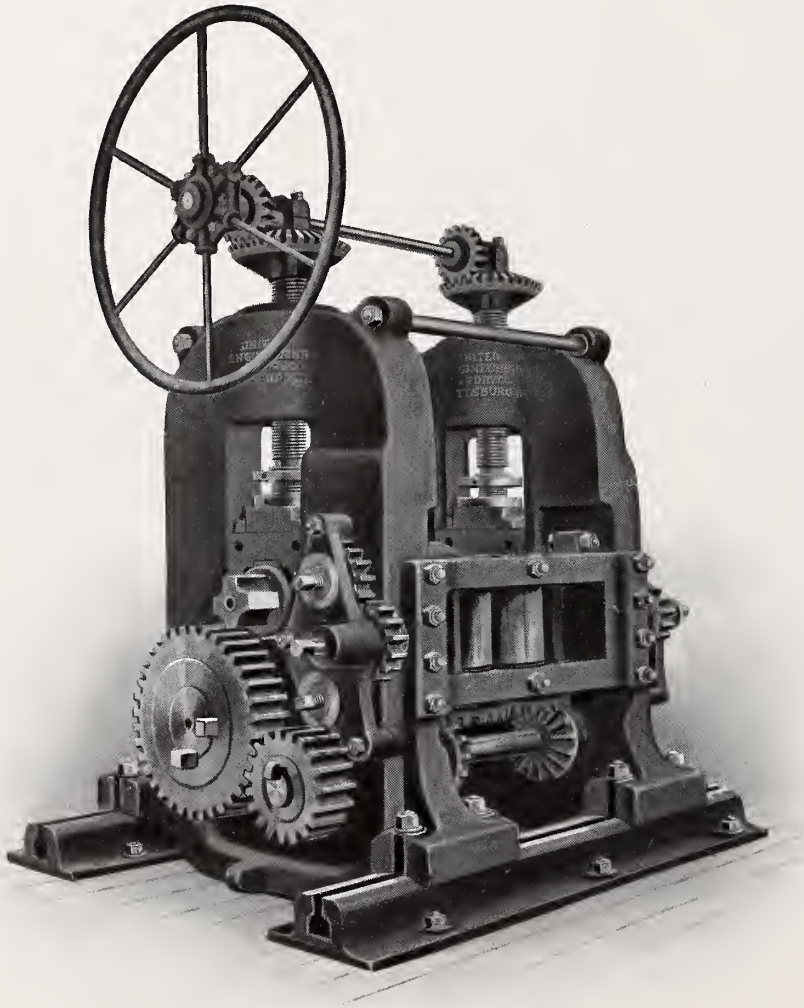


Illustration No. 86

16-inch Universal Mill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

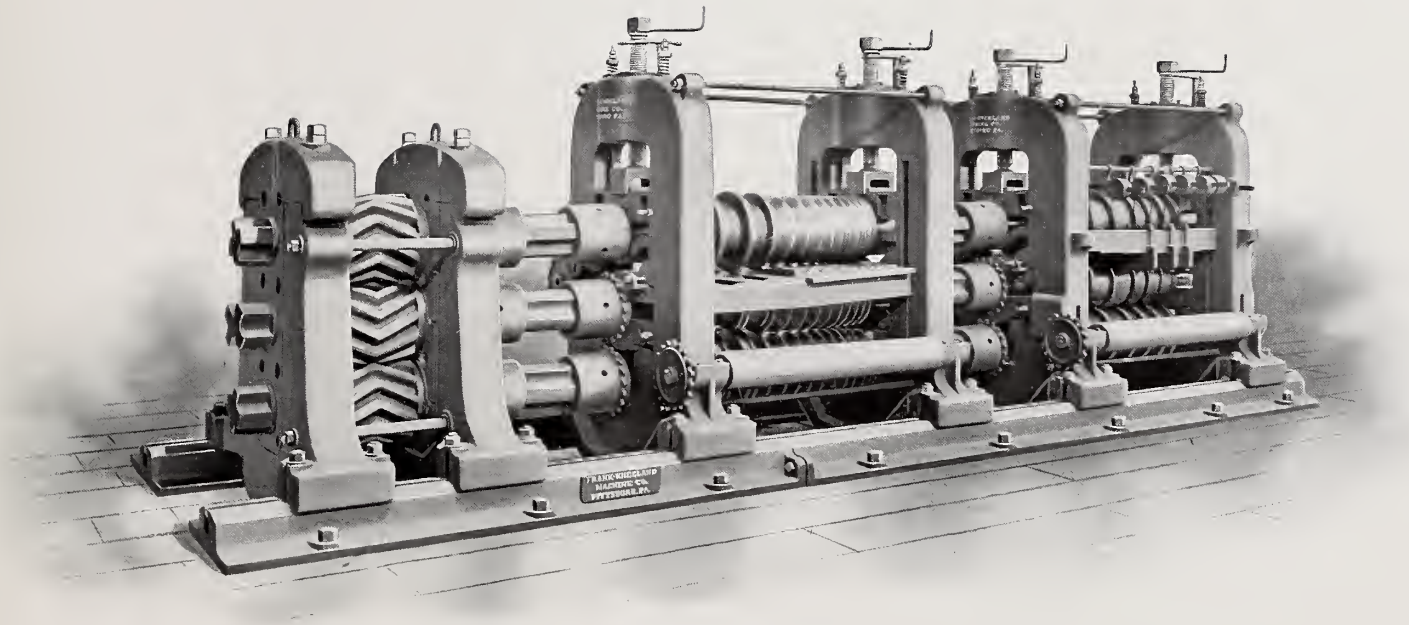


Illustration No. 48

18-inch Bar Mill

United Engineering and Foundry Company
PITTSBURGH PA. U.S.A.

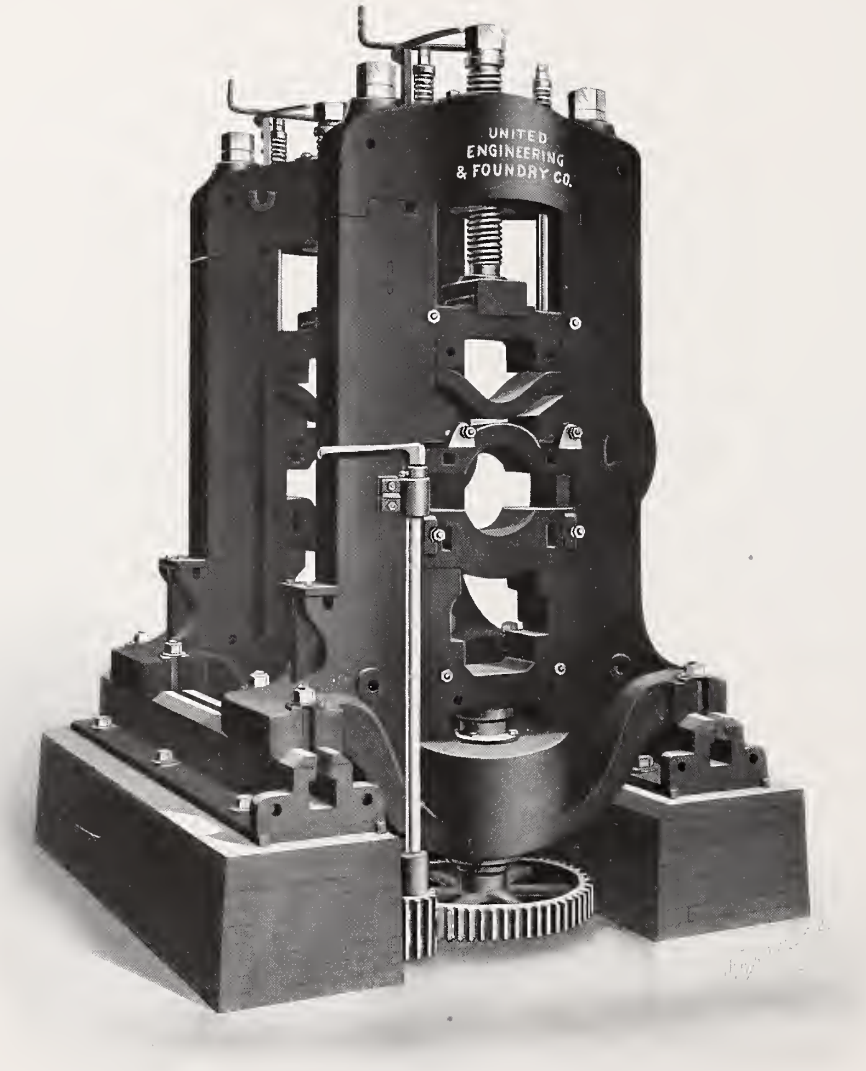


Illustration No. 303

22-inch Mill Housings

For Structural Mill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

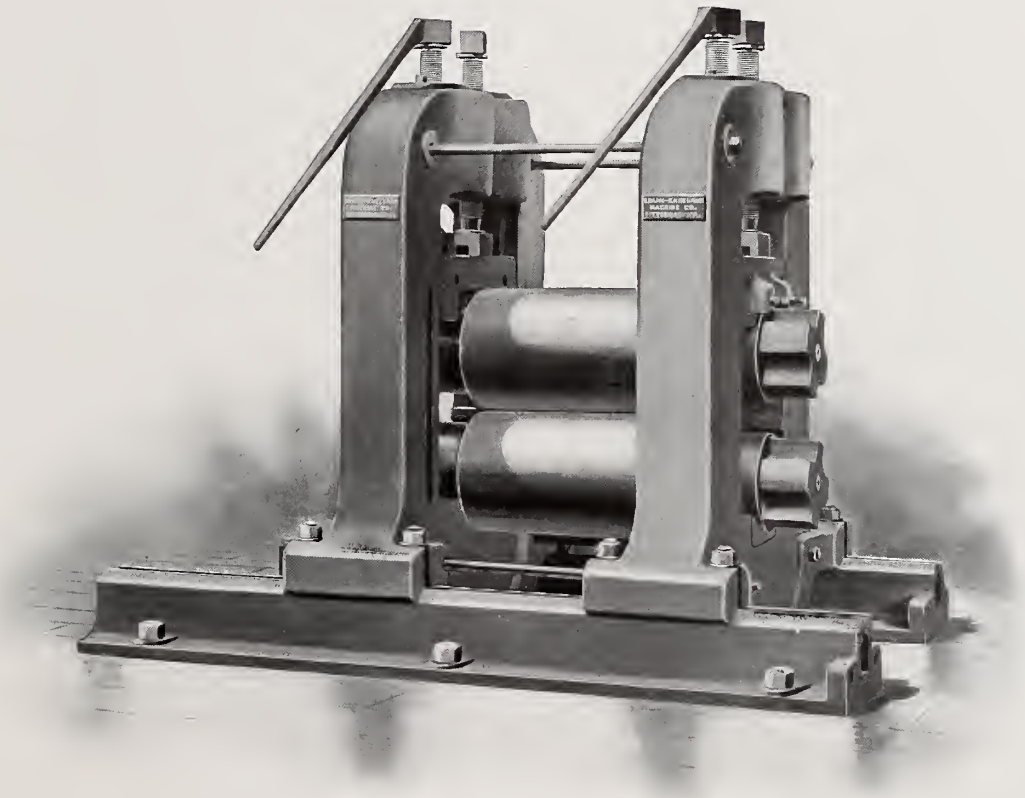


Illustration No. 173

22-inch Tin Mill Cold Rolls

United Engineering and Foundry Company
PITTSBURGH, U.S.A.

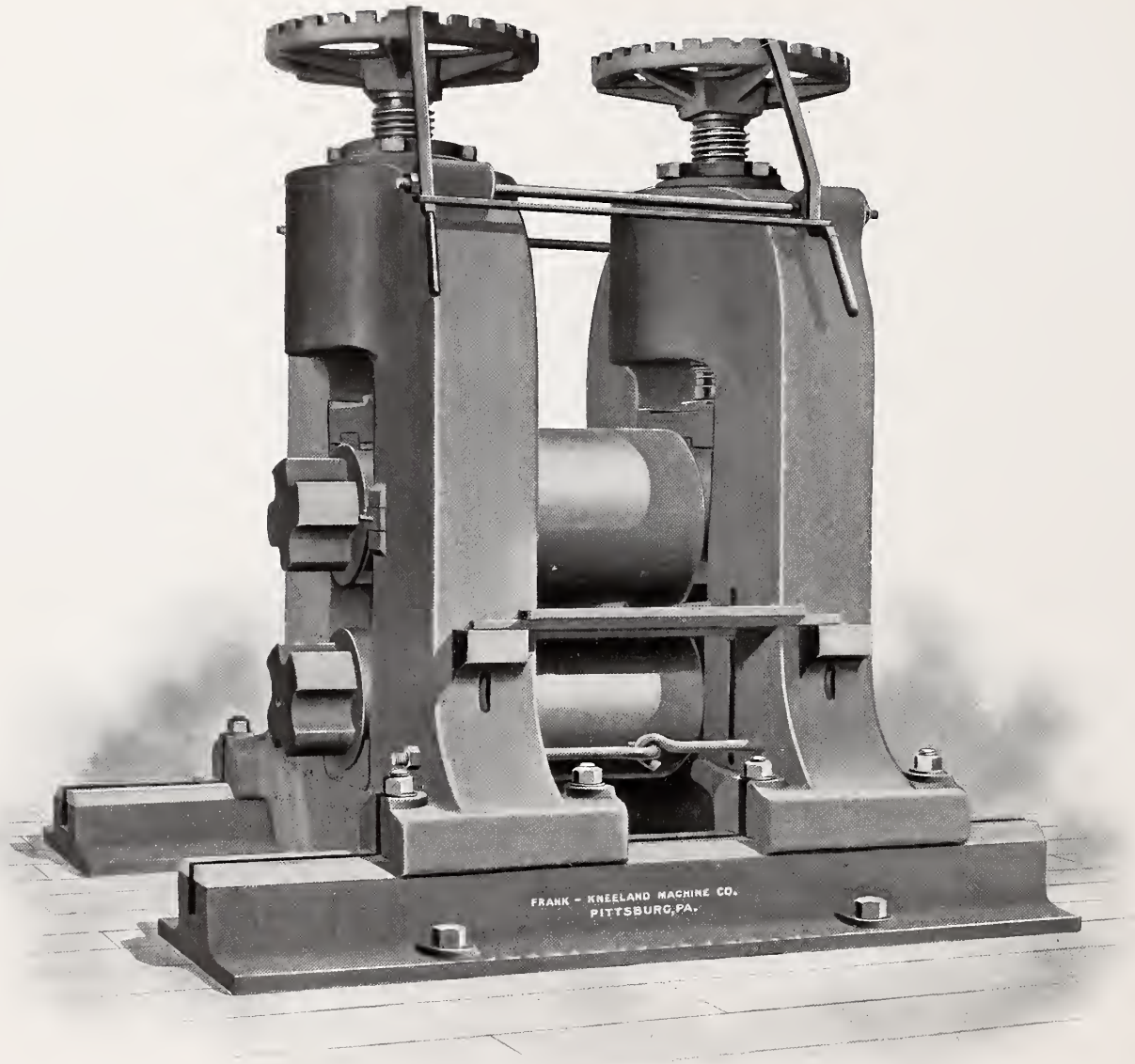


Illustration No. 172

24-inch Tin Plate Mill

United Engineering and Foundry Company
PITTSBURG, PA. U. S. A.

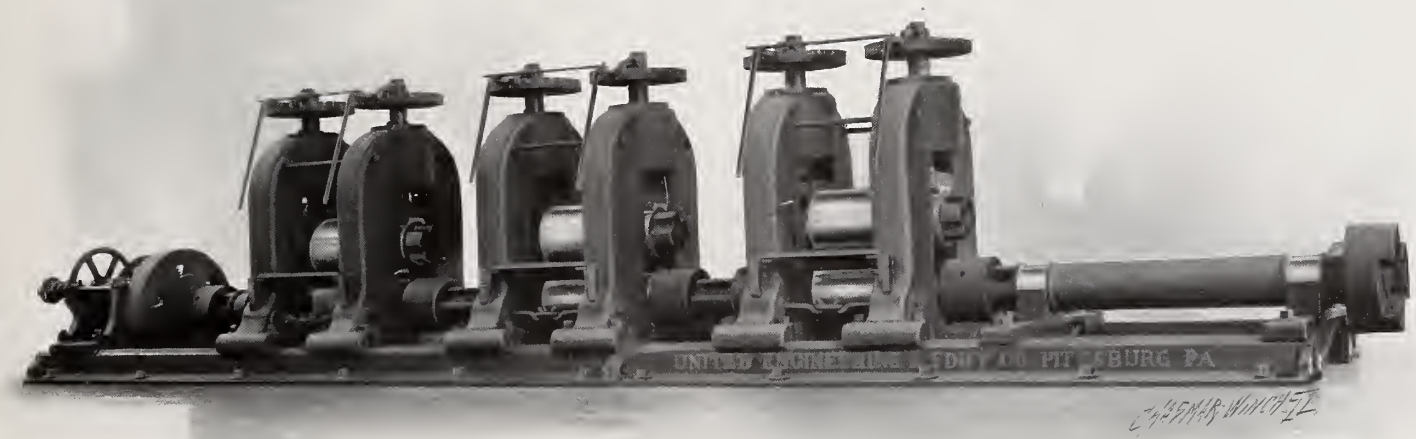


Illustration No. 127

Sheet Mill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

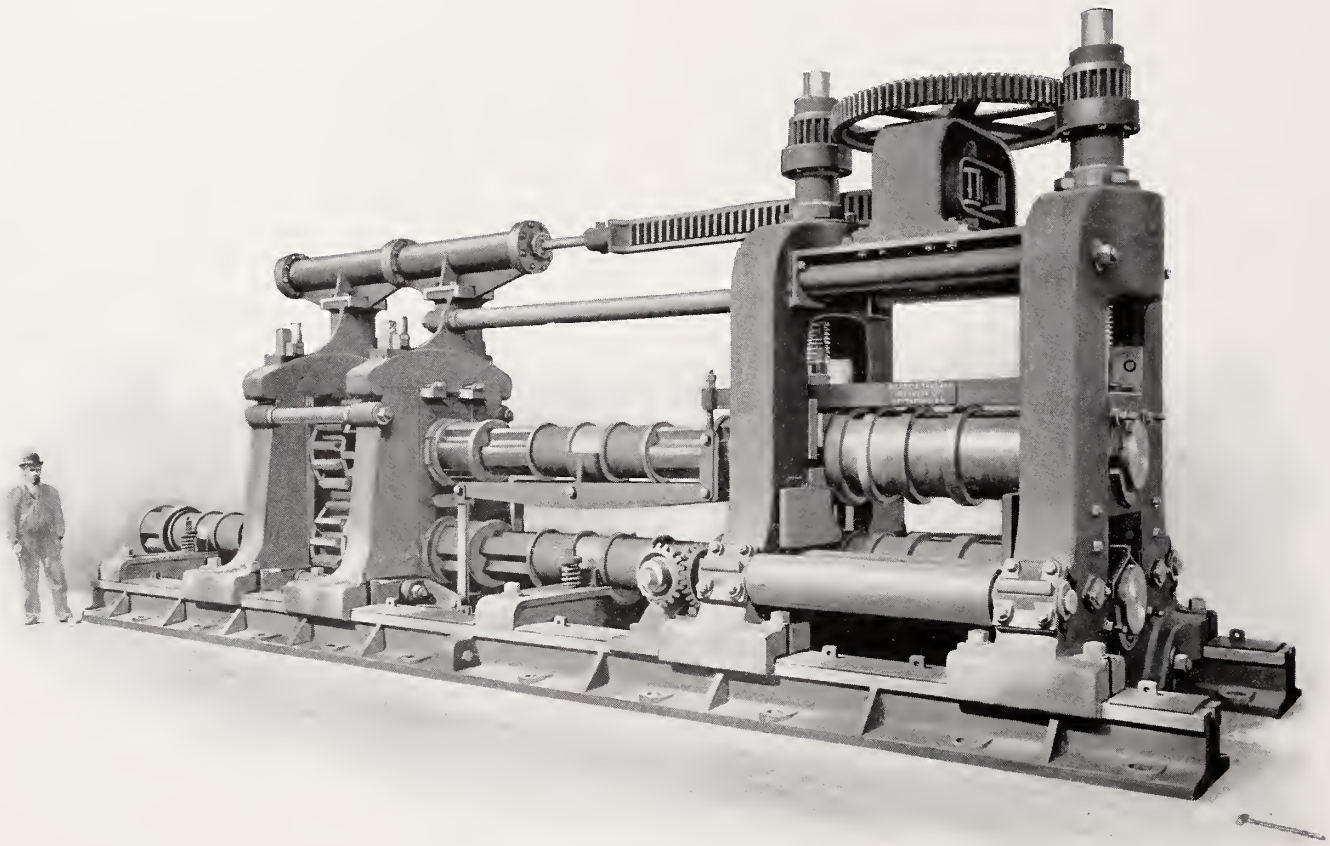


Illustration No. 17

34-inch Blooming Mill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

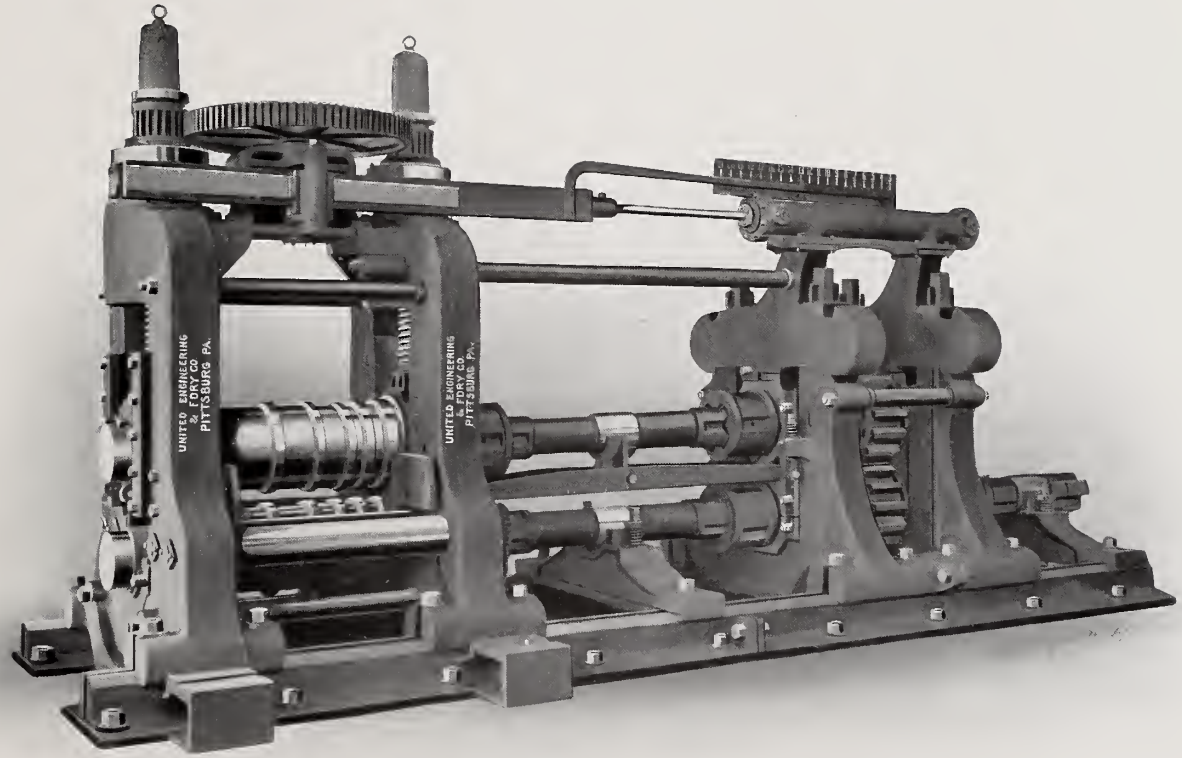


Illustration No. 42

36-inch Blooming Mill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

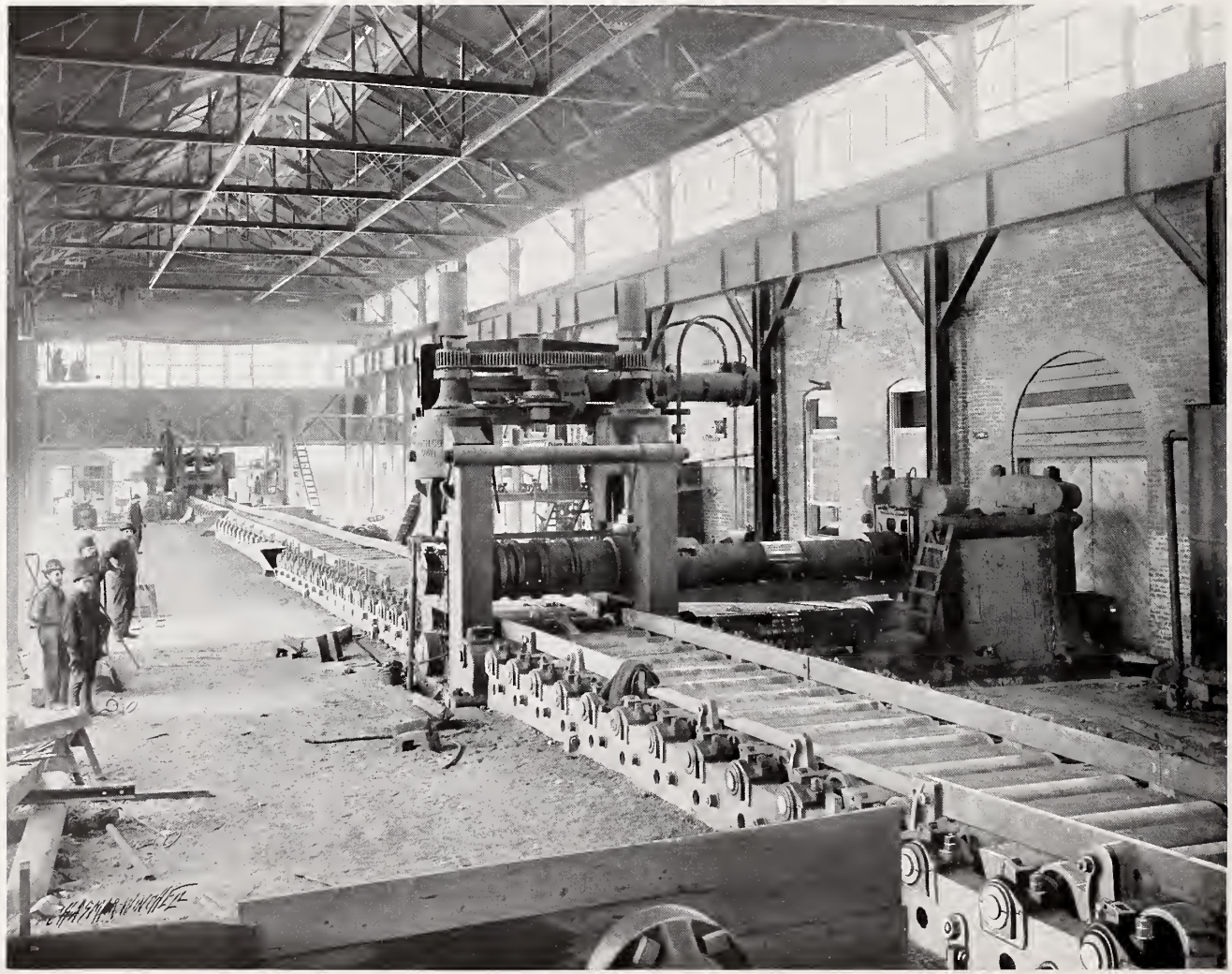


Illustration No. 157

38-inch Blooming Mill and Tables

Sharon Works, Carnegie Steel Co.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

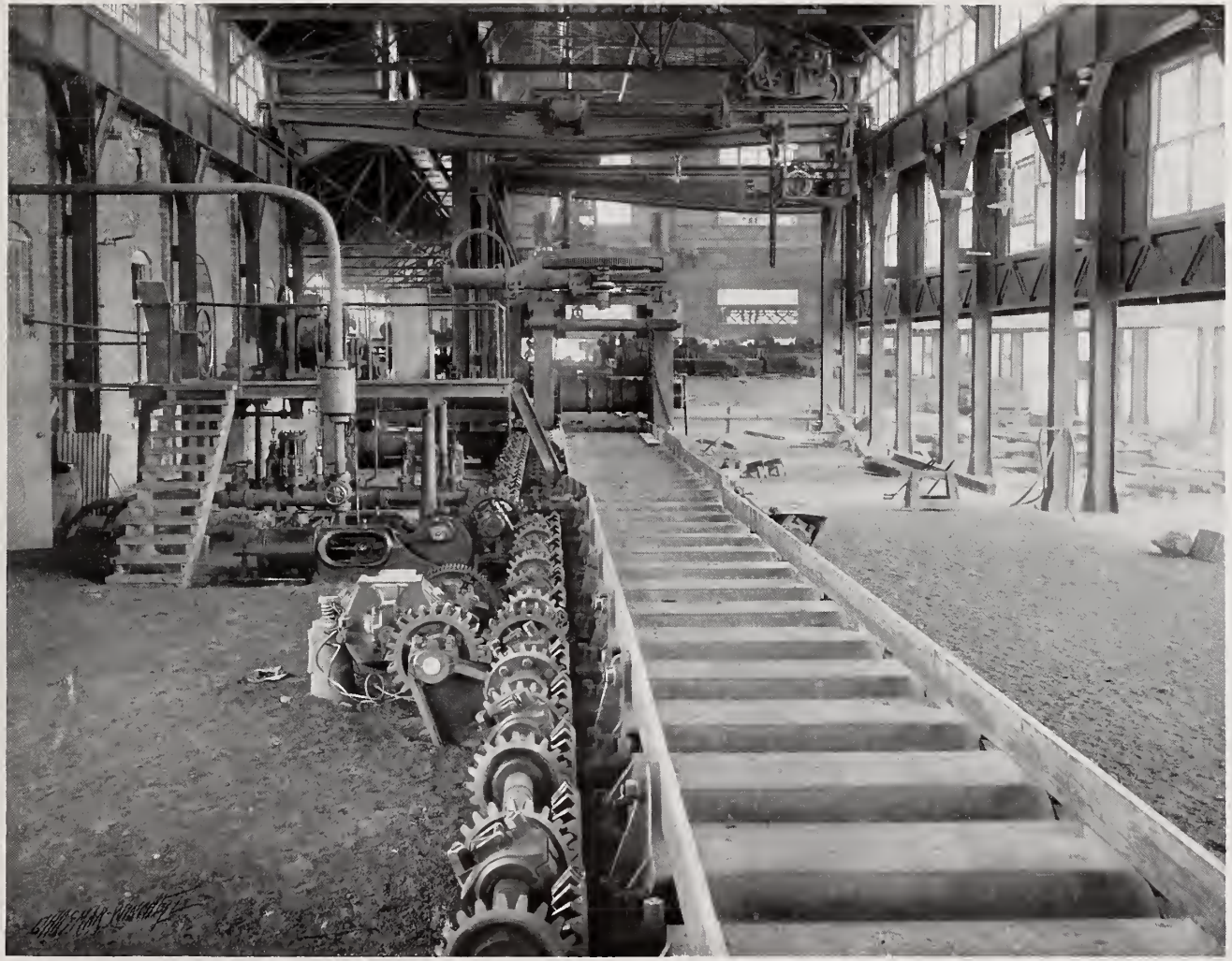


Illustration No. 157 A

38-inch Blooming Mill and Tables

Sharon Works, Carnegie Steel Co.

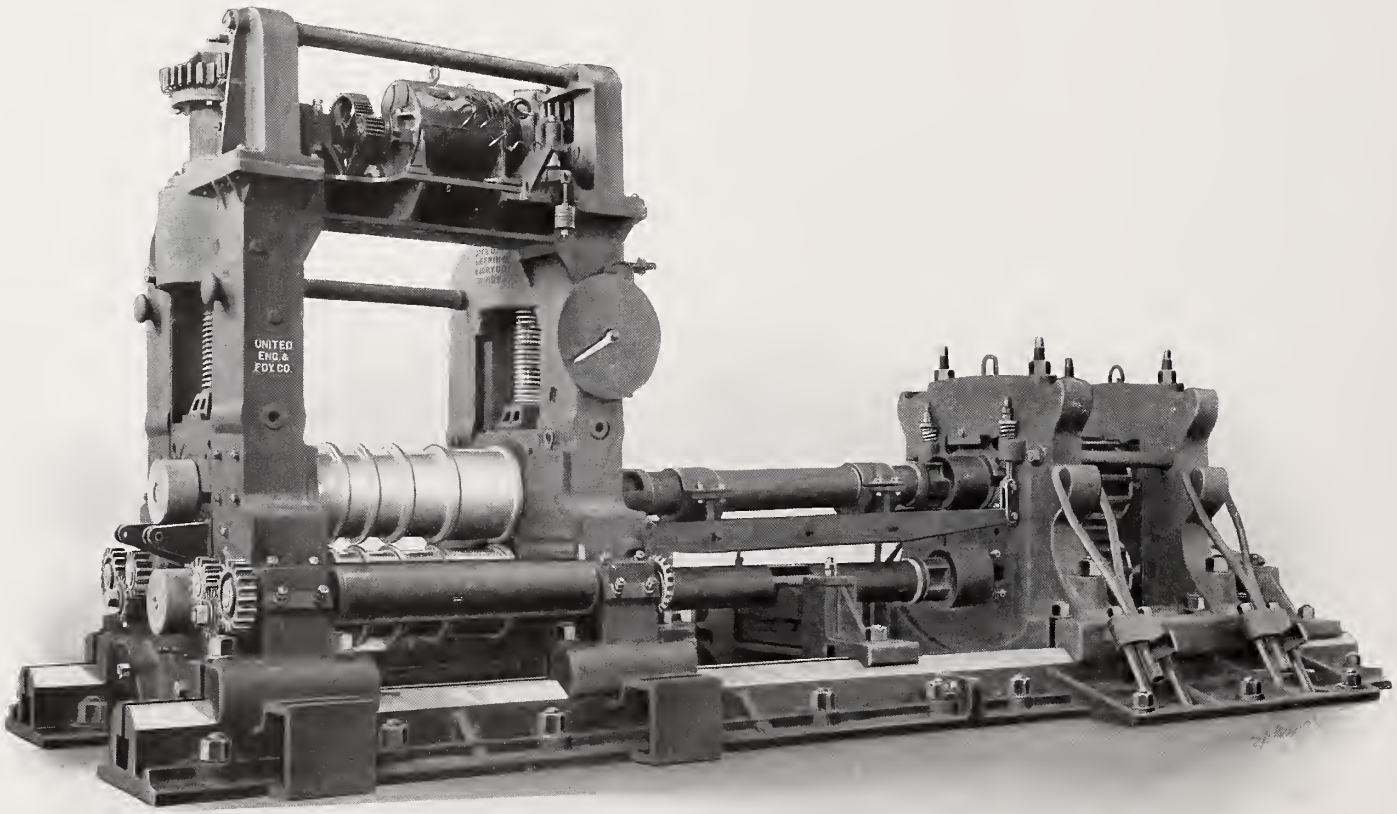


Illustration No. 341

40-inch Blooming Mill

Equipped with Electric Screw-down

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

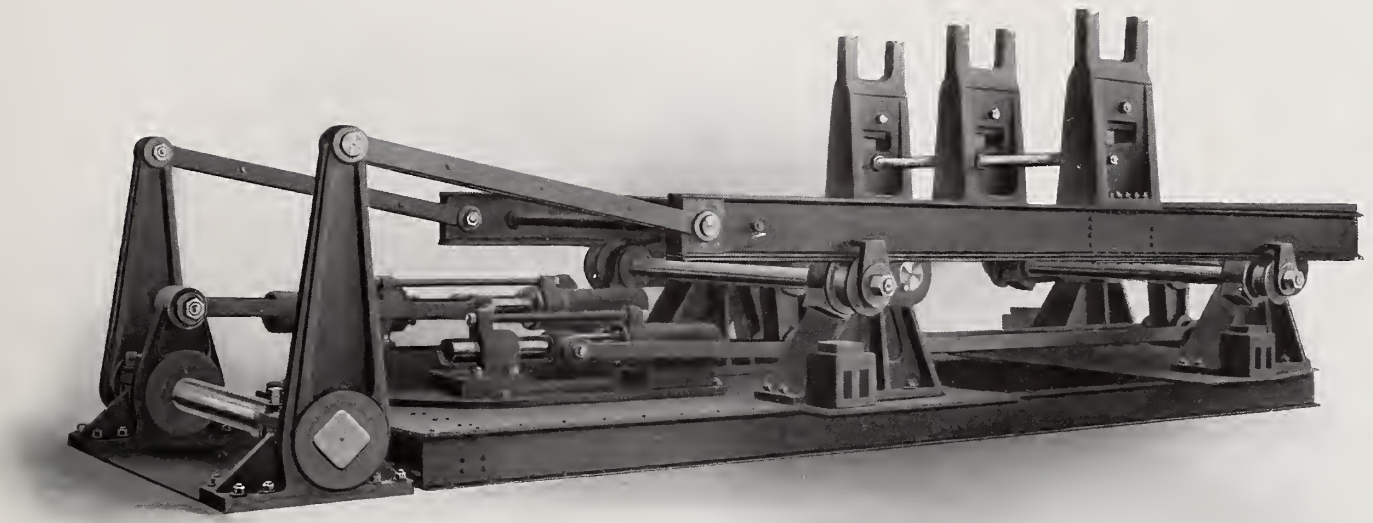


Illustration No. 359

Manipulator 40-inch Blooming Mill

Built for Illinois Steel Company

United Engineering and Foundry Company
Pittsburgh, U.S.A.

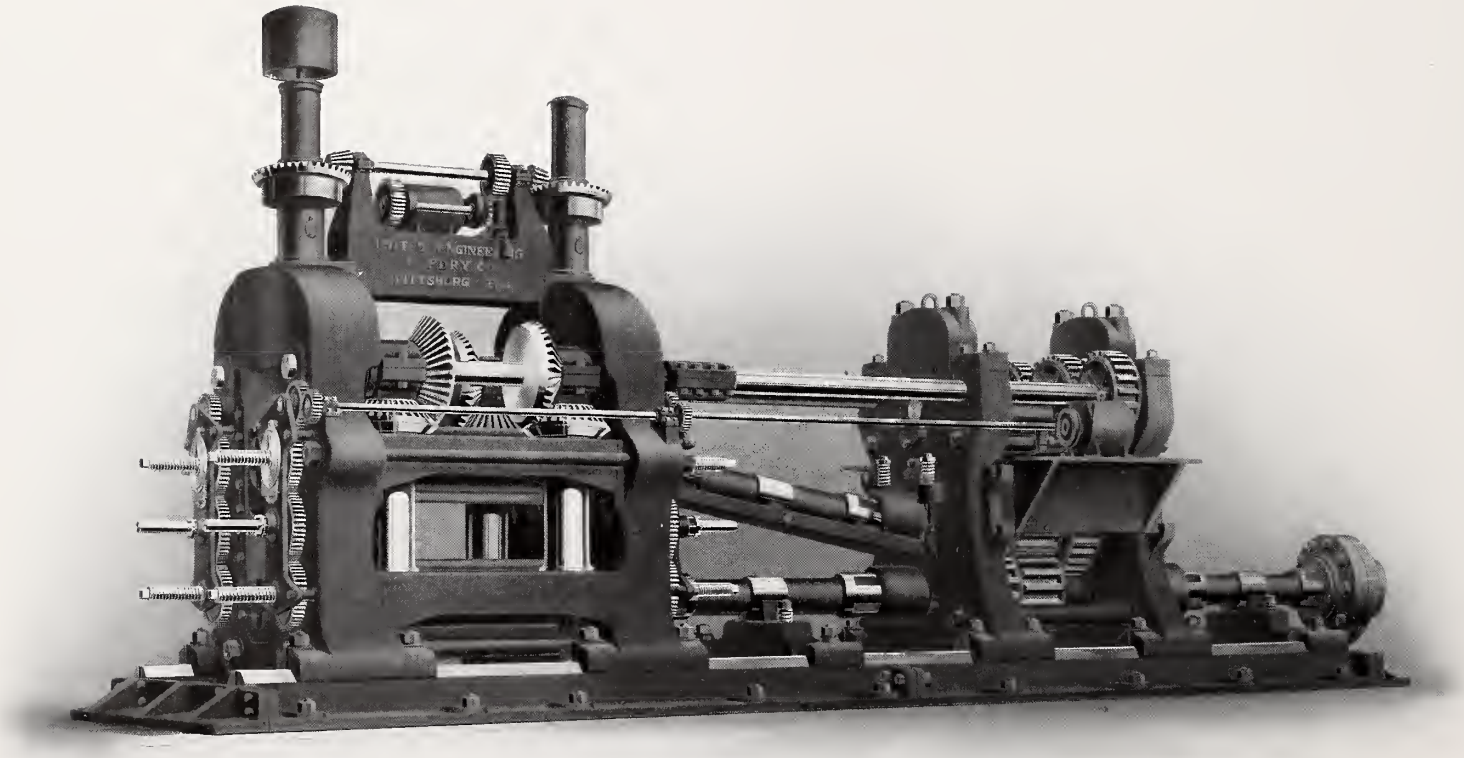


Illustration No. 345

48-inch Universal Mill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

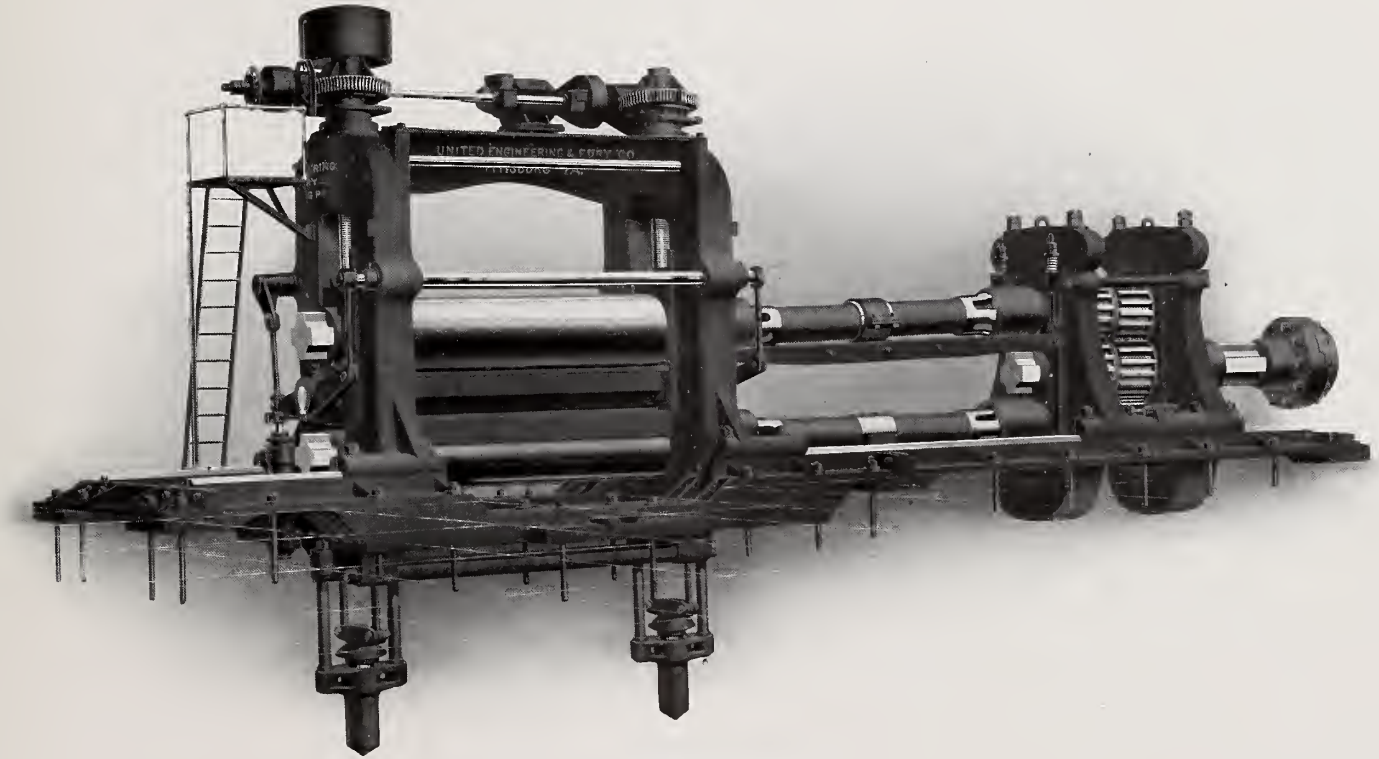


Illustration No. 346

34x128 Inch Plate Mill

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

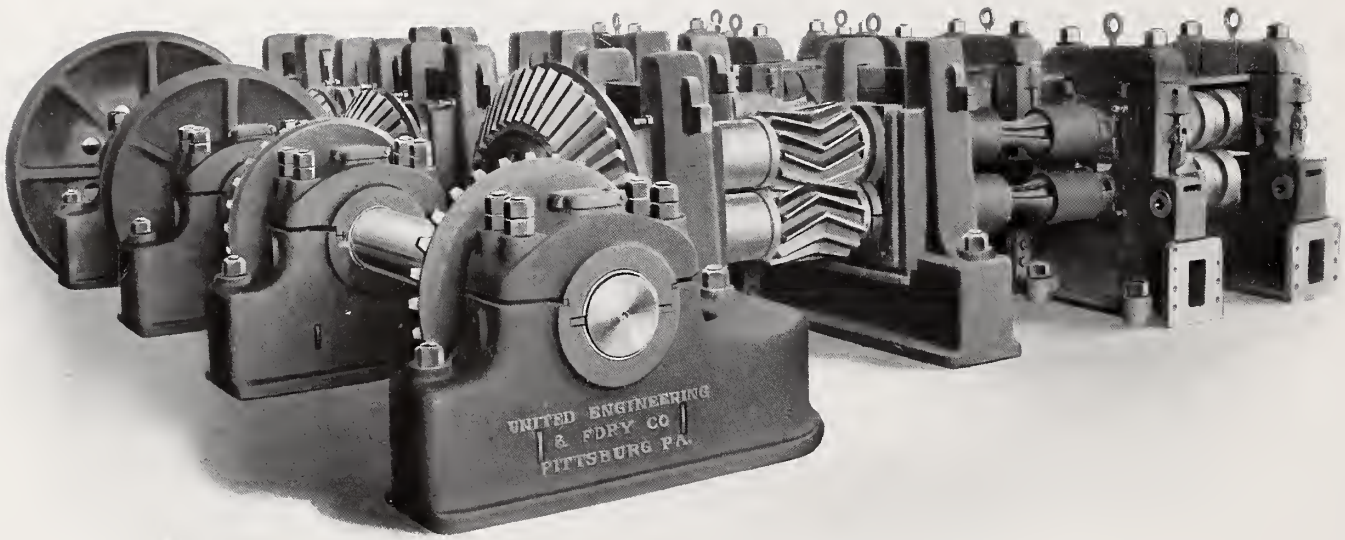


Illustration No. 252

14-inch Continuous Rod Mill

Designed by Garrett Cromwell Engineering Co.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

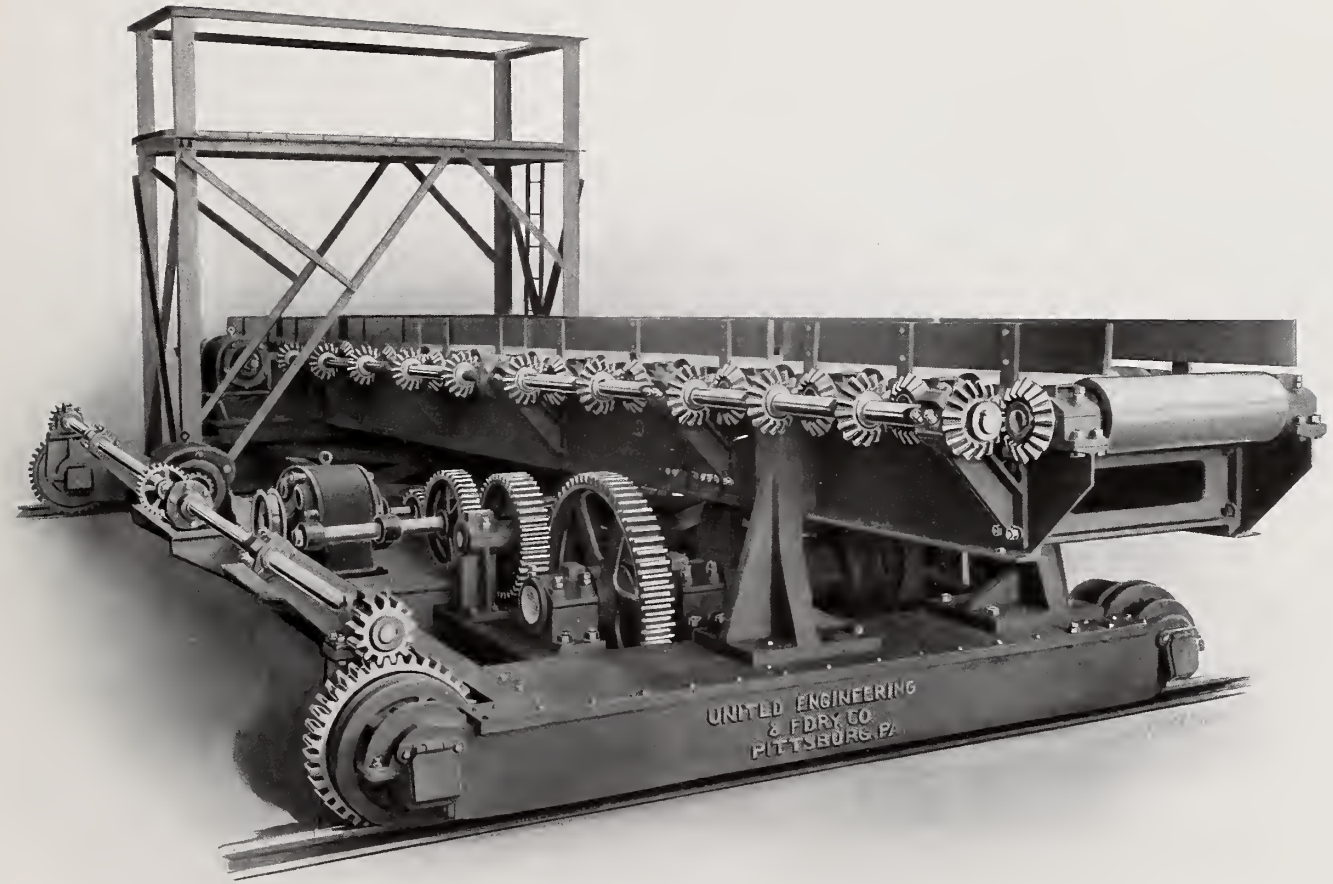


Illustration No. 304

Beam Mill Tables

Arranged for lifting and traveling.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

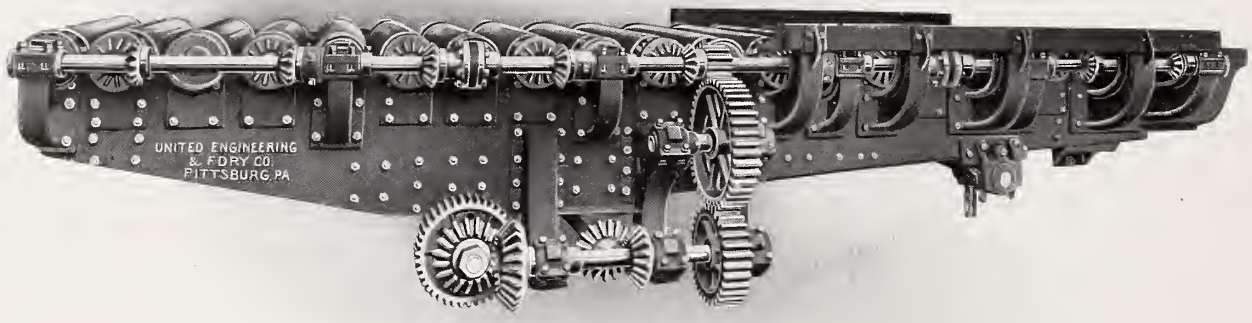


Illustration No. 261

127-inch Plate Mill Table

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

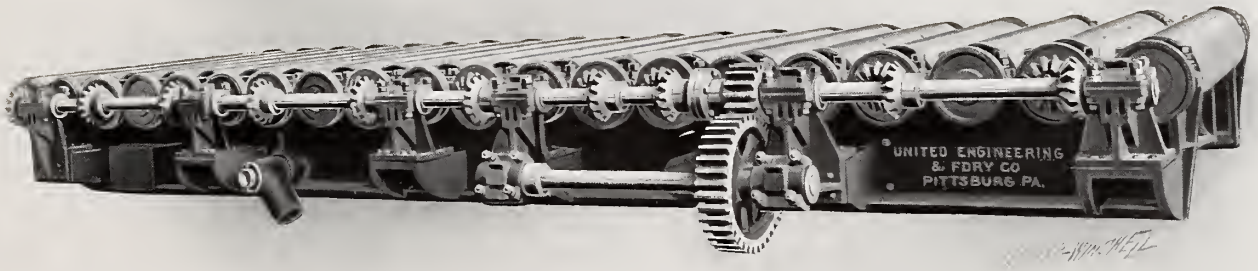


Illustration No. 292

140-inch Plate Mill Table

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

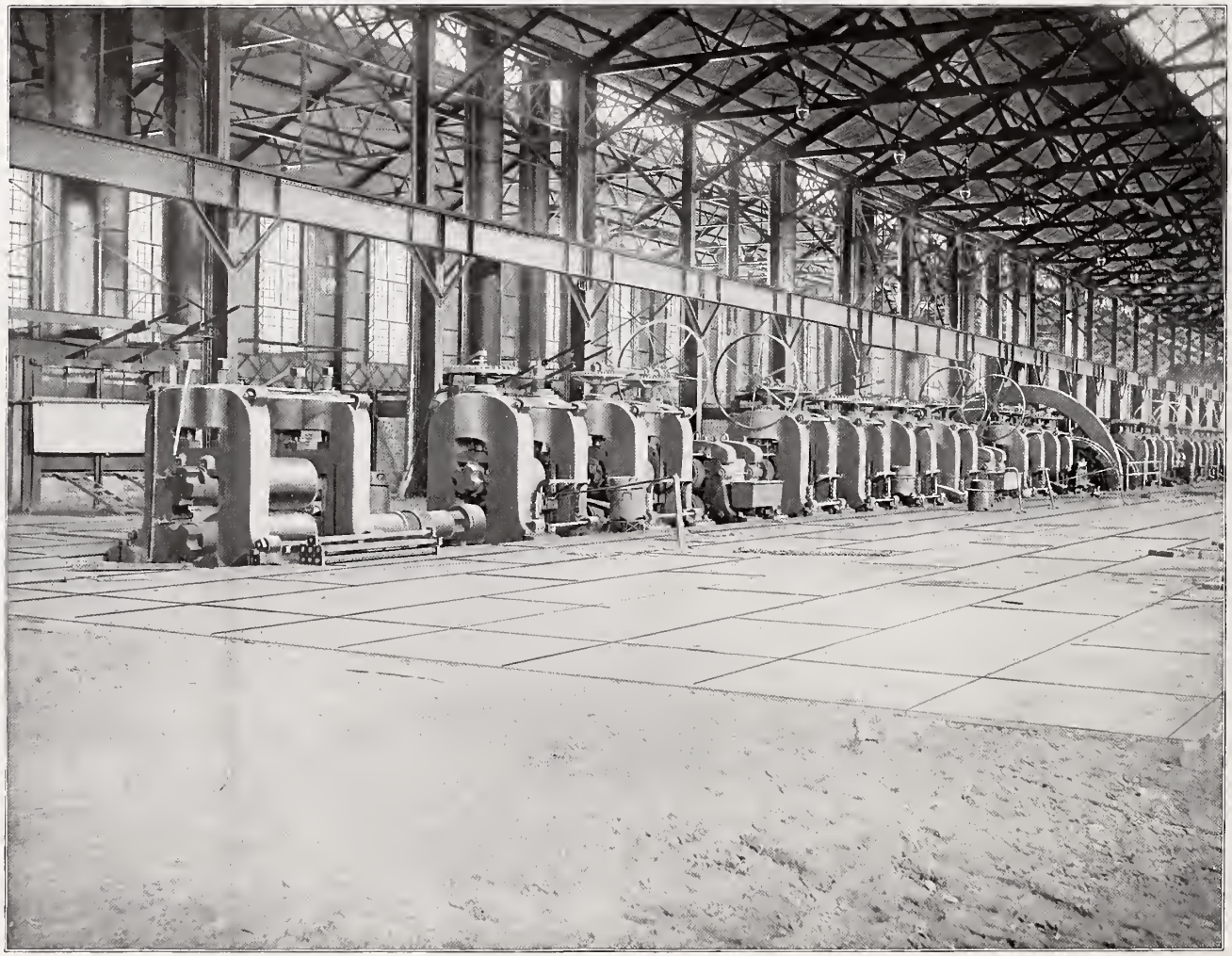


Illustration No. 296

Sheet Mills

Apollo Works, American Sheet and Tin Plate Co.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

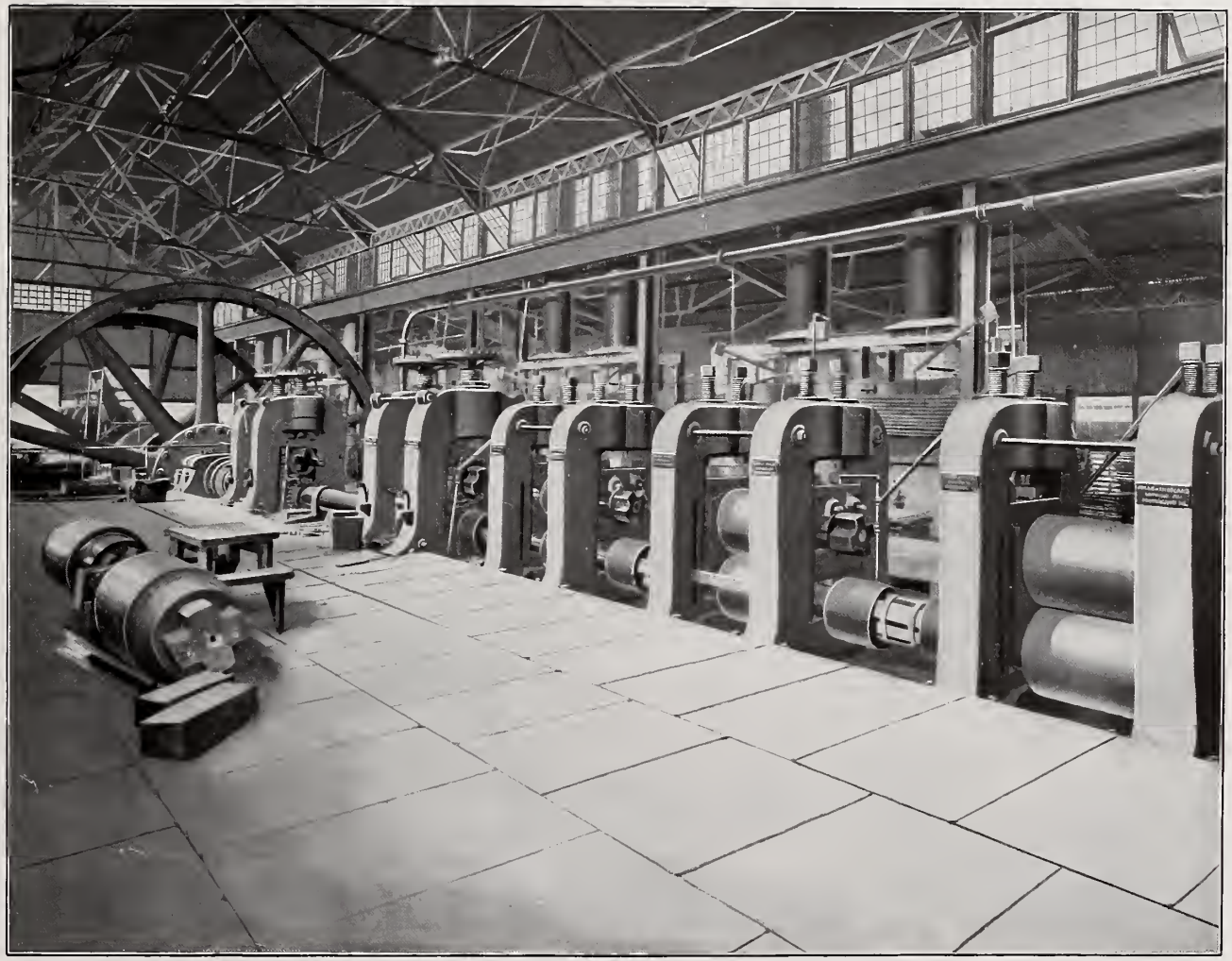


Illustration No. 298

Pennsylvania Works, American Sheet and Tin Plate Co.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

GRINDING MILLS

THESE machines are built with pans ranging from 6 to 9 feet in diameter, and are furnished with tight and loose pulleys, or with direct-connected engine or electric motor.

See illustration No. 121 A.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

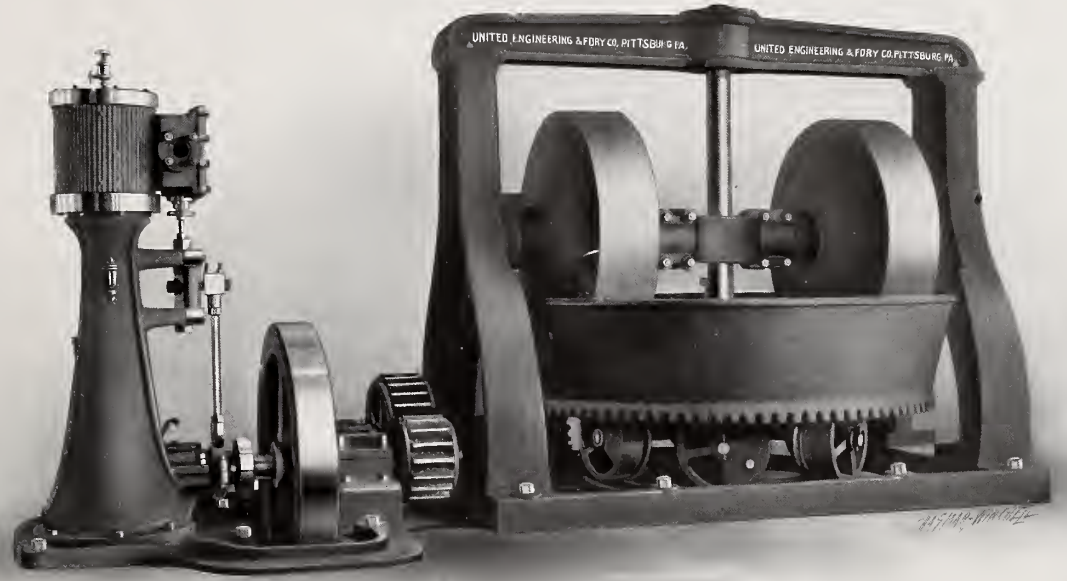


Illustration No. 121 A

Grinding Mill

Engine Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

ANGLE STRAIGHTENING MACHINES

ALTHOUGH these machines are called "Angle Straightening Machines," they are very suitable for straightening beams, channels, rails, "U" bars, angles up to 8 x 8 x 1 inch and various other shapes.

We build these machines in four sizes as follows: Nos. 00, 0, 1 and 2, and furnish them with either inside or overhanging rollers.

They are all equipped with seven or eight rolls, these rolls in most cases being chilled on the surface. We can, however, make these rolls of steel castings or forgings when so specified.

The adjustment of the rolls is accurately controlled by a hand wheel in connection with gearing and screws.

We build these machines with tight and loose pulleys or with direct-connected engine or electric motor.

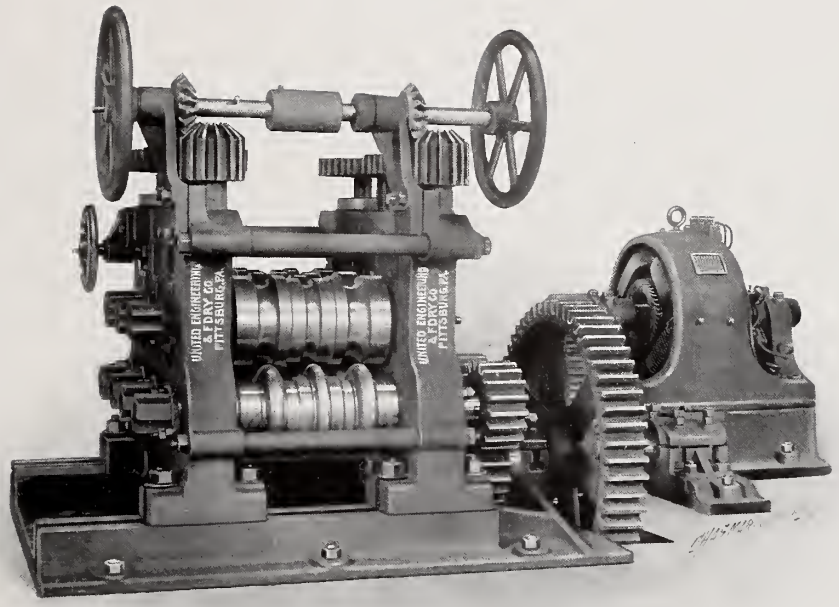


Illustration No. 255

No. 2 Angle Straightening Machine

Motor Driven

Capacity up to 2½ x 2½ inch angles.

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

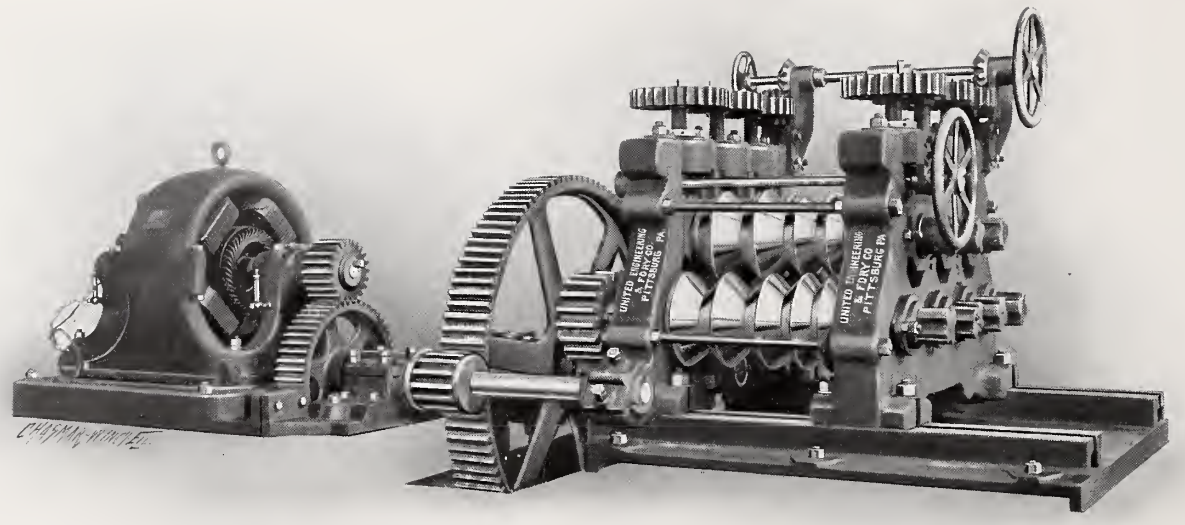


Illustration No. 253

No. 1 Angle Straightening Machine

Motor Driven

Capacity up to 4 x 4 x 5/8 inch angles.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

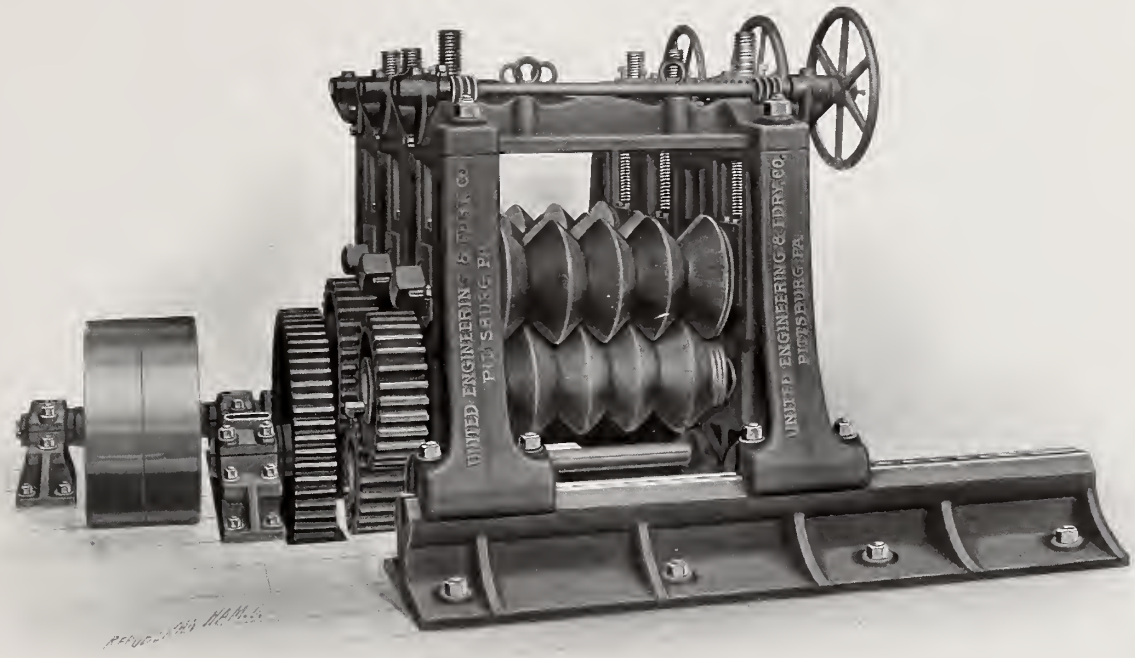


Illustration No. 98

No. 0 Angle Straightening Machine

Belt Driven

Capacity up to 8 x 8 x ¾ inch angles.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

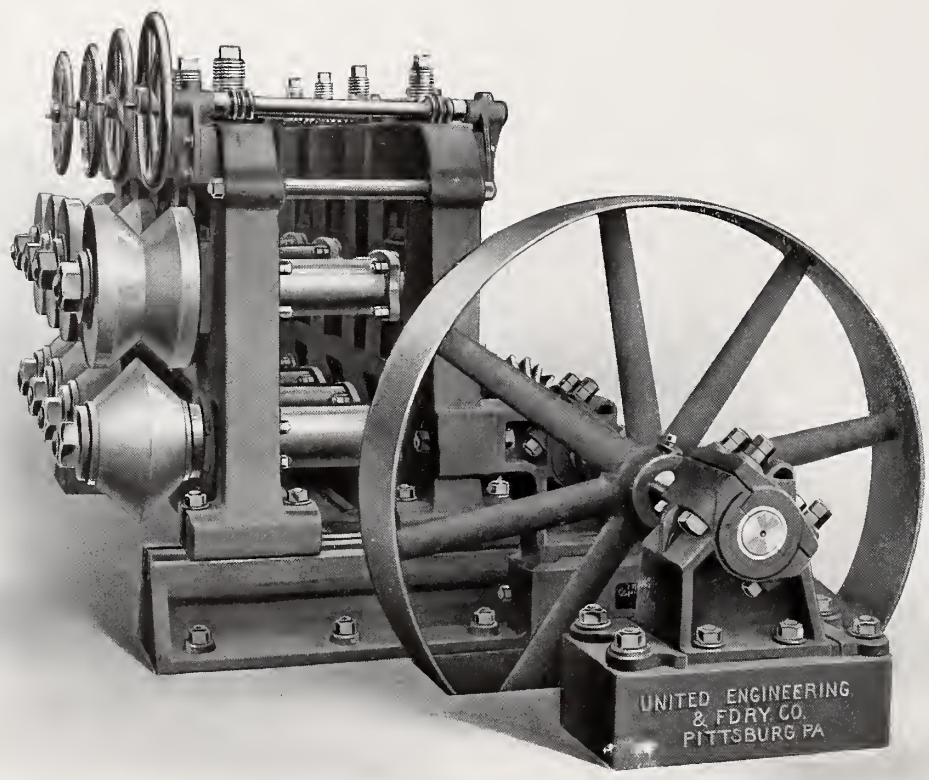


Illustration No. 270

No. 00 Angle Straightening Machine

Belt Driven

Capacity up to 8 x 8 x 1 inch angles.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

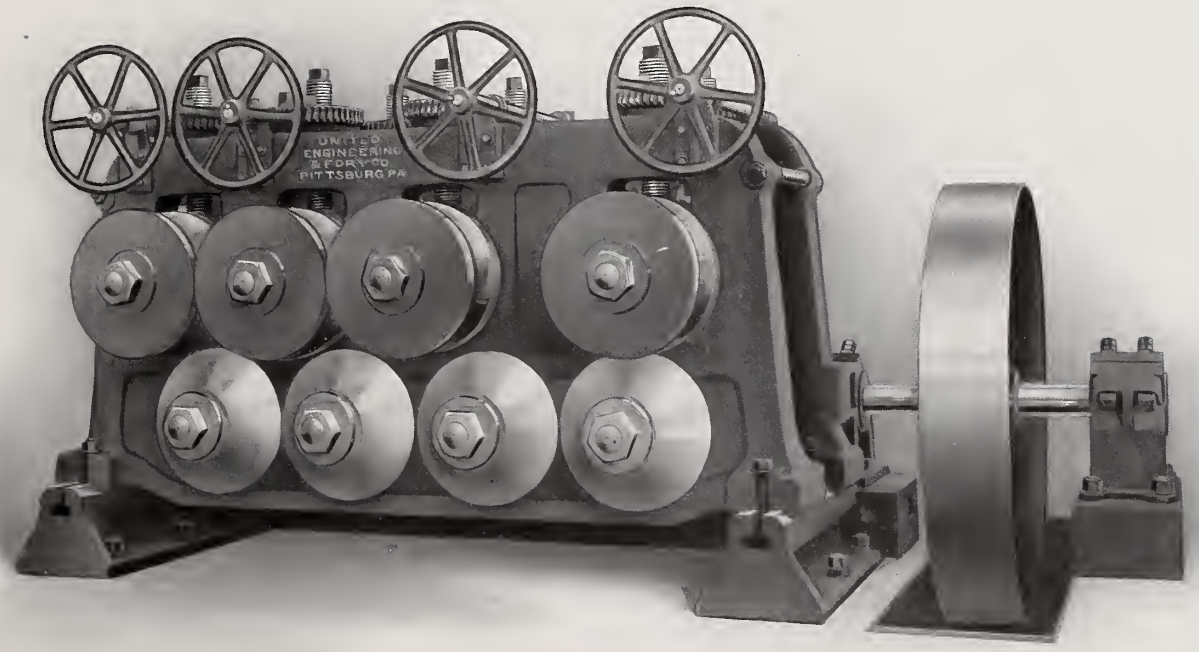


Illustration No. 271

No. 00 Angle Straightening Machine

Another view of illustration No. 270.

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

CARS

THE following illustrations show only a few of the various types of cars which we build. Our designs cover all classes of billet, ingot, ash, slag, cinder, mule, scrap and ladle cars.

We also furnish billet cars arranged as a "merry-go-round," with car pusher, billet conveyor, crates, etc.

In most cases our cars are fitted with brass or bronze bearings, while the wheels are made of cast iron with chilled treads.

The axles are steel forgings with the wheels pressed on.

The car bodies are usually made of cast iron, well ribbed to secure great strength and rigidity.

Illustration No. 163

Cinder Car

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

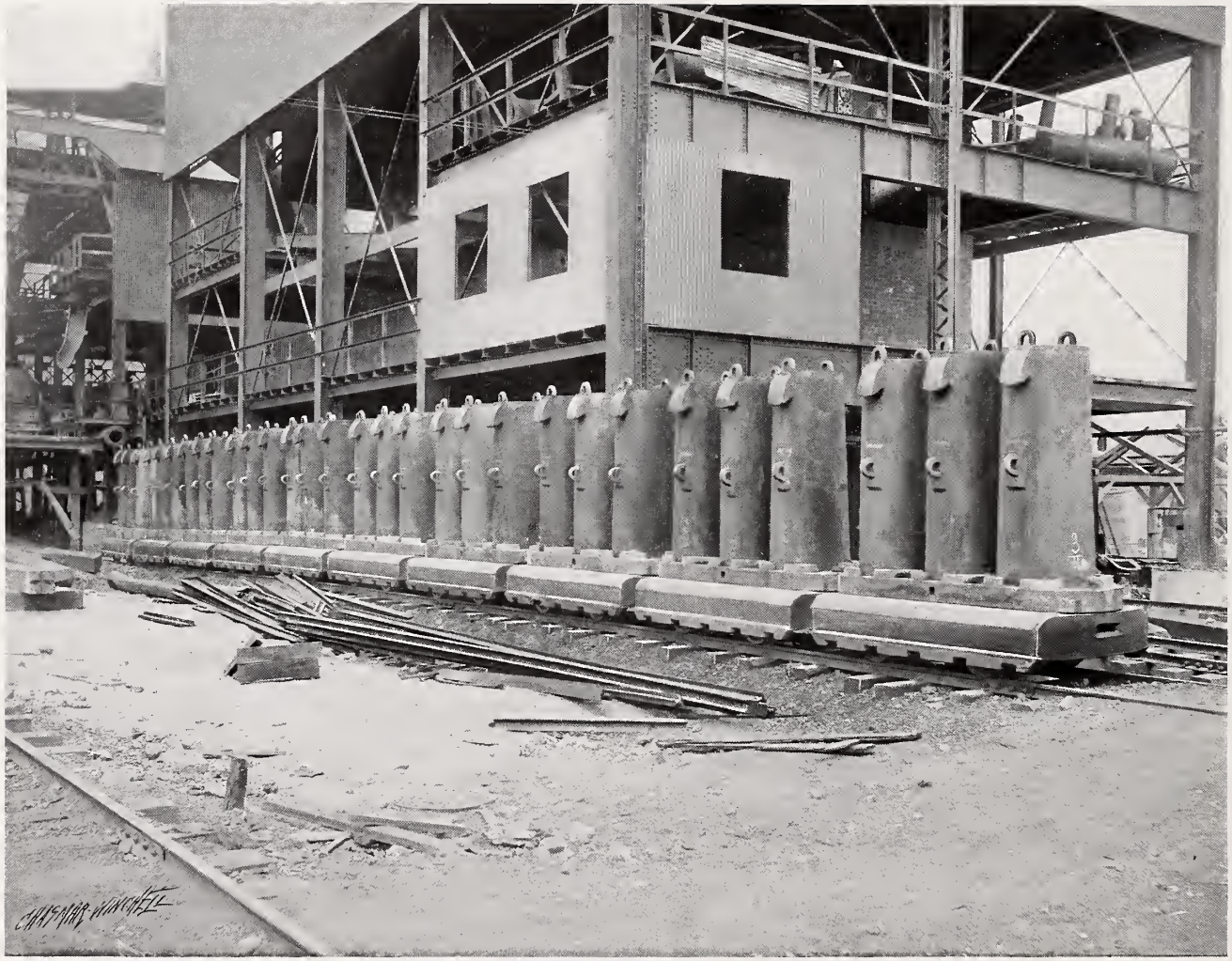


Illustration No. 162 A

Row of Ingot Cars

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

Illustration No. 162

Ingot Car

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

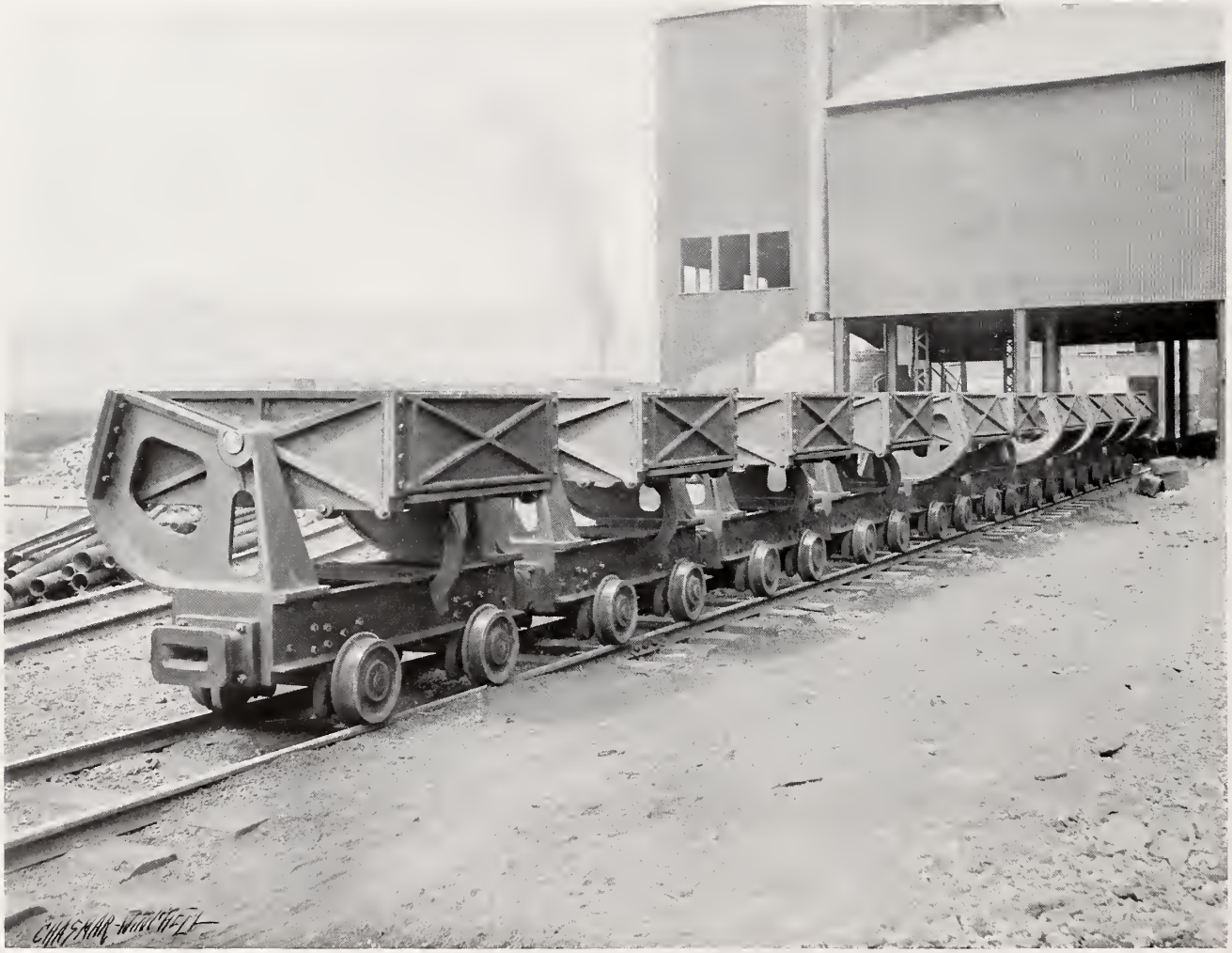


Illustration No. 163 A

Row of Ash Cars

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

Illustration No. 163 B

Ash Car

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

SQUEEZERS

THESE machines are built in four sizes, with drums 50 inches in diameter x 19 inches high, 50 inches diameter x 24 inches high, 60 inches diameter x 26½ inches high, and 62 inches diameter x 26 inches high, respectively.

The small size squeezers deliver a 7-inch and 8-inch bloom from a 200 and 300-pound ball, while the large size squeezers deliver an 8-inch bloom from a 350-pound ball.

The weight varies from 48,000 pounds for the small machine to 94,000 pounds for the largest.

The 60-inch squeezer shown by illustration No. 84 is designed so that it can be changed from right to left hand by simply turning over the curb.

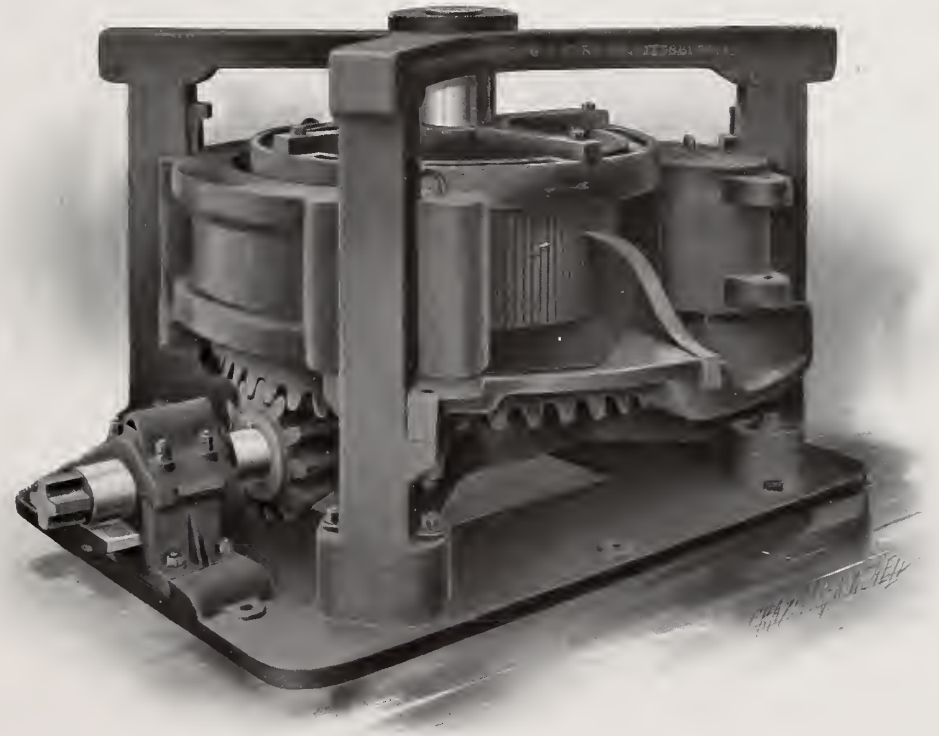


Illustration No. 84A

60-inch Squeezer for 400-lb. Bloom

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

TUBE WORKS MACHINERY

WE are prepared to design and build complete equipment for all classes and sizes of tubular products for either seamless, lap or butt weld plants.

Among the plants which we have designed and built are included the following:

Spang, Chalfant & Co.	Aetna, Pa.
Youngstown Iron, Sheet and Tube Company	Youngstown, Ohio
La Belle Iron Works	Steubenville, Ohio
Mark Manufacturing Company	Chicago, Ill.
Coatesville Rolling Mill Company	Coatesville, Pa.
National Tube Company, Continental Plant	Pittsburg, Pa.
Thyssen & Co.	Dusseldorf, Germany
Hahnsche Werke Actiengesellschaft	Berlin, N. W., Germany
Balcke, Tellering & Co.	Benrath, Germany
Reliance Tube Company	Pittsburg, Pa.

The following pages illustrate a few sizes and types of the various tube working machines which we build. These are all of modern design, and constructed so as to give the greatest strength and wearing qualities, together with a maximum production at the lowest possible cost. We are in a position to give our customers the benefit of a long experience in this line, as we have designed and built tube works machinery since 1886.

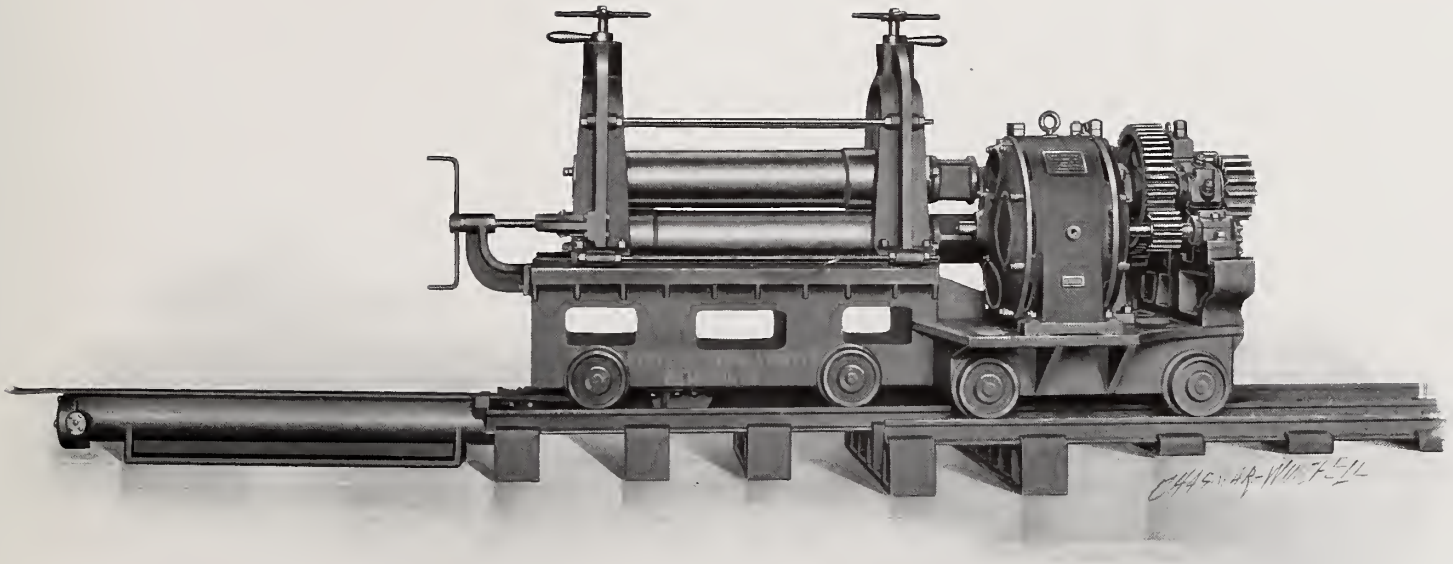


Illustration No. 116

Movable Scarfing Machine

Motor Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

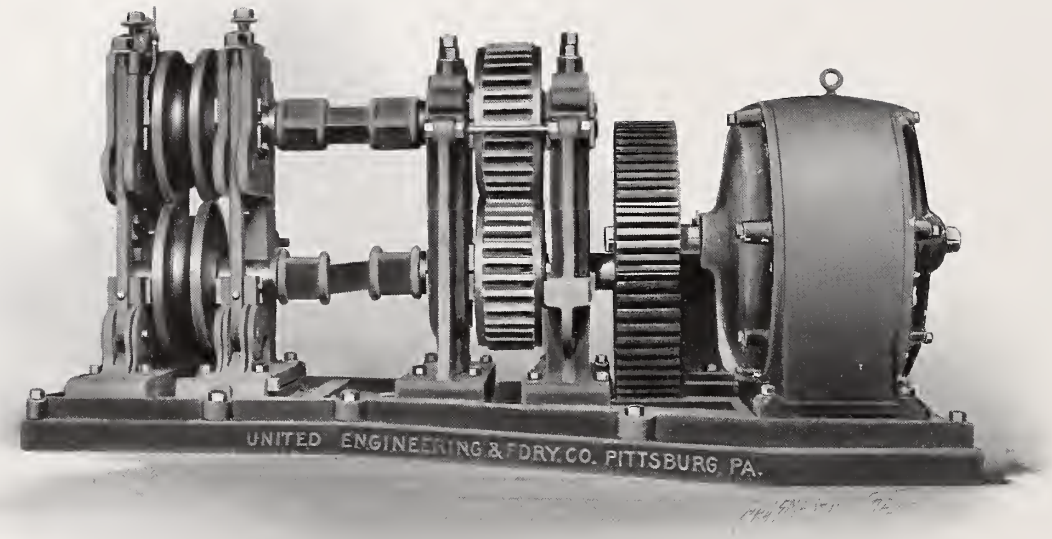


Illustration No. 233 A

Single Lap Welding Rolls

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

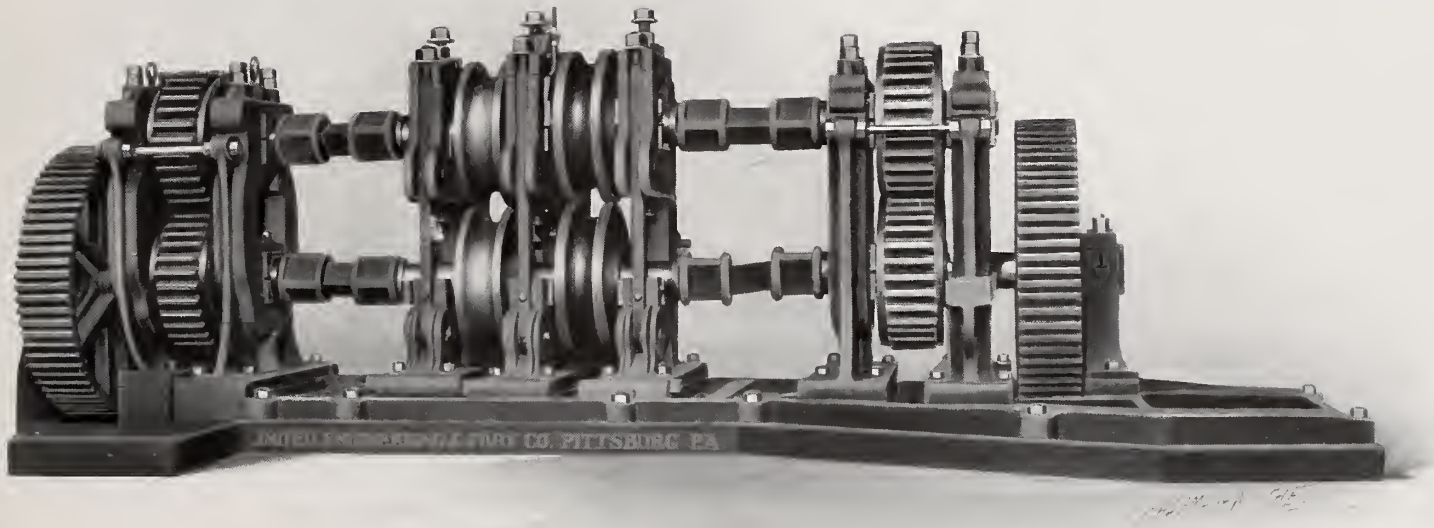


Illustration No. 233

Double Lap Welding Rolls

Motor Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

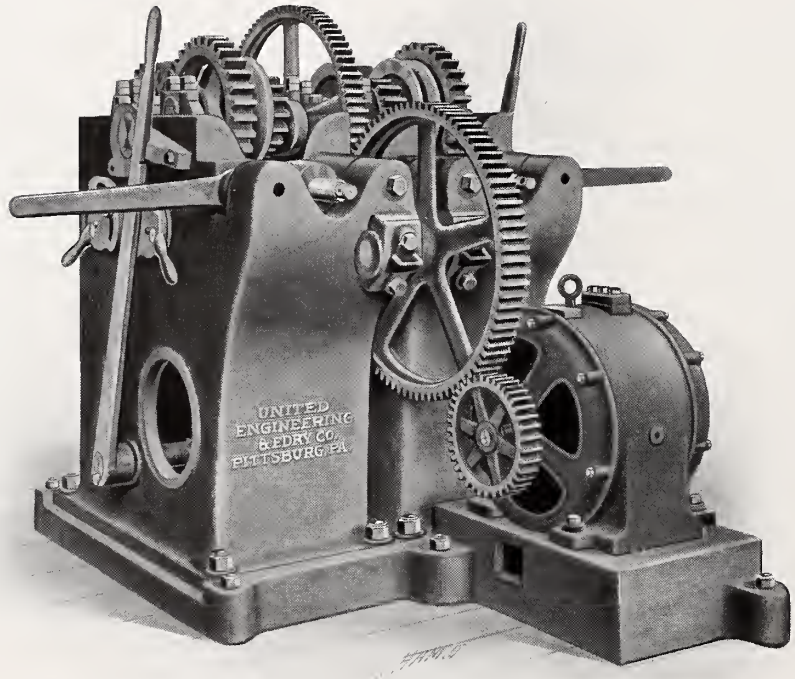


Illustration No. 234

2 to 6 Inch Bar Puller

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

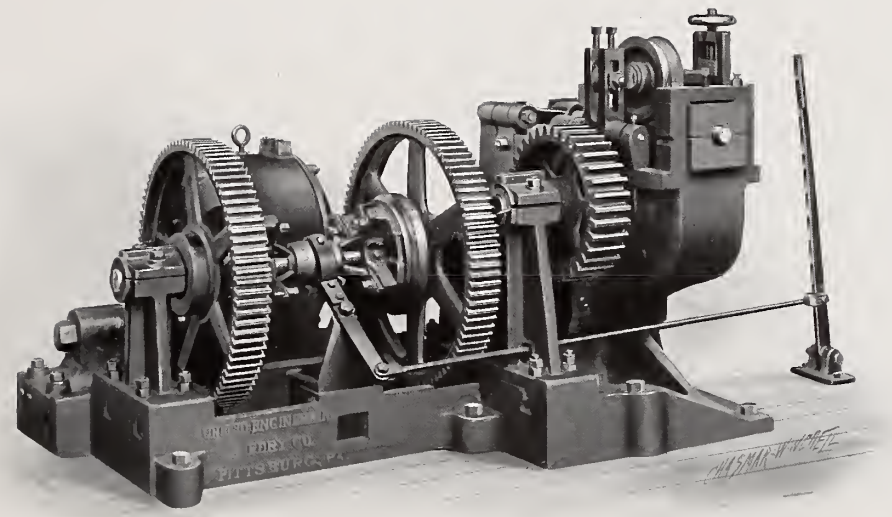


Illustration No. 239

6 to 20 Inch Bar Puller

Motor Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

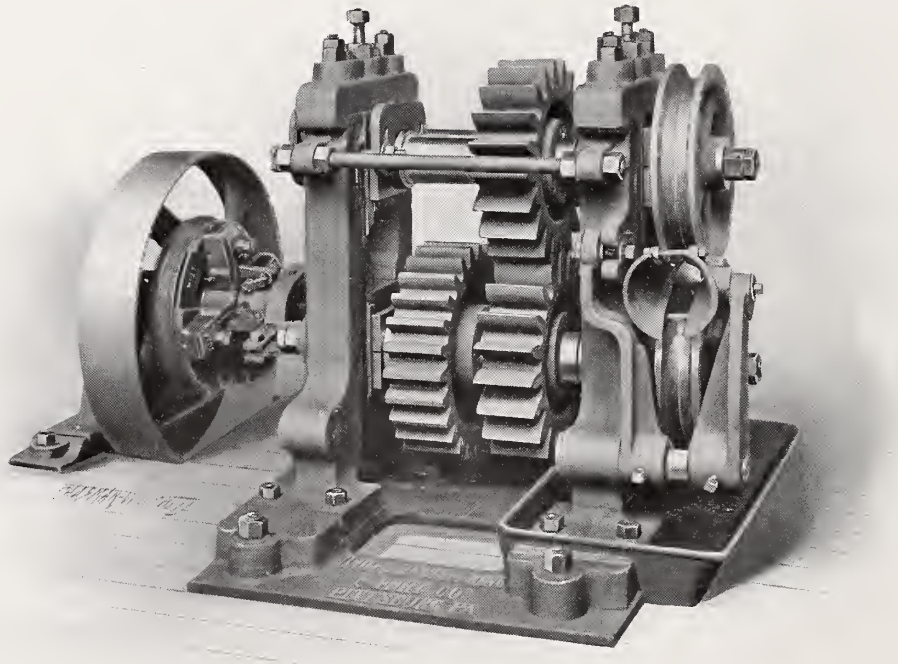


Illustration No. 238

Sizing Machine

For ⅜ to 2 Inch Butt Weld Pipe. Belt Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

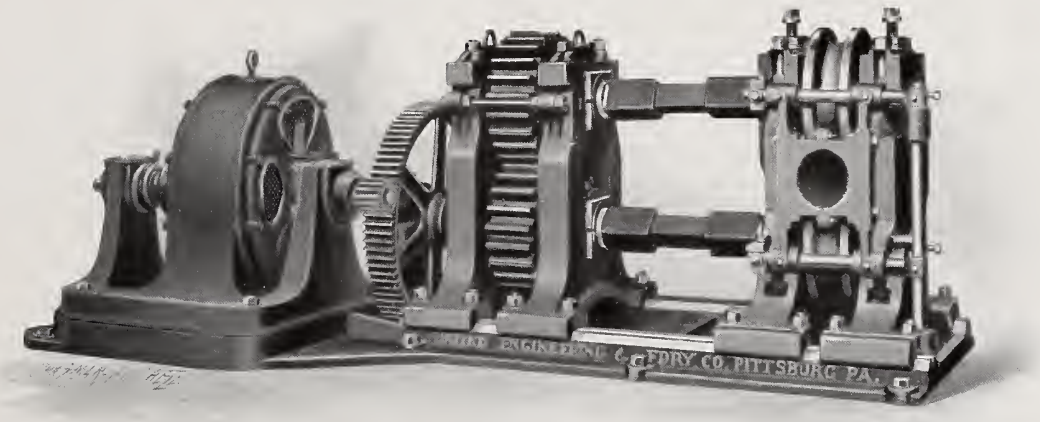


Illustration No. 230 B

Sizing Machine for 2 to 4 Inch Butt Weld Pipe

Motor Driven

United Engineering and Foundry Company

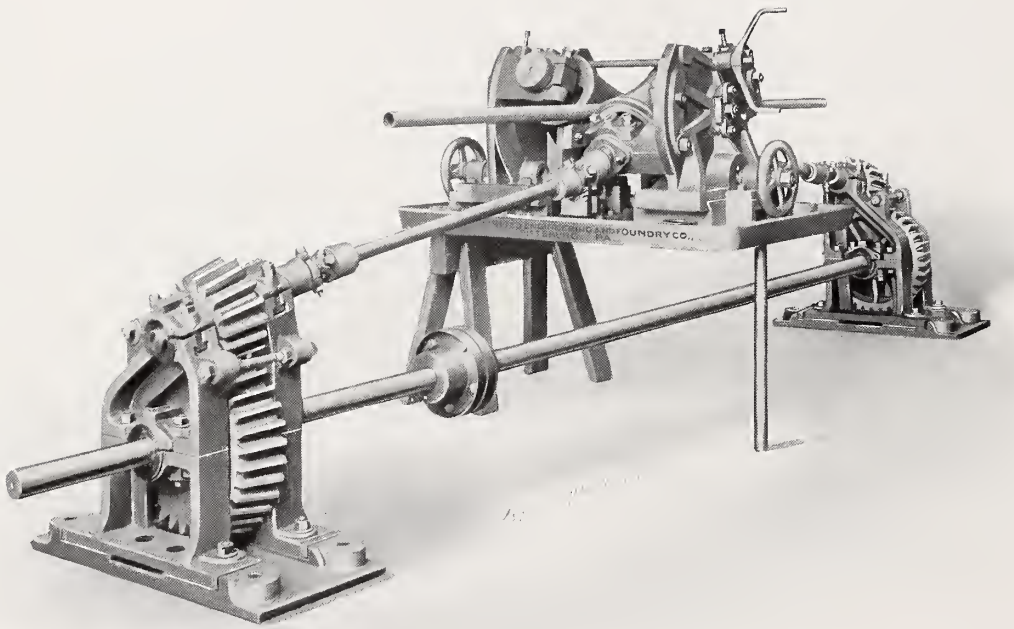


Illustration No. 224 B

2 to 4 Inch Cross Rolls

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

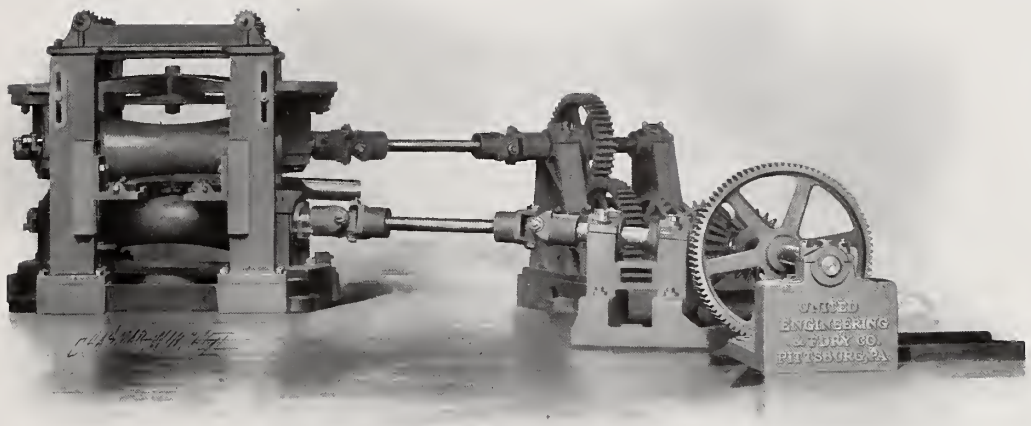


Illustration No. 206

2 to 8 Inch Cross Rolls

Motor Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

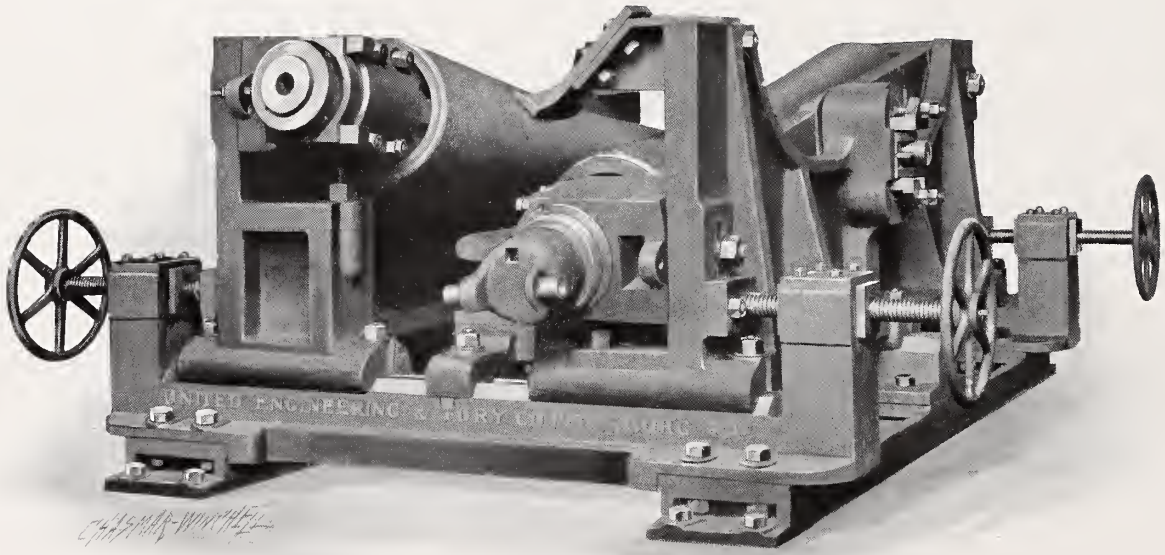


Illustration No. 240

8 to 20 Inch Cross Rolls

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

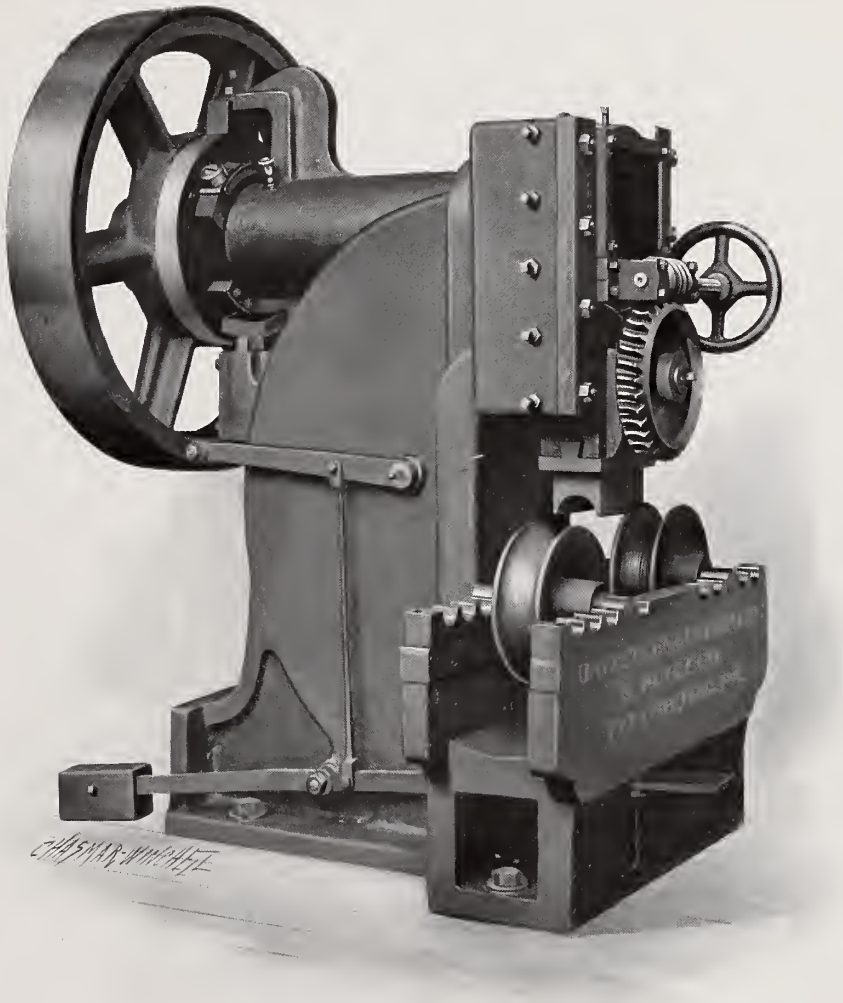


Illustration No. 107

6-inch Pipe Straightening Press

Belt Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

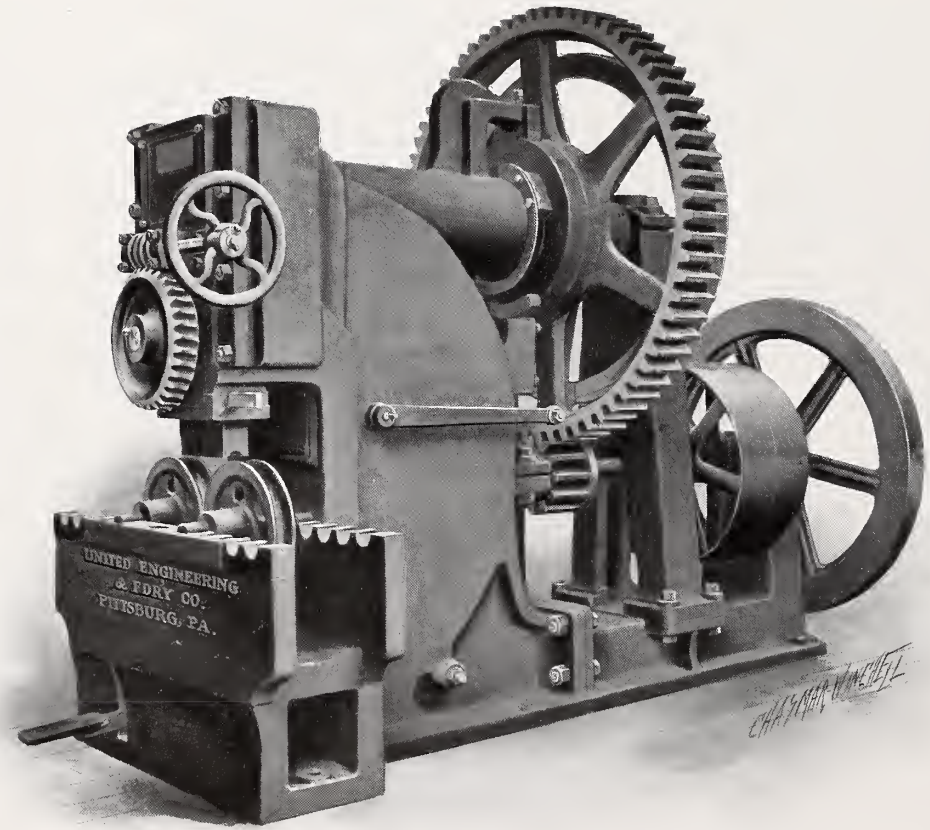


Illustration No. 217

8-inch Pipe Straightening Press

Belt Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

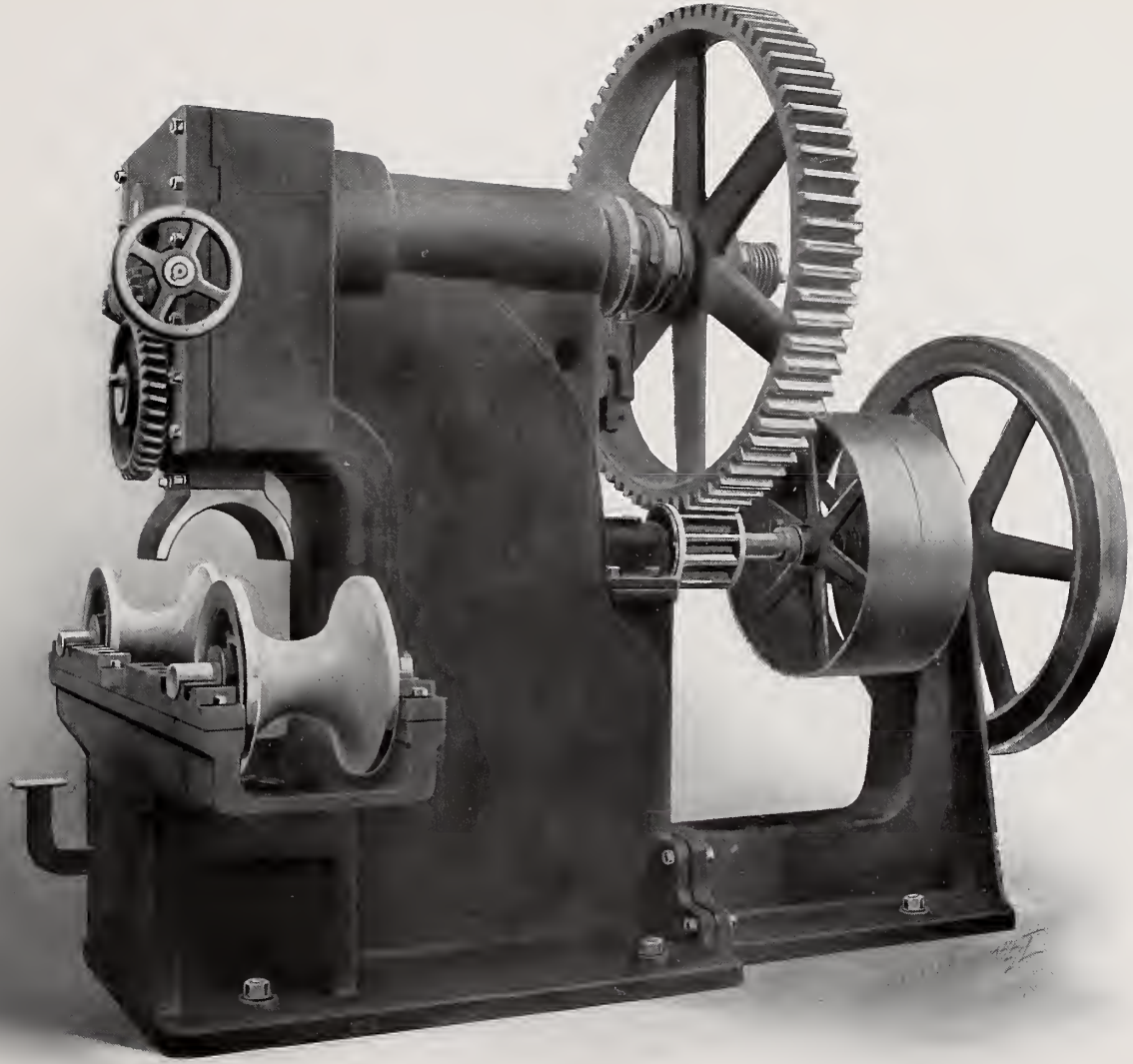


Illustration No. 105

12-inch Pipe Straightening Press

Belt Driven

United Engineering and Foundry Company
PITTSBURGH, U.S.A.

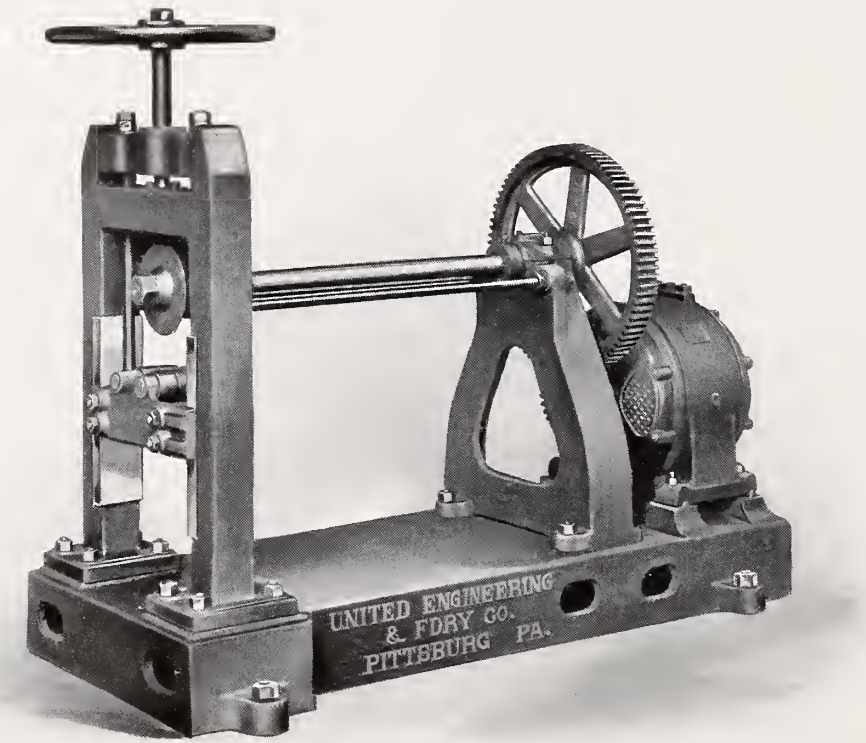


Illustration No. 187

Pipe Cutter

Motor Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

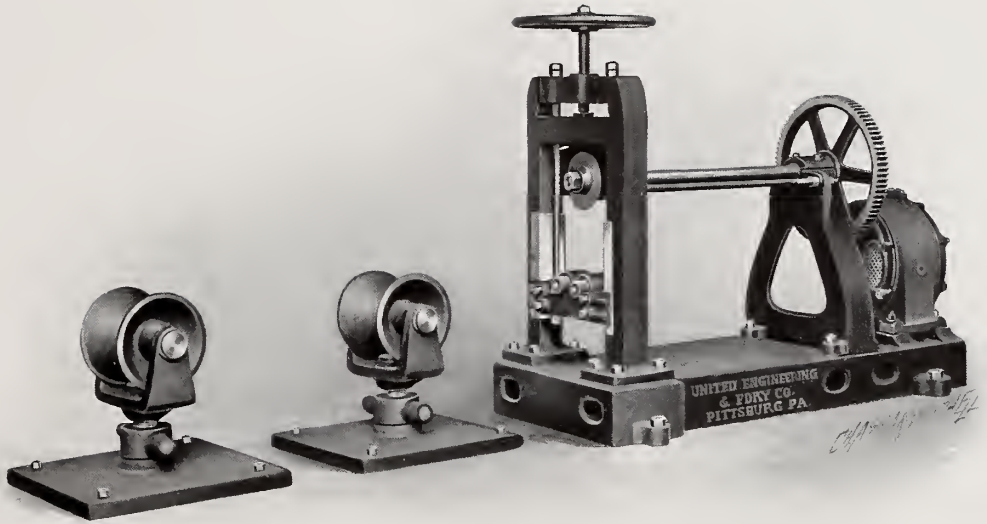


Illustration No. 187 A

Pipe Cutter

Motor Driven, with Feed Rollers

United Engineering and Foundry Company
PITTSBURGH, U.S.A.

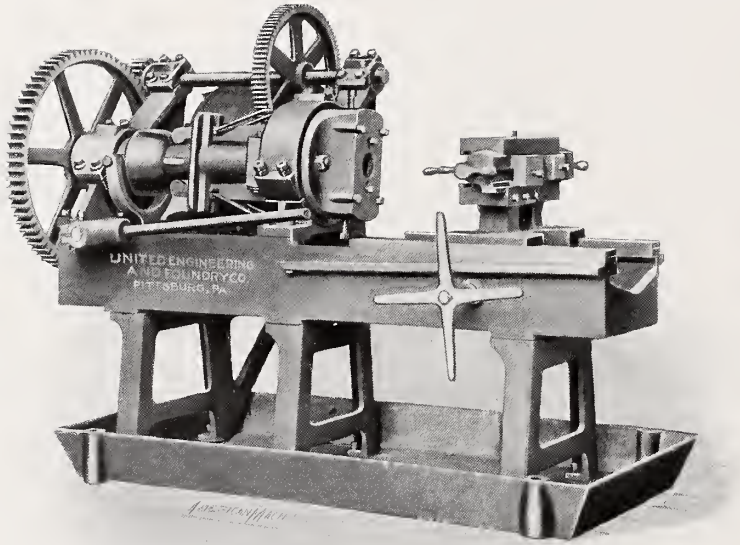


Illustration No. 236

$\frac{3}{8}$ to 2 Inch Pipe Threading Machine

Motor Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

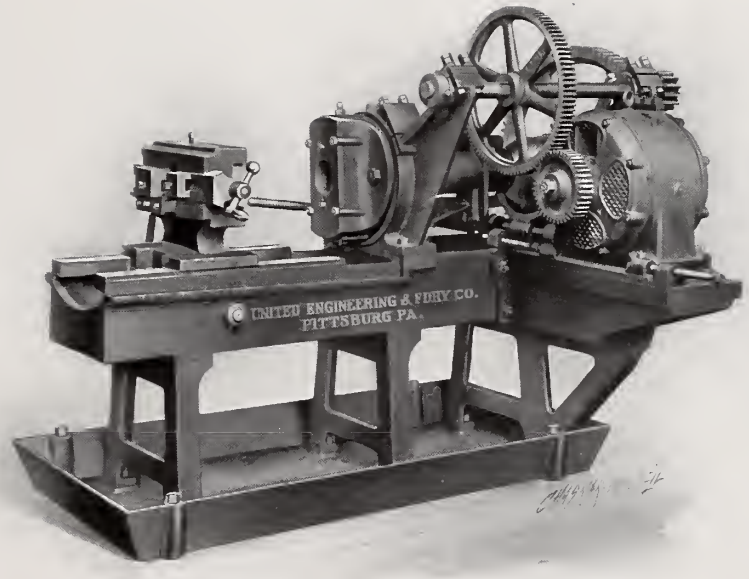


Illustration No. 171

3-inch Pipe Threading Machine

Motor Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

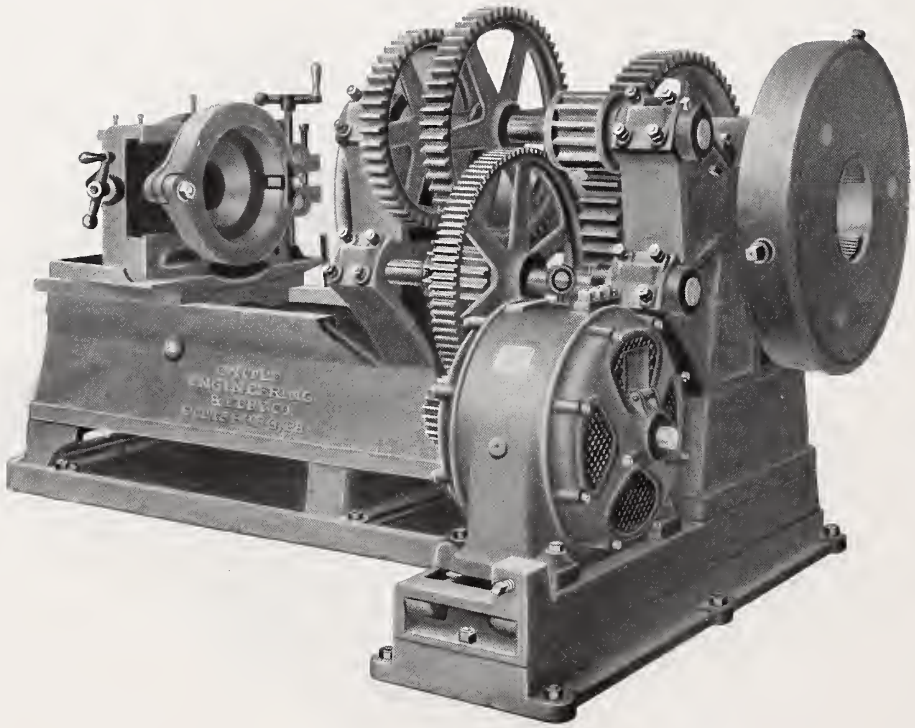


Illustration No. 100

2 to 8 Inch Pipe Threading Machine

Motor Driven

United Engineering and Foundry Company
PITTSBURG PA U.S.A.

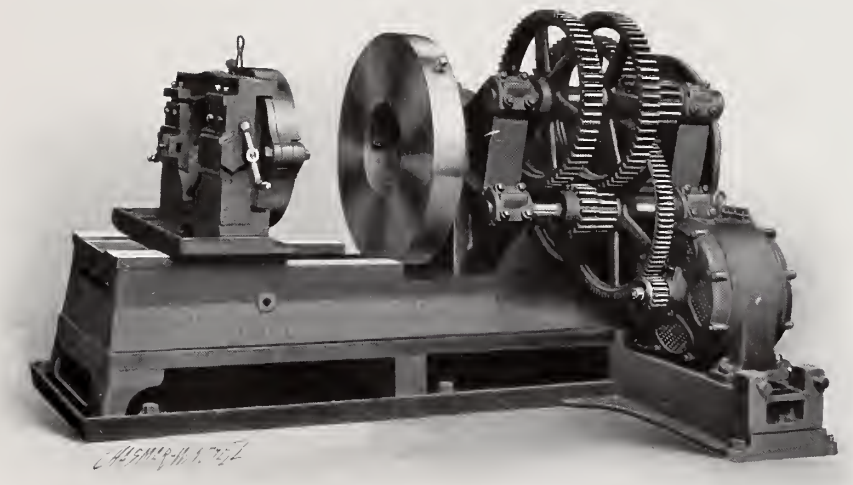


Illustration No. 189

6 to 12 Inch Threading Machine

Motor Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

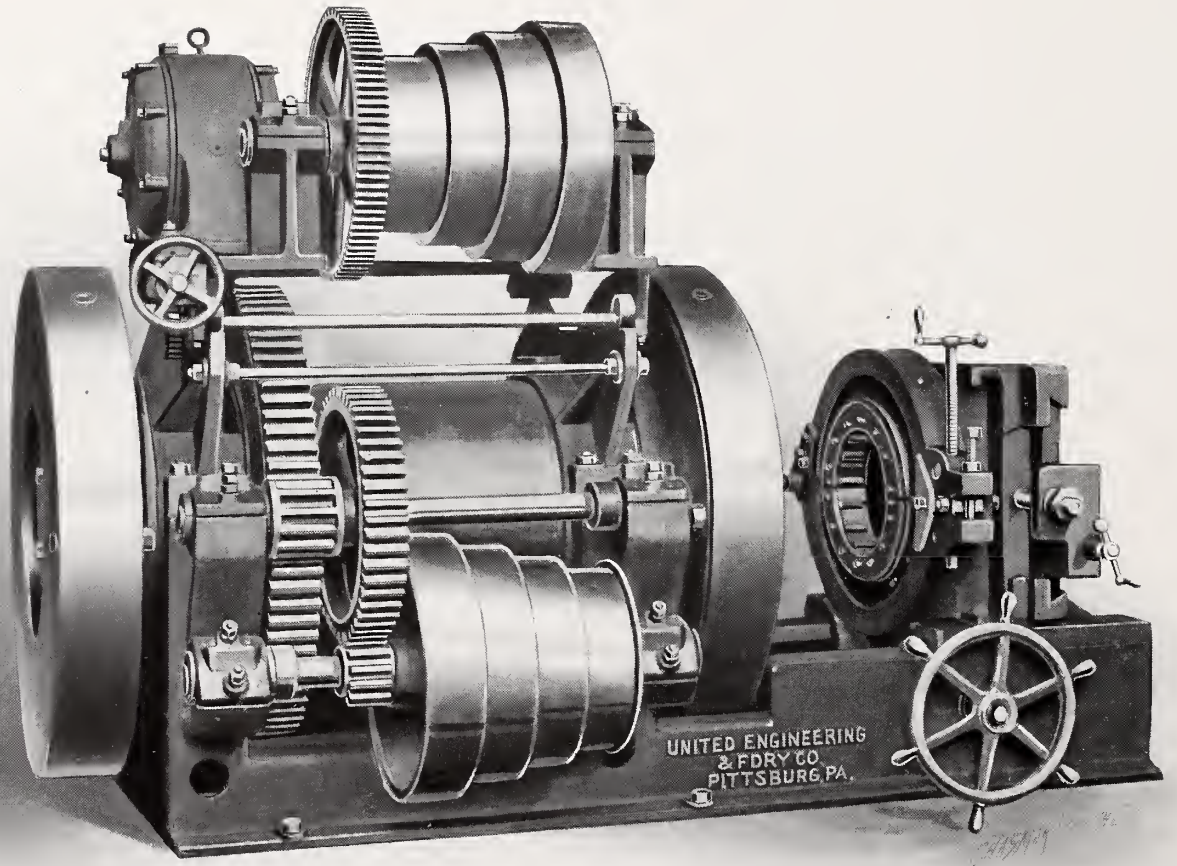


Illustration No. 244

12 to 24 Inch Pipe Threading Machine

Belt Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

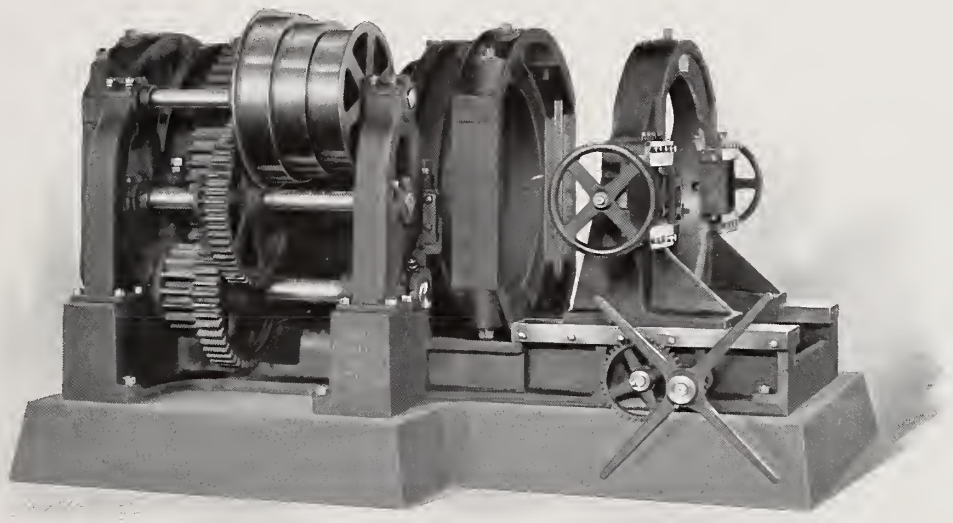


Illustration No. 226

30-inch Pipe Threading and Cutting-off Machine

Belt Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

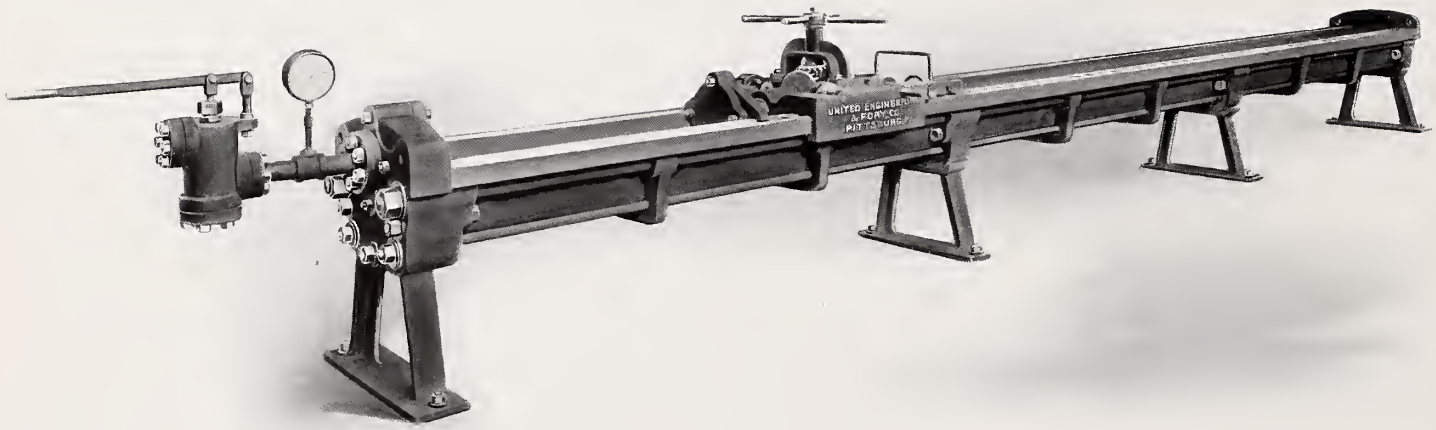


Illustration No. 291

2 to 8 Inch Pipe Testing Machine

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

Illustration No. 169

12-inch Pipe Testing Machine

United Engineering and Foundry Company

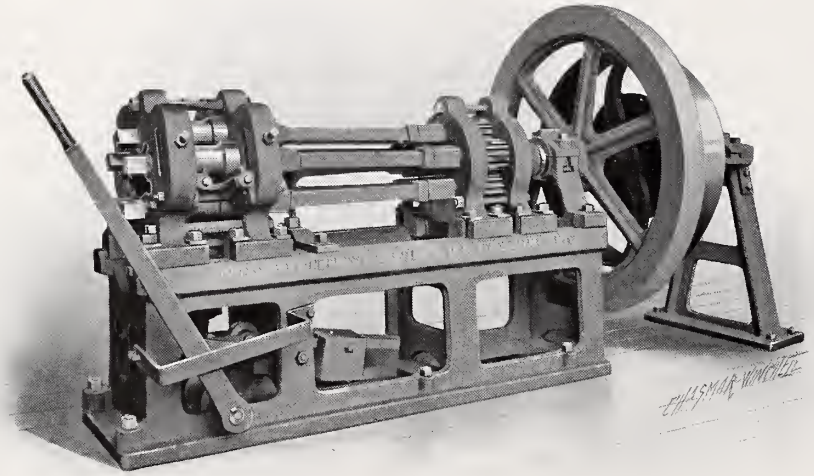


Illustration No. 215

Coupling Rolling Machine

Belt Driven

Patented September 29, 1903, August 2, 1904

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

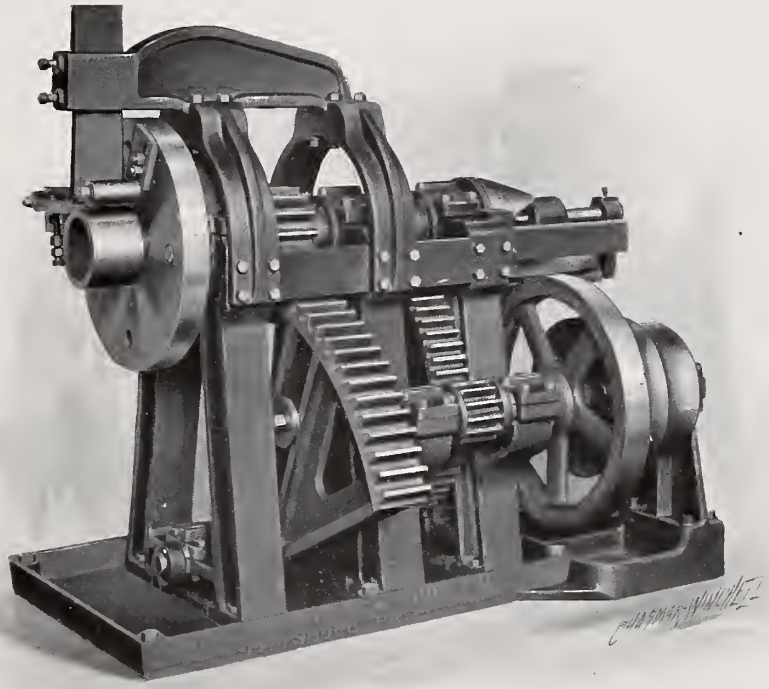


Illustration No. 186

8-inch Coupling Bender

Belt Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

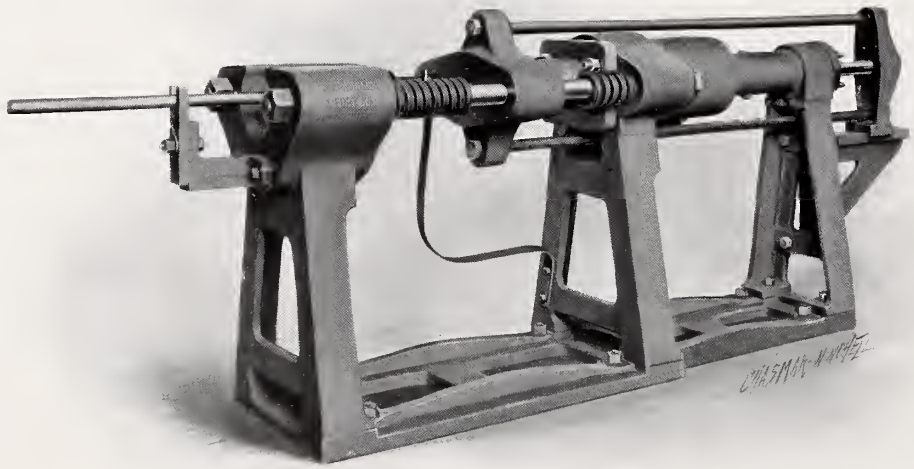


Illustration No. 216

Hydraulic Mandril Extractor

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

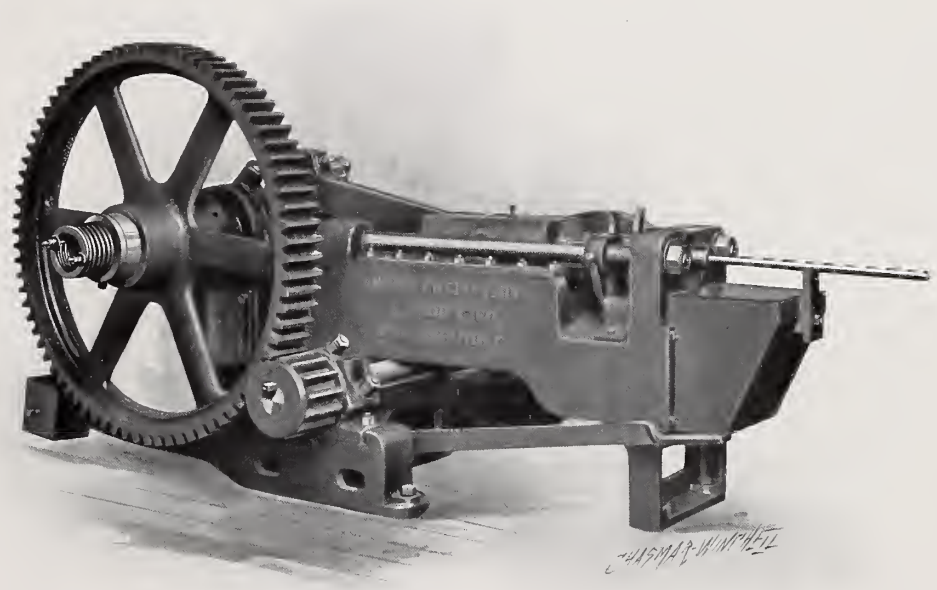


Illustration No. 241

Mandril Extractor

Belt Driven

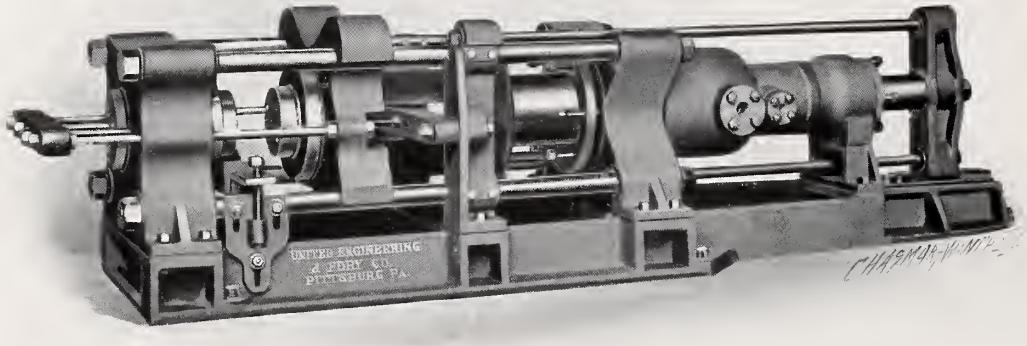


Illustration No. 118

5 to 12 Inch Hydraulic Coupling Expander

United Engineering and Foundry Company
PITTSBURGH PA. U.S.A.

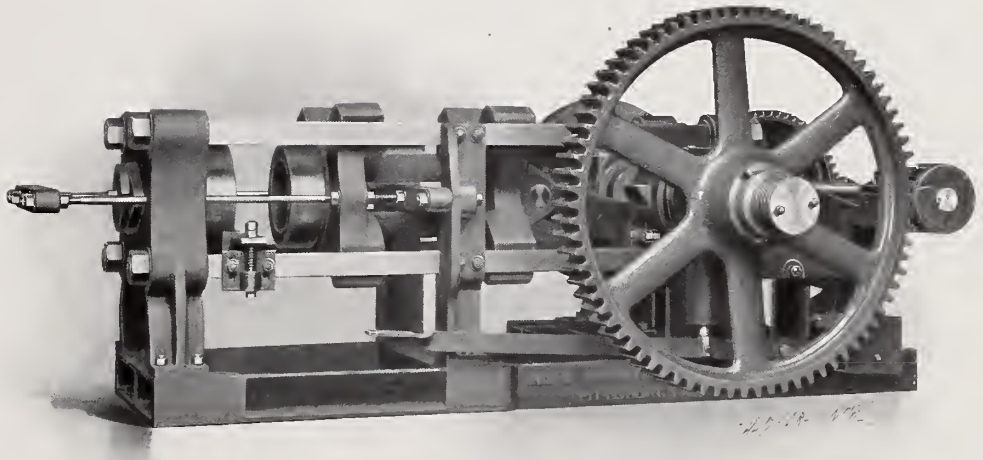


Illustration No. 188

12-inch Coupling Expander

Belt Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

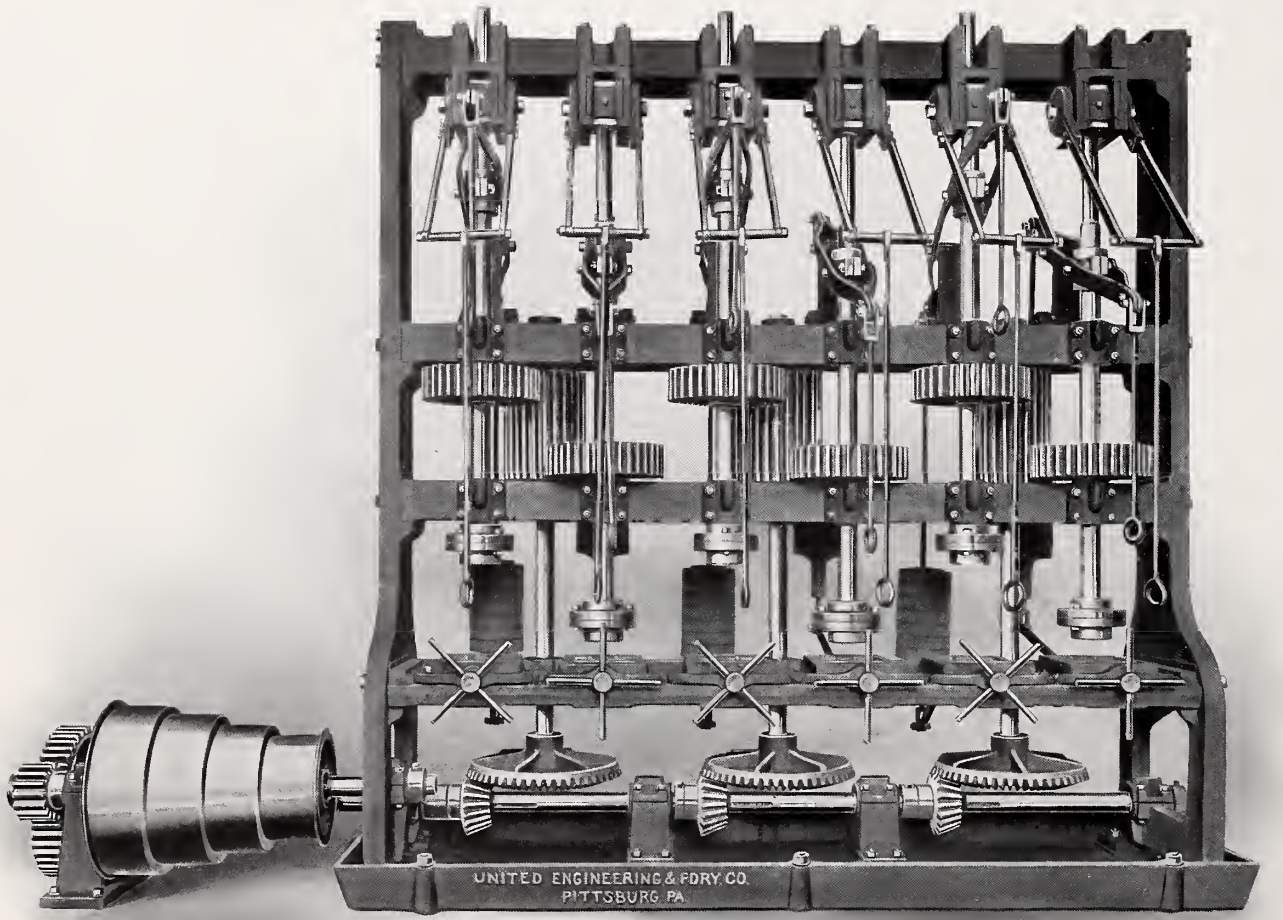


Illustration No. 228 A

6-Spindle Coupling Tapping Machine

Belt Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

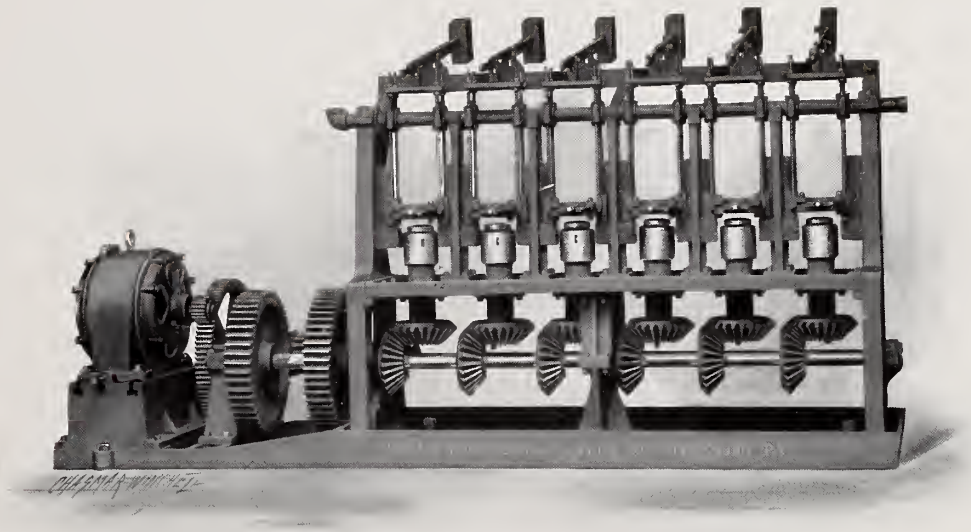


Illustration No. 209

6-Spindle Coupling Tapping Machine

Motor Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

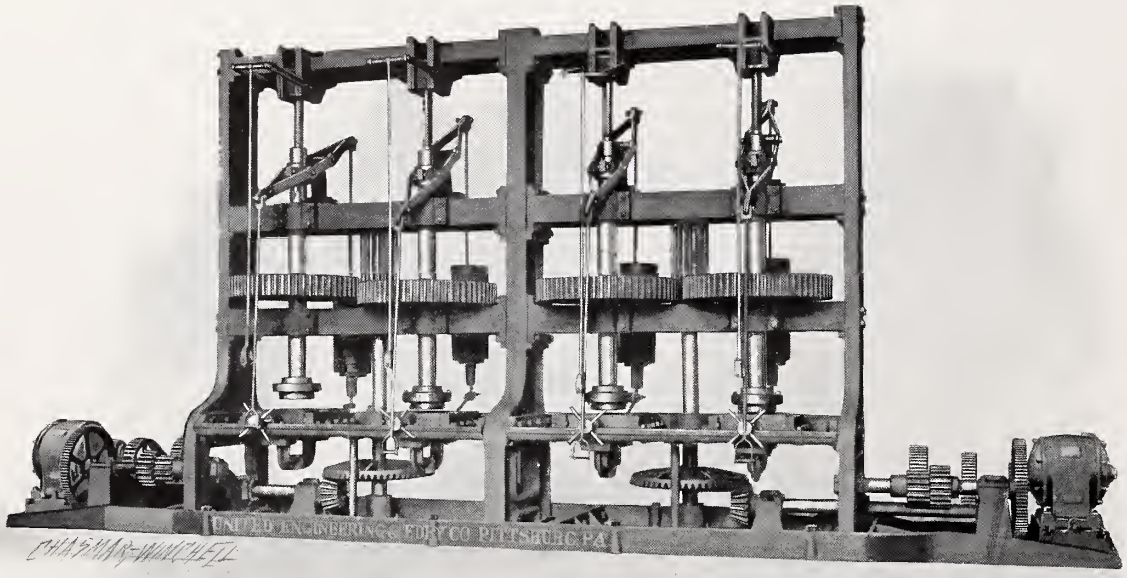


Illustration No. 232

4-Spindle Coupling Tapping Machine

Motor Driven

United Engineering and Foundry Company
PITTSBURG, PA. U.S.A.

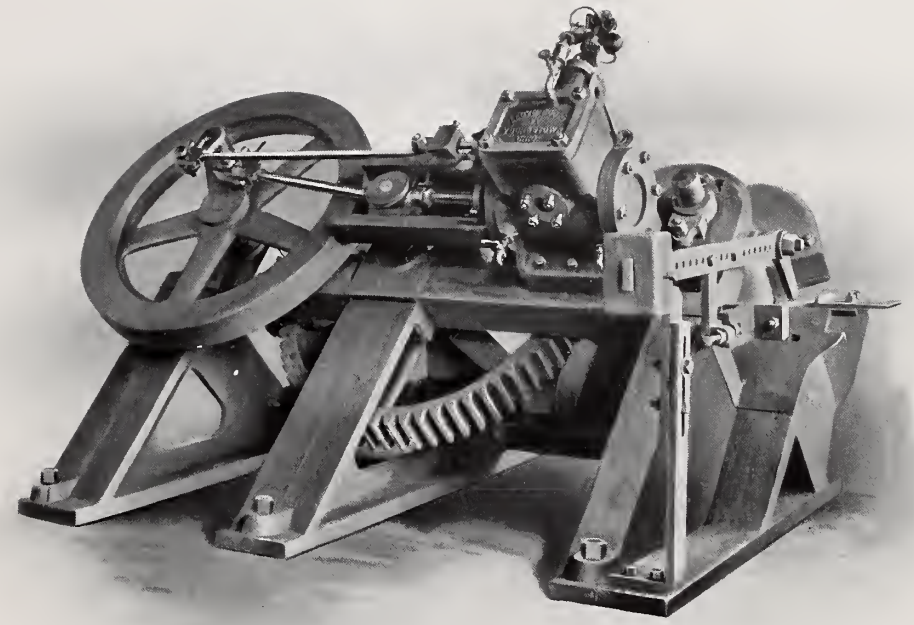


Illustration No. 193 A

Bevel Shear

Engine Driven. Arranged with gauge

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

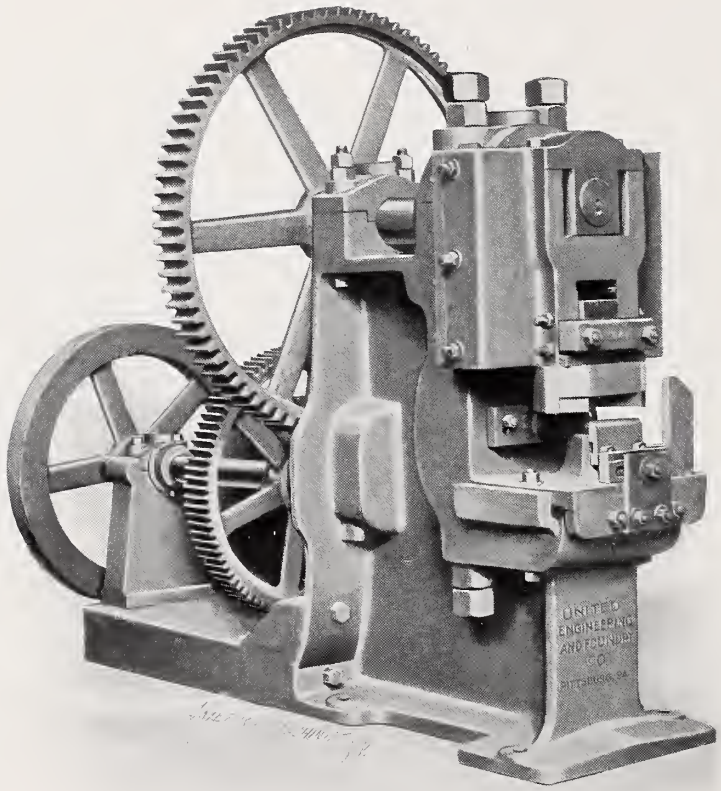


Illustration No. 235

Clipping Shear

Motor Driven

United Engineering and Foundry Company
PITTSBURGH, PA. U.S.A.

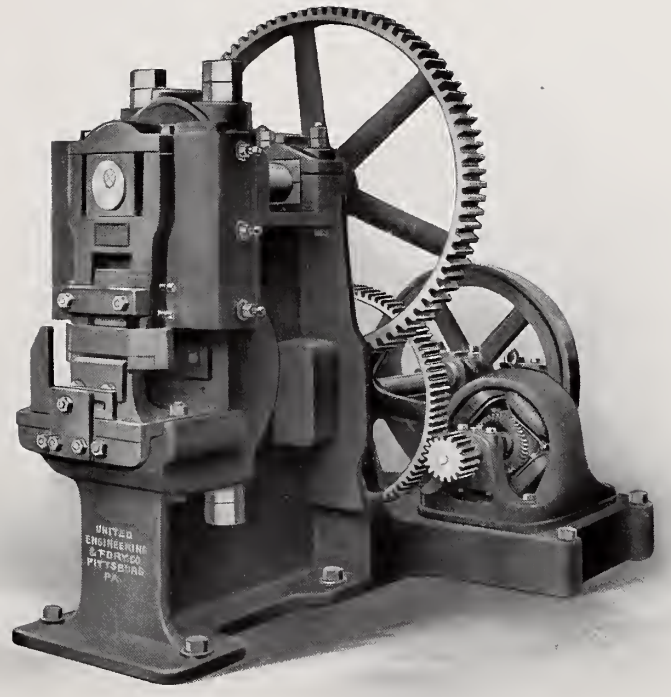


Illustration No. 235 A

Clipping Shear

Motor Driven

United Engineering and Foundry Company

Chasmar-Winchell Press New York and Pittsburg