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### Home Made Guano.

The following is from a communication to the N. E. "Farmer;" it will be useful to many of our agricultural readers:—

"Some years ago I thought I would try my luck in keeping a few hens. The house I keep them in is a rough concern. I put some crotches into the ground, boarded up outside and inside, then filled in by sawdust to make it warm. It is well lighted with glass windows, and well ventilated, and a small stream of water runs through it. The roosts will accommodate about a hundred hens, that being the number I usually keep. Under the roost I throw three or four ox-cart loads of dry muck, chip dirt, &c., which I haul over two or three times a week with my manure hook. I bury their grain in it, and make them work for a living, which gives them exercise in cold weather. In the spring, I have a fine heap of home made guano. If there is anything imported that is better to make our crops grow, I am mistaken."

### French Beet Root Sugar Factories.

According to the official returns of the beet root sugar manufactories up to the end of last March, the number of establishments at work at that period was 303, or 85 less than in the same month of last year. The quantity of sugar manufactured was 73,987,419 kilogrammes being an increase of 2,530,318 kilogrammes over the quantity manufactured during the corresponding month of last year.

### Improved Hose Protector.

The annexed engravings represent a method of protecting the hose of fire engines crossing city railroads, so as to allow the cars to pass freely over the hose without touching or injuring them. A patent was granted for the improvement to David Demarest, of this city, on the 1st of last November. The nature of the invention consists in the employment of a portable inclined section of a railroad track, to be placed on the fixed track, which section has an opening for the hose to pass through, by which the hose can be laid over the fixed railroad, and then the portable track, inclosing the hose, laid down, to allow the cars to run over on the portable section.

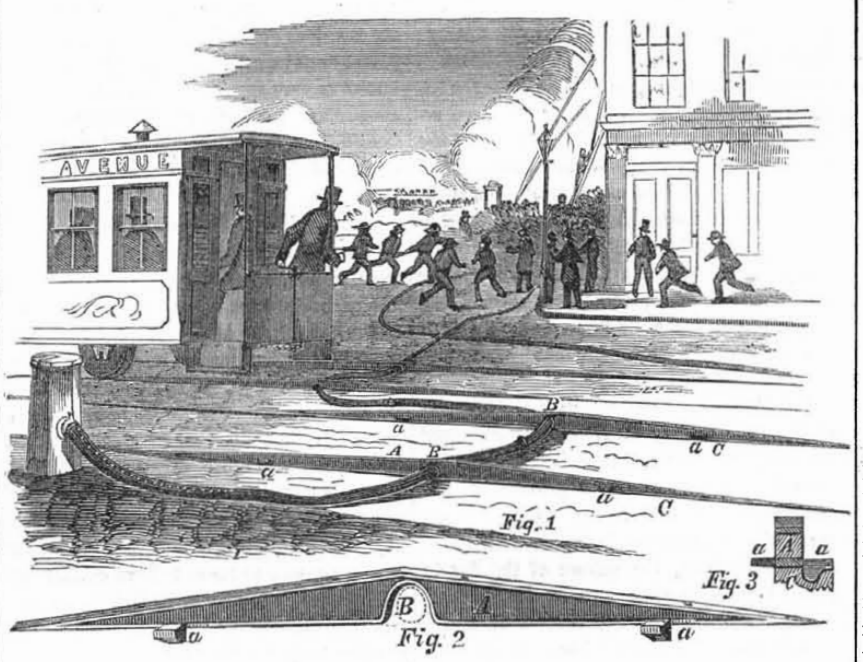
Fig. 1 is a perspective view; fig. 2 is a side view of a protector for one rail, and figure 3 is a small section. The same letters refer to like parts.

The hose, B, is represented as being laid from a hydrant to a fire across a city railroad track. Over this hose is laid the Protector, A, which has its greatest depth at the center, in which is the free opening that encircles and protects the hose. It (the Protector) is inclined towards the extremities, and has a rail on its surface or top; and it lies solid on the stationary rail, it being straight on its under side, C. It is also clamped firmly to the rail by the clamps, *a a*. All this is so plainly represented in the figures, that the nature, application, and construction of the apparatus will be understood at once.

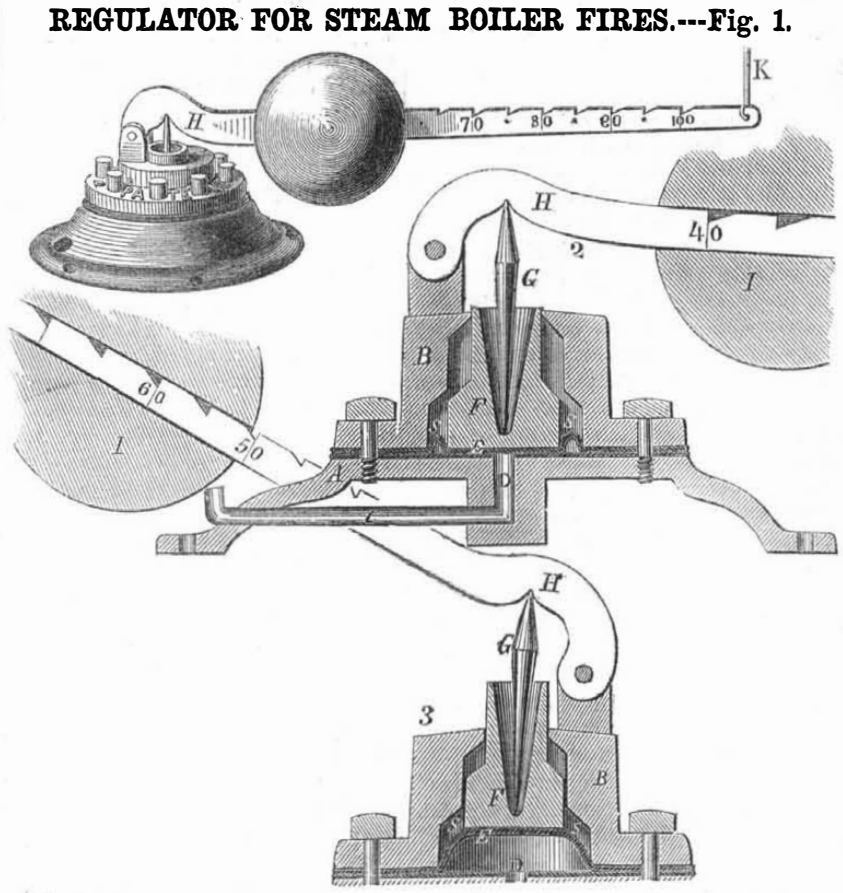
A car is represented as having passed over the portable track,—one section being used for each rail. All that has to be done in protecting fire hose, by using this improvement, is simply to lay down the Protector, as shown, and when a car comes along it merely passes up a slight incline and over the hose, without touching it. This protector is also applicable to the protection of hose from all kinds of carriages, over the whole width of a street, by making it broad on the surface for the vehicles to run upon. The improvement is a very good one, and is now used by either one or two of our city railroads. It protects the hose from injuries of a very serious character, to which they had been heretofore subjected, and it keeps them in working order—no small consideration—during the whole period in which they are required for use. These protectors ought to be carried to fires either by the engines, or a company specially appointed for that purpose.

The patentee is in the employ of the Sixth Avenue R. R. Co., and for more information respecting it, letters may be addressed to him at the office of said Company.

## DEMAREST'S HOSE PROTECTOR.




## REGULATOR FOR STEAM BOILER FIRES.---Fig. 1.




The annexed engravings are views of an improvement in Regulating the Dampers of Steam Boilers by the pressure of the steam, for which a patent was granted to Patrick Clark, of Rahway, N. J., on the 3rd of last January.

Figure 1 is a perspective view of the regulator; figures 2 and 3 are vertical sections through the center, in which figure 2 shows the lever down, and figure 3 the lever up. The same letters refer to like parts on all the figures.

The nature of this invention consists in causing the damper in the chimney (or if a blower is used, the damper for shutting off the blast,) to be acted on by the pressure of the steam, so that when the head of steam in the boiler has attained the pressure required, the damper will be closed, but when the pressure is less than that, say by one pound per square inch, the damper will be opened.

A is a base or platform of cast-iron, on which is fastened by means of screw bolts, the cylinder, B, which is also of cast-iron. C is the pipe leading from the boiler, and connecting with this cylinder at D, by being screwed into the platform, A, to which the cylinder, B, is bolted. The pipe, C, is bent like a syphon, to prevent the steam from coming in contact with the diaphragm, E. This diaphragm may be made of vulcanized india rubber, or any flexible substance, having considerable strength and being impervious to water. It is shown in figures 2 and 3, intervening between the piston, F, and water, D. It is made cylindrical in form, of a length sufficient to allow of the piston moving through any distance required; about one inch is sufficient, but it may be one or ten feet, should the nature of the case require it. One end (the upper end) is closed. The lower end is open and is surrounded by a flanch about one inch wide, which answers the double purpose of holding it to its place, and making a tight joint between the flanch of the cylinder, and the top of the platform upon which the cylinder rests.

A flat disk of vulcanized rubber will answer in place of this diaphragm, where the distance moved through by the piston is not greater than one inch. The bore of the cylinder must be as much greater than the piston as will allow the diaphragm assuming the position shown at S and S. F is a cylindrical piece fitting the upper part of the cylinder loosely, and having a hole bored nearly through its axis from the top to receive the bar, G. The bar is smaller than the hole in which it stands, to allow of its accommodating itself to the varying position of the lever, H, which rests on its top; I is a ball or weight made to slide back and forward on the lever. It is used to counterbalance the static pressure on the bottom of the piston; K is a rod connecting the lever, H, with the crank of a damper. The machine as described in the foregoing being put in connection with the boiler and damper, the piston will be acted upon by the pressure of the steam, and when the weight of the ball on the lever, H, is little more than counterbalanced, the lever will be lifted, thereby closing the damper; of course, if the pressure now diminishes a little, the weight and lever will descend and open the damper, to be closed again if the pressure of the steam should rise above the given point.

After Watt had made his first and great improvement on the steam engine, and had so far perfected it as to cause it to go into general use, he turned his attention to the minor details, such as producing rotary from the reciprocating motion. The construction and application of the governor, the cut-off, &c. Among these details was his contrivance for regulating the draft of the boiler fire, which was introduced at an early period of his career. His genius did not fail to see the advantages that must result from its use, both in the economy of fuel and the saving of time, as well as a preventive of accidents resulting from too high a head of steam to the person attending the engine, who might be employed more usefully than in watching his fire. He therefore invented a regulator for boiler fires, which went rapidly into use, and is still used on all the engines now in operation in the mines in England, and in many of the manufactories where low pressure steam is used. In his day it was thought that steam, having a pressure of five pounds above the atmosphere, was as high as was compatible with safety, and the construction of his fire regulator was suited to the circumstances.

As time passed on, however, and improvements were made in the construction of boilers and boiler plate, and also in the construction of pistons, which could be kept tight against higher pressures, high pressure boilers were introduced, and the principle of the fire regulator which he invented not being capable of

modification to answer the purpose on these boilers, they had to be used without any such contrivance. Many years after his death, and within the recollection of some of our older engineers, Perkins, the celebrated American genius, whose invention for preparing steel plates for engraving will render him memorable so long as science holds a place in the memory of man, invented an arrangement to answer the same purpose for high pressure boilers that Watts did for low pressure. This contrivance gave motion to the damper by means of the expansion and contraction of metallic bars, the expansion and contraction being consequent on the changes of pressure of the steam in the boiler and its consequent change of temperature. The amount of first motion of this contrivance was so small, and consequently needed so much multiplying, that it was liable to many derangements which destroyed its utility. Still it was used to some extent, and was only given up on account of the difficulty of keeping it in order.

This regulator, it is believed, possesses all the good qualities aimed at by the eminent men above mentioned. It is comparatively frictionless, and does not depend on the contact of metals to form a tight piston.

The claim is for the diaphragm, E, in combination with the piston moving in the cylinder.

More information may be obtained at the Office of Clark's Patent Steam and Fire Regulator Co., 208 Broadway.

### Flax Industry.—No. 5.

The manufacture of flax continued to extend and increase in Belgium until about the year 1838, when the English competition seriously injured the business. The number of pieces of linen of the better qualities manufactured in 1840, was estimatedat 400,000, and the value of all the production from flax in the same year at 60,000,000 francs. The linens which have for the most part contributed to the reputation of the Low Countries, are undoubtedly those made at Courtray.

It will not be foreign to our subject to correct at this point an error which has been widely extended, and has found credence with very many persons, viz., that which ascribes to Holland the manufacture of nicer varieties of linen. The facts are these:—After the troubles of the 16th century, almost all the linen goods manufactured at Courtray were sent to Harlaem to be bleached, and during the whole of the 17th century, the bleaching of this place was regarded as an indispensable compliment to all the high-priced linens. The goods of Courtray, almost without exception, passed into the hands of the Dutch, who, after they had given them the *blanc de Harlaem*, sold them as the manufactured products of Holland. In the 18th century the manufacturers of Courtray succeeded in imitating the Harlaem white, and henceforth all the branches of industry concerned in the flax manufacture became concentrated at one point.

General laws for the regulation of the linen manufacture were early enacted both in Holland and Belgium. By these laws all the cloth was carefully examined, and an imprint placed upon each piece, which made known its quality. This imprint, known to all the merchants of Europe, was a valuable guarantee, and at the same time, a recommendation. These measures, without doubt, powerfully contributed to develope the flax manufacture of these countries, and to give reputation to their products.

The culture of flax gradually extended into all the Cantons of Flanders, but those of Courtray, Tele, and Termonde, in the district of Waes, furnished, as at the present time, the best products.

In 1720 the price of ordinary flax was from 13 to 20 sous for a stone of Brabant, of the weight of three kilogrammes, (about seven pounds avoirdupois.) In 1763 it increased to 34 sous, this increase led to an ordinance which prohibited exportation. At this epoch flax of a superior quality brought 61 sous per stone of three kilogrammes. Since then it has often exceeded these figures, and from 80s to 90s, was obtained by many of the cultivators during the year 1849-50.

In 1840 the number of *hectares* (2 acres, 1 rood, and 35 perches) under cultivation with flax, was upwards of 41,000. Since this time the cultivation of flax has extended in all those Provinces which produce the better qualities, but has greatly diminished in those which produce the inferior varieties. The latter has to sustain the competition of the Russian flax, which is employed to a considerable extent in the coarser goods of the country. In 1846 the importation of Russia flax into Belgium exceeded ten millions of kilogrammes, (a kilogramme is equal to 2·20485 lbs. avoirdupois;) in 1841 it was unknown in Belgium. Another cause for the decrease of this production of ordinary flax is the failure of a number of manufacturers who formerly worked this quality; the demand for Belgian manufactured linens on account of foreign importations has, for the last few years, been supplied with difficulty, on account of the yearly increasing deficit in the better qualities of flax. While the consumption and production have both greatly increased, the former far exceeds the latter. Notwithstanding it may be stated that the cultivation and production of flax in Belgium is of greater importance at the present time than at any former period, especially when we consider the total value of the fabrics produced, which has greatly increased since 1830.

The history of the introduction and progress of the flax industry in Holland is embraced for the most part in that of Belgium, the latter country being formerly a province of the Kingdom of the Netherlands. As the character of the soil, however, in these countries is essentially different, the culture of the flax in Holland presents some striking peculiarities. Holland is situated on the borders of a sea, from the waves of which it has been reclaimed and is now preserved only by the skill and enterprise of its inhabitants. Its position clearly indicates the nature of its soil, which consists almost wholly of alluvial deposits and peat.—The *polders*, or the bottoms of lakes which have been drained, being kept constantly moist by a careful system of irrigation, have a wonderful fertility. The low and marshy places are principally used for pasturing great numbers of cattle, but the plains are given up almost entirely to the culture of flax. At the time of flowering these plains present an immense blue surface, which attracts the attention of the traveler, and when agitated by the wind has much the appearanc of a vast lake or sea.

[For the Scientific American.]

### Secrecy in Inventions.

I find myself under the necessity of asking your kind indulgence, while I explain my ideas a little more clearly on the subject of Judge Sprague's decision on the Sewing Machine case. I hold that the first inquiry, whether Hunt's machine was ever perfected, is altogether irrelevant, because the Patent Law, as far as my knowledge extends, does not ask whether a machine shall or shall not be perfected in order to become public. Nor does it ask whether "it had been abandoned and forgotten before a subsequent invention." It asks "whether the whole or a part of a machine had been before known or used." The only exception is in the proviso of the 15th Sec. of the Act of '36, "That whenever it shall satisfactorily appear that the patentee at the time of making his application for the patent, believed himself to be the first inventor or discoverer of the thing patented, the same shall not be held to be void on account of the invention or discovery or any part thereof, having been before known or used in any foreign country; it not appearing that the same or any substantial part thereof, had before been patented or described in any printed publication." The Act of '37, Sec. 9, is additional to and explanatory of Sec. 15, of '36, and does not admit of a patent being granted for anything which was before known or used in this country. In your reply to my remarks you state that "A person might construct and use a machine in secret for twenty years and not give anything to the public, and after that, if another person invented the same machine, he could obtain a patent and restrain the inventor from using his machine." I think that construction of the law would hardly be sanctioned by the Constitution, which, in the last clause of Act 5th, of the amendments, says, nor shall property be taken for public use without just compensation." As there is no law against a person inventing and using a machine in secret, if he so elects, I think it must be conceded that he is in legal possession of such machine or invention, and entitled to the use of the same, and that use is property. Now I would ask how the public—not having any right to appropriate private property to their own use "without just compensation,"—would take the use of that machine and give it to another individual, who is a part and parcel of the public (for the public is made up of individuals) "without just compensation." I believe the law does not contemplate the granting of a patent to any one for anything which was before known or used in this country, for the reasons above stated; it would not harmonize with the Constitution, and whether I am right or wrong is respectfully submitted for your consideration.

EDMUND FIELD.

Greenwich, Conn., May 5, 1854.

[Our correspondent does not present the question properly for correct adjudication.—The patent laws do not *ask* anything, but they do provide for the asking of questions relative to what is public property in a machine when the validity of a patent is disputed on a trial for infringement. To invalidate a patent (as was attempted in the case to which he refers) it is necessary to prove that the machine patented, is either *not new* or *not useful*. "To constitute a prior invention," says Curtis (page 37) "the party alleged to have made it, must have proceeded so far as to have entitled himself to a patent in case he had made an application." Now as the Patent Law requires that the improvement must be *useful*, how can a machine be useful if it is *not perfected*?

Judge Sprague's decision was to the effect, that "it had not been proven that Hunt had invented a practical machine," consequently, in the eye of the law, it was no property—public or private. As it respects the question of abandonment (for a lost art or forgotten machine is out of order in discussing this question) our patent laws do provide for this, and decisions have been made in accordance with it—the one of Battin's Coal Breaker, for example.

So far as it relates to *secret* inventions, our correspondent's objections to our views are just as applicable to any machine built and used, after a patent has been granted, as before. The question of "private property" is one of a different issue entirely; the law declares what is property. Our correspondent is perfectly right in what he has said, about "private property," but a "secret invention" is not held to be property at all. Making this distinction, he will find no difficulty in coming to a right conclusion on the subject. Phillips, on the property in patents, page 317, says of an invention used in secret, "it is not a species of property;" "it is only the inventor's secret." It is true, there is no law against a person devising and using an invention in secret, and it would be a queer thing if there was. Such a law would be like a statute against something that never had, has not, and may never have an existence. To make the question plain.—Suppose an inventor secures a patent to-day, and in the course of three or four weeks afterwards, finds access to a room where a machine like his is in operation, and he then goes, and according to law, prays for an injunction, describing the machine and place—making oath that such and such a person is violating his *patent* by using a machine like that specified in it? What then. The Court orders the person against whom the complaint is made to appear and show cause why an injunction to restrain him from using said machine, may not be granted. The defendant appears and does not deny his using such a machine, but says he constructed it twenty years before, and has used it ever since. Well, where is your proof? He has none to present—it was kept secret—(his own statement is no proof.) There is nothing left for the Court to do then but to grant the injunction. If, however, he can produce one respectable disinterested witness to testify to the prior age and use of his machine, it would not, in the eye of the law, be considered a *secret* invention, but public property, to the use of which all were entitled who desired to use it. There is therefore a great difference between what is considered "private property," and a "secret invention." The laws of every country specify what is property—public and private.

### A Curious Dining Hall.

We learn from a London paper, that Professor Owen was recently entertained at dinner in the garden of the Crystal Palace at Sydenham, in the model of an Iguanadon. The animal in whose mold the dinner was given was one of the former inhabitants of Sussex, England, several of his bones having been found near Horsham. His dimensions have been kept strictly within the limits of an anatomical knowledge. The length from the snout to the end of the tail was 35 feet; he was 12 feet high; the cir cumference of his body was 25 feet; and the girth of his fore leg 6 feet 6 inches. Twenty-one gentlemen dined comfortably within the interior of the creature, and Professor Owen sat in his head as a substitute for brains.

### Velocity of the Wind.

Professor Stoddard, in a lecture recently delivered upon the hurricane in Knox county, Ohio, stated that in one town a grove of oak trees was almost entirely blown down. The trunk of one of these trees was about three feet in diameter. Assuming, however, its diameter to be but two and a half feet, a force of 147,000 pounds would be required to break it. The surface of the tree exposed to the action of the wind was about 1000 feet, which would give a pressure by the wind of 147 pounds per square foot, or a velocity of not less than 171 miles per hour, which is nearly one-fourth the initial velocity of a cannon ball.

### The Comet.

Commander Plana, the distinguished astronomer at Turin, in speaking of the new comet which was visible there lately, mentions a curious circumstance in connection with the popular superstition about the influence of comets over worldly affairs. He states that when a large comet appeared in 1446, just after the Turks had overthrown the Greek Empire, Pope Calixtus ordered public prayers to exorcise both the comet and the Turks.

### A Mammoth Vessel in the Upper Lakes.

The Cleveland Daily "Herald" says: "The ship, 'Canada,' of Buffalo, is in port here, to-day, for the first time. She is owned by Messrs. Walker and Bantam, and is under command of Captain Bantam. Her dimensions are—length of keel, 208 feet; breadth of beam, 32 feet; depth of hold, 14 feet; capacity, 1,100 tuns. Last year, she carried at one time, 50,000 bushels of oats, and at another, 40,000 bushels of wheat. She brought up a deck load, four of the largest size passenger cars; and is now loading for Chicago with 800 tuns of coal and 300 tuns of merchandise.

### To Fix Carpets on Floors.

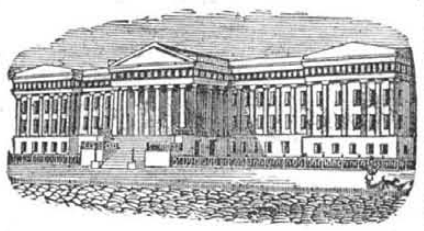
The foreign correspondent of the Newark "Advertiser," in writing from Florence, says: "Here iron rings are fastened in the floors when the carpets are laid, and they have large hooks in the binding, for which these rings are eyes; so that there is no taking out and nailing in of tacks, and carpets are raised and laid as noiselessly and easily as bed-covers."

### The Ericsson Raised.

This vessel was raised on Thursday last week, and was towed to the Naval Dock at Brooklyn, for repairs. The damage sustained, it is said, will amount to about $50,000. The accounts of the daily papers of this City, respecting her late and unfortunate trial trip, are not to be trusted in any one particular—excepting that relating to her being capsized.

Prince Paul, of Wurtemburg, is now in this country collecting botanical, and ornithological specimens, for the publication of a work, when he returns to Europe. This is a very creditable occupation for a Prince, and it would be more to the honor of them all, if they engaged in some such useful and instructive profession.

There are half a million more females than males in Great Britain.



[Reported Officially for the Scientific American.]

## LIST OF PATENT CLAIMS

**Issued from the United States Patent Office**

FOR THE WEEK ENDING MAY 9, 1854.

SEWING MACHINES—Simeon Coon, of Ithaca, N. Y.: I claim the combination of the slot in the shuttle, and the pin or stud in the raceway, or their equivalents, for the purpose of drawing the thread from the shuttle bobbin, so that there may be an uniform tension upon the shuttle thread when drawing up the stitch, as described.

I also claim, in contradistinction from the double-acting dog or pawl and ratchet, which changes the time of feeding forward the cloth, relatively, in regard to the motion of the needle, the separate pawls operated by a cam and levers, or otherwise, so that the feed, whether reversed or not, shall always remain relatively the same with regard to the motion of the needle, or so that the feed shall take place whilst the needle is going down, or towards the cloth, and not when it is leaving the cloth to draw up the stitch, as described.

MACHINERY FOR DRESSING FLAX—E. L. Norfolk, of Salem, Mass.: I do not claim the employment of trunks with movable lids, by the rising and falling of which the rate of feed is regulated.

But I claim governing the movements of the rollers, which supply the material to the machine by means of wedges, which are suspended in such a way as to be caused by the rising and falling of the movable lids, or their equivalents, to rise and fall, and thus regulate the position of bars, which are acted upon by eccentrics or cams for the purpose of transmitting motion to the feed, and thereby regulate the amount of motion which the said bars receive from the said eccentrics or cams, as set forth.

[A notice of this invention is published on page 132, Vol. 8, Sci. Am.]

BEE HIVES—Clark Wheeler, of Little Valley, N. Y.: I do not claim either the box, the pendant valves or reticulated screen, separately or independent of each other: but I claim the drone trap constructed as set forth, and operating in the manner described and shown.

[See notice of this invention on page 124 of this Vol. Sci. Am.]

SEWING MACHINES—Heman Crosby, Jr., of Watertown, Conn.: I claim, first, the adjustable cam, or its mechanical equivalent, in combination with the friction brake, for the purpose of intermitting the action of the brake upon the thread during the feed, and thus obviating the danger of sundering the thread in rapid work during that moment of extreme tension, as set forth.

Second, enlarging that portion of the needle, which, having entered the material, is to retire from it before the pull upon the last loop is commenced, in the manner described.

SEWING MACHINES—Christopher Hodgkins, (assignor to Nehemiah Hunt), of Boston, Mass.: I am aware that there is nothing new in moving the feeding wheel by means of a friction brake knuckle or clamp, and a clamp combined therewith. I am also aware that for the purpose of operating a feed wheel, a combination consisting of a shaft with two arms, a screw regulator, a lever and clamp, have been used: I therefore do not claim such devices.

But I claim the peculiar manner in which the brake clamp is constructed, applied to, and made to operate in the groove of the feed wheel, whereby the bearings of the clamp on the two opposite concentric surfaces of the groove or curved concentric lines or surfaces, running parallel, or about parallel to the plane of the feed wheel, instead of perpendicularly to it, such an arrangement of the bearing lines or parts of the clamp, rendering its hold on the wheel far more certain than when they are made in length only equal to the depth of the groove and to stand perpendicularly to the plane of the feed wheel.

I also claim the mode of operating the brake clamp or lever, or in other words the arrangement and combination of the spring, the slide, two cams, the lever, and the spring, as set forth, such mechanism causing the clamping of the lever brake to the feed wheel to be wholly done by mechanism acting entirely before and separate from and not controlled by that which produces the movement of the clamp, by which corresponding extent of motion is produced in the feed wheel.

SEWING MACHINES—Otis Avery, of Honesdale, Pa.: I claim, first, so arranging the upper needle bar on a pivot, and controlling it by a spring, or their equivalents, as that it may be swung around to remove or replace the cloth or other material to be sewn, as described.

I also claim the arrangement and combined adjustment of the two needles, for the purpose of regulating the relative positions of said needles to each other, and their joint positions in relation to the material to be sewn, as described.

I also claim the arrangement of an adjustable table or support for the cloth, with regard to two needles which have a fixed center, at which the stitch is formed, as that by raising and lowering said table or the cloth, the stitch may be thrown to one side or the other, or in the center thereof, as described.

SEED PLANTERS—G. S. Enoch, and Daniel Wissinger, of Springfield, Ohio: We claim the mode of adjusting the tappet wheel, in combination with the peculiar form of the sliding bar, to suit the nicest differences in any desired quantity of seed to be sown, as described.

HUB BORER—Wm. J. Casselman, of Vernon, N. Y.: I claim boring taper holes through hubs by means of a lever secured by a pivot to a rod, which is drawn through the mandrel hole of the hub, said lever having a cutter at one end and a pin at the opposite end, which pin fits in an oblique slot in an adjustable plate, the slot giving the proper movement to the cutters as it passes through the hub, as described.

[A notice of this useful improvement is published on page 268 of this Vol. Sci. Am.]

BIT GUARD KEY FOR DOOR LOCKS—Wm. Damarel, of Brooklyn, N. Y.: I am aware that the key hole has before been plugged on the outside by the key from within, by means of an additional or swivel guard bit in front of the ordinary or main bit which operates the bolt, such therefore I do not claim.

But I claim so arranging and connecting the main bit of the key, or that portion which operates the bolt with the shank of the same, as that the main bit may be thrown in or out of gear at pleasure with the shank, and extended so as to plug the key hole, or be moved inwards to form a firm connection with the shank to operate the bolt, as set forth, and whereby the many advantages specified are obtained.

[This is an ingenious key, and is proof against being turned by the burglar from the outside of the door.]

FELLOE MACHINE—H. H. Dean, of Adrian, Mich.: I do not claim the cutters, clamps, or guides: but I claim the combination of mechanism operating the guide, viz., the lever, rod, and springs, arranged and operating as set forth.

PUMP—Jacob Edson, of Boston, Mass.: I claim, first, the tube, in combination with the air chamber, constructed and operating as set forth.

Second, the cup, in combination with the holes and the packing, constructed and applied to a force pump, as described, and for the purpose set forth.

Third, the inclined partition in the rear of the spout, operating as set forth.

CULTIVATORS—C. K. Farr, Hinds Co., Miss.: I claim the bed with inclined sides, as described, which, following the trace of the coulter, renders the sides of the furrow compact, and prevents the falling in of the earth, as set forth.

BRIDGES—Albert Fink, of Baltimore, Md.: I do not claim as new the manner in which the central post is supported; nor do I claim the combination of a series of triangular bracings, in such a manner that one system of triangles is supported by and dependent on the other, merely, as I am aware that this has been done before, both in trusses for bridges and roofs.

But I claim, as different from any other method of bracing and strengthening bridge trusses heretofore known, the method of combining the different systems of triangular bracings described, so that a weight coming on one of the systems of the truss, is not only transferred over one or more other systems before it is carried back to the abutments; but the foot of the post in each triangle being unconnected with the tension rods of the other triangular bracings, can settle vertically as well as move to the side, so that the tension rods of each system of the triangular bracings will be strained equally when the bridge settles under a superincumbent weight.

This would not be the case if the foot of the post in the second system of triangular bracings rested on the tension chord of the post, in the first system, as heretofore used, and herein consists my improvement.

JOURNAL BOX FOR SAW MILL CARRIAGE—Chas. R. Fox, of Chicago, Ill.: I claim the construction of the boxes, with the opposite inclined inner faces, for giving the requisite set-off to the carriage when gigging back, and again setting up when moving forward for the cut, as set forth.

MACHINERY FOR CUTTING PAPER—Nelson Gavitt, of Philadelphia, Pa.: I am aware that conical rolls encircled by a shifting belt, as a device for varying the relative velocity of different parts of a machine has long been known, and I do not claim it.

But I claim the method described of adjusting the cuttings of sheets from a web of paper, whereby the length of the sheets can be varied by any required proportionate amount of the whole range of variation to which the machine is adapted, however small or however large the same may be, thus rendering it possible, with a continuous feed of the web of paper under an intermittent cutter to sever the sheets half way, or thereabouts, between water marks nearer together at one part of the web than at another.

ARRANGEMENT OF THE PESTLE WITH THE MORTAR: P. C. Ingersoll, of Elmira, N. Y.: I claim the manner of arranging and combining the pestle with the mortar by means of the ball on the handle of the pestle fitted to a corresponding cavity in a spring bar, for the purpose specified.

UNLOADING CANAL BOATS AND OTHER VESSELS—Wm. Loughridge, of Wevorton, Md.: I am aware that vessels have been made with valves or traps in their bottoms, for the discharge of their loads of earth, mud, &c., as in the case of J. R. Putnam's patent of May 6, 1841, and the withdrawn case of Sophia Putnam, of June 28, 1847, I am also aware that vessels have been floated in dry dock, and the water drawn off through valves, leaving the vessel dry and supported upon blocks or upon trucks.

I claim the method or process of unloading vessels described, by means of the combined arrangement of the vessel with valves in the bottom, the dry dock with valves immediately below those in the vessel, and the shutes to carry off the loads into boats or other receptacles placed below, but not immediately under the elevated dry dock, as described, thereby expediting the discharge of cargoes and economizing labor, time and money.

MANURE AND SAND LOADER—H. G. Marchant, of Annisquam, Mass.: I claim the transportable manure loader, consisting essentially of the following elements in combination, viz., the body or box, the trough, and the rake, constructed, and arranged, as described.

REDUCING WOOD TO SLIVERS—Jonathan Prescott, and G. W. Prescott, of Boston, Mass.: We claim the arrangement of the planes, so that each shall cut not only with a drawing stroke, but shall curl the shavings in helices, as specified.

And in combination with the feeding carriage and the feeding screw, we claim the movable straddle or sliding block, and the scroll cam of the screw, the same being made to operate together, as specified.

And we claim the tripping rest, as combined with the weighted lever and the feeding carriage, as specified.

BLEACHING APPARATUS—J. A. Roth, and Joseph Lea, of Philadelphia, Pa.: We do not claim the arrangement of rollers in a vat generally; but we claim the arrangement of the series of graduated and compensating upper and lower rollers in combination with the vat for the purpose of treating simultaneously a series of parallel layers of woven fabrics, as described.

MACHINE FOR MARKING OUT SASH—James Rogers, of Poultney, Vt.: I claim the movable knives or markers, movable stops, and slides, or their equivalent, and manner of adjusting the top, and of causing markers in the top to correspond with the bottom markers, and manner of applying the scales to the machine, as set forth.

WEIGHING AND PRINTING BUTTER—Wm. S. Reinert, of Spring Garden, Pa.: I claim the combination of the mold or vessel for containing the butter, suspended to the lever or scale beam and its attachments, plunger or piston, having the desired configuration on its lower surface, and upright rod and button for raising the circular plate or piston in the bottom of the said vessel or mold, together with the levers for operating the same for weighing, forming, and branding or imprinting with any desired configuration, the butter in parcels, and discharging the same from the vessel or mold, as set forth.

ADJUSTABLE FLUE BOTTOM OF STEAM BOILERS—A. M. Sprague, of Mobile, Ala.: I claim the movable adjustable bottom of the flue space under the boiler or boilers, so constructed and arranged that it may be raised and lowered, or adjusted, to graduate the size of the flue under the boiler or boilers, and adapt such flue to the kind of fuel used, as described and for the purposes set forth.

I also claim, in connection with the above mentioned movable adjustable bottom, the inclined vibrating piece or bridge, or its equivalent, so constructed and arranged that it will operate with the bottom, and conduct the flame from the furnace into the flue under the boilers, as described.

PISTONS FOR STEAM ENGINES—A. M. Sprague, of Mobile, Ala.: I claim making the body of the piston in two parts, as described, so that the hub and disk, or body or center portion of the piston can be removed with the piston rod in the same direction that the follower cap is taken off, and replaced without removing the outer portion, or barrel and flange that supports the packing.

THE CONSTRUCTION OF HATCHES—Daniel Tallcot, of New York City: I claim causing the doors of the hatch to be elevated or raised, as the carriage descends, by attaching to one of the pivots of each door, a half pulley, which is connected by a cord, to a lever, said levers having curved arms which project a short distance beyond the edge of one of the uprights, so that they may be operated upon by one of the rollers, the doors being counterpoised by the spiral springs, or their equivalents, as set forth.

[See notice of this improvement on page 244, Vol. 8, Sci. Am.]

ARRANGEMENT OF FRICTION ROLLER IN INCLINED PLANE HINGES—Enoch Woolman, of Damascoville, Ohio: I claim in the described hinge making and arranging the roller, so that it can be traversed towards and from the pivot of the hinge in combination with the scores in the inclined places, so that it can be used either as a self-shutting or self-retaining hinge when open or partially so, as set forth.

LOCOMOTIVE FIRE BOX—Ross Winans and Thos. Winans, of Baltimore, Md.: We claim the downward and rearward inclination of the top or roof, when this is connected with the flat grate surface, and the usual feeding hole or door, and with or without the fuel feeding boxes through the roof, as set forth.

SCREW JACKS—Francis Davis, of Keene, N. H. (assignor to J. M. Reed, of Swansey, N. H.): I do not claim the use of a right and left screw, as that has been made use of before: neither do I claim constructing a screw jack entirely of iron.

But I claim as a new tool or instrument for the purpose of raising heavy bodies, the jack, constructed and operating as set forth.

RE-ISSUE.

CUTTING BOOTS—Daniel Lynahon, of Buffalo, N. Y. Patented originally Oct. 18, 1853: I claim the tongue which gives the vamp a more exact crimped curve, covers the same from being seen, and secures it from ripping, and keeps the seam permanent by receiving the strain which comes on them when drawing on the boot, which improvements may be applied to any material whatever of which boots may be made.

DESIGNS.

DOORS OF GAS OVENS OR SUMMER RANGE—S. W. Gibbs, of Albany, N. Y.: (assignor to North, Chase, & North, of Philadelphia, Pa.)

## Recent Foreign Inventions.

Although gas made from coals is coming into more general use, in our cities, &c., thus doing away with the necessity of using oil, still, the demand for oil is becoming greater every day. Enormous quantities of it are now being used on all our railroads for lubrication, thus entailing a great working expense on such systems of travel. Any improvement therefore, to increase the quantity, improve it, or render it cheaper, becomes of great importance to the community—for the people pay for all these things. We have therefore selected the two following specifications of recent foreign patents, granted for manufacturing oil, and lubricating materials:—

TREATING OIL MATTERS—G. F. Wilson, of London, patentee.—This invention consists in diminishing or removing the smell and color from the oily matters that are produced by the destructive distillation of resin, and in combining them with the olein of palm and other neutral oils. The resin oily matters are distilled, or repeatedly distilled, with the air exlcuded,—the matters, in some cases, being treated with powerful agents, such as sulphuric acid, before this distillation; or they are exposed to heat, to drive off their more volatile part.—The purified resin oily matters are mixed with the other oily matters, by means of agitation or boiling up with free steam.

In carrying out his invention the patentee has recourse to a preparation for mixing the resin oil with the olein of palm oil and other neutral oils. The resin oil is first caused to be heated for about four hours, in a close vessel, by means of heated steam,—keeping the temperature to about 350° Fahr.; and it is then to be distilled with the air excluded. According to the state of purity desired to be obtained, the distillation is to be performed again and again; and, for this purpose, steam, heated to a high degree after it leaves the steam-boiler, is employed, as is well understood. If the resin oil be very impure, about 2 lbs. of sulphuric acid are stirred in to 112 lbs. of resin oil. The same is then to be washed in water, and submitted to the process of heat.

Having thus prepared the resin oil, it is to be mixed with a neutral oil; and, for this purpose, the oleine of palm oil is preferred. The best mixture will be found to be in about equal quantities,—but this may be varied; and, in order intimately to mix these matters or oils, they are boiled by the aid of free steam, by which a most intimate admixture is effected; and such combined oils will be found very useful for lubricating heavy machinery.

LUBRICATING MATERIALS—Francois Monfrant, of Paris, Patentee.—This invention consists in the employment, for the manufacture of lubricating materials, of all fatty oils, (with the exception of coleseed oil), which are dis-acidified by means of milk, and are then caused to blend and intermix with fat or a fatty body, by means of resin or a resinous composition.

In preparing the said lubricating materials, the patentee employs a large boiler or heating vessel, heated either by fire, or by steam, or hot air, or otherwise. In this vessel, the oil to be operated on is placed, and heated to such a temperature that the hand can just bear it when immersed. The lard or other solid fatty body is then added (care being taken to stir the mixture well with a spatula from this time to the end of the operation), and also resin of the ordinary description, or resinous body, in the proportions necessary, to produce the several compositions hereinafter specified, or other like proportions. When these two bodies are perfectly melted, and an intimate commixture has taken place, pure fresh milk is added, in the proportion of at least two pints for every 100 kilogrammes (220 lbs. about) of oil; and the greater the impurity of the oil, the larger must be the proportion of milk added to it. In the event of milk not being procurable, the same proportion of albumenized water (prepared by adding the white of one egg to a pint of water), or of alkaline water (containing 5 grammes) (3¼ dwts. of crystals of sub scarbonate of soda to a pint of water), or even water alone may be used; but milk is, in all cases, to be preferred. The mixture is allowed to be heated to boiling, or until the bubbling, produced by the evaporation of the aqueous matters has ceased; and, in order to ascertain when the operation has been carried on to a sufficient extent, a slice of new bread is placed in the heating vessel; and, when this is well browned, the operation is complete. It must be observed, that the stirring should be continued throughout the operation; and, in the case of the more solid compounds, even after the boiling is completely finished. When the operation is terminated, as has just been described, the mixture is allowed to repose for several hours, and is then drawn off, before packing it for storage or use, by means of a hand-pump, or a common syphon. The results of the different operations described are, that, by the boiling, all the moisture of the milk, and other foreign bodies, is entirely dissipated as vapor; and that the acid principles of these substances, combined with the casein of the milk, are rendered insoluble and precipitated, while the oil, separated from the deposit which they form, contains no acid, and the deposit itself is, in some measure, carbonized, and is easily removed from the vessel. All the products, by being boiled together, are thoroughly incorporated; so that there is no danger of the lard and oil becoming separated,—a result to which the resin or resinous body undoubtedly contributes. If the operation is to be carried on continuously, it will be needful to have tinned iron vessels, into which the clear contents of the boiler can be transferred, to cool and settle before being packed away.

No. 1.—Compound for the finer carriage-work, &c.—Resin, 2½ per cent. of the quantity of oil. Lard, 50 to 75 per cent. of the quantity of oil, according to the degree of solidity required.

No. 2.—Compound for copper, steel, fire-arms, the more delicate kinds of machinery, &c.—Resin, none; but, instead of it, 2 per cent. of common yellow wax. Lard, 25 to 50 per cent. of the oil employed.

No. 3.—Compound for lubricating oil for machinery.—Resin, 2½ per cent. of the oil employed. Lard, 5 per cent.

No. 4.—Compound for the woolen manufacture, &c.—Resin, none. Lard, 3 per cent. of the oil employed; but, for this purpose, it is indispensable that the lard should be quite fresh.

No. 5.—Compound for paint, oil, &c.—Resin, 1 per cent. of the oil employed. Lard, 2 per cent.

As before observed, these proportions may be greatly varied. The more lard used, the harder will be the compound. The weather also affects the proportions to be used, and more lard must be employed in summer than in winter, to produce a like effect. The lard may be composed of half hog's lard and half mutton or other suet or fatty matter. The lard should be freed from all skin, &c., and cut into small pieces; and it is better also to remove from it any portions of fleshy matter that may be mixed with it; and if the fatty bodies employed, whether lard, mutton suet, beef suet, or other fatty matter, are used in the raw state, they should be first partly melted before being added to the mixture in the heating vessel, by any of the means ordinarily adopted for such purpose. The products, obtained as before mentioned, can be employed with advantage to replace all the oils employed as lubricators, such as animal oils, lard oil, olive oil, &c.—They possess, moreover, the merit of being perfectly unctuous, and of containing no kind of acid; they do not act prejudicially on metals, nor form any residuum through friction; they neither turn rancid from age, nor do they harden from contact with the air; and, lastly, their component parts do not separate from each other, but continue always in intimate commixture.—[Newton's London Journal.

# New Inventions.

### Carriage Couplings.

Norman B. Livingston, of Portland, Ind., has made an improvement in the manner of coupling the front axle and reach of carriages and wagons, the same consisting in having an eye piece or collar with a shank instead of the usual "king bolt." The shank of the collar is attached to the reach, and is capable of revolving; the collar turns loosely in a groove formed in the periphery of a horizontal circle plate which is secured to the top of the front axle, and is made in two parts, to admit of the eye piece being fitted in the groove. By this coupling a greater bearing surface is secured, and the carriage or wagon is made to adjust itself more freely and easily, when running, to the inequalities of roads. This coupling is also stronger than that of the usual king bolt, is more durable, and not so liable to get out of order. Measures have been taken to secure a patent.

### Bullets for Breech-Loading Fire Arms.

Henry W. Adams, of this city, has taken measures to secure a patent for an improvement in bullets for breech-loading fire arms. The bullet is hollow with a portion of its exterior of the form of the frustum of a cone, the smaller end of which is of the same size as the bore of the barrel, for which it is intended. The object in view for making the ball of this form is, that when it is driven by the force of the powder from the enlarged chamber in which it has been received, into the regular bore of the barrel, it may perfectly "slug" and fill the grooves, and be afterwards kept expanded to fill the grooves, until it is discharged from the muzzle.

### Mortising Sash Stiles.

J. B. Smith, of Milwaukie, Wis., has taken measures to secure a patent for an improvement in mortising sash stiles by machinery, which mortises both ends of the sash stiles—no matter what their length is—and clearing out the mortises at the same time, without the necessity of reversing the ends of the stiles, tightening or slackening the driving belt. This improvement obviates the necessity of laying out the stuff, thus saving both time and labor in the operation.

### Improved Car Seat.

A. C. Moestue, of La Porte, Ind., has made an improvement in car seats, which consists in a peculiar construction of the seat, whereby its back, when the car is going in one direction, forms the seat, when the car is going in the opposite direction. The seat and back being formed or connected together and provided with folding leaves for the purpose of having high backs when required. The whole seat swings upon pivots, and is kept in the desired position by means of pawls in catches, which fit or catch in segment racks attached to the sides of the seat. Measures have been taken to secure a patent.

### Grease Feeder.

Francis A. Hoyt, of Fitchburg, Mass., has taken measures to secure a patent for an improvement in a grease feeder for lubricating the interior of steam cylinders, and other parts of steam engines, the nature of which consists in forcing the grease from a cup on the exterior to the interior of the steam cylinder, &c., by means of a piston working in a small cylinder which has communication at one end with the interior of the steam cylinder through a passage in which is placed a valve, which closes by the outward pressure of the steam. This grease feeder is a force pump, and its check valve simply prevents the steam in the cylinder from acting on the oil in the pump, while the plunger is raised. The oil from the cup descends by gravity under the plunger of the pump, then it is injected into the cylinder, to lubricate its interior by the plunger of the pump.

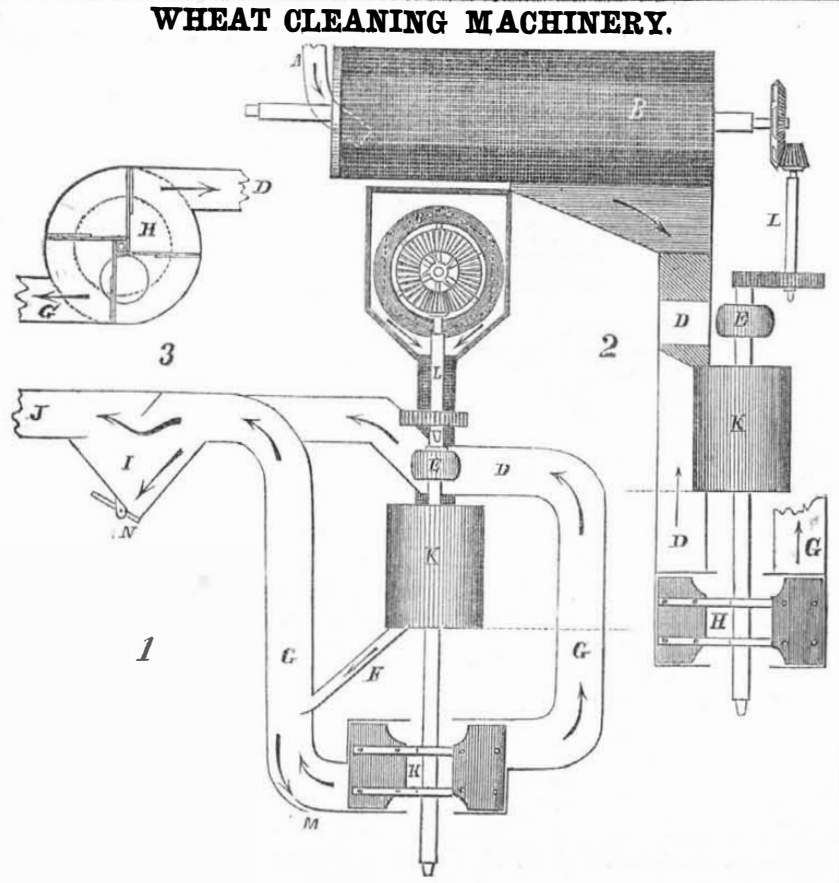
### Hose Coupling.

James McPhail and Ephraim C. Barrett, of the city of Boston, have made an improvement in Hose Couplings, which consists in the employment of a raised galvanized iron collar or annular guard round the screw end of the male section of the coupling, for preventing vehicles, stones, &c., coming in contact with the screw thread and injuring it during the time that the said screw part may be disconnected from its converse coupling part. Measures have been taken to secure a patent.

### New Nail Machine.

A new self-feeding machine has lately been put in operation at Troy, N. Y., which, it is said, will manufacture, in a given time, as many again nails as any other known process, while one man and a boy can operate ten machines.

## WHEAT CLEANING MACHINERY.




The annexed engravings represent a combination of screen fans and smut mill, forming a compact and efficient machine for cleaning wheat, invented by Samuel Taggart, millwright, of Indianapolis, Ind., who has taken measures to secure a patent for the same.

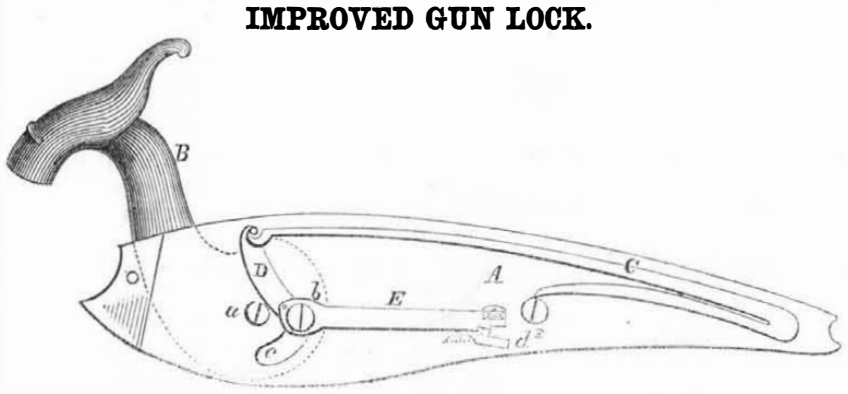
Figure 1 is an elevated section; figure 2 is a transverse section of figure 1, and figure 3 is a horizontal section through the dotted lines in figures 1 and 2. The same letters refer to like parts in all the figures.

The mode practiced at the present day is to place the several component parts of wheat cleaning machinery on different floors of flourning mills, at an expense of from $1,000 to to $3,000 in some instances. The inventor asserts that by using this machine more than half the usual cost of wheat cleaning machinery can be saved, that it does not require more than quarter the room occupied by the ordinary machinery now in use for cleaning wheat, and that less propelling power drives it.

Description.—A, figure 2, is a spout leading from a wheat garner—or hopper—into the screen, B, through which the wheat passes, and finds its way through the coarse wire cloth, into the spout, then passing through the air trunk, D, where it is fanned, into the cylinder or smut mill, K, where it is scoured, thence into the air trunk, G, through the spout, F, where it is fanned the second time, passing out at the opening in the bottom of air trunk at M, into an elevator, and is carried to the hopper to be ground. L, figure 2, is a shaft, bevel, and spur wheels, to which motion is transmitted to the screen, B; E is a pulley on smut mill shaft, through which motion is given to the entire machine by a belt; J, figure 1, is a hopper to receive shrunken wheat and chess, which pass through the aperture at the valve, N. The smut, chaff, and other impurities pass on through the trunk, I, out of the mill, and thus got rid of, without filling the room in which the machine stands, with dust and dirt, the case of the smut mill, K, being tight—not perforated. The arrows in the engraving show the direction of the air—or blast—wheat, chess, &c., respectively, H H H, figures 1, 2, and 3, show the fans which produce or create the blast.

More information may be obtained by letter addressed to Mr. Taggart, at Indianapolis.

## IMPROVED GUN LOCK.




This is an improvement in Gun Locks, for which a patent was granted to P. F. Charpie, of Mount Vernon, Ohio, on the 16th of last August. This figure is a view of the inner side of the lock-plate, showing most of the parts of the lock; the hammer is represented as being down.

The nature of this invention consists in connecting the dog of the main-spring to the hammer, by means of a screw passing through a curved slot in the lock-plate, in combination with suitable packing, encompassing the slot on the outside of the plate. By this combination the inventor is enabled to use an extremely simple and useful device for a gun lock, and to place the principal parts on the inside of the plate, fully protected from moisture.

A represents the lock-plate of the ordinary shape, and constructed of the usual materials; B is the hammer attached to the plate by a screw, *a*; C is the lock-spring, the outer end of which is connected by a stirrup, D, to a dog, E. The screw, *b*, which connects the stirrup with the dog, passes through a curved slot, *c*, in the plate, A, and into the hammer, B. The end of the dog, opposite the end through which the screw, *b*, passes, rests upon a stop, *d*, which is secured to the plate, A. This stop catches into notches 1 and 2. The notch, 1, being for the half cock, and the notch, 2, for the full cock. On the outer side of the plate, A, and surrounding the slot, *c*, there is a circular recess, in which recess is placed suitable packing. The lower and circular end of the hammer, B, through the center of which the screw, *a*, passes, covers this packing, and bears against it. The object of the packing is to prevent moisture from entering the lock through the slot, *c*.

Operation.—When the hammer, B, is drawn back and raised, the screw, *b*, moves downward in the slot, *c*, and the spring, C, is depressed; the dog, E, moves forward till either notch, as desired, catches upon the end of the stop, *d*: when the hammer is fully raised, the notch, 2, catches upon the stop; the notch, 1, being for the half cock, and the notch, 2, for the full cock, as aforesaid. The hammer is let fall by the ordinary means of a trigger. The end of the dog on which the notches are cut, is made to bear upon the stop, by the spring, C, as will be readily seen.

This lock prevents the entrance of moisture by means of the packing mentioned. The claim is for connecting the dog to the hammer by means of a screw, *b*, passing through the curved slot in the plate, in combination with the packing which encompasses said slot. The main-spring and dog are thus placed on the inside of the lock plate, and moisture may be kept out. More information may be obtained of Wm. Henry, Jr., Wooster, Ohio.

### Patent Cases.

Unstamped Patent Articles—Before Judge Betts, U. S. Circuit Court, New York City, May 11th. Chester W. Palmer against A. Allen and W. Nichols. This suit was brought by the plantiff against the defendants as the assignees of a patent issued to George H. Gray for a sash fastener, called Gray's Patent Sash Fastener, to recover $10,000 penalty under the Patent act of 1852. sec. 6, which provides that "all patentees or assignees of patents are required to stamp or engrave, or cause to be stamped or engraved, on each article vended or offered for sale, the date of the patent," under a penalty of $100 for each offence.

The defendants are assignees of the patent for New York City, and some other counties, and sold 21 dozen of the articles in question, unstamped, at one time, in the City of New York. In defence of the action they proved that the articles were not manufactured by them, but by Gray, the patentee, who sold them to the defendants.

The Court charged the Jury that the assignees of a part of a patent were no more liable under this act, for articles purchased by them, than any other purchasers, unless it appeared that the articles were so manufactured with their connivance, and that it was not the selling of the articles which rendered them liable to the penalty, but the omitting to put on the stamp, and that if the articles were manufactured before coming into the possession of the assignees, it was not their duty to put on the stamp.

The Court also charged that the penalty was $100 for every separate article sold unstamped, and not $100 for all that were sold at one time; and that if they found that the defendants were liable to the penalty, they must give the plaintiff a verdict of $100 for each article sold by them.

The Jury thereupon, after a short absence found a verdict for the defendants.

[Patentees must be very careful in stamping every patented article; the above named patentee is liable to a fine of $25,200 for selling the above named number of articles. There is no way whereby he could escape such a penalty, excepting on proof of their manufacture previous to the issuing of the patent.

Bell Telegraph—On the same date an injunction was granted by Judge Betts, on the complaint of the U. S. Annunicator and Bell Telegraph Co., against J. W. Sanderson and C. L. Mather, for infringement of their patent, unless the defendants, within ten days, give security in $5000 to abide by the decree of the court, in reference to a trial at law.

# Scientific American.

NEW YORK, MAY 20, 1854.


### What we do not Eat—Tobacco.

Man is a strange being—a compound of dirt and deity. In nothing, perhaps, is this more evident, than in his use of tobacco. It does not appear strange that a man should, by degrees, become accustomed to eat and relish a bitter plant, which at first he rejected with loathing, but that he should take some drug like tobacco, set it on fire, and make his mouth a fire pump, to draw in and force out the smoke, is indeed more than passing strange "'tis wonderful." It is no less fantastically droll, that he should grind up this same drug into powder and feed his nose with it, when reason and instinct require that organ to be kept profoundly clean, for the purpose of enjoying "nature's incense on the dewy morn," and for giving "utterance clear to vocal sounds." Perhaps there is a little more reason on the side of our universal national characteristic, "chewing the weed and spitting out the juice," but this habit, too, is no less strange than either of the other two. But strange as these things are, the surprise would not be great if its use was confined to a small number of the human family, but instead of this being the case, there is perhaps no other drug more universally and extensively used in one form or another, by both civilized and savage man.

The history—rise and progress—of the cultivation and use of tobacco is more like a romance than a plain unvarnished record of an inanimate, bitter vegetable production. It derives its name—*Nicotina Tobacum*—from Jean Nicot, an agent of the King of France, who sent some of its seeds from Florida to France in 1560, and from Tobacco in Yucatan, from which it was first sent to Spain. It is generally held to be a native of America—indigenous to its tropical regions. Some, however, have doubted this, and consider it to be a native of both Africa and Asia, as savages have been found using it far in the interior of these continents; hence some modern travellers say, "it is impossible to conceive that its use and cultivation could have spread over such an extent of the old world, as it has since the New World was discovered." Be this as it may, the fact is unquestionable that it was unknown in Europe prior to the discovery of our continent, and the inference is, that if it had been known to the inhabitants of Africa and Asia, it would surely, from the old established trade with these countries, have found its way at an earlier period—such as during the Roman Empire—into Europe. It was introduced into Spain and France from America in the beginning of the sixteenth century, and into England by Sir Francis Drake in 1586.

Since that time it has spread in the east into Turkey, Persia, India, China, Australia, the Phillipine Islands, and Japan. It has been raised with success also in nearly every country in Europe; it is cultivated in Egypt, Algeria, in the Canaries, and at the Cape of Good Hope. It is, indeed, among narcotics what the potato is among food plants—the most extensively cultivated, the most hardy, and the most tolerant of change in temperature, altitude, and general climate.

When it was first introduced into Europe its use was opposed by Pope, Kaiser, and King, but although the knout was threatened for the first offence in using it, and death for the second, in Russia, it has marched over these enactments, and established itself in the imperial Palace—Czar Nicholas being now an inveterate user of the *weed*. Pope Urban the VIII. thundered out a bull against it; James the I. —pragmatical Jamie—wrote a counterblast against it, and both priest and pastor denounced it from altar and pulpit. But what signified the opposition of king and priest, to tobacco—it has conquered them all. Larger quantities of it are now grown in France, than any other vegetable; the Dutchmen—high and low—seldom have the pipe out of their mouths, and in Persia and Turkey, where smoking was declared a sin against religion, the people have become the greatest smokers in the world. In India all classes smoke; in China the practice is so universal that "every female, from the age of eight or nine years, wears as an appendage to her dress, a small silken pocket to hold tobacco and pipe.

It has been calculated that no less than 2,000,000 tuns of tobacco are grown annually on our globe, and no less than 199,752,646 lbs., —83,232 tuns—by the census of 1850, of that in the United States.

In 1662, the quantity raised in Virginia was 60,000 lbs.; and the quantity exported in 1689 only 120,000 lbs., while now the whole product of the country is more than a thousand times greater, and from present indications its use and cultivation are becoming more general every day, for while it was cultivated in none of the Northern States, a few years ago, no less than 53,000,000 lbs. were raised in 1850. We do not really know what lesson we can learn from the extraordinary history of tobacco. Medical and other men have written against it, but seem to have urged nothing very specific, excepting this, that as *nicotine*, (C.10, H.7, O.5 the same elements as sugar but combined in different proportions) the active principle of tobacco, is poisonous in its isolated form, the use of tobacco must be injurious. The experience of mankind does not confirm this conclusion, excepting in cases of excessive use, which, like everything else, used immoderately, is injurious. And yet no later than last week we read in more than one of our cotemporaries, that there is now living somewhere in the State of Maine, an old lady 112 years of age, who, for half a century, has been a most immoderate nose-consumer of tobacco, the stimulating effects of which seem to have forced her on, alive and cheerful, far beyond the common years of mortals.

The cigar seems to be conquering its way over all other modes and forms of using tobacco. Opposition to its use seems to promote its consumption, and it is now considered to be a common solace among all ranks and conditions —the poor pipe smokers only being prevented from using it from inability to buy.

While we are writing this, a Convention of Cigar Makers are in Assembly in Syracuse—the central city of this State—for the purpose of taking into consideration their own case—their remuneration for making cigars. We hope they will make no wordy war against their manufacture by machinery,—something which will be accomplished at no distant day, as a number of such machines have already been built, and further improvements will no doubt lead to their success. In the Crystal Palace there is a great variety of fine samples of tobacco from almost every State in the Union, but the finest quality of this plant is raised in Cuba, the cigars made from it selling for $150 per thousand. There can be no doubt but man could live cheerfully and well without using this plant in any form. Those who do not use it are as cheerful and healthy as those who do. Its effects upon many are very exciting to the nervous system, and as it is not pretended to afford any nutriment; it may in a great measure be considered an article of luxury merely, costing our country an enormous amount every year. As a voluntary tax it costs the people of Britain and Ireland every year more than $20,000,000, while it costs our people at least $10,000,000. We are glad, however, that tobacco, and not opium, is so extensively used by our people; still, if it is an evil, it forms no excuse for its use to say, "it is the substitute for a greater." Every man, however, in this respect, should be a judge for himself; it is the duty of every man to temper his appetites and passions, and bring them into calm subjection to judgment and sound reason. The conclusion at which we have arrived, in view of the use that is generally made of tobacco, the vast amount of it that is consumed, and the great expense of its cultivation and manufacture—is, that it affords a matter for the profound study of the philosopher, statesman, and man of science.

### American Institute.

The Annual Election for Officers of this Institution took place on the evening of the 11th inst. The election was quite an exciting one. Robert L. Pell was elected President over J. Bullock, the opposing candidate, by a *very* large majority. A number of very excellent and able men, were elected for the other officers. We hope the Institute will go on and prosper in doing good—make it worthy of its name—something which it has not yet done.

### The New Three Dollar Gold Piece.


The accompanying figures illustrate both sides of the new three dollar gold pieces recently issued. They are very beautiful in design, but while one side is very appropriately ornamented, the other is quite the reverse.—The encircling chaplet, composed of wheat, corn and oak leaves—our natural productions—harmonizes with our tastes, feelings, and associations, but the female head of the other side—which our cotemporaries say is that of an Indian—has a Grecian face, and looks like one of those Aztec Princesses with a *crown* of peacock's feathers, that we see in pictures.—What business has such a crowned head upon our republican coins? None whatever. If a head is to be placed on any of our coins, why not have that of the President during whose administration it was issued. This, like the old Roman medals, would make our gold coins historical.

### Living Weather Prognosticators—The Eclipse.

It is said that the woodcock in New Jersey, is building its nest this year in open and moist places, hence some of our cotemporaries state that old hunters predict a warm dry summer. There are many prevalent opinions respecting the prophetic instinct of beasts, fowls, and insects, but we are of the opinion that their instincts lead them no further to prepare for changes of weather than the immediate premonitions of every such change. Beasts birds, and insects, living in the open air, are more sensitive to the indications of coming storms, just as the Indian is superior to the civilized man in this respect, but from the present month, we believe that neither man nor animal can indicate or tell what kind of weather we may have during the next month. If the changes of weather followed after one another, in continual and regular procession, then the signs of the opening of one year would be good for the whole year, but no meteorological record gives us any foundation, as yet, for supposing that there is any such regularity. The lesson we would learn from the change of habits in the woodcock this year, is simply this, that the spring, having been so wet and stormy, the swamps in the woods are too full of water for that bird at the present time to pursue the purposes of nature and rear its young.

We have heard some predicting a wet and stormy summer on account of the influence of the approaching eclipse of the sun. We do not know whether this will be so or not, but if we have a wet season, it will afford some evidence of a regular successsion in the changes of weather, when like influences are in operation. Thus in 1836, when an eclipse of the sun took place on the last Sunday of May—if we recollect aright—we had a very wet summer, as we had a previous severe winter—the one of the great fire and heavy snows in this city. The crops, especially the corn, failed throughout most of the States, and as a consequence, the food was very high during the succeeding winter—the one when the flour riots took place in New York. Instead of the United States exporting wheat to Europe that year, we imported it, and poor stuff the most of it was. But although we may have a very wet summer this year, and the crops fail in many States, in all reason we would not anticipate the inability of our country to raise enough food—and to spare—for ourselves. The fact is, that Michigan, Illinois, Wisconsin, and Iowa, which are now great surplus-producing States, were then unable to provide food for their new settlers—these States being then in their infancy. At any rate, the present year will afford a good opportunity for observing the effects of the eclipse upon the weather, and of making a comparison with the wet and cold summer season of 1836.

### Yankee Lumbermen in Canada.

Since the close of the Baltic to a valuable timber trade, a great impetus has been given to that on the American side of the Atlantic; great quantities have been shipped from the Potomac during the past winter, for France, and the Maine Lumbermennever were so busy as they have been during the past season.—But the greatest scene of lumber activity on our continent, for the past two years, we understand, has been in Canada. About two years ago the Canadian Government threw open to competition an immense tract of timber land, lying on the bank of the St. Maurice, midway between Montreal and Quebec. The Government of Canada was liberal in the terms which it offered. A tract of territory consisting of two thousand square miles, covered with red and white pine, was divided into portions of fifty square miles, and the right to cut for a given number of years was sold at auction in Quebec in the month of July of each of the last two years. And a number of our Eastern lumber merchants availing themselves of the advantages then held out, bought tracts, and began operation on a grand scale. Messrs. Norcross, Philips, & Co., of Lowell, we understand, have now one of the largest lumber establishments in Canada. They have extensive saw mills at the junction of the St. Maurice with the St. Lawrence, and it is said had a thous. and men employed by them in cutting logs the last winter. There were employed last winter in the timber territory named, six hundred pair of horses, and five thousand men.—and never before did such activity exist in the North American timber trade. The old saying "it is an ill wind that blows nobody good," may be aptly applied to wars in Europe: although they do immense evil to the people in those countries which are the scenes of strife, they benefit us in America, by increasing our commerce, and calling forth greater industrial effort.

### Reaping Machine.

It was our intention to have published a series of articles on reaping machines in this volume of the "Scientfic American," but we are compelled to delay them until we commence our next volume. The reason of this is, that these articles are to be illustrated with excellent engravings of the various reaping machines, starting from the rudest implements of ancient days, to the most improved of our own, giving the history of each, and describing its construction, and the number of these is so great, that we could not furnish them in this volume. As we desire every volume to be complete in itself, it would not be prudent to commence any series of articles that would require to be extended to another volume.

The History of Reaping Machines, which we intend to present, will be of great importance, and the only one of the kind ever set before the public through a periodical.

### A Good Law for Philadelphia.

"From and after the first July it shall not be lawful to erect a house in Philadelphia—for a dwelling—without a yard in its rear covering at least 30 square feet of an area, and with a separate well-built cesspool. Such a law should be enacted for every city in the land. In New York the houses occupy less space than in London. This cannot be healthy. The want of cesspool conveniences in connection with hundreds of buildings in this city, where females are employed, is the cause of a great amount of suffering and disease. A law like that of Philadelphia is much needed here.

### Cure for Corns.

Mr. Cooper, in his "Dictionary of Surgery," has the following infallible cure for corns: Take two ounces of gum ammoniac, two ounces of yellow wax, and six drachms of verdigris; melt them together, and spread the composition on soft leather; cut away as much of the corn as you can, then apply the plaster, and renew it every fortnight till the corn is away.

## American Association for the Advancement of Science.

MET IN WASHINGTON IN THE LAST WEEK OF APRIL, 1854.

TRANSPARENCY OF THE OCEAN.—Capt. Glynn, of the U. S. N., read a paper on this subject.

Philosophers ashore, and philosophers of the forecastle, have wondered in all times as to the causes and extent of the color of the sea, and queried how far into it our vision could penetrate. Capt. Wilkes advanced the opinion that the transparency of the sea varied quite directly with its temperature. To this his observations did not allow him to assent entirely.

The surface of the sea must be perfectly tranquil and smooth. There must not be a ripple on it. So essential is this point, that during a cruise of four years, he only succeeded in sixteen observations that proved worth saving. Of these sixteen, in only one the water was ruffled by a slight breeze.

The next trouble was to discover what object would be most likely to reflect all the rays of light—what would be longest visible. First we tried an iron pot painted white. When we looked for it for the second experiment, the white pot was a black one again. Next we tried a sphere of hoops, covered with white cotton cloth. Before it was called for the second time, it was smashed into a cocked hat. Next we tried a mere hoop, covered with canvas. It was laid away on some old spikes, and when needed next, it came up sound enough, but of a bright yellow. At last we took a common white dinner plate. It was good enough. It was the brightest object we could find, was always handy, and was always clean, of course, seeing I took it from my table. It was slung so as to lie in the water horizontally, and sunk by an iron pot, with a line. The first experiment was tried April 4, 1848; the last one, December 22, 1850; everything wears out at last on board of a man-of-war, and my last observation took my last white plate.

The observations were taken wherever we could get them—ranging over 200 degrees of latitude, in different oceans, in very high latitudes, and near the Equator. I have to assume, what doubtless I may, that they do not differ from what they would if taken all in the same place. At every station we noted in the connection the sun's altitude, the velocity of the current, the temperature of both the air and the water, and the number of fathoms at which the plate was visible below the surface. We took these observations from a boat, bringing the line on to its shady side—then leaning over, with faces almost touching the water, and eyes shaded from the reflected rays from the surface by the brims of our tarpaulins, we watched for the disappearance of the plate as it was slowly let down. The men were about as much interested in the thing as I was—and, as sailors may have as good eyes as officers, each one took the observation,—so this table of results is really the mean of the observations of a number of men, not of one only. The varying points between which it disappeared from the vision of all, and where all could see, never were further separated than the length that the line could be lifted or let down by a reach of the arm—not over four feet. The water varied thermometrically from 40° to 85°.

It did prove that the lowest degree of temperature gave shortest line of visibility, and it did happen that at the point where the water was the warmest, there we saw the plate at the greatest depth. On two occasions we saw the plate when it was 25 fathoms below the water's surface, and on one of these the water was at 85 degrees. On these occasions all noticed the extraordinary clearness of the water. To lay in the boat and look down, was like looking down from the mast-head. Objects were clearly defined to a great depth. Fish were playing about below us, whose movements were so distinct that it made the flesh creep to see them. On this occasion I tried if a contrast of colors would increase the visibility. I so placed the plate upon the pot that a periphery of the black surface surrounded the white plate, but it made no difference at all. The Commander remarked that he never saw the water above 80 degrees of heat. He thought no sandy bottom could have been seen further than the plate was. So he believed that the maximum of visibility under water, under the most favorable circumstances, is twenty-five fathoms. But between the highest and lowest points of visibility, which corresponded with the highest and lowest points of the water's temperature, there were great variations, which showed no direct correspondence between the temperature and the line of visibility.

At the mouth of the Mississippi we find the water no more transparent than so much muddy water. The further we get from the points where earthy matters in large quantities are washed in, the clearer the water is. Now the Pacific, like the Atlantic, is a great whirlpool—a tide flowing entirely around its circumference. In latitude 20° on the west side of the Pacific, furthest removed from all stormy quarters, and where the ocean is stillest, we found the greatest transparency of water. Off Cape Horn, where eternal storms drive up the dirt torn by glaciers and icebergs from the regions around the Pole, the water was exceedingly turbid. With the thermometer at 68°, we got only ten fathoms of visibility.

LONG ISLAND SOUND.—Charles A. Schott presented the abstract of a paper on the tidal currents of Long Island and its approaches, from observations in connection with the United States Coast Survey, between the years 1844 and 1848, inclusive. The great tidal wave from the Atlantic, which enters the sound between Point Judith and Montauk Point, is divided into two branches by the intermediate position of Block Island. And another portion of this wave enters New York Bay, and passing through Hell Gate, meets the wave from the east. The tides meet near Hewlett's Point. The variable limits of this meeting are Sands' Point and Throg's Neck. It was found that the velocity of the flood stream was a little less than that of the ebb, owing to the discharge of the river water into the Sound. The average velocity of the tide in New York Bay was found to be 3 knots; in New York Harbor, 3 7-10 knots; in the Sound, 2 1-5 knots. The velocity in the Race (off Fisher's Island) was 4 7-10 knots; in Hell Gate, 5 9-10 knots. These velocities vary, of course, with the size of the channel, (width and depth) and the quantity of water to be discharged. The total number of stations taken to observe the currents was seventy-five, and they generally occupied thirteen hours each.

GULF STREAM—Prof. Bache, of the coast survey, read a paper on the distribution of temperature in and near the Gulf Stream of the coast of the United States.

On the seaward line off Charleston, from the shore to sixty miles out, the depth increases gradually, till it acquires a depth of one hundred fathoms. But it soon deepens with great rapidity, as if on the side of a mountain, until at about eighty miles out the ocean-bottom is more than six hundred and fifty fathoms from the surface. This continues forward less than ten miles, when the depth as suddenly decreases to not more than three hundred and fifty fathoms, which so goes on only a few miles, when it again deepens to about five hundred fathoms, with subsequent fluctuations. There is, therefore, a submerged mountain-peak or ridge between these points of a truly remarkable character. The differences in the temperature vary almost precisely according to the change of contour of the bottom, showing that the temperature at great depths is much modified by the propinquity of the ocean's bed. It appears that the Gulf Stream, while certainly not superficial, does not run to the bottom, for off Cape Florida, at twelve hundred fathoms, the water in summer is of a temperature of 38° Fahrenheit—a degree below the average winter temperature much further north

COURSE OF THE GULF STREAM—Lieut. Maury followed Prof. Bache. He showed that the stream varies its course according to the season, having a more southerly sweep in winter. The stream is more rapid off Cape Hatteras than Cape Canaveral, and never deposits the seaweed, with which it is so plentifully beset, on the western side. This was accounted for by supposing that the stream stands above the general level of the ocean, with its highest point in the centre or axis of the stream, and sloping off like the roof of a house each way. This stream is what modifies so agreeably the climate of Western Europe, and at the same time causes its fogs. Storms that arise on the coast of Africa, trailing westward, fall into its influence, and sweep around its circuit. In this stream the "San Francisco" was on the 26th December, and it was along its eastwardly current that the ship drifted. The Gulf Stream is sensibly affected by the discharge of the waters in Winter from the Chesapeake, Delaware and Hudson.

METEORIC STONES AND SHOOTING STARS—Dr. Lawrence Smith, of Louisville, Ky., read portions of a paper on the Meteoric Stones, with an account of some recently discovered.

He exhibited several small meteorites, and some large ones. A fragment of one in his possession he showed, of which the whole body weighed over 60 pounds. It was found in Tazewell County, Tennessee. A large one from Saltillo, Mexico, lay on the table, weighing 260 pounds.

Mr. Bartlett (Boundary Commissioner) had described to him one specimen which weighed 600 pounds and its greatest length was five feet. These bodies are composed principally of nickeliferous iron with portions of cobalt, copperas, copper, and phosphorus. The iron generally amounts to 95 parts out of a hundred. But in all meteorites we find one combination of these constituents, namely: *Shreibosite*, of which there is no natural specimen on earth.

It was long supposed that these bodies were identified with the shooting stars, but that error is of easy demonstration. For in all the periodically returning occasions of shooting stars, there is not a case on record where the fall of meteoric stones has accompanied them. Then we can obtain the elevation of the shooting stars, and without difficulty learn their velocity. They are often far beyond the circle of our atmosphere, and travel at the rate of sixteen miles a second, while we know that nothing can revolve around the earth at a swifter rate than five miles a second. Shooting stars then are cosmic bodies, revolving around the sun as a center. They are self-luminous too. But meteoric stones could not strike the earth in their fall, coming at the rate of sixteen miles a second, without producing very different impressions from what are recorded of their fall. Nor can these stones be self-luminous in our atmosphere. They are of heavy iron. They cannot be mere concretions of nebulous matter as some have maintained.—They have not the form that nebulous matter would assume on condensing. Evidently then they are not identical with shooting stars.

They are not of terrestrial origin. The number of those who think that they are, is too limited to require a set refutation of that theory.

They are not of atmospheric origin, aggregated from different directions, hardened like hail, though from different causes. Their form forbids that suspicion. Whence then are they.

Dr. Smith evidently accepted the "lunar theory." They were masses thrown off with great force from the moon, revolving around that body until in the great eccentricity of their orbits, they fall within the circle of our atmosphere; once within which, and with velocity greatly retarded, our earth becomes their center. They may have been thrown out from the craters of volcanoes a long time ago, and been thousands of years revolving before their orbit brought them in contact with our sphere. Laplace and Cerago, who once held this theory, gave it up, but they were compelled to do so or surrender another belief of theirs, that they are identical with shooting stars. One-twentieth of the surface of the moon is volcanic, and if the craters, as revealed by the telescope, are only in the usual proportion to the highth and depth of the volcanoes, there need be no doubt that they have sufficient ejecting force to hurl large masses of volcanic matter to immense distances. Remember, beside, that the attracting power of the moon is but one-sixth that of the earth, and that bodies thrown from its surface experience in consequence but one-sixth the retarding force they would have when thrown from the earth's surface.

Look again at the constitution of the meteorite,—made up principally of pure iron. It came evidently from some place where there is little or no oxygen. Now the moon has no atmosphere, and no water on its surface, or we should find it out by its refracting power.—There is no oxygen there then. Hurled from the moon, these bodies—these masses of almost pure iron—would flame in the sun like polished steel, and on reaching our atmosphere would burn in its oxygen until a black oxyd coated it; and this we find to be the case with all our meteorites—the black color is only an external covering.

[According to the funny idea of D. Vaughan, of Cincinnati, these meteoric stones, if thrown from the moon, ought to keep whipping round our earth in small rings of moon dust—he has put forth the absurd doctrine that the rings of Saturn are the dust of two moons, which having lost their balance, were hurled to the planet and dissipated into dust—now whirling round in the form of rings.

MORE ABOUT THE "KILLER WHALE."—Since Lieut. Maury read his paper on the fish, before the Association for the advancement of Science, Lieut. Porter, U. S. N., has written a letter on the subject to the "National Intelligencer." The following is an extract from it:—

In Lieut. Maury's description of the whale, he made some remarks on a fish of the above species called the "killer." This fish is described in "Porter's Journal of a Cruise in the Pacific." This fish is so well known to the old salts of the whaling trade and Pacific cruisers, that I have always thought it equally well known to the scientific. Having, on more than one occasion, been an eye-witness of the attacks of this fish on the whale, I will attempt a description of it.

The killer is the wolf of the ocean, and hunts in packs, and their tall dorsal fin can be constantly seen above the water. This fish has always, as a companion, but swimming deeper, the sword-fish, and now and then can be seen the shark. On sighting their prey, which the killer sees at a great distance, the pack give chase; the unconscious whale is slowly moving near the surface, and occasionally spouting, as it were in sport, jets of water above him. But he now suddenly sees the "sea-wolf" near him. Instinct at once teaches him that on the surface he cannot be safe, and taking in a long breath, he flukes, that is, dives. But there has been another enemy watching him from the depths below, the "sword-fish," which now darts at him with the velocity of lightning and perforates the whale beneath with his long and spear-like nose.—This sends him at once to the surface; here he again meets with his enemy, the "killer."

[The rest of it is a description of the manner in which the sword-fish and "killers" dispatch the whale, and at last make a feast on his fat body.

TASTE AND SMELL IN CHEMICAL INVESTIGATIONS—Dr. Hilgrand read an interesting paper upon the intimate connection between taste and smell. The Dr. called the attention of the Section to the fact, that if the nostrils are closed, the sense of taste is lost, and a person is unable to distinguish sweet from sour. He had made many observations upon the subject, and he wished others to investigate the phenomenon also.

[We know that many chemists pay particular attention to taste and smell in qualitative analysis. These senses are given to man, and are just as useful as vision and hearing, though not so valuable. They are also capable of cultivation, and chemists would do well to improve the advice given above. At the same time great care must be exercised in using the sense of taste, for we have heard it stated, that Sir C. McIntosh, an excellent chemist, had his sense of taste entirely destroyed, by tasting chemicals. It is not safe, either, to taste some chemical compounds.

[Concluded next week.]

Fifty miles of the Egyptian Railway has been opened for traffic. Passengers to and from India now travel on it. The British have thus got a short cut of railway to their India possessions.

## TO CORRESPONDENTS.

H. C. H., of Pa.—We do not understand what you mean "by the steam returning to some state of tension which existed before the engine moved."

W. A. E., of Vt.—The proper chemical name for the gum is "anime;" if we can obtain the proper recipe you shall have it.

T. R. W., of R. I.—The pressure of the atmosphere is allowed generally to be 15 lbs. on the square inch at the level of the sea.

A. N., of Pa.—Your improvement in car wheels is new, we think. Why not give your name? It looks very much as though you had appropriated the fruit of another man's brains, and desired "darkness rather than light." We suppose, however, that you are ignorant of the rules of our office, or else you would not have neglected to sign your name to your letter.

T. P. S., of Mass.—If we had unqualifiedly endorsed the "flax patent" then we might admit of a criticism upon our views, but as the case stands we are not disposed to do so. The specification has never appeared in our columns, and the discussion would seem rather "far fetched." Your views may be correct,—we do not know why they are not.

J. M. G., of Ohio—The recipe you require is rather long to send in an answer to a correspondent.

W. H. H., of N. Y.—Yours will appear next week. We are much obliged to you for the information.

W. H. P., of Fla.—The water will not back in a stream above the level of the water in the dam, but that level is always changed according to the quantity of water in the stream—that level must determine the question of back water—one easily settled.

R., of Rome—Yours will meet with attention next week.

A. W. A., of New York—Such plans as you propose are now in operation on a number of boilers.

U. B. V., of Va.—Your corrugated propeller appears to be a good idea, and embraces the very principle of construction that nature has provided for fish.

J. M., of New York—We do not know of any benefit arising from printing bills of any tint previous to printing from the plate, that is not obtained now. To make bills water-proof would not be difficult.

L. E. T., of N. C.—The blue vitriol preparation of wood is of no use for yellow or resinous pine, but it is for white pine: the cutter and jointer combined is very good, but with its practical workings we are not acquainted.

J. H. B., of Ind.—A fan operated by clock-work, for ventilating bed rooms, is not a new device; in 1830 a patent was granted for such an apparatus to Commodore Barron.

J. D., of N. Y.—A "plenum" means the opposite of a vacuum,—the smallest space to which a body could be reduced, by the pressure of the united gravity of the solar system.

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**Money received on account of Patent Office business for the week ending Saturday, May 13:—**

S. & H., of Mass., $20; H. C. S., of Ohio, $25; D. F., C., of N. Y., $30; J. B. M., of Geo., $25; H. M., of N. J., $10; S. K., of Pa., $20; W. H. H., of N. J., $25; J. B., of N. Y., $25; W. W., of N. Y., $55; W. A. P., of Miss., $12; E. A. H., of Ill., $30; C. & B., of Ohio, $30; J. G. M., of Pa., $10; B. J., of Mass., $30; F. B. S., of N. Y., $55; E. & R., of N. Y., $30; J. J., of Ohio, $30; J. A. S., of N. Y., $250; J. M., of N. Y., $50; J. T., of Mich., $15; C. & L. B. D., of Pa., $55; J. R. M., of Ohio, $57.

**Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, May 13:—**

H. C. S., of Ohio; W. A. P., of Miss.; S. & M., of Ct.; J. H., of Vt.; J. T., of Mich.; J. F., of N. Y.; J. R. M., of Ohio; J. B. M., of Geo.; G. S., of N. Y.; G. P. G., of N. Y.; J. S., of N. C.; J. B. M., of N. Y.; C. E., of Mass.

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**AUCTION SALE**—The Percussion Cap Machinery and Fixtures of Phipps & Titcomb, will be sold at Water Cure Hall, Three River Village, Palmer, Mass., June 7th, 1854. Any information respecting the machinery may be had by addressing
36 2* PHIPPS & TITCOMB.

**PROPOSALS** will be received at the Engineer's Office, Huntington, Pa., until Monday, June 5, for the Superstructure of Bridges and Trestle Work of the Huntingdon and Broad Top Railroad. Plans and specifications will be exhibited at the Office, or the contractor may furnish his own plan with his bid.
36 3 S. W. MIFFLIN, C. Eng.

**A PRACTICAL PAPER MAKER**, who has secured a license to use Mellier's process of making Straw Paper, and who superintended its establishment at Manayunk wishes to connect himself with a manufacturer. Address "A. B.," Strange Bro., 21 Park Place, N. Y. 1*

**SPECTACLES**—And Surgical Operations Useless. The Blind May See. It is gratifying for us to be able to announce to the public that the utility of our Patent Eye Cups is now no experiment. The wonderful, almost miraculous, effects produced by their use, are coming daily to our knowledge. Strange as it may seem, it is true that Spectacles may be dispensed with entirely, and sight restored to its original power. These Cups are simple, yet philosophical. They are used without pain or the least danger of injury. A pamphlet containing a full description of facts, &c., in regard to them will be furnished gratis to any person applying for the same. Price of Cups, $5 per pair. J. BALL & CO.
1* 100 Nassau st. New York.

**NORCROSS' ROTARY PLANING MACHINE.** The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringement of the Woodworth Patent.

Rights to use N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.

The printed Report of the case with the opinion of the Court can be had of Mr. Norcross. 36 tf

**VALUABLE MILL PROPERTY FOR SALE**—Situated 3 miles north of Salem, Colum. Co., Ohio, in a good section, for grinding two run of burrs run by steam and water; 3 small dwelling houses, good orchard, 12 acres of land, &c., all of which will be sold low and on favorable terms. For further particulars address H. KIDD, Goshen Mills, Mahoning Co., Ohio. 1*

**TO CANDY MANUFACTURERS**—For sale or rent a beautiful three story brick dwelling and store house, together with a two story brick shop, used for the manufacture of candies. The whole is well built and finished, and the shop has furnaces all in working order. The store room is handsomely furnished with glass casing, shelving, counters, and two superb bow windows, and handsome gas light fixtures. Possession of the store room, cellar, and shop can be had immediately. Terms reasonable; price $5000; rent $300, or for store room, cellar and shop, $200. Address, post paid, A. F. WARD, York, Pa. 35 4*

**FOR SALE**—By the Baltimore and Ohio Railroad Co., 24 Crate Cars, adapted to railroad purposes, which will be sold at a reasonable price. For further information apply to SAMUEL J. HAYES, M. of M., Baltimore and Ohio R. R. Co., or BRIDGES & BRO., 48 Fulton st., New York. 34 tf.

**GRIFFITH'S PATENT VALVE** COCKS for Steam Engines, dyeing establishments, or Chemical Works, They are warranted superior to any valve or cock in use. They are easily repaired without taking them from the pipes, they are made any size from 3-8 in. up to 7 1-2 in., either screwed or with flanges. Responsible agents for the sale of these valves wanted in New York, Boston, Pittsburg, and all the principal cities in the Union. The rights to manufacture in the different States for sale. Parties interested will address J. GRIFFITHS, City Tube Works and Brass Foundry, 15 North 7th street Philadelphia. 34 8*

**FULTON FOUNDRY AND MACHINE WORKS** S. W. corner of Green and Morgan streets, Jersey City, N. J. The subscribers are prepared to contract for Sugar Mills and Mining Machinery of every description. Horizontal Steam Engines of various sizes constantly on hand. All orders executed with promptness.
34 13* FIELDS, BROTHER & CO.

**ENGINEERING**—The undersigned is prepared to furnish plans for ever description of machinery, water wheels, turbines, and to consult with parties to make experiments and scientific investigations, and to superintend the construction of works. Agent for Mehler's Patent for making White Paper from Straw.
VICTOR BEAUMONT,
33 10* Consulting Engineer, 74 Broadway, N.Y.

**TO YOUNG MEN.**—Pleasant and Profitable Employment.—Young Men in every neighborhood may obtain healthful, pleasant, and profitable employment, by engaging in the sale of useful and popular Books, and canvassing for our valuable Journals. For terms and particulars, address, post-paid, FOWLERS AND WELLS, No. 308 Broadway, New York.

P. S.—All Agents who engage with us will be secured from the possibility of loss, while the profits derived will be very liberal. 33 4

**SEWING MACHINE**—The Office and Warerooms of the Wheeler & Wilson Manufacturing Company, for the sale of their Sewing Machines, is removed to No. 343 Broadway, where the public are invited to call and examine them in practical operation. 31 13*

**1854. WOODWORTH'S PATENT PLANING,** Tonguing, Grooving, Rabeting, and Moulding machine.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $800. Two machines are at the Crystal Palace. For rights in all parts of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 18eowtf

**CLOCK'S FOR CHURCHES. COURT HOUSES,** &c.—Regulators for Astronomical purposes, Jewellers; also Time Pieces for Session Rooms, Railroad Stations, Offices, &c., which for accuracy of time and durability have proved (it is believed) equal to any made in Europe or this country. Glass Dials for illumination, and other kinds furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, N. Y. 10eowtf

**IRON FOUNDERS' MATERIALS**, viz: Pulverized Sea Coal, Black Lead, Soapstone, Anthracite and Charcoal Facings. Also, best imported Fire Bricks, Fire Clay, Fire Sand, and Moulding Sand, for sale by
G. O. ROBERTSON,
13 13eow 135 Water street, corner of Pine.

**MACHINERY.**—S. C. HILLS, No. 12 Platt-st., N. Y. dealer in Steam Engines, Boilers, Iron Planers Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's, and Law's Planing Machines; Dick's Presses, Punches, and Shears; Mortising and Tennoning Machines; Belting; Machinery Oil, Beal's Patent Cob and Corn Mills; Burr Mill and Grind stones; Lead and Iron Pipe, &c. Letters, to be noticed, must be post-paid. 27tfeow

**PASSAIC WORKS**—Passaic street, Newark, N.J.—Manufacture and have on hand, Steam Engines of the most approved construction and various sizes. Also Machinists Tools of all kinds: Lathes, Planing Machines, Drills, &c., machine for Enameling Carriage Cloth, and Machinery of every description. Jobbing Work promptly attended to. Address GEO. WATTS, Passaic Works, Newark, N. J. 32 4eow*

**EUROPEAN PATENTS.**—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments, and to save much time and expense to applicants.

**PORTABLE STEAM ENGINES**—The subscriber is now prepared to supply excellent Portable Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, say 2, 2 1-2, 3, 4, 6, 8, and 10 horse-power, suitable for printers, carpenters, farmers, planters, &c., they can be used with wood, bituminous, or hard coal; a 2 1-2 horse engine can be seen in store, it occupies a space 5 feet by 3 feet, weighs 1500 lbs., price $240; other sizes in proportion. S. C. HILLS.
25eotf Machinery Agent, 12 Platt st, N. Y.

UNITED STATES PATENT OFFICE,
Washington, April 15, 1854.

**ON THE PTITION** of Fones McCarthy, of Putnam County, Florida, praying for the extension of a patent granted to him on the 3rd of July, 1840, for an improvement in the Cotton Gin, for seven years from the expiration of said patent, which takes place on the 3rd day of July, 1854,

It is ordered that the said petition be heard at the Patent Office on Monday, the 26th of June next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing. All testimony filed by either party, to be used at the said hearing, must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 16th of June; depositions and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the argument, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York; Daily Courier, Buffalo, N. Y.; Floridian and Journal, Tallahassee, Fla., once a week for three successive weeks previous to the 26th day of June next, the day of hearing. S. T. SHUGERT,
Acting Commissioner of Patents.

P. S—Editors of the above papers will please copy, and send their bills to the Patent Office, with a paper containing this notice. 34 3

UNITED STATES PATENT OFFICE.
Washington, April 18, 1854.

**ON THE PETITION** of Charles Spafferd, administrator of George Spafferd, late of Windham, Connecticut, praying for the extension of a patent granted to him on the 2nd day of September, 1840, for an improvement in "machines for boiling and washing rags for manufacturing paper," for seven years from the expiration of said patent, which takes place on the 2nd day of September, eighteen hundred and fifty-four.

It is ordered that the said petition be heard at the Patent Office on Monday, the 13th of August next, at 12 o'clock. M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 3d of August: depositions, and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evening Argus, Philadelphia, Pa.; Scientific American, New York; Daily Courier, Buffalo, N. Y., and Post, Boston, Massachusetts, once a week for three successive weeks previous to the 13th day of Aug. next, the day of hearing.

S. T. SHUGERT,
Acting Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 36 3

**HARRISON'S PATENT MIL** —Received the highest premium at the World's Fair; 250 have been sold in two years. The stones are French burr; the frames and hoppers cast-iron, the spindles solid cast steel. They will work better for flouring, and on all kinds of grain and dry substances, and keep in repair longer than any other mill in the world. I have completed my new steam mills for manufacturing and running them, and am now prepared to supply orders for all the sizes, from 30 inches to 4 feet diameter, including also a superior farm and Plantation Mills at a fair price. Agents wanted to sell them in all parts of the country. Descriptive circulars, with cuts, mailed to all post-paid applications. EDWARD HARRISON,
Sole manufacturer and proprietor of the patent, New Haven, Conn. 30 7*

**1854**—MICHIGAN CENTRAL R. R. LINE,—D. W. WHITING, Freight Agent for Railroad and the enormous new steamers "Plymouth Rock," "Western World," and "May Flower,"—and also General Forwarder, will forward freight of any kind, by any mode of conveyance, to any destination, with dispatch and at the lowest rates; has trucks and machinery and (having been a practical machinist has all the skill necessary) for the safe and expeditious handling of any machine or heavy article, such as Locomotives, Steam Engines and Boilers, Engine Lathes, Church Bells, Safes, &c. Mark packages care "D. W. Whiting, Buffalo;" goods thus consigned take precedence with the above boats in all cases. 32tf

**STAVE AND BARREL MACHINERY**—HUTCHINSON'S PATENT.—This machinery, which received the highest award at the Crystal Palace, may be seen there in operation during the ensuing season. Cutting, Jointing and Crozing Staves and Turning Heads. Staves prepared by this process are worth to the cooper from 20 to 40 per cent more than when finished in another way. Applicable alike to thick and thin staves. Apply to C. B. HUTCHINSON & CO., Auburn, N. Y., or at the Crystal Palace. 34tf

**KRUPP'S BEST CAST STEEL**—Suitable for Mint and Plater's Rollers, also of large size (72x18 inches diam.) for rolling iron, copper or brass. Pistons of Steam Engines, and Shafts for Steamboats, not exceeding six tuns weight in one piece. Also the celebrated Cast Steel Axles and Tire, made from a solid bar without welding. Agents, THOS. PROSSER & SON,
33tf 28 Platt st, New York.

**KETCHUM'S IMPROVED MOWING MA**chine with entire change of Gear. The only successful grass cutter now known; warranted capable of cutting and spreading from ten to fifteen acres of any kind of grass, per day, in as good a manner as is done with a scythe. Orders filled at our establishment in Buffalo, N. Y., or at J. MAYHER & CO.'S, and R. L. ALLEN'S, Water street, N. Y. HOWARD & CO.,
31 8 Proprietors.

**MODELS**—Of all kinds made and warranted to answer the requisitions of the Patent Office. Post-paid communications strictly confidential. Address J. G. ARNOLD, Worcester, Mass. 31 10*

**PORTABLE FORGES AND BELLOWS**—(Queen's patent). The best forge in market for Blacksmiths work, Boiler Makers, Mining, Quarrying, Shipping, plantations, Contractors on Railroads and Public Works, Coppersmiths, Gas Fitters, &c., Also an improved Portable Melting Furnace for Jewellers, Dentists, Chemists, &c., both of which are constructed with sliding doors to protect the fire from wind and rain when used out doors, and for perfect safety and free escape of smoke when used indoors. They are compact for Shipping. Circulars with particlars and prices will be forwarded upon application. Cast iron Columns, for building constantly on hand. Jobbing, Piano, and all kind of work promply executed. FREDERICK P. FLAGLER,
29 10* Sole Manufacturer, 210 Water street, N. Y.

**MINING MACHINERY**—Of most approved construction, furnished by FRED'K COOK & CO, Hudson Machine Works, Hudson, N. Y. 15 6m

**STAVE MACHINERY.**—The "Mowry Stave Cutter and Jointer Combined," which received the highest award at the Crystal Palace, is the only machine that ever undertook to joint a stave properly at the same time that it was cut and dressed, without rehandling. One man tends the machine and turns out from a solid block of wood ninety staves a minute, ready for the truss hoop. It is not only the best in use, but for slack work we challenge the world. For machines and rights in New York, apply to CHARLES MOWRY, Auburn. For machines and rights in other parts of the United States, apply to GWYNNES & SHEFFIELD, Urbana, Ohio. 29 tf

**NEW HAVEN MANUFACTURING COMPANY**—New Haven, Conn., (successors to Scranton & Parshley) have on hand Power Planers, to plane from 3 to 12 feet; slide lathes from 6 to 18 feet long; 3 sizes of hand lathes, with and without shears; and counter shafts: universal chucks; drill presses, index plates, bolt cutters, and slide rests. The N. H. M. Company also have the right for Harrison's patent Flour and Grist Mill for the term of five years, and are prepared to furnish these superior mills at short notice. They are unequalled by any other mill, and will grind from 20 to 30 bushels per hour, and will run without heating, being self-cooling. They weigh about 1400 lbs., are of the best French burr stone, 30 inches in diameter; are snugly packed in a cast-iron frame, price of mill $200, packing $5. For cuts, prices, and further particulars apply post-paid, as above, or to S. C. HILLS, agent N. H. M. Co., 12 Platt st., N. Y. 35tf

**PORTABLE STEAM ENGINES**—GEORGE VAIL & CO., Speedwell Iron Works, Morristown, N. J., LOGAN VAIL & CO., No. 9 Gold st, N. Y., are prepared to furnish Portable Steam Engines from four to eight horse power, with locomotive boilers. These engines are recommended for their simplicity, durability, and economy, being made from the best materials and designed for practical use. They are placed on wheels convenient to be moved from place to place, and are shipped in working order: for plantation use, machinists, or others wanting small power, these engines will be found superior to any others in use. A Silver Medal was awarded at the late Fair of the American Institute, and a premium in cash of $100 at the Maryland State Fair, held at Baltimore in October last. Persons writing us by mail will be particular to give their address in full.
31 38*

**JOHN PARSHLEY,** No. 5 and 7 Howard st., New Haven, Ct., manufacturer of Machinists' Tools, and Steam Engines, has now finishing off 25 Engine Lathes, 6 feet shears, 4 feet between centers, 15 inches swing, and weighs about 1100 lbs. These Lathes have back and screw gear, jib rest, with screw feed, and the rest is so arranged that the tool can be adjusted to any point the work may require, without unfastening the tool, hence they possess all the good qualities of the jib and the weight lathe; they are of the best workmanship. Price of Lathe with count shaft and pulleys, $155 cash. Cuts, with full description of the lathe, can be had by addressing as above, post-paid. Also four 30 horse power vertical Steam Engines with two cylinders. Price of engine with pump and heater, $800 cash. For particulars address as above. 35tf

**$100 REWARD**—To the Manufacturers of Bank Note Paper. The Executive Committee of the Association of Banks for the Suppression of Counterfeiting, hereby offer a reward of One Hundred Dollars for the best specimen, in the opinion of the Committee, of Bank Note Paper, of not less than five hundred sheet, which may be submitted to them on or before the 1st day of January next. All paper submitted, except that selected by the Committee, to be returned to the persons submitting the same.
J. M. GORDON, Secretary.
Boston, Mass., March 31, 1854. 31 15*

**SCREW CUTTING MACHINES**, with P. W. Gates' Patent Dies—The subscribers keep constantly on hand three sizes of the above-named machines, to wit—No. 1 machine, 10 sets dies and taps from one-half to two inches, $350; No. 2, 8 sets dies and taps, one-half to one and a half inches, $250; No. 3, 6 sets dies and taps, three-eighths to one inch, $150. Cash on delivery at shop. P. W. GATES & CO.
Chicago, Ill. 27 13

**HUDSON MACHINE WORKS** and Iron Foundry—at Hudson City, N. Y., are prepared to contract for castings for railroads, bridges, buildings, gas pipes and posts, water pipe, cast-iron ornamental floors, cannon, &c. Steam engines and boilers, high and low pressure, sugar mills, Cornish lifting and forcing pumps for mines; stamps, mortars, and mining machinery;—also superior hydraulic pumps and presses, and superior machinists' tools made to order. Especial attention given to the making of patent machines. Orders by mail will receive prompt attention. New York Office No. 18 Exchange Place.
FREDERIC COOK & CO.
F. COOK, H. McCLELLAND. 27tf

**MACHINERY FOR SALE**—The following machines are for sale at the "Scientific American" Office:—Alcott's Concentric Lathe, price $25.
Portable Mortising Machine, $20
Bushnell's Iron Drill, $25
All orders should be addressed (accompanied with the cash) to MUNN & CO., 128 Fulton st., N. Y.

**WHITE STRAW PAPER**—For Newspapers.—A Mellier, the patentee, having established his process at Nixon & Xeinour's Mills, Manayunk, where the paper for the Philadelphia Ledger has been made daily from straw since the 12th of April, is now ready to sell licenses and make arrangements for establishing the process elsewhere. Apply to A. MELLIER & V. BEAUMONT, 74 Broadway, where specimens of half stuff, stuff and paper may be seen. 33 10*

**ENGINEERING.**—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.
CHARLES W. COPELAND,
35 tf Consulting Engineer, 64 Broadway.

**PLANING, TONGUING, AND GROOVING**—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 300 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of feet Spruce flooring in ten months. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
27tf GEO. W. BEARDSLEE.

**STATIONARY STEAM ENGINES**—The subscriber is now prepared to furnish, with or without pumps, boilers, &c., Horizontal Engines on iron bed frames, good strong, substantial, plain finished engines that will do good service, say from 4 horse, $215, to 30 horse, $1,037: they have Judson's patent valves, and will be warranted to work well. S. C. HILLS,
31tf 12 Platt st, New York.

**A. B. ELY,** Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American.
16 1y*

**WROUGHT IRON DIRECT FROM THE** Ore—The owners of James Renton's Patent are now prepared to sell rights for this most valuable invention. Apply to JAMES RENTON, Cleveland, Ohio, or to A. H. BROWN, 107 Market st., Newark, N. J. 27 10*

**BAKER'S IMPROVED BOILER FURNACE**—As used at the Crystal Palace: orders received for Stationary, Marine, or Locomotive Furnaces on this plan, and also for the rights for towns, counties, or States: certificates can be shown of furnaces in use for stationary, marine, and locomotive furnaces, with saving from 30 to 50 per cent. in fuel. J. AMORY,
25tf General Agent, 28 State st, Boston, Mass.

**NORRIS WORKS**, Norristown, Pa. The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping, and Portable Engines, and Mining Machinery of every description.
41 1y.* THOMAS, CORSON & WEST.

# Scientific Museum.

### Scientific Memoranda.

On the Alcohol of Benzoic Acid—Cannizaro has found that the oil which results from the action of an alcoholic solution of caustic potash has the constitution C14 H8 O2. It is colorless, heavier than water, refracts light strongly, and boils at 204° C. In its relations to re-agents it behaves like an alcohol, the aldehyde of which is represented by oil of bitter almonds. By the action of nitric acid at a gentle heat the new alcohol is converted into oil of bitter almonds; the action of chromic acid converts it into benzoic acid. The vapor of the alcohol passed over red hot platinum sponge yields an oil which is specifically lighter than water and is probably C14 H6. By passing muriatic acid gas into the alcohol the liquid separates into two layers, of which the upper is the the chloride C14 H7 Cl. This is a highly refracting, strong-smelling liquid, heavier than water, and boiling between 180° and 185°.—With caustic potash it gives chloride of potassium and the alcohol is regenerated. Warmed with an alcoholic solution of ammonia, the chloride gives sal-ammoniac and a crystallizable base which fuses at a higher temperature than Toluidin. By mixing a solution of the alcohol in acetic acid with a mixture of sulphuric and acetic acids, an oil is obtained which is the acetic ether of the new radical, C14 H7 O+C4 H3 O3. This is a colorless liquid, having an aromatic odor and boiling at 210°. With caustic potash it yields acetic acid, and the alcohol.—[Ann. der Chemie und Pharmacie.

On Forming Vessels of Gold by the aid of Phosphorus.—The property of phosphorus, of precipitating certain metals from their solution, has long been known; and gold is among the number. M. Levol has used this process in forming gold vessels, so useful in chemical research. He takes the perchloride of gold, and places in it, at the ordinary temperature, some phosphorus, molded of a form convenient to serve as a nucleus for the vessel of gold. To give the phosphorus the desired shape, it is melted in a water-bath near 60° C. in temperature, within a vessel of glass having the form required. After cooling it, the phosphorus is taken out solid from its envelope, breaking it if it be necessary. The precipitation of the gold or the construction of the vessel is then begun; and it finally remains only to remove the phosphorus by re-melting it and washing, by the aid of boiling nitric acid, until the last traces are removed.—[Silliman's Journal.

### The Beard and Moustache in the Arctic Regions.

Now let us start out upon a walk, clothed in well-fashioned Arctic costume. The thermometer is, say 25 degrees, not lower, and the wind blowing a royal breeze, but gently.—Close the lips for the first minute or two, admit the air suspiciously through nostril and moustache, presently you breathe a dry, pungent but gracious and agreeable atmosphere. The beard, eyebrows, eyelashes, and the downy pubescence of the ears acquire a delicate, white, and perfectly enveloping cover of venerable hoar frost. The moustache and under lip form pendulous beads of dangling ice. Put out your tongue, and it instantly freezes to this icy crusting, and a rapid effort and some hand aid will be required to liberate it. The less you talk the better. Your chin has a trick of freezing to your upper jaw by the luting aid of your beard; even my eyes have often been so glued as to show that even a wink may be unsafe.—As you walk on you find that the ironwork of your gun begins to penetrate through two coats of woolen mittens with a sensation like hot water.—[Dr. Kane's Journal of the Grinnell Expedition.

### Sugar in the Living Animal.

One of the greatest discoveries of our day, says a French paper, is that made by Claude Bernard, of the constant formation of sugar in the liver of animals. Feed an animal how you will—with food containing saccharine matters, and with food containing no trace of them, you always find the animal has, from the blood, formed sugar for itself. This sugar, which is secreted by the liver, is, like all secretions, under the influence of the nervous system; you have only to cut what are called the pneumogastric nerves, and in a few hours all the sugar vanishes. The amount of sugar thus formed in every healthy animal may be increased by certain influences, and then it gives rise to, or is the indication of, various diseases. In one disease the quantity is so great that M. Thenard extraced 15 killogrammes of sugar (something like thirty pounds) from the secretion of one patient! Real sugar, too, and of irreproachable taste, according to Boussingault, who tasted it. But now attend to this: what Nature does in disease, man can do in the terrible theatre of experiment. Claude Bernard has proved that there is a very small region of the spinal column (by anatomists styled the *medulla oblongata*), the wounding of which (between the origin of the pneumogastric and accoustic nerves) provokes this increased secretion of sugar, and if with a sharp instrument you wound a dog or rabbit in this place, you will find that in a little while sugar has accumulated to an immense extent in the blood and other liquids.

## MALONE'S HAND CORN PLANTER.

Figure 2. Figure 1.

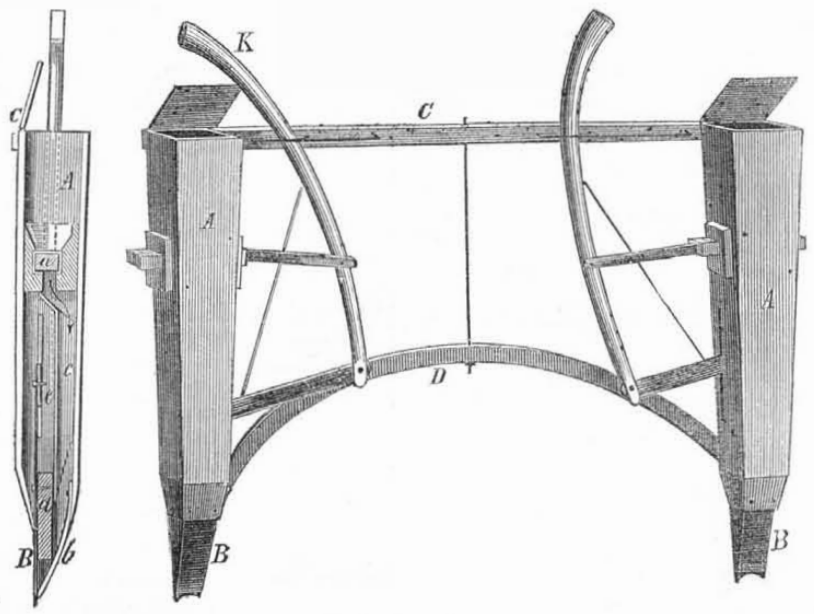


Figure 1 is a perspective view, and figure 2 is a side section of one of the tubes of the patent Hand Corn Planter of Samuel Malone, of Tremont, Tazewell Co., Ill.

This machine is small and light, not weighing over 10 lbs., and is capable of planting, by a smart person, from 4 to 5 acres per day on smooth ground. Two crops of corn have already been gathered, that were planted by it, and it is now at work at the spring business in the great agricultural State of Illinois.

A A represent two seed tubes made gradually tapering to their lower extremity, and having metal points, B B, which form the holes in the ground for the corn; these tubes are united together by the cross-pieces, C D. *e c* represent two chambers in each of said tubes, *e* being the chamber for the vertical slide, *d*, or covering piston, to work in, and *c* for the seed to fall through, as seen in figure 2. These two chambers run into one near the extremity, and thereby leave a space for the seed to fall into before being discharged, as seen in figure 2. The spring side, *b*, of the metal point keeping the corn in the chamber as long as desired, and also yielding when necessary, and allowing of its escape into the ground, the spring being operated upon by the vertical slide or plunger, *d*; it is connected to one end of a rod or arm working in a slot placed in nearly a horizontal position, and attached by its other end to one of the handles, K, fig. 1,—said handle having its fulcrum secured in the lower cross-piece, D. The arms and rods are joined, arranged, and operated in a similar manner, as knee levers, the plunger having a perfectly vertical movement. The handles of the planter are moved back and forth in the brackets, when it is desired to operate the slides. *a* is a horizontal slide working through the seed tube under the hopper; this slide is joined to one of the handles of the planter by an arm. In this slide two passages are formed for the corn to escape through from the hopper; these holes may be reversed, and both or one of the holes in the slide made to receive seed and deposit into the tubes. The horizontal slide, *a*, and the vertical piston operate at the same time, one receiving seed while the other is discharging it into the ground.

This machine is made light and portable, and is operated and carried across the field by the handle, K. The farmer stands behind and at the center of the machine, and lays hold of the handles with his hands, lifts and carries the machine from place to place, forms the impression in the ground by pressing the tubes downward by the handles, and then operates the slides and opens their seed passages by drawing the handle towards his sides, and forces the seed into the ground by moving the handles from his sides.

The horizontal slide, *a*, is like the slide valve on a steam engine; the seed passes down through either the one or the two openings in it, into *c*, as shown by the arrow, while the piston, *d*, pushes it into the ground. The handle, K, gives an up-and-down motion—raising and forcing down *d*, while it gives a horizontal motion to the valve, *a*. It is a very simple machine, and no doubt answers a very excellent purpose.

More information may be obtained from Mr. Malone by letter addressed to him at Tremont.

### Manure for Strawberries.

The following is from a communication to the "Friend's Review," and may be very useful to many of our readers:—

"The writer had a very productive bed, 30 by 40 feet. I applied, says he, about once per week, for three times, commencing when the green leaves first begin to start, and made the last application just before the plants were in full bloom, the following preparation:—Nitrate of potash, (saltpetre) glauber salts, and sal soda, (carbonate of soda) each one pound, nitrate of ammonia, one quarter of a pound—dissolving them in 30 gallons of river or rain water. One third of this was applied at a time; and when the weather was dry, I applied clear soft water between the times of using the preparation, as the growth of the young leaves is so rapid, that unless supplied with water, the sun will scorch them. I used a common watering pot, making the application towards evening. Managed in this way, and the weeds kept out, there is never any necessity of digging over the bed, or setting out new. Beds of ten years are not only as good, but better than those two or three years old."

### Attraction of Compasses on Ships.

The following facts will serve to show the necessity of the strictest attention to the accuracy of ships' compasses:—

"A Cunard steamer, on leaving Halifax, had steered such a course as should have carried her 30 miles east of Cape Race, in Newfoundland. The weather was wintry and foggy, and the captain coming on deck in the gray of the morning, found, to his horror, his vessel apparently rushing to destruction on an iron-bound coast. By instantly reversing the engine the vessel was saved, when an examination of all the compasses on board was had, and the cause of aberration found to be, a new iron tube which had been placed inside the brass funnel of the saloon without the captain's knowledge, and thus the lives of many persons and the safety of a noble vessel jeopardized by a circumstance apparently so trifling."

### LITERARY NOTICES.

Anatomy of the Invertebrata.—By C. Th. Siebold: translated from the German and edited with Notes and Additions recording the Recent Progress of the Science. by Waldo I. Burnett, M. D., Boston: Gould & Lincoln. This work marks a period in the history of American Scientific progress, and indicates an advance in the department of Natural History equal to that attained to by the savans of the old world. The work appears as a translation, but the notes and additions brought to it by the Editor are equally valuable and important as the text itself. The class Invertebrata, of which it treats, embraces, as is well known, those forms of animal life, in which there is an absence of the brain, spinal cord, and vertebral column. They occupy the lowest grades of animal life, and any extended research into their character must be necessarily microscopic. At the first glance it may seem that the work is wanting in the so-called practical information,—but no opinion can be more erroneous. The growing coral reefs that endanger our Southern coasts, and obstruct navigation, are the work of the invertebrata: their microscopic bodies, which the sounding line brings up from the ocean depths, are our only sources of information respecting the character of the sea bottom, and last, but not least, would we refer to the opinion which is year by year gaining in weight, that it is only by a close examination and study of the forms of animal life that we shall be enabled to interpret and combat those strange and mysterious diseases which periodically visit with such severity man, and his great staples of vegetable food. To every student of natural history in this country the work is invaluable, and at present is the only standard.

Practical Surveyor's Guide—This is a new work of the "Practical Series," published by H. C. Baird, of Philadelphia. The author of it is Andrew Duncan, Land Surveyor and Civil Engineer, Pittsburg. He has had more than 30 years' experience, and is master of his subject. The work is composed in four divisions: 1st. The arithmetical calculation of plane figures. 2nd. The calculation of surveys taken with the compass and chain, by latitude and departure. 3rd. The method of plotting, enlarging and diminishing maps, with remarks on copying and embellishing. 4th. Levelling and calculating cuttings and embankments, with tables and many useful practical rules. It is an excellent work; and is for sale in this city, by C. S. Francis & Co., Broadway.

Henck's Field Book for Railroad Engineers—Published by D. Appleton & Co., New York. This is, strictly speaking, a book for the Civil Engineer, the author himself being one of acknowledged ability. It is neatly printed with gilt edges, morocco cover with flap and pocket, and is designed to be a pocket companion; it contains many useful tables of sines, cosines, tangents, squares, cube roots, &c. It is very full and complete on the laying out of simple, compound, parabolic, and other curves. This book does great credit to both author and publisher.

The Illustrated Magazine of Art—May number.—This splendid magazine continues its attractions; an elegant series of illustrations, and a choice variety of carefully prepared historic and literary contributions. It stands unrivalled as a work of excellence. A. Montgomery, publisher. No, 17 Spruce st.

Putnam's Monthly—The May number of this choice periodical is upon our table. G. P. Putnam & Co., publishers, 10 Park Place, New York.

Frank Leslie's Book of Fashion—The May number compares favorably with its predecessors, and is a publication worth subscribing for, especially by the ladies. Price 25 cents per number; $3 per annum. Published monthly at No. 6 John st.