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Improved Stave Machinery.

The annexed engravings are views of an improvement in stave machinery, for which a patent was granted to Jonathan E. Warner, of Boston, Mass., on the 15th of last November. Figure 1 is a perspective view, and figure 2 is a longitudinal section. The same letters refer to like parts.

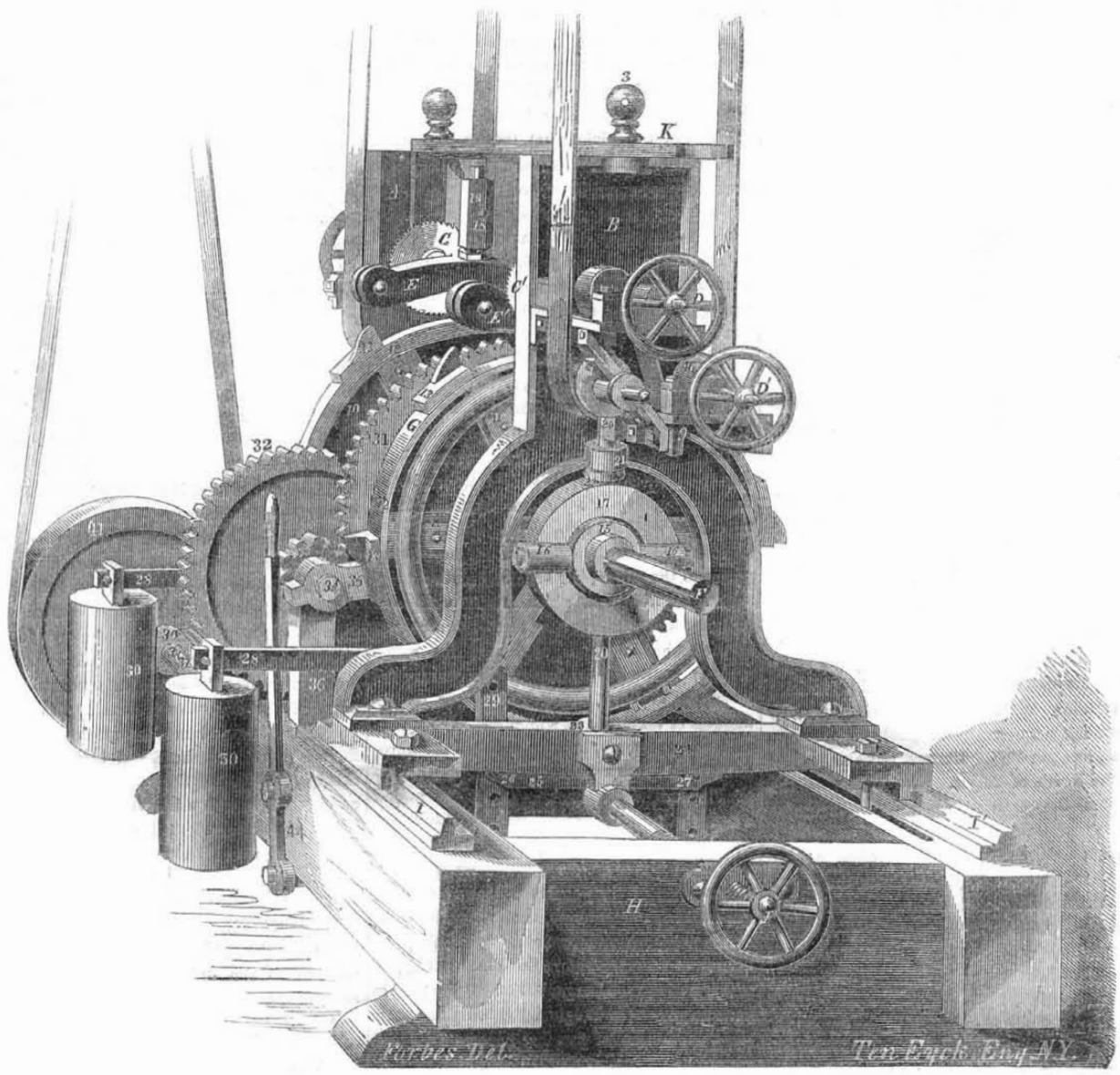
The object of this machine is to finish the two ends of a stave simultaneously, which includes four distinct operations, viz., cutting the proper length, bevelling the ends, "howelling," and "crozing." The combined operations are technically known as "working off." The nature of this invention consists, first, in the use of two circular saws to cut the staves to equal length. Secondly, in the use of two revolving cutter-heads, having in each three sets of movable and adjustable cutters, the first set for cutting the bevel on the ends of the stave; the second set for howelling, and the third set for crozing. Thirdly, in the use of a rotary bed, which, slowly revolving on its axis, carries the staves to the saws and cutters, and deposits them when finished on the opposite side of the machine. This bed is made to yield to the varying thicknesses of the staves, and by means of weights acting through systems of levers, the staves while being wrought are kept steadily in contact with fixed stops. The saws, cutter heads, and stops are supported in two upright frames, the one being fixed and the other movable, upon the frame of the machine, by which means the staves can be cut to any required length.

A B represents two upright frames for supporting the arbors of the circular saws, C C′, the cutter heads, D D′, the stops, E E′, and the axis, F, of the rotary bed, G. The frame, A, is firmly bolted to the bed, H, and the other, B, admits of moving laterally on the guides, I I′, attached to the bed, H, by means of the screw, J, and secured at any distance from A, by the bolts, 1 1′, which pass downwards through the slots 2 2′, in bed H. The tops of the frames are steadied by the horizontal link, H, which is fast at A, and slotted to permit the bolt, 3, in the top of the frame, B, to move therein. By tightening the bolt, 3, the top of B is connected firmly to A. The circular saws, C and C′, are of the ordinary kind, and are supported in the brackets, 4 4′, which are bolted to the frames.

To the cutter heads, D D′, are bolted the curved edge or howelling cutters, 5 and 5′, the gauge cutters, 6 6′, the crozing saws, 7 7′, and the inclined cutters, 8 8, and 8′ 8′, which severally reduce the thickness of the stave at the ends, define the limits of and cut the groove for the heads and bevel the ends of the stave. These heads are attached to revolving arbors, and supported in brackets, 9 9′, in the same manner as the saws, C C′.

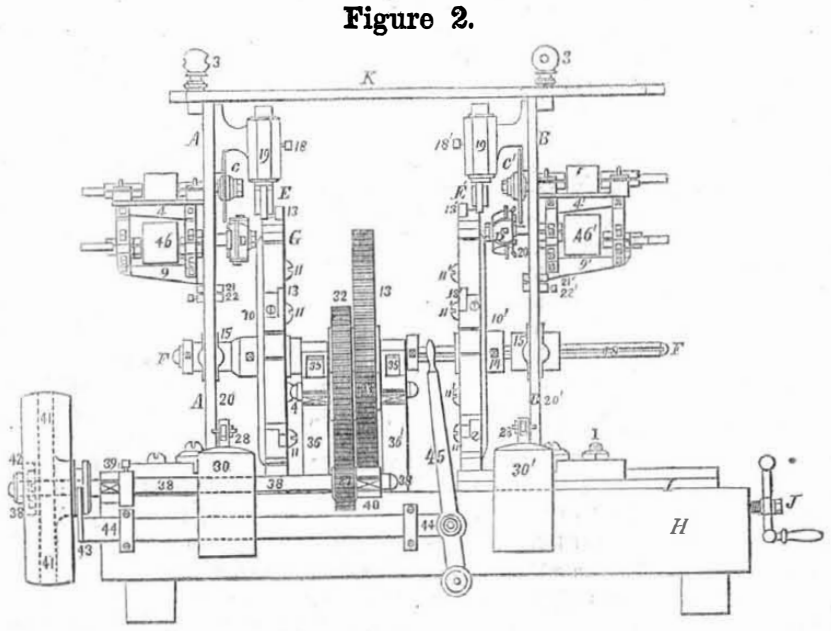
To obtain a simple, uniform, and constant feeding apparatus, and also to combine therewith the means of so carrying the staves that the form of the surface left by the revolving cutters in the heads, D D′, should be similar to the required internal figure of the ends of the cask, there is the rotary yielding and expanding bed, G.

WARNER'S STAVE MACHINERY.---Fig. 1.



It consists of two similar wheels, 10 10′, to the radial arms of which are attached by the bolts, 11 11′, the movable segments, 12 12′. Each segment carries a stop, 13, against which the staves rest. By moving the segments on the radial arms, the diameter of the bed may be made similar to the required internal diameter of the head of the cask. The two wheels are placed upon a shaft, F, the one, 10, being fixed, and the other, 10′, movable, and held at any required distance from 10, by the screw, 14, which is guided by the groove, 48, in the shaft, F, and retains the opposite stops, 13 13′, (figure 2) of the segments always in a position parallel with the axis, F, and at right angles with the saws and cutter heads. The

Figure 2.



shaft, F, is supported and revolved in the bearings, 15 15′, within the frames, A B. These bearings are of the kind known as swivel bearings, and vibrate on the screws, 16 16′, within the rings, 17 17′. Above the rotary bed and in a vertical line with the axis, F, are placed the spindles of the curved stops, E E′, which can be set at any vertical distance from the path of the cutters in the heads, D D′, which the required thicknesses of the stave demands, by means of the screws, 18 18′, which pass through the shells of the sockets, 19 19′. These sockets are bolted to the frames, A B. The axis of the rotary bed has a yielding vertical movement, so that when a stave is carried by the revolving bed to the saws and cutters, in passing under the curved stops, E E′, the axis lowers to suit the thickness of each end of the stave. To the opposite sides of the rings, 17 17′, are fixed the spindles, 20 20′, the upper ones, 20, pass through the eyes, 21 21′, in the frames, A B, and have collars, 22 22′, movable upon them to prevent the axis from being raised too high; the lower ends of the spindles, 20′, slide through the eyes, 23 23′, of the stretchers 24 24′, and rest on the horizontal levers, 25 25′. 25 is one of a system of levers composed of movable fulcrums, 26 27, the fixed fulcrum, 27′, the levers, 25 28, and the link, 29. To the levers, 28 28′, are hung the weights, 30 30′, by the gravity of which, acting through the system of levers, the axis of the rotary bed is raised until the collars, 22 22′, strike the eye, 21 21′, or the passing stave pressed against the curved stops, E E′, prevents further vertical action.

The revolution of the bed is accomplished by a train of gearing, viz. :—31, on the shaft F, 32 33, on the shaft, 34, and kept in contact with the gear, 31, by the radius bars, 35 35′, the end of the bars resting on the props, 36 36′, fig. 2, and finally the pinion, 37, on the shaft 38. The shaft, 38, revolves in the bearings 39 40, and carries the loose pulley, 41. The pul-

ley, 41, is thrown into connection with its shaft by pins on its face being brought in contact with similar pins or projections on the side of the circular plate, 42 (seen in dotted lines in figure 2), said pulley being moved laterally on the shaft, 38, in the usual manner by the fork, 43, embracing a groove in the hub of the pulley, the shipper bar, 44, and the lever, 45.

To bring the machine into action the circular saws are first set to the required length of the staves by moving the frame, B, on its bed; the curved stops, E E, are then set to position as described; the saws and cutters are made to revolve by a belt which passes under the carrier pulleys, 46 46′, over the pulleys on the saw arbor, and under the pulleys on the cutter head arbors, thence uniting with the other end over the main driving pulley; the loose pulley, 41, is then thrown into gear by the clutch arrangements, and a rotary motion being given to the bed, G, a stave laid upon the wheels, 10 10′, of the bed, G, parallel with its axis, F, will be carried by the stops, 13, under the stops, E E′, to the saws and cutters; the outer side of the stave being supported against the stops, E E′, by the action of the weights, 30 30′, upon the revolving feed bed, G, having passed from under the stops, E E′, the stave being unsupported, falls from the bed. Other staves are laid upon the bed as often as the several stops, 13 13′, &c., come around to the operator.

This machine has been in successful operation for the past two years, its duty averaging fifteen staves per minute for large work, and thirty for small work.

More information may be obtained by addressing, post-paid, Jonathan E. Warner, Boston, Mass.

Flax Industry.—No. 4.

The origin of the use of flax for textile and other purposes, is lost in the obscurity of antiquity. Its importance as affording the material from which one of our most valued articles of clothing is manufactured, was certainly known at a very early period, not only throughout a great portion of Europe, but also in Asia and the North of Africa. The history of the flax plant is even in some measure co-extensive with that of grain, since whenever man partially civilized appears united in societies, we see that he has become acquainted with the means both of nourishing and clothing himself, without it being possible for us to discover by what successive steps he has been enabled to attain this position, either by agriculture or manufaacturing art.

Frequent allusions to the employment of flax occur in the Old Testament. "The flax and the barley were smitten, for the barley was in the ear, and the flax was bolled. But the wheat and rye were not smitten, for they were not grown up." (Exodus ix., 30, 31.) In this simple statement we discover the accuracy of the Mosaic account, for both in Europe and America, the flax ripens before the wheat. Rahab hid the spies with the stalks of flax which were laid in order on the roof of her house. Now as a nice regard is paid to the order in which flax is laid to dry at the present time, preparatory to scutching and spinning, doubtless, in this instance, it was placed upon the roof for similar purposes.

Solomon had horses brought out of Egypt, and *linen yarn*; the King's merchants received the linen yarn at a price. Job complained that his days were "swifter than a weaver's shuttle." From these quotations we learn that flax was cultivated, prepared, spun into yarn, woven into linen, and considered as an article of merchandise in the remote periods. "The Egyptians," says Belzoni, "were certainly well acquainted with linen manufactures equal to our own, for in many of their figures we observe their garments quite transparent," and among the folding of the mummies he observed "some cloth quite as fine as our common muslin, very strong and of an even texture." As the priests of the Egyptian Isis were clothed wholly in linen, Ovid has applied to this Goddess the term *Dea lingera*.

Numerous specimens of the linen of the ancient Egyptians may be seen in the collection of Dr. Abbot, now on exhibition in New York. An inspection of these samples would seem to warrant the inference that the linen of the Pharionic period was generally coarse and of an inferior character, the threads being loosely twisted and the weaving imperfect; the strength however, after the lapse of several thousand years, is still considerable.

The use of linen for clothing passed from Egypt to Greece, and from thence to Italy. It was little known at Rome under the Republic, but was in general use in the time of the Empire, at which period linen of great fineness and whiteness was manufactured. Pliny describes the different qualities of flax respectively produced by each country, with a peculiarity which argues that the manufacture of linen had already become an important branch of commerce to many nations.

At this date, also, the use of flax as a textile material was established among all the nations of Northern Europe. M. Theis, of France, who has made very complete historical investigations, is of the opinion that the art of preparing flax had not been communicated to these people by commercial intercourse with other nations, and considers it as a matter of no little interest, that these almost savage nations, were able to attain to a great perfection in the use of a material, the complicated preparation of which seems to imply an advanced stage of civilization.

All the barbarous tribes that came from the remote parts of Scandinavia, or Eastern Germany, were clothed in linen fabrics at the time of their migration into Southern Europe, aud it is to those emigrating about three centuries before the Christian Era, that the introduction of flax into Flanders and the low countries is attributed.

At the time of the extension of the Roman power to the Rhine, the article of clothing manufactured from flax, which is still worn and designated as the *sarran*, or blouse, formed part of the national costume, soon after the whole of Italy became dependent on this country for its supply of linen, which was famous for its fineness of texture, and whiteness. If Rapsæt, a French antiquary, is to be credited the introduction of the flax culture and manufacture into Flanders, dates back even to the period when the tribes dwelling on the Black Sea emigrated to Western Europe. But, however, this may be, it is certain that the want of any organization of the people into towns or villages under municipal laws, does not enable us to obtain any positive information concerning this branch of industry before the 13th century, at which period social organization of the people became general in Belgium. Since this epoch the manufacture of flax has become fixed and constant, and has been considered as a part of the necessary occupatiou of each rural family, equally with its cultivation. The first notice in the Government Records occurs during the 14th century, but Mathew Westminster cites a chronicle of the 13th century, which quaintly states that "about these times all the world came to Flanders to buy clothing."

During the 13th and 14th centuries, however, Nivelles enjoyed a greater reputation for linens than Flanders; it afterwards lost this reputation, and together with it, its population, which became reduced from thirty thousand to eight thousand inhabitants. From Flanders the linen industry extended to the neighboring provinces, to Brabant, Hainault, and especially to Tournay. The number of edicts and ordinances issued during the 15th and 16th centuries show how great an interest had already been excited in relation to the business. An order in 1565 prescribes the method of bleaching the yarn; another in 1619 relates to frauds which had been introduced in the manufacture of the cloth. Different edicts, the first dated in 1591, prohibited the importation of flax; another in 1667 prohibited the introduction of cloth prepared from the fiber of cotton or nettles, as likely to affect the use of the fiber of flax. Towards the close of the 17th century a commission was appointed to inquire into the condition of the various branches of industry followed in Belgium and Holland, in which the flax manufacture was especially noticed as worthy of protection and attention.

It appears from the official documents of this epoch, that the markets of Flanders furnished about one hundred thousand pieces of cloth, each piece measuring about eighty ells. In this is not included the quantity furnished for home consumption.

With the advancement of the age the fabrication of flax increased in importance. In 1735 there were sent out from the single market of Ghent 65,849 pieces of linen; in 1755, 79,040; in 1660, 83,305; in 1764, 86,315. At the same time, independently of the market of Ghent, there were in Flanders the markets of Andenarde, Alost, Renaix, Lockeren, Bruges, and Courtray. The total exportation of cloth in 1762, amounted to 13,115,241 ells, and in 1783 to 20,408,373 ells.

[For the Scientific American.]

Storm Lights.

There is a phenomenon of common occurrence in this part of the country, connected with the atmospheric influences that move about the earth during the seasons of mild temperature, which I had never been able to explain according to any laws with which I was acquainted. I allude to the lights frequently seen in a clouded sky at night in advance of storms. These lights, some suppose, are caused by fire on the prairies; while by others they are called storm lights, and are said to indicate snow. They differ somewhat from the Aurora Borealis, but still are analogous. The great similarity in certain respects of light, heat, and electricity, justly leads us to the inference that their action depends upon the same physical laws, and that whatever causes the liberation of caloric from matters, in like manner sets free its light and electricity. Atmospheric ascension is the principal cause of the condensation of the vapors of water, and this ascension in our climate depends on certain conditions imparted during the passage of atmospheric influences. I think that I have evidence sufficient to warrant the assertion that sometimes, when there is a general rising of the air, there are places where the ascending current is moving with a greater velocity than in the neighboring regions, and in consequence of which there is more light, heat, and electricity liberated in such places than where the ascending current moves with a less velocity. In restoring an equilibrium, light is set free. These luminous places in the clouds are only seen when the transfer of electricity is by convection, as is common in cool weather.

While this diffusion of light is due to such a discharge, the lightning flash may be properly referred to the disruptive discharge in the summer season. J. Hall.

Athens, Ill.

Wintry Weather in New Brunswick.

The spring is said to be very backward in the Province of New Brunswick. The Woodstock (N. B.) "Sentinel" says that in that vicinity the snow is from two to four feet deep in the open fields, and five feet deep in the woods. Cattle are starving to death in many parts of the country for want of food, and from present appearances at least a month must elapse before they will be able to procure a sustenance from the growing vegetation of Spring. It is said that in Frederickton the people, becoming somewhat impatient of the slow approach of warm weather, have commenced blowing up the ice in the river with gunpowder—a tin vessel containing the powder being placed beneath the ice, and the charge ignited by means of a galvanic battery.

[Although the spring has been very backward here—the latest we have had in a great number of years, still our lot has been favorable in comparison with those living further north.

Louisville Locomotive Works.

We learn by the "Louisville Courier," that very extensive works have been established and are in successful operation in that city, for building first class locomotives. It is about sixteen months since ground was broken for these works by Messrs. Olmstead & Co., and they have now about 250 persons in their employ; they have built three excellent locomotives for the Nashville Railroad, and six others are in course of construction for the Ohio and Mississippi Road. There are complete and ready for service a number of freight cars for the Nashville Road, and the elegant passenger cars on the Louisville and Portland Railroad were also built there.

Scientific Memoranda.

On Some Peculiar Reductions of Metals in the Humid Way—The following experiments were made for Professor Wohler, by Hiller. The observation first made by Bucholtz, that long crystals of metallic tin are form e. when a rod of that metal is inserted in a solu tion of protochloride of tin, and the latte carefully overlaid with water, was first of all further tested. It appeared that, for the production of large crystals, the solution of chloride of tin must be acid. Of the tin immersed in the solution, there was always more dissolved than was made up by that which crystallized. In one experiment the proportions were as 7 to 6. These crystals are formed at the point of contact between the two fluids.—If the solution be neutral, they appear below this in the solution of the protochloride, and remain bright. Copper, inserted into a neutral solution of nitrate of copper, covers itself entirely with brownish-red crystals of protoxide of copper, and afterwards with sharp crystals of metallic copper. The copper is dissolved, especially at the point of contact of the fluids.—The same phenomenon is produced, but in a less degree, with sulphate of copper. In a solution of perchloride of copper, the copper is covered with crystals of the protochloride. A rod of zinc, under similar circumstances, covers itself with grey granules of metallic zinc, especially at its lower end. In this case, also, the zinc is dissolved at the point of contact of the fluids. Cadmium behaves in a similar manner in the solution of its nitrate; the reduced metal is more pulverulent, and therefore much more readily oxydized in the air than the reduced zinc. Lead in the solution of neutral nitrate or acetate of lead, furnished small shining crystals of lead. Bismuth precipitates the metal from a solution of protochloride of bismuth, if the latter has been overlaid first with muriatic acid, and afterwards with water On silver, immersed in a concentrated solution of nitrate of silver overlaid with water, metallic silver deposited in a dentric form, always originating from a few scattered points of the surface of the silver.—[Ann. der Chem. und Pharm.

To Make Oxyd of Gold—Figuier, who tested the several methods of preparing this oxyd, now so extensively used in electro-gilding, has determined the best to be as follows:—Dissolve 1 pt. gold in 4 pts. aqua regia, evaporate to dryness, re-dissolve in water, add a little aqua regia to take up the traces of metallic gold and of protochloride remaining undissolved. Evaporate again, re-dissolve in water, and mix with pure pottassa perfectly free from chloride, until it gives an alkaline re-action with turmeric paper. Turbidity immediately ensues, when it is mixed with chloride of barium; aurate of baryta precipitates as a yellow powder. When the precipitate begins to assume a whitish appearance, the addition of chloride of barium must be discontinued, as all the gold oxyd has gone down and the alkali commenced to act upon the baryta of the chloride. The aurate of baryta is then to be washed until the waste-waters cease to be precipitated by sulphuric acid. The aurate is then heated to boiling, with dilute nitric acid, in order to eliminate the oxyd of gold. By washing until the water no longer reddens litmus paper, the oxyd becomes pure, and must be dried between the folds of bibulous paper by exposure to air. —[Journ de Pharm.

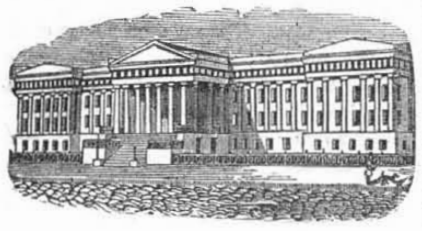
Minot's Ledge Light-House.

The work for the construction of a solid and substantial light-house, on the site of the ill-fated structure, washed away some years ago, will be very soon commenced.

A Light on Bunker Hill.

The fixtures having been completed, Bunker Hill Monument was lit for the first time with gas on the evening of the 17th ult. There are ten "bat-wing burners," and the pipe passes up the well or inner circle, two hundred and twenty feet.

Were a cannon ball-fired from the earth with a velocity of seven miles per second, it would never return.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MAY 2, 1854.

SEWING MACHINES—I. M. Singer, of New York City: I claim forming seams for stitching and sewing with two threads, the first of which is carried through the cloth at each stitch, and interlaced with the second by forming a loop with the second on one side of a loop formed with the first, and then forming a second loop with the second thread, which is drawn through the loop formed with the first thread, and through the first loop formed with the second thread, as described.

I also claim the needle and looper in combination with the instrument, or its equivalent, for carrying or guiding the second thread within the range of the looper, as described.

DISCHARGING COAL FROM CANAL BOATS—Amos Young, of Georgetown, D. C.: I do not claim the devices named, but the method described of discharging and transferring coal or cargo from canal boats, by causing the boat to free itself of its cargo by the settling or falling of the boat in the dock in drawing off the water from the latter, in such a manner that the cargo contained in one or more cargo boxes or trucks provided with suspension track attachments or devices, as specified, is left suspended at its draught of floating level in the canal on a suspension track or railroad, built on the sides of or over the dock, whereby the cargo may be discharged from the boat with dispatch, and with but little labor, and be run off at a high level, to any distant place of transfer, and there be transferred from one receptacle to another, without inconveniently detaining the boat, and whereby the many other advantages specified are obtained, the said cargo box with its suspension track or railroad being arranged and operating together as set forth, and the whole serving to economize time, labor, and reduce the cost of transit and delivery at a high level, in a practicable manner, as specified.

DEVICES FOR TONGUING AND GROOVING LUMBER—N. G. Norcross, of Lowell, Mass.: I am aware that a rotary planing cylinder has been arranged so as to have its cutter knives rotate in the direction in which a board was moved against it, in such case a bar or the equivalent therefor has been employed to keep the board down upon the bench when the cylinder has been arranged in the bench, or under the surface of the board dressed by it. I therefore lay no claim to any such disposition or operation of a rotary planing cylinder for planing boards, as the function of it is different from that of a rotary saw, the latter being made to cut entirely through a board, while the former only dresses it on one of its surfaces, and cuts but a short distance below the same. The saw cuts into two opposite surfaces or through the board, and in striking out of the board it leaves a ragged edge on the surface, while in striking into it the surface through which it enters is left smooth and without a ragged edge or fin. Now as one of the sides of the board to be tongued and grooved is usually a planed surface, and that surface must be placed downwards on the bench during the operation of making the tongue and groove, it becomes desirable to have it jointed with a smooth edge, and this is done by making the teeth of the saw to run so as to cut into the surface of the board instead of cutting out from the board and such surface.

And I do not claim the improvement of making the tongue with two recesses, the same being accomplished by means of the extension of the teeth of the saws inward beyond the knives so stated, but mean to claim such an arrangement of the teeth of the saws with respect to the outter knives and for the purpose of making the tongue and such channels or recesses.

I also claim the mode of confining the upper saw, or set of saws of either the tonguing or grooving cutters to its shaft, viz., by the combination of the two right and left threaded screws, and the screw nut, the same being substantially for the purposes of ready adjustment of the saw or saws, as stated.

I also claim the improvement of making one or both of the draught rollers with a groove, when such roller is arranged and made to operate with respect to the tonguing cutters or saws, as specified.

CONSTRUCTING STRAP IRON RAILING—Matthias Lachenmaier, of Philadelphia, Pa.: I claim the manner described of constructing and fitting together crimped wrought metal railing, by constructing the cross bars at the extremities of their crimps or bends with punched or pressed studs, projecting either successive pair in each bar, in opposite directions alternately, to form supports or stops to the bars on either side or edge of their crimps, and on both sides or faces of the railing, to prevent the bars from slipping out of their crimped bearings, and from out of line with them, also to relieve the crimps from injurious strain, and to divide strain, jerk, or pressure applied to the railing or to one or more bars over the several bars, whereby time and labor are economized in fitting together the railing, a simple and strong double cross tie of the bars at their several crimps is obtained, and whereby a flatter crimp, without the usual adjuncts of bolts or rivets for tying the bars together, may be used, as specified: the said cross bars at one of their crimps or bends, either being made with or without a center stud, fitting into a corresponding indentation in the adjoining bar, to serve as a starting point or center for fitting the bars together, and to hold them in their crimps, as specified.

CHARGERS FOR FIRE-ARMS—Wm. M. Storm, of New York City: I am well aware there are several chargers already in existence, as Colt's "powder and shot chargers," and others, but I disclaim all interference with these, claiming in my charger the general arrangements of the parts, as described, the same embracing the combination of the devices of a fixed rammer, and moving ball nozzle, and with the latter of a plurality of ball columns or distinct chambers, the whole operated as set forth.

PLATES FOR ARTIFICIAL TEETH—Mahlon Loomis, of Cambridgeport, Mass.: I do not claim the process set forth. In making sets of artificial teeth, I do not claim the spreading of a gum enamel over one side of a metallic roof plate upon which the teeth are fastened: nor the extension of the porcelain gum some way, and not entirely upon the roof.

What I claim is the improved manufacture of whole or half sets of mineral teeth, as described.

REED BOXES FOR MUSICAL INSTRUMENTS—M. T. Lundfeur, of Manchester, Conn.: I claim, first, my method of inserting reed boxes in chambers of graduated length and depth and width, as described.

Second, tubing or chambering the reed boxes, as described and for the purpose set forth.

Third, blocking the reed box and mortising the block when it overlies the locality of the reed, as described, and for the purpose set forth.

PROCESSES FOR DISTILLING ROSIN OIL—Halvor Halvorson, (assignor to H. Halvorson and J. T. Heard) of Boston, Mass.: I am aware that it has been common in the distillation of rosin to mix it with alkalies, alkaline earths, or metallic oxyds: also that rosin and oil have been distilled from bricks and various other insoluble matters; I therefore do not claim any such mixtures of rosin for the purposes of distillation, as they do not have a specific action in the process that results from the employment of clay. I have found that in the use of clay no pitch residuum is left in the retort or distilling vessel after distillation, whereas with any of the other matters alluded to as having been mixed with the rosin, I have found a large residuum of pitch remaining after distillation.

The clay, therefore, I have discovered to have, in some unknown manner, a specific action on the rosin in preventing the formation of the pitch residuum.

What I claim is the combining clay with rosin and subjecting the mixture to distillation, so as to produce therefrom an oily product, as specified.

DISTILLING APPARATUS—Halvor Halvorson (assignor to H. Halvorson and J. T. Heard), of Boston, Mass.: I claim the rotary cup, the rake, and the discharge pipe, (made with a plexure) or their equivalents, in combination with a still, and made to operate therewith as specified.

SPINNING COTTON—John W. Adams, of Thomsonville Conn.: I claim the employment of the thread carrier, as specified, in combination with the central spindle for winding on with or without a bobbin or spool, and with the ring, groove, and traveler, or its equivalent, as specified.

COUPLINGS OF ENDLESS CHAIN HORSE POWERS—W. E. Arnold, of Rochester N. Y.: I claim the lips, the recesses, and the hooks, by which the series of platforms are united into a continuous chain platform, without any other fastenings than those afforded by their own peculiar shape, and thus avoiding the use of links, bolts, rods, or similar fastenings, as described.

OPERATING CATCHES IN TOOL HOLDERS—John Allender, of New London, Conn.: I claim the described socket, the face plate with an eccentric groove or slot, in combination with the sliding catch, with a projection fitted to said groove, and so arranged as to traverse the catch by turning the plate, as described.

MAKING SHIPS' KNEES—Wm. Ballard, of New York City. I claim the formation of ships' knees substantially as described.

HYDRAULIC HEATERS—Wm. H. Churchman, of Philadelphia, Pa.; I claim the attachment of all of the radiating or circulating tubes, in one or more series of rows, directly to the boiler or main receptacle for water, together with any and all equivalents thereof.

ADJUSTING THE PACKING OF PISTONS FOR STEAM ENGINES—John Crabtree, of Philadelphia, Pa.: I do not claim the packing rings concentric with and clasping the inner ring; nor the inner ring and packing rings in combination; nor do I claim adjusting the packing of pistons through a hole in the cylinder head.

But I claim the open conical ring in combination with the lugs or their equivalents, cast on the open inner ring, and the flanged adjusting screw, or its equivalent, the shorter adjusting screw, and follower, arranged and combined as described.

ADJUSTING THE VALVES OF LOCOMOTIVE ENGINES—H. W. Farley, of East Boston, Mass.: I do not claim making use of the power of the locomotive exerted through rollers placed beneath the rails, for the purpose of driving machinery, pumping, sawing, or performing other analogous operations.

I claim the described method of adjusting the valves of a locomotive engine, the drivers being revolved by rollers suitably placed to receive them, which rollers are driven by any suitable power independent of the engine itself.

CUTTER FOR METALLIC BARS AND RODS—John Gallagher, of New York City: I claim the arrangement of the movable cutting die, in the eccentric lever operating in connection with the fixed cutter, as described.

MACHINE FOR MAKING BED PINS—Curtis Goddard, of Edinburgh, Ohio: I claim the combination of cutters in the hollow mandrel with the movable cutter operated by the pin pressing the cutter, or by a disk of metal moved by the pin or other means, as set forth.

STRAW CUTTERS—Robert Hodgin, of Barnesville, Ohio. I disclaim the use of an endless belt for the purpose of feeding the straw or other material to the knife.

But I claim the straw rest for supplying the straw to the knife, said straw rest or rack being carried the entire length from rear to front end of the cutter box by an intermittent forward motion, as set forth.

CAR TRUCKS WITH ADJUSTABLE AXLES—A. C. Ketchum, of New York City: I claim the combination of the sliding side pieces, the transverse sliding bar, and the lever, as described, for the purpose of causing the axle boxes to move in such a way as to make the axles assume the form of radii, or normals, to the curves, and thereby keep the wheels in line with the track.

[A notice of this improvement is published on page 300, Vol. 8, Sci. Am.]

TRUNK LOCK HASPS—Conrad Liebrich, of Philadelphia, Pa.: I claim so combining a spring with a hinged hasp, as that the lower or hinged portion thereof shall stand off from the trunk, in the manner and for the purpose described.

Second, the placing of the hasp catch in a solid projection which enters the lock with the hasp catch, and takes all the strain incident upon the tendency of the lid to open and thus protect the catch itself, as described.

HARROWS—W. F. Pagett, of Stone Bridge Va.: I claim, first, the constructing harrow beams of sections of iron with the teeth wrought solid upon and with them.

Second, the combination therewith and arrangement of cross rods with screw and taps, and pipes or tubes, or their equivalents, to keep the beams and sections in their places.

ARRANGEMENT OF SPRING DIES IN MACHINES FOR MAKING CLINCH RINGS—G. M. Patten, of Bath, Me.: I am aware that a lower die having a spring seat for discharging the manufactured article, has before been used, also that a spring clearer differently arranged or operating in combination, has been employed in various eyelet machines for removing the eyelets from the punch or upper die, as it ascends: such I do not claim.

But I claim the spring seat of the lower die and elastic clearer, when arranged and operating together, as specified, so that not only is the finished clinch ring forced upwards out of the lower die, and detached from the upper one to permit of its easy removal by the bar in feeding forward, but, also whereby the spring seat and clearer are made to act as elastic grippers to the ring, to hold or keep it in its seat till removed by the bar to avoid the breaking of the machine, and whereby the clearer serves as an elastic guide to the bar to facilitate the entry of feed to the bar and to keep it in a fair or flat position for the operation of the punch upon it, as specified: the said clearer and spring seat being hung and operated so as to exert a continual tendency to approach each other both during the up and down stroke of the punch, as set forth.

FLEXIBLE HARROWS—W. B. & M. Ramsay, of South Strabane, Pa.: We claim the peculiar arrangement described, of the three parts of the harrow and the three flexuous joints connecting the same together, in combination with the construction of said joints, which allows of the several parts very freely and perfectly adjusting themselves up and down, independent of each other in passing over the undulating surface of the soil, as described.

By thus arranging and combining the several parts of the harrow, we are enabled to simplify its construction, lessen its cost, and render it capable of making ten more movements than any other flexible harrow known, and consequently performing the harrowing operation more perfectly and speedily, as set forth.

[An engraving of this improved harrow is published on page 180, Vol. 8, Sci. Am.]

MACHINERY FOR MAKING ROPE—Wm. Robinson, Jr., of Warsaw, N. Y.: I claim, first, the employment of the cogged ring, arranged and operating as described, for giving the fliers their independent rotation for twisting the strands, and by its own revolution regulating the amplitude of that twist, as set forth.

Second, the employment of the rotary clamps, in combination with the cams and openings, for grasping, conveying, and releasing the rope, as set forth.

VIOLINS—Sewall Short, of New London, Ct.: I claim the application of a trumpet or horn to violins, bass viols, and other similar instruments, in the manner and for the purpose set forth.

AIR ENGINES—Philander Shaw, of East Abington, Mass.: I claim the described auxiliary heater, constructed and arranged as set forth. The exhaust air and the products of combustion being passed through in one direction, while the cold air from the force pump is passed through in the other, by which means the heat is extracted from the heated air and smoke, and transferred to the cold air on its way to the engine, the latter being pumped in against a pressure much less than that at which it is worked off from the main heater, as explained.

Second, I do not claim the use of cold water for the purpose of refrigerating the cylinder or piston of hot air or other engines, but I claim the arrangement herein described of the tubes within the piston rod, the reservoir, and the india rubber tubes, for the purpose set forth.

HYDRODYNAMIC ENGINE—LeGrand C. St. John, of Buffalo, N. Y.: I claim the described arrangement of mechanism for operating the tube, so that it shall produce the alternate opening and closing of the ingress and egress passages for letting water to the float and drawing off the same, as set forth.

I also claim the arrangement of three wheels with their ratchets and pawls, for causing a continued rotary motion of the wheels from the alternate motion of the float, as specified.

MILKERS' PROTECTOR—John M. Weare, of Seabrook, N. H.: I claim the "Milkers' Protector," constructed, as specified, viz., of a combination of ham string and tail nippers applied together, and made to operate, as described.

ROTARY PLANING KNIFE—Elbridge Webber, of Gardiner, Me.: I claim the combination of the knives with the stock, constructed, arranged, and operated, as set forth.

EXPANSION BIT—Asa Weeks, of South Boston, Mass.: I do not claim an expanding bit, neither do I claim making both of the cutters capable of motion independent of each other.

But I claim the method herein described of connecting the two cutters with each other, so that they shall move out and in simultaneously and equally, as set forth.

SLOTTING MACHINE—Parley Williams, 2nd, of Barre, Mass.: I claim, first, the mandrel, secured in the top of the column which supports the hub, serving, with the aid of a key, to hold the hub in place, and containing a slot on the side, in close contact with the hub which serves as a guide for the tool while cutting the slot in the hub or other similar article, as described.

Second, the combination of the wedge, the screw, and the spring, the wedge being placed in a recess in the mandrel behind the tool, and serving to feed and hold the tool to its work, the screw being attached to the wedge, so as to bear on the top of the mandrel and control the descent of the wedge, and the spring being attached to the tool, so as to bear on the hub and hold the tool back, against the wedge, and thus prevent it overloading itself, as set forth.

Third, attaching the tool to its stock by a button or knob at the bottom of the tool, fitting loosely into a slot in the top of the tool stock, which has a mouth narrower than the button, but which extends only partly across from the front of the stock, said slot being arranged in such a direction, and its narrow mouth being of such length as to allow the tool, while attached to the stock, to move back and forth as far as is required for the feeding operation, but to allow the tool to be withdrawn by moving it back beyond its most backward operative position, as set forth.

[See notice of this improvement on page 158, Vol. 8 Sci. Am.]

HAY KNIVES—Seth Whalen, of West Milton, N. Y.: I claim attaching a blade made of sheet steel and bent at its upper extremity so as to stand out from the handle, directly to and in the center of the handle, and between the arms, whereby a great saving in time, labor, and expense in making hay knives can be effected, and an equal distribution of the power of the operator exerted in a perfect manner upon the edges of the knife, and it consequently caused to act more effectually upon the hay than the ordinary knife, as set forth.

[This is the best improvement in hay knives we have ever seen.]

DESIGNS.

COOKING STOVE OR SUMMER RANGE—John Abendroth, of Port Chester, N. Y.

FRAMES AND HANDLES OF HAIR BRUSHES—Hugh Rock, (assignor to H. Rock and Francis McLaughlin), of Boston, Mass.

COOKING STOVES—N. P. Richardson, of Portland, Me.

[NOTE.—Five of the above patents were applied for through the Scientific American Patent Agency. Inventors can at all times consult us in regard to their improvements, and circulars of information will be supplied free of cost upon application to Munn & Co., 128 Fulton street, New York.

Recent Foreign Inventions.

NEW PLASTIC COMPOSITION.—H. B. Hustwayte, and R. I. Gibson, of London, patentees. This cement is formed of clean washed river sand, blue lias lime, and common cement, in about equal proportions. This composition is molded into the form of bricks or slabs, and without firing it, dries quickly, and resists the action of the atmosphere.

GEOGRAPHICAL CLOCKS.—J. Radford, of Chittenham, Eng., patentee.—This invention consists in constructing a geographical clock in which is the usual dial or clock face marked with figures from 1 to 12, and immediately below this a band having a series of numeral figures. Under this band is the map plate on which is a space for engraving the names of cities towns, or other, designations, as may be desired, and below this space is engraved (on Mercator's projection) the map of the whole or any part of the world. As the usual wheel work moves, giving on the dial the correct time of any given place, the band mentioned, having the hours and minutes engraved thereon, is moved or carried by suitable works, so as to indicate the time at all other places.

NEW BLEACHING PROCESS.—C. M. Motay, and E. L. Daflos, of Paris, France, patentees.—This invention is for bleaching fibrous and other substances by means of a current of oxygen in an allotropic form, or by bleaching fibrous substances by means of a liquid in which oxygen in an allotropic form is liberated.

SULPHURIC ACID.—J. L. Bell, of New-Castle-upon-Tyne, patentee.—This process is the manufacturing of sulphuric acid from factitious pyrites, by making the same into a paste, then drying it to form thin cakes, and afterwards burning them in suitable kilns in which the acid is gathered.

SHIPS' RIGGING.—E. Finch and C. Lamport, of London, patentees.—The claims of the improvements are, 1st. A mode of forming and strengthening ships' masts by introducing vertical and T-angle irons and of increasing the strength of these again by introducing vertical webs, either attached to the angle or T-irons alone or attached to these, and attached also to each other. 2nd. The application of an elastic cushion of vulcanized india rubber or cork in the mast. 3rd. The use of a plate at the head of the mast for facilitating its construction, and for supporting the trestle-trees and the foot of the top mast.

SHIPS HULLS.—R. Clough, of Liverpool, patentee.—This invention consists in constructing ships or vessels with true bilges, instead of the usual form, to give depth and stiffness to ships, especially those made of iron.

(For the Scientific American.)

Upward Stroke of Lightning.

Be the nature of the agent electricity what it may, its effects, on substances exposed to its action, often present marks of a transfer in a determinate direction. This transfer in case of strokes of lightning, sometimes, though perhaps rarely, appears to be upward, or from the ground to the clouds. A building at Stillwater, Minnesota, was stricken by an upward stroke of lightning (if we may use the expression) on the morning of the 27th of July, 1852, which I had the opportunity of examining within a few minutes of the occurrence. It was a store, standing nearly alone by the shore of the lake upon which the town is situated, and surrounded by a bed of coarse gravely sand, well moistened at the time, which had been deposited there a few weeks previously by a disrupting flood of water. Regarding it as an ascending current, the electricity escaped from the sand close to the side of the building, passed beneath the siding and along up a scantling, pressing the siding which was nailed to the scantling outwards convexly, and throwing the wall of the room inwards in a similar manner, pierced the plastered wall of the chamber near its floors, proceeded along the floor of this apartment to a plate of sheet iron, upon which sat a stove, and thence up the stove pipe and chimney, parting the bricks asunder along the side of the chimney, throwing its top—which was capped or arched over—into the street. The point of its path which more particularly denoted an upward course, was its passage through the plastered wall into the chamber. It passed through the middle of a lath into the room, making an aperture somewhat more than half an inch in diameter, with a ragged contour, and protuberant. The shattered splinters of the lath were protruded into the apartment, just as if a bullet had been fired in from below. The dry plastering was likewise projected almost to the iron plate, along either side of the electric path on the floor, a distance of nearly three feet. This clearly showed that the electric disturbance proceeded from the ground upwards into the room. Also the bricks were thrown from the top of the chimney, in precisely the manner that we should suppose they would have been by a force acting upward.

Two windows in the hall leading to the chamber room were remarkably shattered, the glass being projected into the hall, evidently from an inward pressure of the external air. Two circular apertures, each about 2 inches in diameter, were made in the glass of the upper part of one window, and what was remarkable, the lower part of the window was raised up at the time, so that the broken panes were covered by it on the side next the room, and those panes coming against the broken ones, were left entire. The pieces of glass were lodged between the sashes. Two other windows opening into the chamber, having their sashes raised up at the time were not harmed.

Several gentlemen examined the building soon after the occurrence, and all were of opinion that the shock was upward.

STILLMAN MASTERMAN.

Weld, Me., May 1st, 1854.

The Portland "State of Maine" estimates the number of passengers entering that city by Railroad at 520,000, and the number by steamboat at 80,000 during the past year. Portland is growing fast into a large city.

The London "Lancet" records two cases of serious illness among physicians, occasioned by the inhalation of poisonous gas, the escape from decaying corpses in a grave-yard that required to be inspected.

New Inventions.

Coke Ovens.

Guillaume Lambert, of Mons, in the Province of Hainault, Belgium, has applied for a patent for a useful improvement in coke ovens. The first part of the invention consists in constructing, arranging, and combining the ovens, two by two, in such a way that the smoke and gaseous products generated in one during the earlier stages of the coking process, may be burned in the other, which was charged earlier and in which the coking has progressed to a more advanced stage, and may deposit therein a portion of their carbon, and that the incombustible products of combustion may, by passing in contact with the exterior of the oven in which the process is least advanced, serve to assist in heating the charge and setting free the gases. The second part of the invention consists in certain means, by which each or any one of a long range of coke ovens may be discharged of the whole of its contents at once. We consider that every improvement in the manufacture of coke is a great public benefit. The time has now arrived when either coke or anthracite must be used on all the railroads in the Eastern States, New York, and Pennsylvania, in place of wood. Coke is the fuel which has always been used on the English railroads, and will be the only kind used on our Western railroads at no distant day.

New Composition of Journal Boxes.

Joseph Garratt, Senr., of Indianapolis, Ind., has applied for a patent for a new composition metal for the journal boxes of locomotives, &c., which has been tested for about eight months on a locomotive, with the most gratifying results. It is cheaper than brass bearing boxes, or even those that are made of a hard metal lined with a soft composition metal. Boxes made of this alloy have sufficient strength and hardness to prevent them being pressed out of form. They also cause as little friction as any now in use, and will effect a considerable saving in the construction of locomotives and other engines.

Feed Motion of Saws.

J. F. Lovecraft, of Rochester, N. Y., has taken measures to secure a patent for an improvement in the feed motion of buzz and panel saws in mills, the nature of which consists in the employment of two or more small saws, which are so united and arranged that the teeth of one will be opposite the spaces of the other, and both can be adjusted, so as to be thrown in or out of operation in an instant. The teeth of these saws, as they revolve, enter the bottom of the board that is to be cut into panel, &c., and feed it into the cutting saw—the two saws acting as cutting feeders.

Beveling and Crozing Barrels.

A. H. Crozier, of Oswego, N. Y., has taken measures to secure a patent for an improved machine for beveling and crozing barrels, which consists in a movable platform and movable cutters arranged in such a manner that the cutters can be moved from the barrel and freed from the croze, when the platform and barrel descend, and then made to move towards the barrel when it is raised, so as to be under perfect control in cutting the croze and being freed from it.

Cutting Barrel Heads.

Mr. Crozier has also applied for a patent on an improved machine for cutting barrel heads, the nature of which consists in the combination of rotary cutters and horizontal rotary clamps, whereby the heads of barrels are cut out and beveled at the same time.

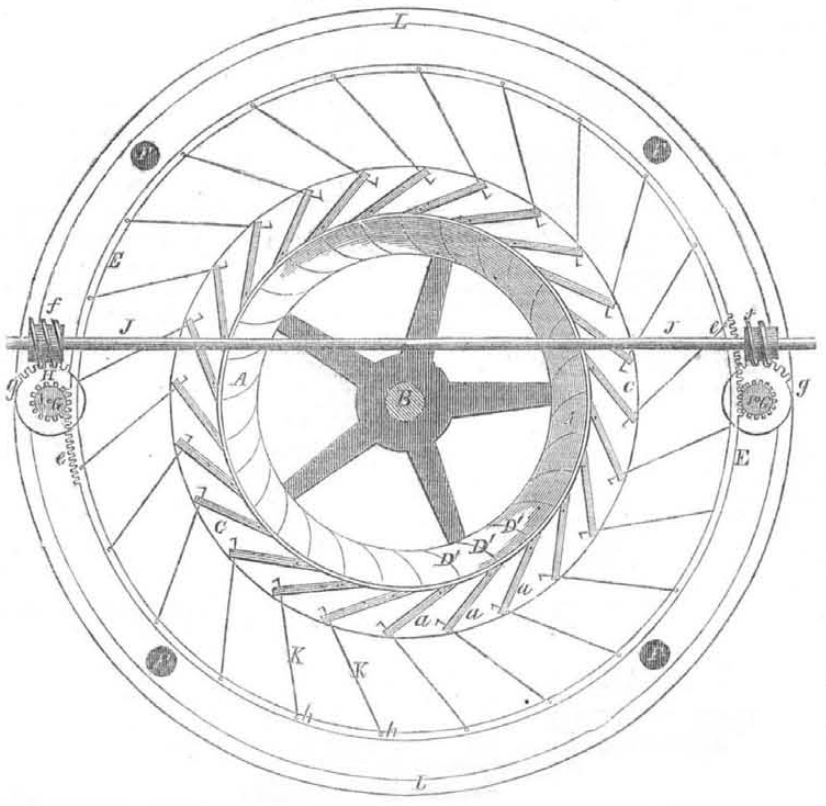
New Brick Machine.

J. McMurtry, of Lexington, Ky., has invented some useful improvements on machines for making bricks. This invention relates to a novel combination and arrangement of mold cylinders and plungers to certain means of giving rotary motion, at proper intervals, to the mold cylinders, and to certain means of securing the cylinders during the compression of the brick and releasing them between the successive compressing operations, in order to enable them to receive the necessary movement. Measures have been taken to secure a patent.

Improved Straw Cutters.

Subscribers at the West Southwest, are not unfrequently writing to us for information about good straw cutters. One of the best machines that we know of for the purpose of straw, hay, and stalk cutting, is Sanford's Patent, which consists of a double cylinder of knives, whose edges revolve into each other, while in the act of cutting. These knives are capable of an easy adjustment, and any farmer can keep them in good order. The machines are made in large quantities by J. B. Ford, Greenville, Ind.

ROBERTS' ADJUSTABLE SHUTE WATER WHEEL.



The annexed engraving is a bird's-eye view, with the upper rim removed, of an improvement in adjustable shutes for water wheels, for which a patent was granted to Elijah Roberts, of Rochester, N. H., on the 4th of last month (April, 1854.)

A is a center vent water wheel, with its vertical shaft, B. The curved buckets, D' D' D', are so placed as to receive the direct action of the water from the shutes,—introduced on the periphery of the wheel. The under side is open and the upper closed with a stationary cover, thus avoiding the weight of the water upon the wheel. E E is an annular ring to which the shutes are connected by rods, K K. This annular ring is supported by four grooved rollers. G G are pinions gearing into the annular ring. J is a shaft with worm gear, *f*, on its ends meshing into cogs on the small wheel, H. The pinions, G. are secured on vertical spindles, I I. *h h* are pins inserted in the annular ring, and *e e* are cogs on this ring meshing into the pinions, G. L L represent a cistern containing the wheel. This is a description of the parts.

The object of this improvement is to regulate and control the water advantageously when applied to the periphery of a wheel on a vertical shaft. The nature of the invention, therefore, consists in the arrangement of the device by which the water has an advantageous direction given to it in passing through the adjustable shutes, combined with the sliding rods for opening the shutes, also in the mode of hanging the shutes on fixed rods passing loosely through them, by which means the clamping of them is avoided, when the bolts holding the rims together are tightened; also the means for simultaneously opening these shutes by the annular ring gearing.

In his statement of the advantages of this improvement, the inventor says:—"The nature of my improvement is such that the water is applied with the same advantage and economy, when carrying one quarter, as its whole load. When driving a number of machines in a factory, and any one or more thrown is off, by which change of load the wheel would be left to increase in velocity, causing irregularity in the other machinery to be driven, its speed can be regulated in one-tenth part of the time that a breast wheel of more than 15 feet in diameter can under the same circumstances.

The improvement is a complete remedy for the difficulty in regulating the quantity of water and speed of the Howd or United States Water Wheel, which has been in so many instances condemned and thrown aside on account of the circular or hoop gate, the difficulty in hoisting and shutting said gate and regulating the speed of the wheel, and wasting water. It is well known by all who use the Howd or United States Wheel, that the water is introduced into the conductor under the gate in a horizontal form, when the gate is halfway up at a right angle with the gate, thus spending a great part of its force against the back side of the shute, then its form is changed to a perpendicular position before it is discharged on the wheel, and is in a great degree reduced to froth and foam, so that in order to run one-fourth of the load of the wheel at proper speed, it is necessary to run three-fourths as much water as it would require to run the whole load of said wheel. In this improvement the hoop gate is dispensed with, and the apertures opened horizontally, and the water is applied at the whole highth and at the thickness required, the water passing at its full velocity, whether the apertures are open one-fourth of an inch or one and a half inches, and said apertures or shutes are connected (when the wheel is running) to the regulator, and may be opened at full size or entirely closed to stop the wheel.

Persons using the Howd or United States Wheel, of good construction, can have the improvement applied at small expense, and thereby be enabled to run as much machinery with water as with the breast wheel; said wheels with the water applied in this way, are, in economy of water, equal to the breast wheel, and in other respects superior."

More information may be obtained by letter addressed to Mr. Roberts.

Cut off of Steam Engines.

Thomas Ashcroft, of Boston, Mass., has applied for a patent for an improvement in the cut-off of steam engines. The cut-off to which this improvement is applicable, is one that is well known, consisting of two plates working on the back of the slide valve. Its nature consists in furnishing the cut off plates with two inclined planes, one for each plate—facing each other, and in placing between these, two inclined planes and an adjustable stop-bar with which the inclined planes come in contact, to arrest the cut-off plates in their movements with the slide valve, thus cutting off the steam at some point, in the first half of each stroke of the engine.

The stop-bar will arrest the motion of the cut-off plates and cut off the steam sooner, or later according as it is nearer or further from the valve, and hence by properly adjusting it, the steam may be cut off at any desired point under half stroke. By attaching it to a "governor," it may be made to act upon the plates, so as to govern the engine by the cut-off.

(For the Scientific American.)

Virginia Gold Regions.

This being the "gold regions" of Virginia, some news may be of importance in regard to mining, &c.

Com. Stockton is not at work, his mill being out of order but repairing.

At the "Belzora Mines" they are in full blast, crushing ore with a machine having six balls, which I have seen illustrated in the "Scientific American." The machinery is spoken highly of; they use what is called "Buffum's Amalgamator." Stockton uses "Ball's Amalgamator," but it is not as good as Buffum's.

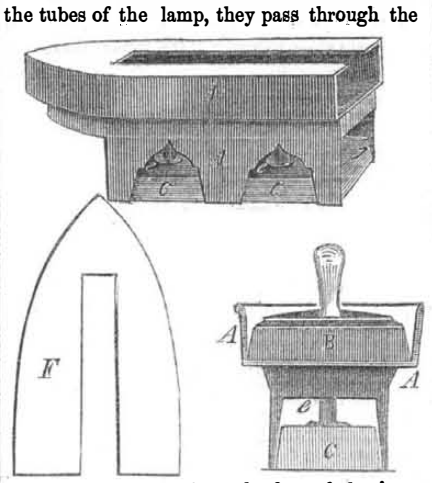
The "Waller Mines" are preparing slowly to operate; also "Aigle D'or Mine," adjoining the Waller; the "Long Island Mine" is also running, using stamps and one of "Ball's Amalgamators."

Several other mines are preparing, all of which expect to be in operation early in the summer. Yours, GEO. O. BAKER.

Columbus, Havana Co., Va.

Flat-Iron Heater

The accompanying figures represent an improved heater for flat irons by F. S. Coburn, of Ipswich, Mass, and embrace a perspective view of the heater complete; a transverse section showing an iron in the heater, also a plan view of the cover, F. A is the shell, of cast-iron, into which the flat-iron is slipped to be heated. About one inch of space is left below the bottom of the iron, and a quarter of an inch at the sides. Through these spaces a draught of hot air, heated by the lamp, C C, circulates, and then escapes under the handle. *e e* are the tubes of the lamp, they pass through the



shell about one inch from the face of the iron. Alcohol is the fluid intended to be used, as it emits no smoke in burning and gives off a high heat. The apparatus weighs only about 3½ lbs. It is all cast in the foundry, excepting the cover, F, which is of sheet-iron or tin, the edges of which are clinched over the upper edges of the casting. It is a simple apparatus for heating flat-irons by a lamp for dressing clothes without the use of a coal fire. It can be set upon the same table on which the clothes are to be dressed; in this respect it is very convenient, and at the same time it obviates the great heat of a coal fire in a furnace, which is very oppressive in warm weather.

For more information see advertising page.

Tail-Boards of Wagons.

F. M. Harris, of Carrol, Ohio, has invented an improvement in tail-boards for wagons, by which they are rendered self-locking, and at the same time unlocked in an instant. They also render wagons to which they are applied more convenient and safe for their loads.

Chloroform Counteracted.

Dr. Robert de Lambelle, a distinguished physician of Paris, announces that a shock of electricity, given to a patient dying from the effects of chloroform, immediately counteracts its influence, and returns the sufferer to life.

Scientific American.

NEW YORK, MAY 13, 1854.

Rich and Poor Inventors.

There is a prevailing opinion with many, that inventors are in general very poor; that the great mass of them who have lived and died, went down to the grave loaded with poverty, and that the majority of those who are now living, will meet the same doom. This is a mistaken notion, conclusively proven by the paper of Dr. Gale (who is Chief Examiner in the Chemical Department of the Patent Office), on another page. It is true that many men, whose inventions have greatly benefitted mankind, have departed this life in poverty and neglect, the value of their labors not being appreciated until they were beyond the reach of human reward or praise. We expect that some inventors will meet with disappointments in every age, for it is more than can be expected, that the merits of every improvement will be appreciated during the lives of inventors. But the number of such inventors cannot be very large, if their inventions are meritorious, for the means which are at the command of inventors at the present day,—such as the press—to disseminate a correct knowlege of their improvements throughout the civilized globe, are such as no previous age in the world's history could boast of. It was very different with inventors in the days of Evans, Fulton, Whitney and Watt; and yet, when with all their disadvantages, many of the old inventors, from being poor, became rich men, what should inventors not expect for *their* benefit, at the present day, in comparison with those of the ages past and gone. James Watt was once a poor man, but he died very rich; Richard Arkwright died the richest commoner in England, and with a title tacked to his name—a pretty high elevation from cropping heads and shaving beards. Whitney, we believe died comparatively wealthy, and so did many other American inventors. There are quite a number of living inventors, who, from being once poor men, have become comparatively wealthy.—We could name a host of such, but this, without their consent, would perhaps not be proper. There are but few in our country who are not acquainted with one or more inventors who have been greatly benefitted in a pecuniary point of view, by their inventions.

It is true that there are but few prominent and distinct inventions like the telegraph, and it cannot be expected that all inventors should meet with the same amount of remuneration, but when a Chief Examiner of the Patent Office—who has access to the records which describe the sums paid for patented inventions, tells us that "it is a very small matter indeed, if a patent is not worth $5000; hat medium ones are worth from $20,000 to $50,000, and many not worth less than from $100,000 to $500,000 each," we have reason to state, with all confidence, that inventors who secure patents are full as well rewarded as any class of men in the world.

One reason why patents are more valuable now than formerly, is no doubt owing to the rigid examination which they have to undergo in the Patent Office, and the care and qualifications necessary on the part of those who prepare such papers. But another reason, and one equally as good, is owing to the means which patentees now have of spreading abroad a knowledge of their improvements among the people. A man may have talents, but who can know this, if he ties them up—like the fool in the parable—"in a napkin." So it is with an invention—mechanical or chemical; who can know what it is, or what are its merits, if a knowledge of the same is locked up in a chamber? Without feeling the l ast degree of conceit on the subject, but only a sensation of solid pleasure, we venture to say, that the "Scientific American" has been the greatest agent for rendering patents more valuable, and affording our inventors the means of being better remunerated, than any other influence or agency in our country. We are confident—for we know it is true—that patents have rapidly grown more valuable since it was established. This is quite natural, for every week it carries the list of the new patents granted to all parts of the world, stating their claims, and illustrating from four to five of them in such a manner, that all can judge of their value. It is not too much to say, that no less than fifty thousand persons receive information through our columns every week, of from thirty to forty new improvements; therefore our people are becoming better acquainted with the works of our inventors and the value of their patents.

Another reason for the increased and increasing value of patents, is attributable to the desire of our Courts—the United States Judges—to do justice to inventors. We believe that our U. S. Courts are open to improvement, and would be all the better for it, but, at the same time, it is our firm and sincere conviction, that there is not a U. S. Judge on the bench who has not a strong and sincere desire to see justice done to our inventors. Let a plain and palpable infringement of a patent be presented to any U. S. Judge, and he will not hesitate an instant to grant an injunction, or demand bonds, for a correct account to be rendered by the infringer. Taking all these things into consideration, we agree with Dr. Gale, that patent property, is now "of great value." And this is right; for by the telegraph, locomotive and steamboat, millions upon millions are saved to our country every year, and so it may be said of all other inventions, such as sewing, weaving, washing, reaping, rolling machines, &c. We have no doubt, but every right-thinking man in our country will rejoice with us, that a better day has dawned upon our inventors, and that their labors have now become so valuable in the estimation of the community.

Re-Inauguration of the Crystal Palace.

The Crystal Palace in this City was re-opened with very appropriate ceremonies on Thursday of last week. The pomp and display of high civil and military dignitaries witnessed last year, when the Exhibition was first opened to the public, and the total subordination of art and industry, to gaud and glitter, on that occasion, were amply atoned for on this one. It was an ovation to the genius of industry and art. There was a procession of the Association and citizens through the city which, as a whole, was a dead failure, as it should be, for processions, except upon very extraordinary occurrences, should be thrown to the moles and the bats. In our opinion they are foolish and unnecessary affairs. The ceremonies within the Crystal Palace, however, were in good taste; the only objection was too much *spouting*, a mistake which might have been avoided if the Directors had only employed one clergyman and one lawyer, instead of three of each class, to make speeches. Elihu Burritt, "the learned blacksmith," and Horace Greeley, were the only mechanics who made speeches. There was one idea on which most of the speakers seemed to dwell erroneously, and which Mr. Greeley corrected with great propriety, that was "the dignity of labor." Men talk much of the dignity of labor, but in itself, as we have often said, there is no dignity in labor; it is the person, the cause, and the motive, not the toil that confers dignity on art. "There is nothing in toil," said H. Greeley, "of any kind, that ennobles and dignifies its votary, unless it be the motive which impels him to pursue it." This is correct, strictly speaking, but there can be no doubt that some occupations have a mental elevating tendency, while there are others that have a degrading one. But so far as it relates to true worth, the couplet of Pope is good, and applicable to man in every condition.

"Honor and shame from no condition rise,
Act well your part, there all the honor lies."

The President of the Association—Professor Barnum—made a very good speech, but the most important part of it was the announcement of certain large prizes, which the Association have offered. They are as follows: 1st. A gold medal valued at $1000, (or cash) for the most useful invention or discovery which shall have been patented, or entered in the U. S. Patent Office, this year, before next December, the said invention or discovery being exhibited by model, or sample in the Crystal Palace. 2nd. A like medal (or cash) to the artist, whose work shall be exhibited for three months in the Crystal Palace, and which shall be deemed the most meritorious.—3rd. Five one hundred dollar medals (or cash) to five inventors whose inventions shall be patented, or caveated within this year, and exhibited in the Crystal Palace, and which shall be deemed the most worthy. 4th. Five medals of equal value (or cash) to artists, for the five best works exhibited. Juries are to be selected to examine the objects exhibited for prize competition.

In the evening there were also exercises, at which James Henry, of the New York Mechanics' Institute, made a short and very excellent speech, and the Rev. E. H. Chapin, delivered an eloquent and glowing oration. We think the exhibition will now be well and ably conducted; and that it will prove to be a source of enjoyment, and a means of social and intellectual elevation, to hundreds of thousands, we have no doubt.

The Crystal Palace is now open to visiters every day and evening, from 8 A. M. to 10 P. M., the admission fee being 25 cents.

New Process of Making Bread.—Important.

"A very remarkable exhibition took place recently at the Marylebone workhouse, London, by Messrs. Morlan, Martin, and Journet, a French firm, who undertook to demonstrate before a committee of the board of guardians that, by a peculiar modification in the fermenting process, the amount of bread from a given weight of flour could be increased to at least 50 per cent. This singular method was invented by a French gentleman, a pupil of Orfila.—Two sacks of flour were made use of, both under seal, and issued by the authorities of the workhouse. One of these was manipulated in the ordinary way, the other by the associated French manufacturers. The first sack converted into bread by the usual method, produced 90 loaves weighing 360 lbs. The second bag of flour, placed in the hands of the French bakers, produced 154 loaves, weighing 520 lbs. giving an increase of nearly 50 per cent. under circumstances very disadvantageous to the owners of the secret. The place, the oven, and apparatus were all new and strange to their workmen, who had many difficulties to contend with. It was admitted by the spectators that in consequence of such drawbacks, there was a considerable waste of bread in the oven.—There was a large attendance of scientific men as well as bakers from the country and city, who witnessed the process with the keenest interest.

This marvellous increase in production does not arise from any weighty substance mixed with the dough, as no extraneous ingredient can be discovered in the loaf by the most rigid chemical analysis."

[We have seen the above copied with eclat into quite a number of our daily and weekly cotemporaries, as something grand and wonderful in the line of new discoveries. It is a grand piece of nonsense.

In the first place, it is stated that the weight of the flour is increased by this process, from 360 lbs. by the old process, to 520 lbs. by the new. That is a gain of 130 lbs. coming from no where—something made out of nothing.—Who among us has the organ of credulity so large, as to believe that a London baker loses 64 loaves in every sack of flour? According to a good authority, 7 lbs. of flour yield 10 lbs. of dough and 8¾ lbs. of bread.—(Accum.)

If there is a gain in this new process of weight in the bread, we suspect it is the water of the dough that is retained in it, consequently, those who purchase such bread, pay for water instead of flour. And in connection with this, let us say, that the process of working it must be effervescence, not fermentation, and in all likelihood some deleterious substance is employed, which takes up and retains more water than yeast. Thus in experiments made for the Analytical Sanatory Commission in London, bread with 2 lbs. of flour and the necessary quantity of water and yeast, had acquired, on its removal from the oven, 8½ oz. of water, while the same quantity of flour raised with an alum and soda mixture retained one ounce more of water. A few years ago, bread made by effervescence was quite fashionable, but such bread is not so easily digested, nor is it so pleasant as fermented bread.

Reform in Franking Letters.

The Postmaster General has issued instructions to all the officers in the Departments, Special Agents, &c., to enforce strictly the provisions of the Act of Congress in relation to the franking privilege. No person can frank a letter not written by himself or at his order under a penalty of ten dollars, and any person receiving a letter under frank, not entitled to receive it free, is required to give notice at the office where received, that postage may be charged. The franking privilege had grown into a foul and huge abuse, and we had often directed attention to it, from the fact of having received franked letters ourselves from persons who had no right whatever to the use of the privilege. So shamefully brazen-faced had it become, that franks were sold by thousands in Washington, thus robbing the Post Office of its legitimate revenue. It is well known that since the postage on letters was reduced by the late Act for reforming the Postage Laws, that the revenue of that Department has not been able to pay the current expenses. So serious, indeed, has this become, that a resolution was recently introduced into the House of Representatives, for again adopting the old postage rates on letters. We do hope that Congress will not take any such step in a backward direction. We are confident that the expenses of the Post Office Department have been enormously increased by an abuse of the franking privilege; and that by proper management and reform, these expenses may be so much reduced as to meet current expenses. We are glad to know that the Postmaster General has adopted stringent measures to enforce the law strictly, and whatever we have said, which has tended to direct attention to the evils mentioned, it affords us pleasure in thinking we have "done the State some service."

Roth's Anti-Chlorine.

Our attention has been directed to this new preparation for bleaching; but what it is and what are its beneficial qualities, we cannot tell. If it is superior to chlorine—less injurious to textile fabrics in bleaching—then we hail it as a most excellent discovery. We have received from George F. Wilson, of Providence, R. I., two samples of flax which were treated with this preparation for a few minutes; they look well, and so far as we can judge by their appearance, contrast favorably with samples operated upon by chlorine.

Universal Exhibition at Paris.

We are informed by our agent in Paris that the Exhibitors can guard their rights and obtain *gratuitous* protection for one year by sending on drawings and descriptions of their inventions to the Office of Patents. This protection will allow the invention to be worked, which the English regulations of 1851 did not. This is certainly a good feature, and will stimulate much activity among European inventors.

We are inclined to think, from present appearances, that the United States Department at the Exhibition of 1855, in Paris, will prove to be a slim affair. Little interest is felt upon the subject here, and owing to the great distance and the unsettled state of affairs in Europe, few contributions can be relied upon from this side.

An Ominous Fact.

Probably, the greatest number of applications for patents that was ever filed into the Patent Office by one agency in a single month, was made through the "Scientific American Office" last month. We filed no less than 58 complete sets of specifications and drawings into the Patent Office during the month of April, which averages over two cases for every working day in the month—exclusive of a number of caveats. Two facts are portrayed by the above item; first, inventors are plenty, and are vigorously securing their inventions; and secondly, that they know *where* to apply to get their applications—specifications and drawings—properly prepared.

It is estimated that nearly a million of dollars' worth of property has been wrecked on the Bahama Banks, within three weeks.

American Association for the Advancement of Science.

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

OUR PATENT SYSTEM.—The following is a condensed abstract of an able paper on our Patent System, by Dr. Gale, Chief Examiner in the Patent Office:—

The patent system gives to first inventors a monopoly of the profits of their inventions for fourteen years. Mere discovery does not entitle a man to a patent. Galvani could not have patented his great discovery, nor the discoverer of potassium his, though he might have patented his apparatus for making it. If a man learns a law or a principle of nature, he cannot get a patent for it; but he can patent his application of it to some useful or mechanical end. Our Patent System was not much calculated to promote science before its re-organization in 1836. Up to that time it was not very improperly said to be a "museum of rat-traps, churns, and quack medicines." There was no thorough examination of the claims presented for a patent; the oath of the inventor, as to originality, was taken—and that was about all. Now, a thorough examination of every article presented is gone through with, and the patent is only granted when there is entire satisfaction that no article of the sort has existed, or publication of the invention ever been made.—Our country is the only one where so thorough a system is carried out. And some of our patents now is of great value. It is a very small matter, indeed, if it is not worth $5,000; the medium ones are from $20,000 to $50,000 each, and many are not worth less than from $100,000 to $500,000 each. Even a valueless article, if a patent is obtained upon it, becomes valuable property, and hence avarice is continually besieging the Office for patents of unworthy inventions.

Our first patent system was started in 1790, and made to include under its objects hundreds of nostrums. In 1836 the present improved system was organized. The only medicine that has received a patent since its enactment was the *Letheon* of Drs. Jackson and Morton.

Seven-eighths of all the patents now granted are for mechanical and physical purposes; the other one-eighth are for chemical inventions. The applicant must describe his invention. A permanent record of this description is confidentially kept, and whether or not the application is granted, these described facts can be used.

The law of 1836 had been a long time in operation, of course, before it became of much use. But it begins to tell well upon the arts and sciences, the necessities and comforts of mankind. Up to 1836 there was not a grain or grass harvester in this or any other country. But the great wheat-fields of Illinois demanded too much hand labor at harvest time, and labor was too expensive for our people. Our necessity compelled invention to relieve us, and now we have grain, grass, and maize harvesters in general use. England has not many such assistants and substitutes for manual labor as we, and in all Continental Europe there are not over three or four kinds of harvesters in use, while we patent twenty modifications a year. In most European countries they use the same scythe now that they used one hundred years ago. We are perpetually varying our forms of the scythe to gain strength, power, and lightness. There is no branch of mechanical ingenuity that has not been revolutionized by the Patent Office. It makes fortunes for successful inventors, and furnishes cheaper implements to laborers, since the inventor is enabled to sell large numbers of his article at very small profits on each.

Alcohol without Re-Distillation.—At the Patent Office it is now customary to obtain pure alcohol from whisky without distillation or heat. The discovery was accidental. A gentleman had a quantity of whisky in a cask, five feet high. On drawing it off, he discovered that the upper part of it was much stronger than that near the bottom. The hint was taken; and now we prepare our alcohol by putting whisky into a tall column, and allowing it time for the heavier parts to subside, and we find pure alcohol at the top. This will prove an invaluable fact to manufacturers. [On this point we differ in opinion with the Doctor, and may take occasion to review it at an early date. —[ED. SCI. AM.]

Paper from Wood.—The great demand of paper outruns the supply of rags, even adding those that are imported for the manufacture of this article. The books say that a paper can be prepared from the wood of various trees, but except from two sources in England and one in France, and they not producing a good article, is has not ever been done until now. We are on the eve of successfully producing such. We have specimens of good writing paper—not as good as the best, for the means of working up the material are not what they will be—made of the fibers of hickory or the cotton poplar, of white pine and of cane-brake. The material is cut first of a proper length, then treated with dilute acids and alkalies, washed, broken between rollers, bleached, and thus prepared to be worked up. If under the microscope the "ultimate fibers" appear broken as sometimes happens from using too great mechanical violence, or if they are made too tender by too great strength of either acid or alkali, the specimen is faulty. These processes are mostly in the hands of practical unscientific men. The assistance of a practical scientific man at the mills would save much time, expense, and the mortification of experimenting to discover facts already well known to science. Indeed, the struggles of unsuccessful inventors would be much lessened in number and in their melancholy results, if inventors would study the general features of the sciences in whose details they generally are the most skilled.

Illuminating Materials.—Oil is scarce and dear, and very apt, in the present state of the market, to be sadly adulterated. Twenty-five years ago, it was not unfrequent that the windows in New York City were seen illuminated by means of spirits of turpentine. A Mr. Jennings first prepared for popular use a "burning fluid" composed of alcohol and turpentine spirits, and a fruitful demand for patents ever since has been for lamps, designing to render safe its use. When Washington City was first lighted with gas it was prepared from an oil of resin brought to us from abroad. But it was expensive and not the best material, and now our gas is made of coal.

Two years ago we heard much of a man down East who was "burning the atmosphere" for a light. The chemist whom he consulted showed that he was mistaken, but deduced from his facts a discovery that benzole would burn in the air, and give a beautiful light. But this article was scarce and costly. The demand, however, soon discovered the fact that it could be produced in large quantities, when bituminous coal is burnt at a low red heat. It is burned only in the form of a vapor.

Painting Materials.—White lead has long stood almost alone as a material for painting buildings, owing to the fact that very few substances have the property of dissolving in oil. In France it was discovered that the white oxyd of zinc has this property. But it was not used much before 1845. A difficulty here was to obtain from the zinc beds in New Jersey and Pennsylvania an article so unmixed with foreign matters as to answer as a substitute for the carbonate of lead. The demand, stimulated by the rewards always offered by the patent system, brings it out at last—a pure article and in plenty. The processes cannot as yet be made public.

Dr. Hare discussed the right of granting patents. He published, he said, in 1820–1, a paper showing that good lights could be obtained by burning alcohol, making the flame luminous by turpentine, but he advised against its use on account of its great danger. He remarked, in passing, that when the British, in the Last War, were about marching up to fire the Patent Office, old Dr. Thornton stepped up and reasoned with them. "Sure" said he, "you will not burn the depository of all their useful arts and the records of their inventions,"—and, to their credit be it spoken, they turned back at his plea.

KILLER WHALE—Lieut. Maury read an interesting paper on the *Killer-Whale.* He said that while they were studying, through their agents, the phenomena of winds and waves, they were constantly laying hands on subjects of exceeding interest, which were thrown in their way without their seeking. Captain Royes, a New-England whaleman, wrote him a letter describing the whales which he was acquainted with. There were sixteen kinds that he named, and one of them a strange fish, which the Lieutenant did not find named in any of the books. The Captain called him the "Killer Whale," and described him as thirty feet long, yielding about five barrels of oil, having sharp, strong teeth, and on the middle of the back a fin, very stout, and about four feet long. The Captain could not believe that this fin was of any service in swimming, but he thought it probably intended to defend him from the flukes of the right whale, in case of collision. For this "Killer" is an exceedingly pugnacious fellow. He attacks the right whale, seizing him by the throat, biting till the blood spouts, or till another "Killer" comes by and eats out the tongue of the tortured fish. This tongue of a right whale is an oily mass, weighing three or four tuns. The Captain sent a drawing of the "Killer," which was exhibited. The Captain, moreover, said that when he was second officer of the bark "Gem," of Sag Harbor, Captain Ludlow, of that ship, captured a "Killer," and carried home his jaw, and he did not doubt that if he wrote the Captain at Bridge Hampton, Long Island, he could get it. The Lieutenant had written, however, and received no answer; but wishing all possible light on the subject, he had written to his friend Captain Daniel McKenzie, inquiring if he had ever met with a "Killer." Captain McKenzie replied that he had seen thousands of them, but never saw one taken. He sent on drawings to the Lieutenant, sketched from memory, which strikingly corresponded with that of Captain Royes. It was customary, he said, for a shoal of "Killers" to attack a right whale, always plunging for the throat. Then others would snatch at his lips, tongue, and other parts about the mouth, the poor fish lying paralyzed with fear meanwhile, until they, fastening upon it, would sink it. Now, the "Killer" can stay much longer under water than a right whale. He had seen the "Killer" return to the surface after a long interval, but when they carried down a right whale in this way, he never saw the latter come up again.

A friend told him that he once pulled up to a whale so attacked and lanced it. The "Killers" thrust about in the greatest fury,—even attacked the boats, and more than once seizing the fish, carried it under water. The "Killer" attacks all kinds of whales, though most often the right whale; he scours the ocean from pole to pole, is in every sea, and all old whalemen have met him.

It was exceedingly curious, said Prof. Dewey, that an animal so well known to sailors, should be entirely unknown to naturalists.

WIND REGISTERING CLOCK.—Prof. Webster, of the Virginia Collegiate Institute, described a most ingenious yet marvellously simple instrument, for registering meteorological observations. It consisted of a common clock, the weight of which instead of running down within the case, runs over two pulleys and down by the side of a cylinder, placed vertically on its end. In the side of the weight a pencil was placed. The cylinder is surrounded with a sheet of clean paper, on which are ruled thirty-two vertical lines, to represent the different points of the compass, and twenty-four horizontal lines to indicate hours of the day. Through the cylinder runs a rod which connects above with a vane, and as the vane turns, the rod and the cylinder turn. Let the pencil in the weight be placed so near that the point presses upon the paper on the cylinder. Now if it is calm, the weight running down makes a perpendicular line on the paper, but if the wind shifts, the mark on the paper veers to right or left. If suddenly, it leaves a horizontal mark; if by degrees, it goes down diagonally.

COAL.—Prof. B. Silliman, Jr., noticed a peculiar variety of coal from Breckinridge Co., Ky. He had several specimens of it with him. The scenery of the country is shaped by the beds of this coal. It makes a terrace perfectly resisting to the changes going on all about it, and hence is found on the tops of hills only.—Struck on its side it resists hard strokes of the hammer, but struck at the end it splits easily. It is curiously elastic. It can be turned, carved, bored, and soils nothing. Expose other bituminous coals to the atmosphere and they are disintegrated. This never. There is no danger of spontaneous ignition. Organic remains—ponds beautifully marked—abound in its body. He merely suggested that it was formed by the extreme pressure together of large exogenous plants. Rub it, and electricity is at once developed. He had seen this property in but one kind besides. It burns like the best cannel coal. It contains on analysis an unprecedented amount of volatile matter,—from 50 to 64 per cent. But solvents remove none of it.

Prof. Hall remarked that cannel coal always has a bed of bituminous coal underlying it.—Was it so with this?

Prof. Silliman answered that there was a mere shale of the bituminous under this, about a foot thick.

Profs. Hall and Rogers thought cannel and bituminous coals not distinct coals, but the same varied only by the processes to which they had been subjected—they often seem to run into each other.

Prof. Hare could not understand how the coal having the largest amount of volatile oil should be uppermost.

Prof. Silliman replied that he supposed no heat necessary to its formation. We too often analyze substances as mere minerals. We should study more their organic composition.

He also exhibited specimens of coal, upon which he had experimented with reference to the question, Is Anthracite the Coke of Bituminous Coal? So far as they went, they answered the query in the affirmative.

EARTHQUAKES—Lieut. Gilliss read a paper, not prepared for the Association, but extracted from a voluminous report he had written on the Earthquakes of Chili. He described minutely the great Earthquake of April, 1851.—He went into the history of these convulsions as he had noted them in several years' residence in that quarter He disagreed with most writers on the subject, as to the barometric, hygrometric and thermometric changes that precede the shock of an Earthquake, but agreed with them that the Seasons have an influence.

(To be Continued.)

(For the Scientific American.)

Steam or Hot Vapor and the Vacuum.

In your interesting series of articles on Hydrostatics and Hydraulics in Vol. 6, it is said (page 128) that "boiling water cannot be drawn off by the syphon from one vessel to another, as the steam and the atmosphere are at equilibrium at the surface of the water." And it is added, "We have not seen this experiment mentioned in any work on Natural Philosophy." As far as your experiment related to the attempted syphoning of boiling water, it may have been an original one. You omitted, however, to show that hot water, some fifty or sixty degrees below the boiling point, can also not be drawn off.

It is no doubt well known to scientific men that liquids above a certain temperature cannot be pumped up, but the following brief information on the subject will be interesting to the general reader like myself. It is from "Chambers' Information" (Edinburgh edition of 1848). It is premised that whatever is true of the pump is also true of the syphon:—

"Only cold or moderately warm water can be lifted by a pump. If the water be above a certain temperature, about 150 degrees at the utmost, the sucker cannot form a perfect vacuum, because, in the attempt to do so, the water yields a steam or vapor which fills the space; in other words, by removing the atmospheric pressure by the piston, the water begins to vaporize as if about to boil. When a pump is made to operate upon hot water, it labors in vain to raise the liquid. This circumstance limits the heat of water injected at a high temperature, it must receive its heat between the pump and the boiler, and this is sometimes done by causing the tube from the pump to pass through a vessel of waste steam." B.

TO CORRESPONDENTS.

J. F. H., of ——.—We have seen colors made by all the means and from the matters you have described, excepting the sample from hydrofluosilic acid. We do not know the price of the best prussian blue. We believe it requires iron to produce it; all common nitric acid contains some iron. The discovery may be new to you. Royal blues are now dyed on wool by the use of yellow prussiate of potash, tartar, hydrochloric and nitric acids.

N. A. K., of La.—It is very difficult to understand your meaning, but we suppose that you want to know the balance pressure for the valve, so as to get the proper area of piston; that area must be equal to that of the valve, if the pressure is the same on both.

M. K., of Ind.—We have not yet been able to satisfy ourselves about the best lime kiln for your purpose.

S. B. P., of N. Y.—We do not know of any work upon bird stuffing which can be relied upon. We presume there is no publication devoted to this art.

J. W. C., of Pa.—We can give you the name of Wm. Silver, Jr., Pittston, Pa., as a manufacturer of powder. The information which you need he may be able to supply.

G. O. B., of Va.—One of the best brick machines in use in this section is R. A. Ver Valens', made at Haverstraw, N. Y. It is well liked in this section, but we are not certain that it will suit your region; you had better apply to him for more information. Francis Smith, of Baltimore, Md., has a very good machine. which is much used in the South. We are obliged to you for the information about gold mining.

G. F. H., of R. I.—If the wheel is perfectly inelastic, its top will move in unison with the bottom; if elastic, it has a tendency to move faster. All parts, top and bottom, of common carriage wheels move with the same velocity.

T. B., of Brooklyn—Your proposal is a good one, but it appears to us that we have read of the floors of houses in Paris being constructed in the same manner. We cannot lay our hand on the information at present. Your composition for the bedding is good. We should like to see your plan carried out in all buildings.

E. G., of N. J.—Did you suffer the india ink to dry thoroughly before you attempted to wash it out? We can show its indelible qualities on some of our draughtsmen's shirts that have been washed a great many times. See Dr. Ure on French indelible ink

J. B. T., of Miss.—Yours is a singular question, namely, whether a bell hung high or low will be heard furtherest. If a bell were hung a mile high it would not be heard so far away as one 100 feet high; neither would one if hung low down in a valley. A bell should be hung above the hight of surrounding houses, trees, &c., that is all.

E. P., of Phila.—There is paper to be purchased at various stores for taking the impression of leaves; it is of all colors. We cannot give you an opinion which is the best work on American Botany.

O. B. O., of Pa.—Salt water is employed in boilers of ocean steamers; excepting a few that may have outside condensers.

C. M., of Pa.—Your fall being 110 feet, and the quantity of water falling per second, being 4 1-2 gallons, the nominal power of the water is 9 horse. A hydraulic engine well made, might be of considerable benefit to you.

F. G. G., of N. Y.—The best red ink for printing is carmine: you can mix it with any quick dryer.

Money received on account of Patent Office business for the week ending Saturday, May 6 :—

W. S., of N. J., $55; W. B. B., of N, Y.. $20; H. & J, B., of Ct., $30; T. E. R., of N. Y., $30; W. H., of N. C., $30; N. F. M., of R. I., $25; D. K., of Ind., $30; H. F. B., of Ind., $55; J. S-B., of Ohio, $25; N. W., of Ct., $25; E. O. P. A., of Mass., $25; J. L. R., of Mass., $30; E. W. G., of Mass., $15; M. V. B. D., of R. I., $30; R. L. S., of Pa., $30; W. J. S., of N. Y., $30; A. H. B., of N. J., $350; J. P.. of N. Y., $60; W. H. W., of Pa., $30; D. & Co., of N. Y., $25; W. D. A., of N. Y., $55; C. R., of Ga., $40. J. C. R., of Ind., $25; R. M., of Ohio, $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, May 6 :—

W. G., of N. Y.; J. S. B., of O.; N. F. M., of R. I.; J. C. R., of Ind.; S. F., of Ct.; E. W. G., of Mass.; W. D. A., of N. Y.: N. W., of Ct.: J. J. W., of L. I.; A. V., of O.; E. O. P. A., of Mass,

A Chapter of Suggestions, &c

PATENT LAWS—The seventh edition of the American Patent Laws and Guide to the Patent Office, published by us, having been exhausted, we shall not be able to furnish orders under ten days or two weeks, Those who have remitted money for copies will be supplied immediately on the issuing of a new edition.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

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IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

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128 Fulton street, New York.

A RARE CHANCE—For sale, a Patent Right recently granted for a most useful invention. For further information address "W. L." No. 8 Christopher st, where a machine may be seen in operation. 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*

SMOOTHING IRONS—To any person who will forward me $10, I will forward a set of patterns and a right to sell one thousand of my Flat-Iron Heaters any where in the United States, excepting in the cities of New York, Brooklyn. and Williamsburgh, N. Y., and the States of Massachusetts and New Hampshire, provided they shall not sell the same for less than 75 cents a-piece. Town rights in Massachusetts and New Hampshire for sale. Agents wanted to sell rights in the Middle and Western States, to whom liberal commissions will be allowed. Money can be sent by mail at my risk. Address F. S. COBURN, Ipswich, Mass, 1*

A MECHANICAL ENGINEER—offers his services as Engineer and Draughtsman in a Foundry and Machine Shop, references will be given; inquire at this this Office. 34 2*

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 promptn ess-
34 13* FIELDS, BROTHER & CO.

DR. LITTLE'S AUTOMATIC LIGHTNING PRESS will be publicly shown in New York shortly. The cylinders of this press can be made to feed itself at the rate of 100.000 sheets each per hour. 34 2*

KETCHUM'S MOWING MACHINE—Also various Reaping & Mowing Machines, combining all the latest improvements. New York Agricultural Warehouse and Seed Store, 189 and 191 Water street,
34 2* R. L. ALLEN.

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 Mellier'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*

CIRCULAR SAW MILLS—The undersigned are manufacturing, and keep constantly on hand.—"Child's Premium Double and Single Circular Sawing Machines." The best machine in use for sawing lumber from logs of all sizes, and warranted capable of cutting more lumber in a given time than any other mill.
H. WELLS & Co.,
31 8 eow* Florence, Hampshire Co., Mass.

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.

PIG IRON—The subscriber has always on hand a stock of the best brands of American and Scotch Pig Iron, for sale at the lowest market price. G. O. ROBERTSON, 135 Water st. cor. Pine, N. Y. 13 14eow

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 17, 1854

ON THE PETITION of Simon Fairman, of Stafford, Connecticut, praying for the extension of a patent granted to him on the 18th day of July, 1840, for an improvement in "the expanding and contracting, or universal chuck for lathes," for seven years from the expiration of said patent, which takes place on the 18th day of July, eighteen hundred and fifty-four, (1854)—

It is ordered that the said petition be heard at the Patent Office on Monday, the 25th 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 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 15th 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 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 25th 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. 33 3

HARRISON'S PATENT MILLS—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 20 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 MAchine 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 outdoors, 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.
21 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 sheets, 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,
20 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 200 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 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 Portabl Engines, and Mining Machinery of every description.
41 1y.* THOMAS, CORSON & WEST.

Scientific Museum.

New Respirator—Proof Against Infection, &c.

The following is a description of a new Charcoal Respirator, by J. Stenhouse, F. R. S., the author of the paper on the disinfecting properties of charcoal, which appeared in our columns last week; this description is taken from the same publication—the London "Journal of the Society of Arts:"—

"The object of the present paper is chiefly an application of the absorbent and oxydizing properties of charcoal, which, so far as I am aware, has never yet been proposed, viz. to employ a new species of respirator, filled with powdered animal charcoal, to absorb and destroy any miasmata or infectious particles present in the air in fever and cholera hospitals, and districts infected by ague, yellow fever and similar diseases. I have got such a respirator, made by Ferguson & Sons, Smithfield, instrument-makers to St. Bartholomew's Hospital. It fits closely to the lower portion of the face, extending from the chin to within half an inch of the eyes, and projects about an inch on either side of the mouth. It therefore includes the nostrils as well as the mouth. The frame of the respirator is made of thin sheet copper, but the edges are formed of lead, and are padded and lined with velvet, so that it can be easily made to fit tightly to the face. The powdered charcoal is kept in its place by means of two sheets of fine wire gauze, from a quarter to an eighth of an inch apart.—As the body of the appartus is metallic, it has been electro-plated with silver. Electro-plating the respirator with platinum or gold would certainly be an improvement. There is a small opening closed with a wire-gauze screw, by means of which the respirator can be filled with charcoal or emptied at pleasure. The respirator is kept in its place by an elastic band passing round the back part of the head. I employ wood-charcoal. The object in view is, by filtering the air with such a porous substance as animal charcoal, to intercept the miasmata which may have got mixed with it. These, I think, cannot fail to be absorbed by the pores of the charcoal, where they will be rapidly oxydated and destroyed by the condensed oxygen with which they will be brought into the most intimate contact. The probability of this expectation being realized is greatly strengthened by the results of repeated trials with the respirator on certain noxious and offensive gases, such as ammonia, sulphuretted hydrogen, hydrosulphate of ammonia and chlorine. I have found that air strongly impregnated with these gases, and which could not be respired for any length of time under ordinary circumstances, may be breathed with impunity when the charcoal respirator is worn, the odor of these gases being rendered almost, if not altogether, imperceptible. Any other highly porous substance, such for instance as sponge platinum, or pounded pumice-stone, might probably be found to answer perfectly well for filling the respirator; but I have selected charcoal as the cheapest and most easily available material.

While the filtration of water through charcoal powder and other porous substances has been advantageously practiced for many centuries, the object in view being to deprive the water of numerous impurities diffused through it, which produce injurious effects on the animal economy, it is certainly somewhat remarkable that the very obvious application of a similar proceeding to the lighter fluid in which we live, viz. air, which not unfrequently contains even more noxious impurities floating in it than are usually present in water, should have, up to the present time, been so unaccountably overlooked.

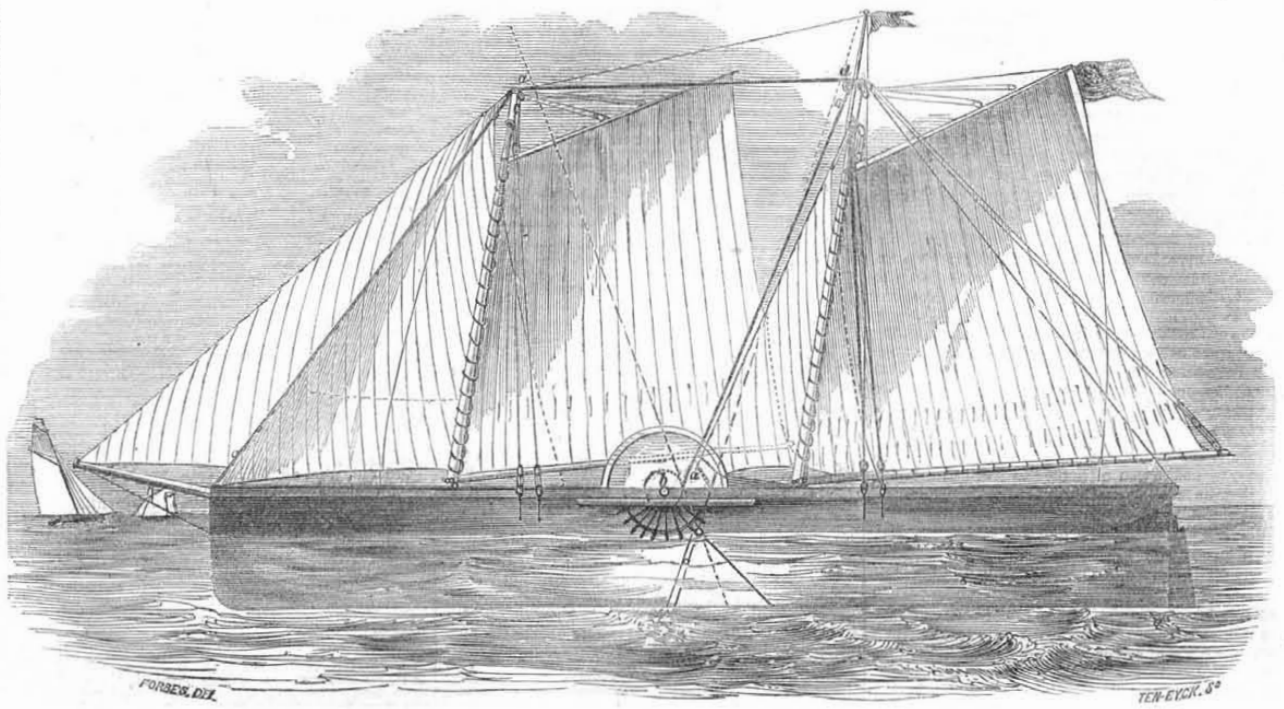
In addition to the precaution of wearing such a respirator as that just described, persons necessitated to live in especially pestiferous districts might have their houses made as air-tight as possible, with the exception of such openings as are necessary to maintain a proper amount of ventilation. By means of these openings the air could be freely admitted through gauze into which the requisite quantity of charcoal had been quilted. The doors of such houses could also be made double, and be constructed of coarse cloth, likewise containing a thin layer of charcoal powder. As an additional precaution, if it were thought desirable, the walls, floors, and ceilings of houses in very unhealthy districts could be easily lined with mattrasses filled with a couple of inches of charcoal powder. Were these and similar precautions adopted I confidently anticipate that Europeans will be enabled to reside with comparative impunity in some of the hitherto most pestilential districts of the world."

Oxyd of Copper.

The ordinary method of preparing this substance as it is used in organic analysis, is to heat the nitrate of the metal to ignition in a crucible; this is attended with much inconvenience, owing to the salt melting, frothing, and in general flowing over the sides of the vessel; in addition to which the crucible commonly cracks during the operation, and permits the liquid portion to run through into the fire. Now all this may be avoided by using a vessel of copper, which is easily made by any one, by simply taking a piece of sheet copper, and folding it so as to form a water-tight vessel, without the use of solder; every one by inspecting a common kitchen fire-shovel will render this intelligible.

In a vessel of this description the nitrate may be safely decomposed, and without any risk of overheating and fusing the oxyd; although the vessel gradually wears out in so doing, it yields a quantity of oxyd of copper, which is mixed along with that produced from the nitrate.

THE BENDER.



The readers of the "Scientific American, who take an interest in naval architecture, will be apt to remember an article in this paper under the title above written, in our issue of July 10, 1852.

The engraving now presented shows some modifications of that plan. It is here intended to gain a propelling power only from the falling of the fore and the aft sections, as the bender passes the crest of a wave, the foreship being allowed to rise over the wave it is encountering without having that motion taxed to produce any mechanical power. In other words, only one wire-rope, *a a*, is used, starting from the foot of the bowsprit, crossing the head of the foremast, passing around a pulley, *b*, on the head of the mainmast and thence down to the fusee on the paddle-wheel shaft, *b*. The motion of the shaft is to be sustained and made continuous by a suitable fly-wheel. As the fore-ship rises, the slack of the rope is to be taken up on the fusee (to be ready for the next pull) by the action of a weight or spring.

The hope is cherished that this Bender, whether in the form of a small boat for harbor use, or in a vessel of larger size, will demonstrate the practicability of using the wave power in moving against a head-wind.

George Steers, Esq., shipbuilder, at the Dry Dock, is ready to undertake the construction of such a vessel for any parties that may apply to him.

Communications for the inventor may be left with his agent in New York, John Livingston, Esq., Counsellor at Law, 157 Broadway.

Depositing of Aluminum and Silicium.

The following interesting extract is from the London "Artizan:"—

Mr. Gore, of Birmingham, has succeeded in depositing aluminum and silicium upon copper, by the electrotype process. To obtain the former, he boils an excess of dry hydrous alumina in hydrochloric acid for one hour, then, pouring off the clear liquid, adds one-sixth its volume of water. In this mixture was set an earthen porous vessel, containing sulphuric acid, diluted with 12 parts of water, and with a piece of amalgamated zinc plate in it. In the chloride of aluminum solution was immersed a plate of copper, of the same amount of immersed metallic surface as that of the zinc, and connected with the zinc by a copper wire. The whole was then set aside for some hours, and, when examined, the copper was found coated with a lead-colored deposit of aluminum, which, when burnished, possessed the same degree of whiteness as platinum, and did not readily tarnish either by immersion in cold water, or by the action of the atmosphere, but was acted on by sulphuric and nitric acids, whether concentrated or dilute. If the apparatus is kept quite warm, and a copper plate much smaller than the zinc plate is employed, the deposit appears in a very short time—sometimes in half-a-minute; if the chloride solution is not diluted with water, the deposit is equally, if not more rapid.

The author has also succeeded in obtaining a quick deposit of aluminum, in a less pure state, by dissolving common pipe-clay in boiling hydrochloric acid, and using the clear liquor undiluted in place of the above-mentioned chloride Similar deposits were obtained from a strong aqueous solution of acetate of alumina, and rom common alum, but more slowly. With each of the solutions named, the deposit was hastened by putting from one to three small Smee's batteries in the circuit.

To obtain the deposit of silicium, monosilicate of potash (prepared by melting together 1 part silica with 2¼ parts carbonate of potash), was dissolved in water, in the proportion of 40 grains to one ounce measure, proceeding as with aluminum, the process being hastened by interposing a Smee's battery in the circuit.—With a very slow and feeble action of the battery, the color of the deposited metal closely resembled that of silver.

Old Newspaper.

A valuable work has recently been added to the library of Congress—a complete file of the "London Gazette," from 1656 to the present time. This is the only complete file in existence. The Royal Library in Great Britain made several ineffectual attempts to obtain this work, but the prize was borne off by Brother Jonathan. The "Gazette" has been for 200 years the journal of the British government, and in it are published all civil, military, and naval appointments; resignations, deaths, and dismissals—all bankruptcies, proclamations, ordinances and despatches from military and naval officers in command on foreign stations.—[Exchange.

Submarine Navigation.

A Dr. Payerne, recently, at Marseilles, France, descended in a machine of his own invention, with three sailors, and after remaining under water a considerable length of time, climbed into the port-holes of a man-of-war in the harbor, without being perceived by the crew. It is said the machine will contain a four hours' supply of air for a crew of fourteen men.