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Decrease of American Sugar Crops.

In Louisiana, the yield of sugar has been decreasing for some years past. A planter gives statistics in the *New Orleans Crescent* which prove this. The sugar cane is propagated by cuttings, the same as the potato. It has been discovered by experience that no annual plant can be propagated by cuttings from year to year in the same locality and in the same kind of soil. The cultivation of the potato affords the most complete illustration of this principle, hence scientific farmers endeavor to obtain seed raised at some distance from where they reside, and on soil somewhat different from that in which they intend to plant it. Those who cultivate the sugar cane, in Louisiania and other places, should take measures early to obtain new cuttings and seed cane for their next crops from the West India Islands, in order to improve their yield of sugar.

Trial of a Steam Plow.

At the late meeting of the Royal Agricultural Society, England, when the trial of reapers was held, as noticed in our last number, a Steam Plow constructed by Mr. Fowler was also tested. It plowed one acre and sixteen poles in an hour with an 8-horse power steam engine.

Memento Mori.

James Bremner, Engineer, who managed to remove the steamer *Great Britain* after she was wrecked in Dundram Bay, and after many engineers of a far higher reputation had tried to do so, and failed, died last month at his native place, Wick, in North Britain.

Beet Root Coffee.

A very good coffee can be made of beet root in the following manner :—Cut dry beet root into very small pieces, then gradually heat it in a close pan over the fire for about fifteen minutes. Now introduce a little sweet fresh butter and bring it up to the roasting heat. The butter prevents the evaporation of the sweetness and aroma of the beet root, and when fully roasted it is taken out, ground, and used like coffee. A beverage made of it is cheap, and, no doubt, equally as good for the human system as coffee or chicory.

Artificial Light for Taking Photographs.

A very brilliant light has been produced by directing a stream of oxygen gas into the flame of coal gas which had been previously passed through cotton and naph a in order to surcharge it with carbon. Wi this light, using a reflector, a photograph o an engraving was taken by the camera in very short period.

New Brick Press.

Our engraving shows a new invention for pressing bricks out of dry clay, for which letters patent were granted to Mr. Stephen Ustick, of Philadelphia, Pa., July 10, 1855.

The clay, after having been finely pulverized is placed in the hopper, A, whence it descends into the sliding mold boxes, B. These boxes move back and forth, and serve to carry the clay forward to the molds, C, into which it falls, and is then pressed. The vibratory movement of the mold boxes, B, is effected by means of rock shaft, D, and rods, E F. The latter has a friction roller, G, upon its upper end, which follows the configurations of cam wheel, H. The latter is attached to gear wheel, I. The actuating power which drives the machine is applied at J.

The necessary pressure is effected by means of four pistons, two of which rise through the bottom of mold, C, and two descend through the top. The upper pistons, K, only are shown The lower pistons are attached to a sliding frame, L L′, and the upper pistons to a sliding frame, M M′, both of which are caused to rise and fall at the right moment by means of a double cam, N N′ O. This double cam is operated by the shaft which carries I. The movement of the cam is such that the faces of the two pairs of pistons are made to move towards each other, when within the molds, C, the lower pistons rising, and the upper pistons falling, the clay being pressed, with tremendous force, between them. After the pressure has taken place, the pistons rise until the bottoms of the bricks are brought up even with the table, P. The box, B, now comes forward, and its front end pushes the bricks forward on to table, P. At the same time the lower pistons descend, and the clay falls into the molds, the upper pistons, K, remaining suspended and stationary until the box, B, is withdrawn, when they descend and press, as before described.

Among the novel features connected with this improvement, is the method of allowing the air to escape from the molds, during the operation of compression; also the mode of expanding the piston so as to compensate for its wear. These features are shown in the sectional figures, 2 and 3.

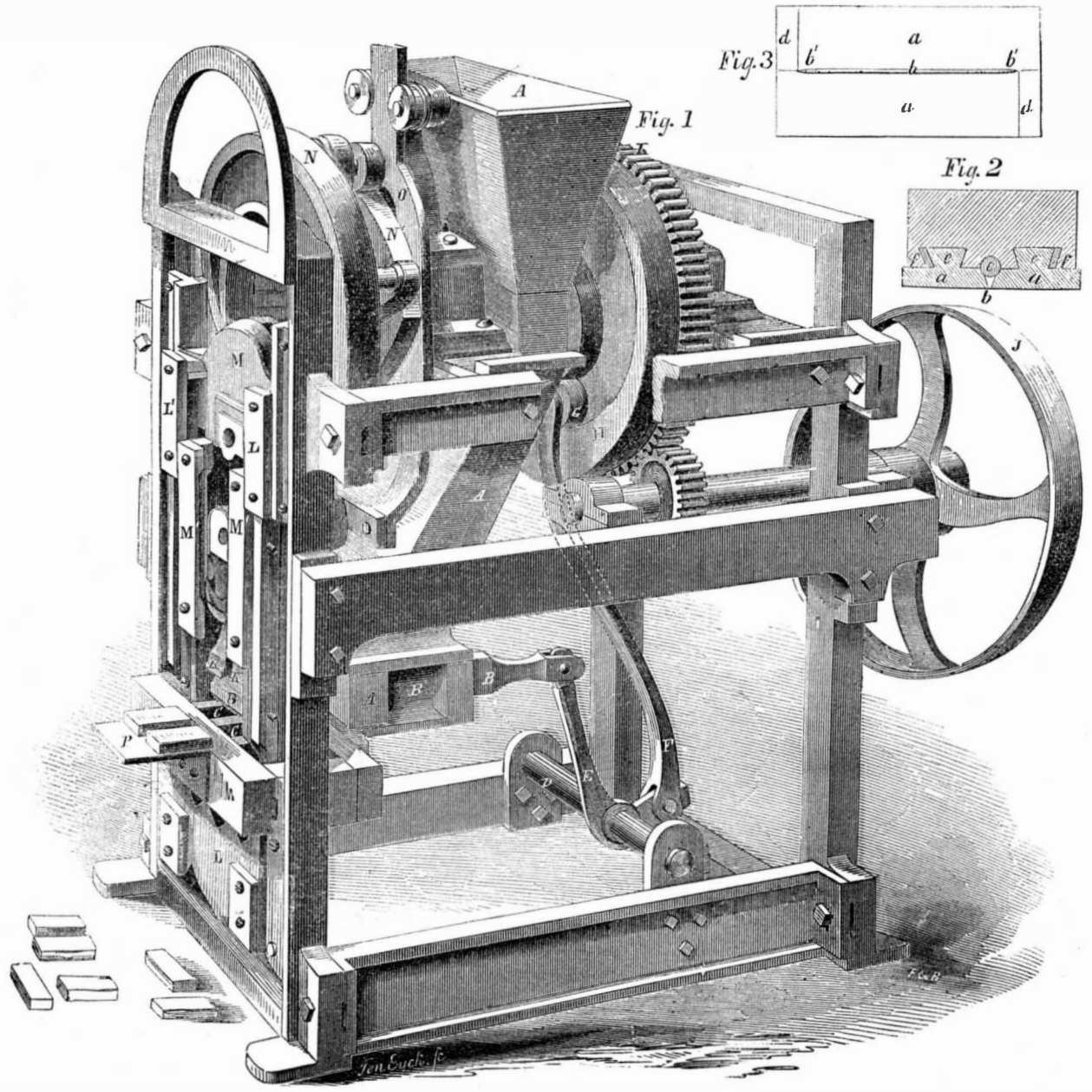
The pressing face of the piston is formed of rectangular longitudinal plates, *a*, having transverse plates, *d*, of the same thickness, their ends arranged in such a manner as to enable the outer edges of *d*, to be brought at right angles against the side edges of *a*, the four plates thus put together forming a surface corresponding with the form of molds, C, and exactly fitting the same. The longitudinal plates, *a*, are separated a short distance from each other by thin plates or shoulders, *b′*, so inserted as to have a slit, *b*, between them of sufficient capacity to allow the escape of the condensed air, at the upper and lower parts of the brick, during the operation of pressing, but not of sufficient width to allow the passage of any material part of the clay. These spaces, *b*, between the plates, extend nearly the whole length, and are increased in width as they extend to the opppsite surface of the plates until they open into channels, *c*, which afford a free passage for the escape of the air at the ends of the pistons. The apertures may be cleaned by the insertion of wires or other devices, in case the clay should enter them.

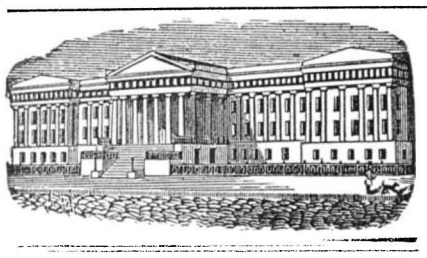
The plates, *a*, are secured firmly to the body of the piston, by means of dovetailed projections or tongues, *e*, attached to plates *a*, said tongues, *e*, being inserted in corresponding mortises, which are larger than the tongues and made slightly tapering on one of their sides so as to admit wedges, *f*.

In case of wear, strips of metal or thin plates are inserted between the ends of the longitudinal plates *a*, and the transverse plates *d*, and the beveled or inclined edges, *f*, and again inserting thinner wedges to secure them together. By thus enlarging the area of the pressing surface of the piston, it is compensated for the wear of its edges, and adjusted to fit the molds at all times.

The working parts of this machine are all of the strongest character, and the arrangement is such that they cannot easily get out of order. Both ends of the machine may, if desired, have a set of molds attached, and, thus provided, the apparatus will turn out 20 000 bricks per diem, all pressed in the very best manner. The superiority of pressed bricks is well known. There is a saving of time in their manufacture, so far as regards preparation for the kiln, as they do not require to be dried so long as the common bricks. But for want of some rapid means of effecting the pressure and other obstacles, the expense of manufacturing is considerable. It is believed that in the improvement here illustrated, all difficulties have been removed. The inventor has had machines in operation for some time, with such success, as to justify him in believing that pressed bricks can be produced at a cost but slightly, if at all exceeding the price of common bricks. For further information address the patentee as above.

IMPROVED BRICK MACHINE.





[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING SEPTEMBER 9, 1856.

SAW SET—Wyllys Avery, of Salisbury Center, N. Y.: I claim a traversing punch, arranged so that it can be vibrated or turned to suit the form or position of the saw teeth, being set substantially as described.

I do not claim a vibrating pin acting upon the teeth of the saw to traverse it endways.

But I claim the adjustable stationary pin, M, so arranged as to bring the teeth of the saw into a proper position under the setting punch, when the scores between the teeth of the saw are forced into said pin, substantially as described.

I do not claim a vibrating frame to support the saw hung directly opposite the setting punch and anvil.

But I claim two separate frames, one hung each side of the anvil, and setting punch, so arranged that when one is turned back out of the way of the handle the other will support and sustain the saw, substantially as described.

I claim the revolving blocks for the above mentioned frames, which support the saw during the process of setting, substantially as described.

DRESS OF METALLIC HEMISPHERICAL GRINING MILL—Anson Atwood, of Troy, N. Y.: I claim the series of radial ogee ribs and furrows, in combination with the intermediate or interposing ribs and furrows, cracking teeth, and hemispherical formed grinding surface, combined in the manner substantially as described.

LADIES RIDING SADDLES—Henry Adams, of New York City: I claim, first, the arranging of the near side horn, a, with the leaping horn, b, attached directly to it, on the side of the tree or saddle, near the front, and a short distance below the head of the same, substantially as and for the purpose set forth.

Second, having the leaping horn attached loosely to the near side horn so as to be capable of being reversed, and thus made to serve as a support or rest for the left leg while riding at a slow gait.

BREECH-LOADING ORDNANCE—G. W. Bishup, of Brooklyn, N. Y.: I do not confine myself to the particular form of the groove, b c, or of the segments.

But I claim the combination of the groove, b c, made around the seat of the breech pin, and the segments, E E, attached to the breech pin, the said segments being operated by a screw and toggle movement, or other equivalent means of spreaidng or expanding them into the said groove, or withdrawing them therefrom, substantially as described.

WOODEN PART OF BRUSHES—Thomas Mitchell, of Lansingburg, N. Y.: I claim the combination of a circular saw with a cutting apparatus, formed as described, for the purpose of applying circular saws to the cutting of the curved figures, substantially as set forth.

I also claim the combination of the apparatus first claimed with a crown saw attached to an arbor common to both, forming a tool for the advantageous manufacture of brush handles, or other analogous work, substantially as set forth.

MANUFACTURING DELAINES—John Marland, of West Bridgewater, Mass.: I claim the method of operating upon wool by combing, and subsequently carding, in the manner and for the purpose set forth.

HANGING SHIP'S RUDDERS—Christopher N. Nixon, of Ramsgate, Eng. Patented in England May 12th, 1854: I claim the use or construction, as applied to sailing vessels, for steering purposes, of the groove or socket, as described, whether the same be formed to extend from the top to, or near to the bottom of the stern post, whether the same be continuous or divided into sections or parts.

Second, I claim the rod, continuous or in sections, attached to the rudder and combined with the groove or other equivalent attached to the stern-post.

CUTTING AND DRAWING WIRE—F. Noette, of Brooklyn, N. Y.: First, I claim feeding the circular plate, M, to the circular cutters, H L, and gauging the same by means of racks, o o, shaft, Q, with pinions attached, the pawl and ratchet, G U, weighted lever, V, or equivalents, and gauge roller, arranged as shown and described.

Second, I claim operating the reel or drum, I', or giving it a vertical vibratory movement by means of the right and left screw rods, l l, with pinions, m m, attached, and made to gear alternately into the pinion, K, on the shaft, A', by means of the block, B', lever, D', bar, G, and weighted lever, H, arranged as shown and described.

Third, I claim the reel or drum, I, when constructed as shown, so that it may be compressed or contracted to allow of the ready removal of the wire from its periphery.

CASTING ARTIFICIAL TOOTH PLATES—John L. Newell, of Binghamton, N. Y.: I do not claim the electrotype art of depositing metals into casts or molds.

Neither do I claim the making of the cast or mold.

But I claim constructing the linings in one piece, and simultaneously with the plate, by the electrotype process, as set forth.

I also claim filling the interstices of artificial teeth, when attached to a metallic plate, with a metallic precipitate solidified, in the manner described and for the purpose specified.

CARTRIDGES—Julius Riedel, of Pleasant Hill, Ky.: I claim making the pointed ball cartridge, as described and shown.

First, I claim that the shape of my cartridge is such that one end is naturally loaded heavier than the other, as represented by section a c b d, thereby causing that end to go forward, thus guarding against all revolving motion, except a single winding or peristaltic one.

Second, I claim as novel the constructing the hemispherical end of the cartridge stronger and heavier than the conical end, having several objects in view, viz., that the loading of shot or balls on the inside may be kept together a considerable distance after leaving the gun, that the lighter conical end may serve to keep the whole in the given direction till the cartridge is burst, and when burst on or near its base, give free egress to its contents.

LOCK—Harly D. Russell, of Naugatuck, Conn.: I claim liberating the knob and its stem from all connection with the main bolt, in freeing the crescent plate, E, by the movement of the smaller bolt, C, as specified, produced by the cross bar, F, or its equivalent, operated by the key of the door, the whole constructed and arranged substantially as set forth.

WINDMILL—John R. St. John, of Lockport, N. Y.: I do not claim, separately and simply by themselves, any of the parts, as they have all been used before.

But I claim the arrangement and combination of the parts as described, or their merely equivalents.

I claim, first, the traverse table and tail piece for carrying the reduced part of the main shaft, and for sustaining the main shaft horizontally on the screw pivot, G, with the arrangement thereon of the rudder vane for its perpendicular movement.

Second, I claim the main shaft with its hinder position reduced, with the circular cogged rack, d, the collar, n n, and the spiral spring, e e, working therewith.

Third, I claim the rudder vane, H, as performing the two offices of keeping the sails to the wind, by moving the traverse tables horizontally, also as carrying the rod, i i, and the governor vane or globe, T, for giving a vertical movement.

APPLE PARERS—John D. Brown, of Cincinnati, O.: I claim the returning or reversing action, as described and set forth.

WASHING MACHINES—Israel F. Brown, of Columbus, Ga.: I claim the slotted cylinder, B, constructed as shown, and having a diagonal or oblique corrugated board, a', at each end, the cylinder being partially immersed within the box, A, substantially as described.

SWEEPING STREETS—Robert A. Smith, of Brooklyn, N. Y.: I claim, first, placing the main broom cylinder under the axle of the traveling wheels, substantially as and for the purposes set forth.

Second, the curved guides, f, of broom cylinder axle, concentric with the driving pulley for keeping the driving band tight in all portions of the said cylinder.

Third, hanging the conveyor on its driving shaft, with its lower extremity resting on wheels running on the surface of the ground, as specified.

Fourth, the arrangement of screw, box, and guides with the shaft of the gutter brush, for regulating the inclinatien and preventing the oscillation of said brush, as specified.

Fifth, the combination of the cylinder brush and gutter brush with the elevator, arranged and operating substantially as specified.

WASHING MACHINES—Riley Smith, of Towanda, Pa.: I am aware that a hand rubbing board has been used in the same machine with a rubbing board operated by levers; this I do not claim.

But I claim connecting the hand and lever rubbers by a pivoted brace, which serves the double purpose of a guide in operating the lever rubber, and a brace for raising up and holding in a convenient position the hand rubber, the whole being arranged for the purpose and in the manner set forth,

STEAM ENGINES—Wm. A. Clark, of St. Louis, Mo.: I claim the arrangement of two or more pistons on the one piston rod within the one cylinder, divided into compartments, the movement of each piston being limited to its respective compartment, and all the pistons traveling in the same direction, as set forth.

FLUID LAMPS—Wm. B. Carpenter, of Brooklyn, N. Y.: I claim the divided cap or extinguisher, A A, in combination with the springs, D D, and the ring, c, the whole operating substantially as described.

REPAIRING RAILWAY BARS—James D Cawood, of Marshall, Mich.: I do not claim the anvil block nor its recesses.

I claim the movable press block, D, having its edge formed to the side of the rail, G, in combination with another block, D, with its edge of a similar but reversed form, the movable block to be operated by two cams, or in any other convenient manner, for the purpose of pressing between them a T or otherwise shaped rail, thereby facilitating the difficult operation of welding or renewing the ends of such rails after they have been damaged, in the manner described and for the purpose set forth.

ARTIFICIAL FUEL—Robert Courtney, of Albany, N. Y.: I claim the rendering coal dust or screenings into a merchantable artificial fuel, by combining coal dust with clay, lime, and coal tar, or other bituminous or resinous material, and subjecting them to all the parts of the process, in manner and form set forth and described.

FEEDING SAWING MILLS—Calvin and Geo. S. Dilkes, of Allowaystown, N. J.: We do not claim operating the feed wheel by means of pawls operated by the saw frame through the medium of a lever.

But we claim giving motion to the pawls which actuate the feed wheel by means of the cord, H, and pulley or short cylinder, G, and its stud, q, in combination with the slotted lever arm, F, and its plate, E, the same being constructed, combined, and operated together substantially as set forth.

LUBRICATING THROSTLE SPINDLES—Geo. W. Daugherty, of Crozerville, Pa., and Thomas G. McLaughlin, of Philadelphia, Pa.: We claim the lubrication of throstle spindles, in the manner and for the purpose substantially as described.

SEED PLANTERS—John Fordyce, of Morgantown, Va. I claim in combination with the hopper and its adjustable openings, the hinge board, B, and its blocks and figures for regulating the discharge of the grain from said hopper, and ensuring regular feeding, substantially as set forth.

ATTACHING HORSES TO VEHICLES—George H. Gray, Sen., of Clinton, Miss.: I claim the plates, C, attached to the harness as shown, and the plates, B, on the shafts, A, with loops or clasps, a, attached to the levers, D, with the pins, h, on them, and the dogs, F, levers, G, and rods, H, as described.

LINKS OF HORSE POWERS—Albert W. Gray, of Middletown, Vt.: I claim constructing the links composing the endless chain of corrugated sheet metal, so that the corrugations shall serve both as hinges for connecting the links and as cogs for gearing with the cog wheel on the driving shaft, substantially as specified.

PANS FOR EVAPORATING SUGAR—Samuel H. Gilman, of New Orleans, La.: I claim the evaporator formed by the combination of a train of open boilers, N O P Q, the boiler, Q, to receive the first, and the boiler, N, to receive the last fire, and each of the boilers in succession presenting an extent of surface to the fire in the reverse ratio of the intensity of the fire, as well as of its, the boiler's, cubic capacity, constructed and arranged substantially as described.

I also claim the construction and use of a flue, x, formed by a series of open boilers, N O P Q, and being in a series of sections of its length, divided longitudally and vertically by water legs, or strata of juice into two or more flues or spaces, the numbers of flues increasing from one section to the next, as the distance from the furnace increases, and the numbers of sections into which it is so divided, corresponding to the number of holes in the series, and each section being shorter than the boiler in which it is placed so as to leave a space between each section where the flue, x, is undivided in its transverse section, substantially as described.

HAND CORN PLANTERS—Herman B. Hammon, of Bristolville, Ohio: I claim the employment of a hexagonal or many-sided revolving wheel, E, having offsets, a4 a4 a4 a4 a4 a4, a plied in connection with the plunger and seed tube, substantially as and for the purposes set forth.

REVERSING GEAR—George Juengst, of New York City: I do not claim the described mode of converting motion, as it is well known.

Neither do I claim the substitution of the nipping pawl for the ordinary pawl and ratchet, as that is also well known.

But I claim the described arrangement of the disks, g, the screw pivots, e, and the springs, f f, or their equivalents, whereby the action of the nipping pawl is reversed and the motion communicated by it changed in direction without any change of direction or cession of motion in the moving power.

METALLIC CAR SPRING—Danforth Johnson, of Chicago, Ill.: I claim the combination and arrangement of a number of springs radiating from a central stud, and secured at the circumference or rim to a box or bed plate.

I also claim the arrangement of the convex bed plate, a b, over which the springs bend, in combination with the stud or pillar, e, to resist the lateral motion of the car or carriage, the whole combined, arranged, and operating substantially as set forth.

COLLISION APPARATUS FOR R. R. CARS—John Kulmski, of Charleston, S. C.: I claim protecting railroad trains against the injurious effects of collision, by the attachment to their front and rear of a series of shields, A B C, kept at a distance from each other by elastic and rigid resistances, E and F, in such a way that a collision taking place, said shields are to fall back successively upon each other from the fore to the rearmost, the resistance to yield to the shock alternately and in succession by the operation of tubes and snap locks, H I, or their equivalents, being constructed, arranged, and operating substantially as and for the purpose specified.

SCREW CUTTER—John W. Lyon, of Brooklyn, N. Y.: I claim the use of the slide rest, slide cutter tool, wire holder box, and spring clamp dies, or their equivalents, constructed, and combined, for the purpose of cutting and finishing screws, as set forth.

SUSPENDING BY HYDRAULIC PUPPET VALVES—Geo. Flott, R. H. Cole, and Wm. A. Clark, of St. Louis, Mo.: We claim the combination of the ball, loose socket, and anti-friction washer, when employed to connect an elastic or yielding valve with its stem, substantially as set forth.

MARBLE SAWING MACHINES—Jose Toll, of Locust Grove, Ohio: I am aware that there have been heretofore machines for sawing marble in taper form, and therefore make no claim to such.

But I claim the particular combination and arrangement of the fender bars, J J j j, with the adjustable guide pieces when the same are constructed and arranged to operate in relation to each other, in the manner and for the purposes set forth.

GRAIN AND GRASS HARVESTER—Wm. P. Maxson, of Albion, Wis.: I claim the wheel, H, attached to the driving wheel, F, in combination with the curved sliding lever, G, (on which the driving wheel is hung,) and straight lever, U, when arranged to operate in the manner and for the purposes set forth.

WINDMILL—Ephraim Whitman, of Abington, Mass.: I claim the combination and arrangement of the rotary wind flume, A, the series of turning blinds or gates, M, and the wind wheel, G, the whole being applied and made to operate together, substantially as described.

And in combination with the wind flume, A, the series of turning blinds or gates, M, and the wind wheel, G, the whole being applied and made to operate together substantially as described.

And in combination with the wind flume, A, and its wheel, G, I claim the series of guide plates, L L L, and the concentric tubular tapering case, I, arranged substantially in manner as explained..

I also claim arranging the transferring shaft, F, in the turning axis of the wind flume, A, and so as to pass through the lower journal, C, thereof, and thereby enable the wind flume and driving shaft, H, and its beveled gear to revolve around such transfering shaft and the beveled gear thereof, and transmit power through the shaft, F, under any position of the rotary flume, A.

FORMING HAT BODIES—D. G. Wells, of New York City: I no not claim the use of the secondary currents of air, nor valves to control them.

First, I claim the mode of guiding the currents of air from the picking cylinder in their passage to the cone, substantially as described.

Second, I claim the mode of regulating the secondary currents of air by means of the wedge-shaped apertures formed by the valves, K K, substantially as set forth.

DRAWING OFF WASTE GASES, STEAM, &c—Robert F. Brower, (assignor to Samuel A. Brower and J. L. Brower,) of Bloomfield, N. Y.: I claim the operation of drawing off waste steam or gases by mechanism or heated currents, from buildings or apartments where drying, steaming, or chemical operations are conducted, after the manner substantially as set forth.

JACQUARD LOOMS—J. C. Cooke, (assignor to Hotchkiss and Merriman, Manufacturing Co.,) of Waterbury, Conn.: I claim the combination of the lifting bar with the sliding hook and rocking piece for operating the needle.

Second, I also claim the use of a pattern cylinder, having a reciprocating horizontal and vertical movement, combined with the movement of rotation on its axis, in the manner, and for the purpose set forth.

SAW GUMMER—L. A. Dole, (assignor to Dole, Silver, and Felch,) of Salem, Ohio; I claim arranging the cam or moving crank below the die, either in or below the die block so as to draw down the punch or male die block, substantially as described.

I claim the cam lever, D, with a movable fulcrum, in combination with the opening, c, so constructed and arranged as to traverse the bar, C, with a positive motion in each direction, as the lever is vibrated, as described.

SHINGLING BRACKET—L. A. Goodsell, of Southington, Conn., assignor to himself and D. H. Holt: I claim a combination of the foot or feet, D D, the claw or pin pointed base, and the hinged braces, E F, made fast and adjustable to each other by the catches and dovetail tongue, receiving the wedge, J, the whole constructed, combined, and operating as set forth.

HARVESTERS—W. H. Seymour and Henry Pearce, (assignors to himself and D. S. Morgan,) of Brockport, N. Y.: I claim the particular arrangement of the clutch and clutch lever, with regard to the conductor's seat and platform, and the shaft, b, from which motion is communicated to both the rake and sickle, as that the operator from his seat, having a distinct view of the platform, can engage or disengage said rake with his foot, whilst the sickle continues to run, substantially as set forth

We also claim the combination of the universal joint, i, for connecting the shafts, b k, the sleeve, l, and plate, Q, with its guide, m m, and gimbal joint, o, for giving the rake its transverse movement, as described.

We also claim the bow and rake head, so formed as to incline towards their outer ends, and so acting as to cause the bent or entangled straws to slide off on to the platform, substantially as described.

FAUCET—Joseph Goodrich (assignor to the Boston Faucet Co.) of Boston, Mass.: I claim arranging between the caoutchouc spring, and the screw cap of the neck of the faucet, a metallic annulus or guard ring, in or to prevent the adhesion of the cap to the india rubber spring, not meaning to claim a metallic washer, as ordinarily used, but the specific application of a metallic ring to prevent a difficulty incident to the peculiar relation of parts, as described.

I also claim the arrangement of the annular groove in the stem of the valve, and with reference to the sides of the spring or valve chamber, in manner and for the purpose, or so as to produce the new and useful result, as specified, the said groove being intended to receive the foot of the spring made tapering, or frusto-conical, in manner and for the purpose of preventing it from being caused to adhere to the sides of the said chamber by oxydation of the metal, under circumstances, as expressed.

SEWING MACHINES—C. R. Gardner, of Detroit, Mich: I claim, first, the sharp pointed needle having a flexible beard, as described, for sewing in woven or other close fabrics, in the manner set forth.

Second, the adjustable slide, C, so arranged as to close the beard of any sized needle that may be used in the machine.

Third, also the guide, G, consisting of the thread channel, C', and the needle passage with the side thereof, either slightly inclined, as described, or provided at the top with the inclined groove, J, and so operating that the feed motion given to the cloth shall carry the thread in proper position that it shall be caught by the hook or beard of the needle, as described.

Fourth, also the folding plate, or its mechanical equivalent for the purpose specified.

I do not claim running several folds or corrugations on the needle at the same time, as it is done in machines for sewing with a running stitch. Nor do I claim sewing along parallel with the fold, as it is done in hemming, binding, and forming welts, where the length of the stitch is parallel with the fold.

I claim sewing with a machine through one fold or corrugations of the material at a time, the cloth being fed along at right angles or nearly so, to the line of the fold, substantially as described.

LAMPS FOR BURNING FLUIDS—Salmon Bidwell, of Rochester, N. Y.: I claim the mode of compressing the wick in the manner described, so as to prevent any change in the light caused by the jar of the lamp, and to prevent the escape of the burning fluid fastor than is desired, and to secure the gas generated from the same, and to enable the use of any desirable fluid for lamp purposes.

HARVESTERS—Wm. H. Seymour and Henry Pearce' (assignors to himself and D. S. Morgan,) of Brockport, N. Y.: I claim, in combination with the main wheel, H, and removable wheel, M, a frame capable of allowing the shifting of the former, and the removing or replacing of the latter, when the machine is to be converted from a reaper to a mower, or vice versa, substantially as set forth.

FURNACE SMOOTHING IRONS—John Taggart, of Roxbury, Mass., assignor to himself and Vernon Brown, of Boston, Mass.: I claim arranging the bellows between the handle and furnace or body of the flat-iron, as circumstanees may require.

I also claim making the bellows tube or conductor, H, in two separate pieces, m n, and attaching them respectively to the cover and body of the furnace, so as to operate together when the cover is down, and to be separated when the cover is raised, substantially in manner and for the purpose as specified.

ADJUSTING CARRIAGE TOPS—C. W. Saladee, of Columbus, Ohio: I disclaim the use of one straight rod or bar of iron, when placed on the inside of the back to the sea, with both extremities passing through a square hole in the lower end of the top-props, and operated upon by a lever, as that forms no part of my invention.

Neither do I claim the long perpendicular rods at the back of the seat, and connected to the back bow, as that patented by Mr. Huntington.

But I claim the lateral rod, D D, in combination with the top props, A.

I also claim the perpendicular rods, E E, in combination with the lateral rod, D D, and the back of the seat for the purpose of throwing back or raising up the top, while seated in the carriage, substantially as set forth.

RE-ISSUE.

HARNESS SADDLES—John F. Denniston, of Lyons, N. Y. Originally patented Nov. 20th, 1846: I claim making the upper or saddle part of harness saddles of metal, giving the required form thereof, by molding, when such saddles are so formed, substantially as described, that the leather parts, such as the skirts, can be secured thereto, without stitching, as set forth, or by equivalent means.

I also claim forming the upper or saddle part, and the under or crotch part in combination, so that the skirt and jockeys, if jockeys are used, will be embraced between them, and secured in the manner substantially as described.

ADDITIONAL IMPRONEMENT.

ROTARY BRICK MACHINES.—George Crangle, of Philadelphia, Pa. Patented June 3, 1856: I claim, first, the substitution of the single square toothed ratchet wheel, D, and the pendulous lever, E, with its spring, e, in the apparatus described in my former specification, "for rotating and stopping the cylinders in rotary brick machines," the square toothed ratchet wheel, lever, and spring, being constructed, applied, and operating, substantially as set forth.

Second, I also claim a single cylinder, A, with two series of molds in the same, when the said cylinder is constructed as described, that is to say, with the partition, b, in the middle, and open at each end: the movable bottoms of the molds thereof being supported at each of their ends by the rims, e e, which are partially supported by the rollers, t t, whilst the roller, h, and its bearings, i i, operate between the said two rims, when the above parts are constructed, arranged and operated substantially in the manner and for the purpose set forth.

Virginia Gold Mines.

The New York *Tribune* of the 19th inst. contains a letter from J. Winchester on the mining capabilities of Virginia. The following are a few extracts from it :—

"There are mines on which $100,000 and $300,000 have been expended, and it would puzzle any person to tell what had been done with the money to any better purpose than throwing it into the sea.

California is scarcely a more inviting field for the miner than this very State, not a day's journey from the commercial capitol of the Union. Facts in proof are not wanting.

I am well satisfied that, considering the recent improvements in metallurgical science, especially in the treatment of *pyritiferous* ores, which form so large a portion of the gold and copper lodes of the Southern States, a new era is about to be opened, in which capital will find the reward hitherto not realized.

The mine at which I am stopping—the Woodville—after years of perseverance under the direction of Dr. S. F. Ambler, has become a success. Dr. Ambler has recently invented and erected a new and admirable contrivance for working sulphurets. I have seen its operation, and have no doubt whatever that he has hit upon a desidesideratum in the reduction of *sulphur* ores, and the release of the gold I needed but such a discovery to render all the *auriferous sulphurets* profitable which have ever before stubbornly refused to yield up their treasures."

The whole letter leaves an impression on the mind that gold itself exists in the state of an ore—as sulphurets and pyrites—whereas gold is only associated with the pyrites of copper and iron in some Virginian mines, and is never found as an *ore*, strictly speaking, but commonly as an alloy, with metallic silver, copper, and some other metals. It is plainly stated that the working of auriferous pyrites—gold associated with iron and copper pyrites—in Virginia has hitherto been unprofitable, but by a new invention of Dr. Ambler the gold can be released profitably, and "a new era is about to be opened, in which capital will find a reward not hitherto realized."

Virginia is rich in gold quartz, but her auriferous sulphurets have always been considered poor ores, because they require smelting, which is a far more expensive process than that of amalgamation by mercury, where the gold is found unassociated with the sulphurets of other metals. The statement that auriferous sulphurets have ever before stubbornly refused to yield their treasures, is not correct. Dana, our greatest mineralogist, states that it has been found profitable where metallic sulphurets and other ores are abundant in gold rocks, to work them by smelting, and he describes the profits obtained by smelting such ores in Russia, in comparison with the simple treatment of them by amalgamation. If, by the process of smelting, the gold can be profitably reduced from the auriferous pyrites, this can be easily demonstrated without very expensive apparatus in any of the Virginia mines. The ores of each mine should be fairly tested before expensive reducing apparatus is fitted up, because their character and quality—even when separated but a short distance—differ so much from one another. It would be hazardous, in our opinion, to invest capital largely in any mine for the reduction of gold from auriferous pyrites, until it was fairly demonstrated that such investment was beyond a doubt, safe and profitable.

[For the Scientific American.]

The Hughes Telegraph.

In its leading features this invention is a combination of the original "Vail's Printing Telegraph," with some modifications of House's and other instruments. It consists of two clock-works, moved by springs or weights, both located in one frame, but operating independent of each other. The one moves a type-wheel, step by step; the other is for printing the letters, and operates only when called into action by an electro-magnet, in order to push the paper against the type-wheel, for printing one letter, like Bain's telegraph and others. The type-wheel is governed by the vibrations of a spring, lying in a horizontal position, and oscillating in a vertical plane; one extremity is fastened to the machine, the other suspended and provided with a compensating slide or weight, which may be shoved along the spring as required, to overcome the variations caused by the changes of the temperature, thus answering the purpose of a pendulum. An escape wheel of the first clock-work partakes of the vibration of the spring by means of a vertical connecting rod, and thus the escape wheel is caused to move in a corresponding manner, step by step, with the type wheel. The latter has on its periphery the letters of the alphabet in relief, and one blank space.

Below the type-wheel is a cylinder for closing and breaking the current; this cylinder is outside of the frame and revolves by means of cog wheels, exactly in unison with the type-wheel. This cylinder or barrel has upon its circumference pins or projections, spirally arranged at equal distances from each other; at one extremity an insulated cog wheel is fastened, and a similar cog wheel, likewise well insulated, is attached at a small distance from the first cog wheel, and in such a manner as to cause a contact spring connected with one extremity of a telegraph line, to meet alternately by the rotation of the cylinder shaft, a cog of the single cog wheel or of the cylinder cog wheel. The number of cogs and pins equals the number of letters and the blank of type-wheel, say 27.

The single cog wheel is connected by a conductor, with the helices of an electro-magnet, which is in conducting connection with the ground plate of the telegraph line; but the wheel of the cylinder has no direct connection with the ground, consequently an electric current passing the contact spring by each revolution of the cylinder will alternately pass 27 times through the helices (the cylinder being excluded,) or 27 times through the cylinder if connected with the ground (the electro-magnet being excluded.)

For this purpose a metallic bar, having a metallic connection with the ground plate, runs parallel with the cylinder; and a number of springs, horizontal, facing the periphery of the cylinder, are attached to the bar in such a manner that each of the springs may be thrown into such a position as to meet a corresponding pin of the cylinders, like the springs of a music box. A momentary connection with the ground plate is thus established at every contact of a spring with its pin. The springs are operated by means of keys arranged on a straight finger board, located in a transverse position near the one end of the cylinder. Each key is connected with its corresponding spring by means of two levers and a connecting rod. By pressing upon the key of a desired letter, its corresponding spring is thrown into a position ready to be struck by its corresponding pin. During the time the cylinder revolves, the type-wheel standing in its proper position the spring will be struck, and a current will pass from the cylinder along the spring to the ground, and influence the electro-magnets of similar instruments (in the same circuit at any distant place,) thus causing the print of the desired letter, by means of the printing clock work, of the other instrument.

The printing is done in the following manner:—Below the type-wheel, which is made to revolve continuously by means of the clock-work, is a printing press lever, and the paper which receives the impression, is fed in between the lever and the type-wheel. The printing lever is raised so as to press the paper against the type wheel at the proper instant, by means of a connecting rod which extends from the lever to a crank which is operated by another clock work. The crank is liberated by a detent which is operated by the motion of a permanent horse-shoe magnet, lying upon the poles of an electro-magnet. By the touch of a key of the key-board, the electric fluid passes through the electric magnet, and both magnets having now a similar polarity, a spring causes the permanent one (previously held by its magnetism,) to raise and to lift the detent, which liberates the crank so as to revolve and bring up the printing lever against the type wheel, and print the corresponding letter on the paper. Meanwhile the circuit is broken again, the polarity of the electro-magnet being destroyed, the permanent magnet is pulled down by a lever connected with the press, to its former position, and the detent arrests the crank again. The method of printing seen in House's and Bain's Telegraph is substantially similar to this.

Suppose, now, one instrument at New York and a corresponding one at Philadelphia, their contact springs connected with the corresponding extremities of the telegraph line, and the type-wheels of both revolving together isochronously, step by step; both will have to be so arranged that if the contact spring at New York touches a cog of the cylinder cog wheel, the contact spring at Philadelphia, will have to touch a cog of the single cog wheel and so, alternately, vice versa, telegraphing will be done.

But both instruments will not print a letter at one and the same moment as has been alleged, but must do so, alternately, like other instruments, as for example, Siemen's Gintle's. Even if the key of the letter M, at New York, is pressed down earlier than the letter B, at Philadelphia, the letter B will be printed first, and the letter M thereafter, for the reason that in the revolutions of the type-wheel, the turn for B, will come sooner than that for M. As it is possible to make one instrument communicate with all the rest in a given circuit at once, (but only one of them will be enabled to answer at the time,) so is it impossible for them to communicate with each other during such an operation, because the whole message will only be received by the first transmitting instrument, say New York.

I shall now try to explain the contrivance by which communication may be precluded from intermediate distant offices though the drawings together with the specification are slightly at variance. A bolt attached to the frame is moved by means of a cam on the crank, towards a flange of the cog wheel which is fastened to the type-wheel shaft. The flange is provided with a slot, which corresponds with the blank on the type-wheel; another slot corresponds with any given letter, by which an office may be distinguished. The flange of the similar wheel of like machines in other offices has two slots, one corresponding with the blank, the other with the letter, by which such office is distinguished. For instance, an instrument at New York is distinguished by A, Baltimore by B, and Washington by C, and it be desired that Washington communicate with New York, excluding Baltimore, and the instruments at Baltimore and New York are ready to receive; the first closing and breaking of the circuit starts all instruments at the same time, the bolt in each, by the first revolution of the crank, moving near to the flange. The next breaking and closing of the circuit is effected if the slot of the New York instrument is opposite the bolt, and forces the bolt through the slot, not suspending the operation of the instrument, A, but no slot being opposite the corresponding, A, in the instrument at Baltimore, the corresponding bolt is forced against the flange, and instantly suspends the movement of the wheel.

Having so far been guided by Hughes' specification, I shall, in my next, turn to a closer examination of the merits of the invention, and show what this printing telegraph is, and what may be expected from it; also how far the many promising reports and puffs respecting its wonderful capabilities, can be relied upon.

CHAS KIRCHHOF.

New York, September, 1856.

What Is the Cause of Yellow Fever?

MESSRS. EDITORS—The yellow fever has been, and is now raging, to a certain extent, near this city. No one seems to have any tangible idea of what the disease really is, (other than yellow fever,) what causes it, or where it comes from.

The doctors are just "as clear as mud" on the subject, some asserting it to be contagious, while others say it is not; some prescribing one remedy, and some another. They say it is brought from infected ports, mostly from hot climates; go to those infected ports, and they say "it is brought from somewhere else."

Now the idea has sometimes occurred to me that as nitric acid stains the skin of a yellow color, and is, as you know, a certain poison, it is possible that the nitrogen and oxygen of the atmosphere, acting upon the fluids in the body, may, to some extent, generate this poison in the system, and being conveyed by the blood to all parts of the system, thus give the skin its peculiar color, while its poisonous effects causes the death of the patient. I know not how the symptoms of the yellow fever patient agree with those of a person who has swallowed some of this acid.

I think it possible, also, for this acid to be generated in low, wet, marshy places, and the heat of the sun cause its fumes to arise and impregnate the air. Would anything of this kind accord with chemical science? R.

New York, Sept., 1856.

[At one time, Ozone in the atmosphere was suggested as being the cause of cholera, and lately it has been suggested as the cause of yellow fever. This subject was brought up at the late meeting of the Scientific Association at Albany. An inquiry was made if ozone had been detected in the atmosphere of Norfolk while the yellow fever prevailed last year, also if it had been observed in any place during the prevalence of cholera. No proof of its special presence in connection with cholera or yellow fever was presented. No doubt the state of the atmosphere is the cause of many diseases—it becomes poisonous to some constitutions under certain circumstances; but how refined must be the analysis to detect what that poison is in the atmosphere. No chemist has yet been able to detect what is called *malarian poison*.

Much has been said about ozone, but very vague ideas have been presented as to what it really is. It is stated to be a condition of the atmosphere produced by passing a number of electric sparks through it, by which it acquires powerful bleaching and acidulating properties. We cannot believe it to have an identity of character without an identity of composition, and our correspondent's letter is suggestive in this respect.

We suppose that nitric acid may be produced in the atmosphere, and that it may be the cause of yellow fever, but although it is a poison, and stains the skin yellow there is no evidence of its agency or presence in cases of yellow fever. Instead of promoting vomit, this acid is used in minute quantities greatly diluted, to prevent vomiting in some cases of sickness, thus exhibiting different tendencies to that produced by the poison of yellow fever.

The color of the skin has a wonderful influence in preserving persons from being attacked with this fever; negroes, mulattos, the Chinese, and persons of a swarthy complexion are not so liable to its attacks as persons of a fair complexion. This, however, may be thought to be favorable to the nitric acid theory of our correspondent.

Nitric acid, no doubt, can be produced in the atmosphere, and by the same means exactly as ozone. Indeed, this was the very method proposed by Cavendish and executed by the Royal Society, by which nitrogen was discovered to form part of our atmosphere. For several days sparks from an electric machine were passed through a vessel containing atmospheric air, and the result was the formation of nitrous acid in the vessel. It was one of the most beautiful experiments ever made in chemistry. More than two-thirds of the atmosphere is composed of nitrogen.

Farmers and Science.

MESSRS. EDITORS—I am a subscriber to your paper, and, although a farmer, derive much instruction from it. A farmer's occupation includes a variety of trades, and particularly that of the carpenter and machinist, as well as chemistry and philosophy. I hold that an agriculturist should be a man of information, of extensive practical knowledge—not a mere clod-hopper to plow and dig. I am sorry to say many of my brother farmers think there is no necessity to cultivate their minds, hence the ironical expression of citizens, "there goes a coarse farmer."

I am a working farmer and pride myself upon it, but I cultivate my mind as well as my corn, and one great source of instruction, with other works, is the SCIENTIFIC AMERICAN.

ROBERT WILLETS.

Flushing, L. I., Sept. 1856.

Deceased Inventors.

The Cambridge (Mass.) *Chronicle* of the 6th inst. records the decease of Nathaniel Jarvis Wyeth, to whom the ice merchants of Massachusetts are deeply indebted for the great increase of the ice trade, by the invention of implements and machinery now employed for cutting and securing the ice crop with facility and rapidity. The Boston *Transcript* says of him:—

"By the mechanical skill and perseverance of Mr. Wyeth more ice of a superior quality is now secured in one good ice day than was consumed by the whole ice trade in 1832. It is not, perhaps, too much to say, that there is not a single tool or machine of real value now employed in the ice harvesting which was not originally invented by Mr. Wyeth."

The annual ice crop of Massachusetts now amounts to 200,000 tuns. Mr. Wyeth was an early explorer of the Rocky Mountains and Pacific regions, understood the Indian language, and was an accomplished scholar and writer, and a close observer of men and things. On several occasions he contributed to our columns, and furnished us with useful information.

Paul Stillman, of this city, died at Plainfield, N. J, at the age of 45 years, on the 11th inst. He was a native of Rhode Island; was a most skillful mechanic, and inventor of many useful improvements in fine instruments employed on steam machinery—guages, indicators, &c.—and had charge, for a number of years, of the important department in the Novelty Works in which such delicate instruments are constructed. He was an active member of the New York Mechanics Institute, and was highly esteemed as a man for his noble qualities of mind, intelligence, skill, and ingenuity. His foot was injured by wearing a tight boot for a few hours; this caused mortification, for which amputation was performed, alas, resulting fatally.

On the same date, Seth Cheney, distinguished as a remarkable crayon artist, departed this life at Manchester, Conn. His crayon portraits have never been surpassed, if equaled, by any other artist, and his ideal sketches evinced a fine imagination and very pure taste.

Bursting o a large Rifle.

On the 3rd inst., while Capt. Dimick, of St. Louis, Mo., was experimenting with a large rifle cannon which he had constructed, it burst into pieces. The front part of it, about five feet in length, blew away from the breech, the latter burst into eight fragments. Some of these, weighing five hundred pounds, were thrown forward from two to three hundred feet, and projected into the air from forty to fifty feet. The gun weighed 7,838 pounds, and was made of fine malleable iron.

A Large New Cotton Mill.

A cotton factory is now in the course of being erected on the Shetucket River, near Norwich, Conn., by Ex-Governor Sprague; of R. I., which, when finished, will perhaps be the largest in the world. It is to be built of stone quarried in the vicinity; its length 952 feet; width, 68 feet; hight 4 stories. A village for the operatives is also to be erected in the neighborhood.

The *Ericsson*, now employed as an American mail steamer, never arrives until her news is superseded by the arrival of the steamer which leaves three or four days after her. The *Ericsson* is an old tub so far as speed is concerned; but she is economical in fuel.

New Inventions.

American Association for the Advancement of Science.— (Continued from page 3.)

Chemistry—Cobalt.—Dr. Wolcott Gibbs read extracts from a very long paper, giving the results of the researches which he and Dr. F. A. Genth, of Philadelphia had been conducting for several years into the nature of those peculiar bases formed by the union of ammonia with the sesquioxyd and sesquichloride of cobalt. He alluded to the value of the chromolithographed scales of color, devised by Chevreul, and the very singular result that in compound cobalt salts the ordinary image always partakes of the peculiar rosy or purple tint of cobalt salts, while the extraordinary image is of another tint, perhaps that of the other bodies present; the salts being examined by reflected light. These investigations involve the question of compounds of organic with inorganic bodies, that is, for example, ammonia with a metal, or the radical of alcohol with a metal; thus ultimately affecting medical chemistry. Dr. Gibbs alluded to a series of substances which he had discovered, and to which he gave the name of thio-cobalts, from their containing sulphurous acid.

Prof. T. S. Hunt, of Canada, making some remarks upon the great value of this paper, thought that the thanks of chemists were especially due to Dr. Gibbs for directing their attention to a new mode of looking at salts, from the basic rather than the acid side. Prof. Gibbs had shown that one form of ammonia cobalt combined with two equivalents of acid, another with three, and had called them bi-acid, tri-acid, &c., bases. He also spoke of the value of investigating, as Prof. Gibbs had done, the action of said vapors—such as those obtained by treating saw-dust with nitric acid.

Atomic Arrangements.—Chemical Laws.—Prof. Alexander delivered an address on this subject, beautifully illustrating his views by models, of crystals of different forms, showing how the atoms must arrange themselves in the production of different substances. The law was an elucidation of that published in a series of articles in Vol. 4, Scientific American, respecting which no chemist should be ignorant, as too many of them are.

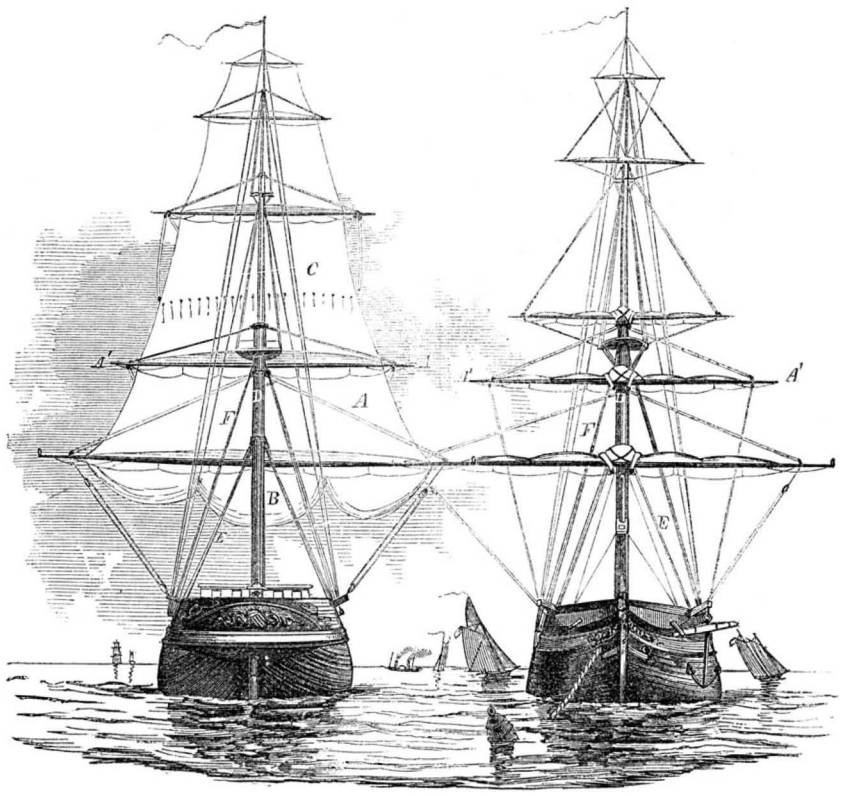
The Old American Elephant.—The remains of the elephant and mastodon, and other extinct giant mammalia, are found in the northern parts of our continent, showing that at an early period they were inhabitants of these regions. How or why they became extinct no one can now tell, but it has been held forth that the cause was a change of climate. Those geologists who have taught that the earth was at one time a mass of fire, have asserted that it gave to our now northern regions, at one period, a tropical climate, and the evidence they have adduced in support of these views was, the remains of the elephant—a tropical animal—found in the northern regions. Col. Foster read a paper on the geography of the fossil elephant of North America, which exploded the theory of the supposed former great heat of our northern regions completely.

The fossil elephant of America was not the same as our tropical elephant: he was adapted to a sub-artic climate. He was clothed with fur, and his food consisted of northern plants and shrubs. He said—

"From all the facts, I am disposed to believe that the fossil elephant commenced his existence before the drift agencies had entirely ceased—when the water stood at a higher level—when the contours of the continent were different—when a different climate prevailed, and when a sub-arctic vegetation stretched far towards the tropics—at a time when the valleys were excavated by the returning waters, and the streams assumed nearly their present direction. I would designate it as the Fluviatile Period. Cotemporary with these fossil elephant and mastodon was the fossil beaver. In bulk he was twice the size of the existing species, and was adapted to a wide geographical range, and tenanted the streams and lakes. Herds of cattle roamed over the plains while the tapir wallowed in the swamps. In the milder regions of the South, visited by the elephant and mastodon in their migrations, lived the great leaf-eating megatherium, the mylodon, the megalonxy, the hippopotamus, the horse, the elk, and the deer, all belonging to extinct species, while at the head of the carnivers stood the colossal lion (Felix Atrox) which then, as now, was the monarch of the forest."

IMPROVED RIG FOR VESSELS.

Figure 1. Figure 2.



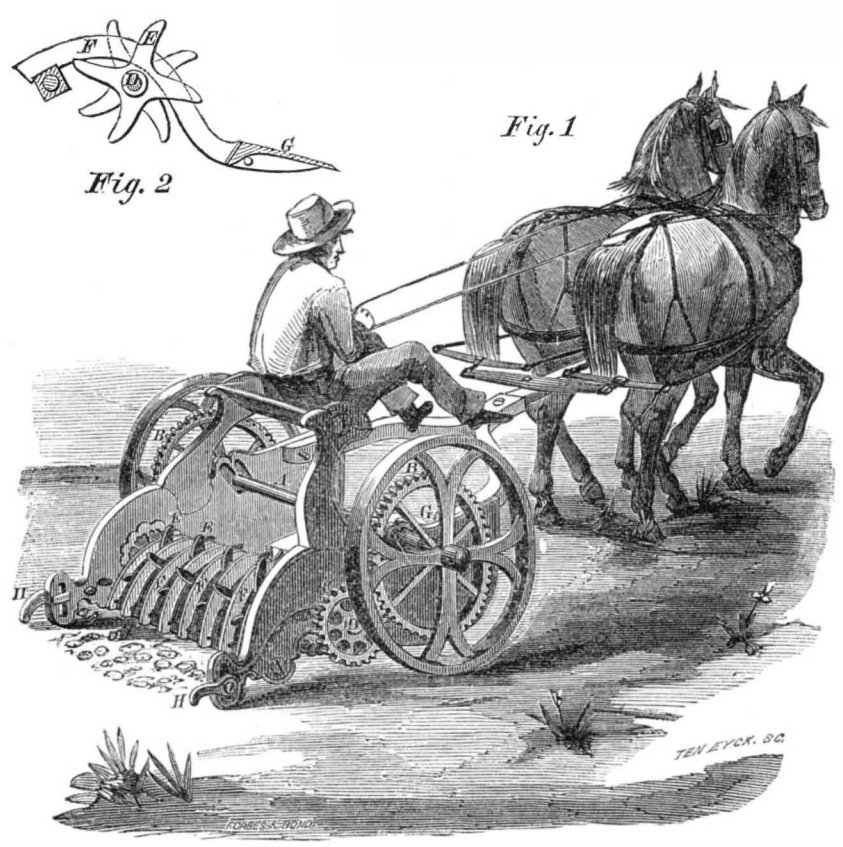
Improved Marine Rig.

The invention shown in our engraving consists in the introduction of an extra sail and yard, A′, between the lower sail, B, and the top sail, C. For this purpose the lower mast, D, is elongated, and strengthened by double shrouds, or rather by dividing the shrouds, as indicated by E F.

Fig. 1 is a front view, sails furled; fig. 2 a back view, sails opened. The improved yard and sail is attached to the mast in the same manner as the present lower yards and sails. The inventor reduces the length of the top masts in proportion to the increased length given to the lower masts, so that the weight carried aloft is no greater than that involved in the ordinary rig. The division of the shrouds is alleged to afford a better support for the lower masts, notwithstanding the increased length.

The inventor does not claim the dividing of the top sail, as in Forbes' or Howe's rig, but the employment of a separate and distinct sail and yard, which he calls a Storm Yard and Sail, on the lower mast, so that in the event of a ship losing her mast heads or topmast, the vessel would still have storm sails and courses remaining, to work with. It is said that on ships rigged in this manner the yards could be so distributed as to have one reef in the top sail, or none at all, as desired, thereby avoding the many accidents in reefing. For further information address the inventor, Mr. Geo. F. Trescot, Charleston, S. C. Patent applied for.

MACHINE FOR DIGGING POTATOES.



Improved Potato Digger.

The improvement herewith illustrated is the invention of Mr. T. Baker, of Stillwater, N. Y., for which he has applied for a patent. It consists of a cast-iron frame, mounted upon two wheels, on whose shafts A, are two driving gear wheels, B, meshing into pinions, C, on shaft D. Shaft D is armed with curved fingers or teeth, E, which project up between the separating bars, F. In front of these bars (see fig. 2,) is a scoop-shaped mold-board or share, G, which lifts the earth and potatoes, and by the advance of the machine they are pushed back to the base of bars F, where the fingers, E, work through. By these fingers the potatoes are carried over the rounding curve of the separator bars, F, and dropped behind the machine, upon the ground or into any receptacle that may be attached to receive them. The earth is sifted through the bars F, leaving a smooth and even surface wherever the machine passes.

The chief features of novelty consist in the curved grate bars, F, by which a hollow is formed at their junction with the mold-board, G, for receiving the hill of earth and potatoes. Second, the earth is discharged through instead of over the separator bars, F, the raised or rounding parts of which prevent the earth from passing freely over, but allowing the potato to be carried over by the fingers, the earth and potatoes being agitated in their passage from the fore to the after part of the machine. The depth to which the mold board cuts is regulated by levers, H, at the back of the machine.

The two wheels on which the machine runs pass between the hills. The curve of the bars, F, being eccentric to the axis of the cylinder, clears the fingers of all vines or roots.

A recent trial of this machine proved it to be perfectly adapted to the work for which it is intended. All the driver has to do, is to ride on the machine and guide his team.

The apparatus is simple, strong, and durable, the whole being made of iron except the pole. It weighs only about three hundred pounds. The machine readily recommends itself by its neat proportions and philosophical principles. It is adapted to save a large amount of labor, converting what has heretofore been a tiresome drudgery into a pleasant recreation. Address the inventor for further information.

Chemistry of Electricity.

There exists between the living plant and the soil supporting it, an electric current, which always moves in the same direction; that is, the soil is constantly positive, the plant continually negative. This fact was first observed by Becquerel, Sen., and for several years it had been pointed out by him as one of the causes of atmospheric electricity. On repeating his experiments, lately, he was struck by certain anomalies in operating on the bank of a stream, and at certain distances from plants. He discovered that electrical currents change their direction and intensity with the chemical composition of the water in the soil; alkaline waters being negative and acid waters positive.

A Handsome Tribute.

At a recent meeting in the Academy of Sciences, at Paris, M. Boussingault, while analyzing some bottles of water brought from the Dead Sea, declared that Commander Lynch's expedition had thrown more light on the climate and topography of that region than any the world has yet seen, although, within the last twenty years many bold travelers have explored that singular lake.

New Steamer.

The new American steamer *Adriatic*, of the Collins' line, the largest steamer afloat, is announced to sail from New York Oct. 16th, on her first voyage to Liverpool.

Scientific American.

NEW-YORK, SEPTEMBER 20, 1856.

To Parents and Young Mechanics.

There are but few families that have not one or more members who possess a taste for science, art, or mechanics; to the parents of such we have a few words to say. Such tastes are noble, because they afford evidence of a thirst for useful knowledge, and as "knowledge is power," they should be fostered and cultivated. The reading and study of works of an elementary character are necessary for this purpose, but these are not sufficient; those who have such tastes must also read and study periodicals devoted to the propagation of information relating to discoveries, inventions, and improvements. The public mind is so active at the present day, and art and science move on and progress with such rapid strides, that it is positively necessary to employ means of this character to keep posted up in correct information. Many publications contain much that excite the passions, and oftentimes impart to them a wrong bias; but science appeals only to the intellect and the judgment, and its influence must therefore be elevating to every mind that pursues it. Is not this a powerful reason why every family should welcome a scientific periodical and make it a household companion?

Our country is a young giant: its growth in material greatness is a modern miracle among the nations. It presents more openings for young men to rise to renown and wealth than any other. Every mechanic who acquires a master's skill of his business, coupled with intelligence and scientific knowledge, is sure to rise to distinction. On the other hand, an ignorant man, no matter what may be the advantages presented to him, never can arise to distinction—he lacks knowledge—and is therefore deficient in power to do so.

Young mechanics! Yours is the time of life to devote to the acquisition of positive knowledge, before the cares of the world absorb all your time in providing the means of a bare subsistance.

A young mechanic should learn to be a good draughtsman; his mind should be imbued with sound scientific information; he should be posted up in the progress of science; and he should be able to write and express his opinions freely and correctly. He should have a manly ambition to be intelligent in all that relates to his profession; for those who have no such ambition never can rise to be good mechanics or good citizens.

Our Inland Navigation.

Our country is unrivalled in the means of inland navigation. It has navigable rivers hundreds of miles long, and extending from the center of the continent to the Atlantic Ocean. Such natural avenues of communication are fountains of wealth and power to an energetic and commercial people, and have been the means, almost within the memory of the living of raising our country from a colony of three millions of inhabitants to a great commercial nation, second to none in the world and equalled only by one other. Tyre, Carthage, Athens, yea, all the great commercial nations of antiquity were mere dwarfs in comparison with the United States of America. Our total tunnage amounts to no less than 500,000,000 tuns—about the same as that of Great Britain; nearly all of this has grown up within the present century. It such has been the rapid rise of our nation in commercial greatness, what an immense power will it have become in fifty years from the present date! If it had no great navigable rivers or lakes, like Australia, it never could have become what it is. It might, and no doubt would be a great agricultural country, but nothing more. Its natural commercial facilities of inland lakes and rivers stretching out their arms like fans, and spreading their broad waters to every favoring breeze, confer upon it advantages possessed by no other country or people.

A practical lesson teaching us the value of such advantages has just been given by the voyage—the first on record—of a vessel (the *Dean Richmond*,) loaded with grain, direct from Chicago, in Illinois, for Liverpool, England. It came down the great lakes, through the canals of Canada—which exhibit the enterprise of a kindred people—passed down the Gulf of St. Lawrence last week, and is now on the broad Atlantic, buffeting its billows; and when it arrives at Liverpool will have made the most extraordinary voyage on record.

Retort Steam Boilers.

At a late meeting of the Institution of Civil Engineers, Eng., Thomas Dunn, of Manchester, exhibited a model and read a paper on his retort steam boiler.

It consists of a series of small boilers all connected together, with the fire passing under them and the return flue over them. This boiler has been used in Manchester, England, for ten months, working two engines of 24 horse power combined, with a consumption of 135 lbs. of coal per hour—5 3-4 lbs. per horse power per hour. He was induced to make such a boiler from having been employed to construct a common boiler of 50-horse power for a firm in Canada, which, owing to its great bulk and weight, and the difficulty of transporting it cost three times more than the real price of it at his works.

In the conversation which followed the reading of his essay, the great expense of transporting large steam boilers to a distance was conceded, also that any improvement which would enable a boiler to be made like a machine, in several pieces, and which could be packed in small bulk, and fitted up at the place where it was to be used, would be of great advantage. This was stated to be secured by Mr. Dunn's boiler. But it was also stated that as his return flue passed over the top above the water line of the retorts forming his boiler, the plan was dangerous. To this objection it was answered that being small they were very strong, also that the flue heat merely dried the steam, but did not weaken the metal nor make it red hot. On this head Mr. Siemens made the following remarks:—

"He thought the steam would certainly be super-heated, to some extent, by the exposure of the upper portion of the boiler, but this would prove an advantage, as steam, in first rising from water was always in a state of transition, containing a portion of water mixed with it, being more or less imperfect as a gas. When this steam was heated a very rapid rate of expansion took place during the first few degrees, from the whole being transformed into a perfect gas; but the expansion afterwards progressed at a very slow rate, approximating to that of the expansion of air by heat. Super-heated steam gave an important advantage in working expansively, as the steam, on entering the cylinder at the beginning of the stroke at a high temperature, became partially cooled at once, by the cylinder being only at a mean temperature considerably below the highest; and, in this case, with ordinary saturated steam, the consequence of its being cooled was the condensation of a portion of the steam at every stroke—depositing a dew on the sides of the cylinder; but if the steam were super-heated sufficiently it would not be cooled down to the condensing point, and no water would be formed in the cylinder. The difficulty in practically applying super-heated steam was the risk of overheating it, in which case it dried up the lubricating material of the cylinder, and caused the piston to grind. The boiler that had been described appeared a good plan for accomplishing the object under safe control."

This subject deserves the attention of our engineers and boiler makers. There is nothing new in retort boilers; they have been in use, and are so now, to a limited extent, in our country, but only on a small scale—in no instance so far as we know, as a substitute for large boilers. Now the question is, "Can they not be made—or a modification of them—to supersede, advantageously, the immense unwieldy boilers, as large as hay stacks, which are made for steamships and large stationary engines?"

We are indebted to Hon. L. D. Campbell for a copy of Report No, 342—"Proposed Reduction of the Tariff of Duties."

New Jersey State Agricultural Society.

The Annual State Agricultural Exhibition was held last week at Newark, N. J., and was very largely attended. In a pecuniary point of view it was a decided success. But as a State Exhibition it was not very creditable. The supply of specimens, in every department, was quite meagre, and there was little indication of progress or competition.

The department of labor-saving machines and inventions embraced a small catalogue of common straw cutters, plows, hoes, pitch-forks, horse-powers, thrashers, mowers, &c. We noticed only a very few objects, in the mechanical line, that were worthy of note for their novelty.

Mr. F. G. Johnson, of Brooklyn, N. Y., had one of his new self-regulating windmills in operation, which worked well, and attracted general attention. Mr. M. S. Hubbard, exhibited a new mower and reaper, which struck us as being unusually strong and excellent. The raking apparatus is extremely simple. Mr. Simon Ingersoll, of Greenpoint, L. I., exhibited a new and ingenious tree cutting machine. The invention will shortly be illustrated in our columns.

The most decided novelty in the whole exhibition was Mr. Wm. Baxter's Hydro Engine. This consists of a pair of upright pumps, which are employed to force a current of water through a small turbine water wheel. Power is obtained by the rotation of the turbine shaft, Steam is admitted alternately upon the upper surfaces of the pistons, and drives them down thus producing the current. The descent of the water in one pump causes it to rise and carry up the piston of the other. There is a simple cut-off arrangement for changing the flow of steam from one pump to the other. The engine on exhibition worked admirably, and although its rated power was only two horses, it drove one of Barlow's new planing machines with apparent ease. The diameter of the turbine employed was only four inches. We were told that the shaft revolved 3500 times per minute when working at full speed. The inventor claims a considerable advantage over the common steam engine by an avoidance of friction. No fly wheel is used, no eccentrics, no crank. The machine is very compact, and we were told that its whole weight was less than the fly wheel used on ordinary engines of the same capacity. A large machine of 25 horse power is building for a silk factory at Paterson, N. J., and another for a steam vessel. For driving propellers, laws, etc., where great rapidity of shaft is wanted, without multiplication of gearing, or loss of space, it appears to be well adapted. The parties interested think that the Hydro-engine, is destined to make a stir in the world. Mr. Baxter's residence is Newark, N. J.

There was a small display of carriages, but they were apparently of the very best description. A Shell Phaeton, made by H. M. Miller, of Paterson, was a splendid specimen of art and workmanship.

The vegetable kingdom was represented by a small collection of cucumbers, squashes, egg plants, etc. Mr. D. A. Bulkley, of Stone Hill Farm, Williamstown, Mass., exhibited some very creditable specimens of seedling potatoes. This gentleman states that he cultivates some 1600 varieties of potatoes. We noticed some samples of corn, the ears of which, stripped of husk, were 3 1-2 inches in diameter, exhibited by Master J. F. Satterthwaite, of Bellville, N. J.

The show of live stock horses, &c., was pretty good, what there was of them.

Manufacturing Malleable Iron and Steel Without Fuel.

The invention of H. Bessemer for manufacturing malleable iron and steel without fuel, described in our last number, is highly extolled by the London *Times*, in a copy received since our article was published. It states that the process was fairly tested on the 22d of last month, with entire success, in the presence of the most eminent iron manufacturers, engineers, and scientific men assembled in London from all parts of England. It asserts that the magnitude and importance of the discovery can scarcely be exaggerated, and that the only parallel to it is to be found in the old but kindred invention of Henry Cort. It says that Nasmyth and Rennie, the famous engineers, assert that "they are unable to forsee the whole advantageous results calculated to spring from it, not to England alone, but the whole world."

We advise our iron manufacturers to give early attention to this invention; it can easily be tested, and if found to be an improvement they should not delay to adopt it.

The experiment alluded to was made in a building in St. Pancra's Road, near London. upon 834 lbs. of molten pig metal, run from a furnace into a brick lined cylinder (described last week) under a pressure from the cold air blast below of eight pounds on the inch. The mass soon began to boil up, by the oxygen of the air combining with the carbon of the metal; and as it was intended to make cast-steel from it, the tap was drawn in twenty-four minutes after the commencement of the operation, and the metal allowed to flow into a mold, which formed it into an ingot of 792 lbs. It was pronounced by the company assembled, a fine quality of steel—a satisfactory experiment of converting crude pig iron into steel in 24 minutes, without fuel. The account of this discovery really appears something more like an Oriental tale than the description of a solid, sober invention.

Recent American Patents.

New Lady's Saddle.—By Henry Adams, of New York City.—Consists in certain novel arrangements of the saddle horns, which enables a lady, while riding, to sit in a very natural, comfortable, and elegant posture, with both legs hanging close together, instead of having one thrown up to an uncomfortable position, and twisted, as on the common saddles. It also gives a very firm, easy, and safe seat for riding at a quick speed, and provides a rest for the left leg in riding at a slow speed. It saves the horse from being injured across the loins, and on the off side of the wither, reduces the cost of manufacture, lessens the weight, gives beauty and symmetry to the saddle, and places it at a cost very little above the price of men's saddles.

Improvement in India Rubber Overshoes.—By J. A. Pease, of New York City.—The annexed cut represents a ventilating India Rubber Overshoe. By this improvement the unhealthiness and unpleasantness arising from the use of rubbers is entirely obviated. The inner surface of the rubber is ribbed or corrugated, and thus allows a circulation of air between it and the boot over which it is worn. The perspiration of the foot is thus allowed to pass off, the health is promoted, and the comfort of the wearer greatly increased.

Fig. 1

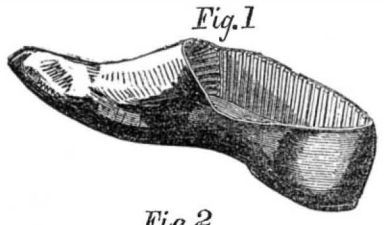
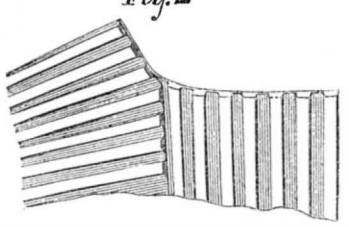


Fig. 2



In our cut fig. 1 is a perspective view, and fig. 2 an enlarged sectional elevation of a portion, showing the ribs. In his patent the inventor says:—

"I claim making india rubber or gum shoes with the inner surfaces ribbed, corrugated, or otherwise made uneven, for the purpose of allowing a circulation of air between it and the boot or shoe over which it is worn; and I claim this, whether it be effected in the precise manner stated or by lining the shoe with a similar ribbed, corrugated, or otherwise raised and depressed surfaced fabric, as described. Patented Nov. 2d, 1855. Address the inventor, No. 304 Broadway, N. Y., for further information.

Breech-Loading Cannon.—By George W. Bishup, Brooklyn, N. Y., opposite New York City.—This invention relates to a cannon, the breech pin of which is movable. In order to

load it, the breech pin is withdrawn, the cartridge deposited in the barrel, and the breech pin then restored, and firmly secured. The invention consists in providing the breech pin with a number of expanding segments, operated by suitable mechanical means, by which they are drawn into a recess or groove round the breech pin to allow the pin to be inserted in or removed from the piece of ordnance. After the insertion of the breech pin, the segments are expanded or spread laterally into a groove, so as to form stays to act between the pin and the solid metal of the exterior of the breech. The pin is thus secured, held, and prevented from driving out when the explosion takes place.

Hand Corn Planter.—By H. B. Hammon, Bristolville, Ohio.—This is another of those contrivances that are carried in the hand like a cane, the planting being accomplished by thrusting the lower end of the machine down upon the ground. The invention consists in a novel arrangement of parts for depositing the seed into the lower end of the tube, ready for being forced into the soil by a plunger, whereby all liability of clogging and bruising the seed is prevented, and increased simplicity and certainty in the planting operation is secured.

Washing Machine.—By Israel F. Brown, of Columbus, Ga.—The clothes are placed in a slatted cylinder, made like a squirrel cage. Said cylinder has within it at each end, an obli ue corrugated board, and when the cylinder rotates, the boards cause the clothes to tumble from one end of the machine to the other, thus assisting the cleansing.

Saw Gummer.—By L. A. Dole, of Salem, Ohio.—Consists in the employment of a movable and fixed die, placed in a stock, so arranged as to form a powerful and convenient instrument for cutting the saw teeth.

Improved Harvester.—By W. P. Maxson, of Albion, Wis.—Consists, first, in operating the sickle by a crank fitted and working within a loop attached to the sickle. Second, in a raking apparatus moved by an endless chain. Third, in placing the driving wheel upon an arm of a lever, which is allowed to slide, so that a wheel on the driving wheel shaft may be thrown in and out of gear with a pinion, when desired, and the machine drawn from place to place without giving motion to the working parts.

Attaching Horses to Vehicles.—By Geo. H Gray, Sen. of Clinton, Miss.—Consists in a de vice attached to the shafts, and connected with the harness, whereby the usual whiffletree and traces are dispensed with, and the horse readily detached from the vehicle if he attempts to run away or becomes unruly.

New Method of Drawing Wire.—By F. Noette, of Brooklyn, N. Y., opposite New York City.—The wire is cut from a disk of iron by bringing the edge of the sheet in contact with a cutter, somewhat after the manner that a cobbler cuts a shoe string from a disk of leather. The strips of metal, as fast as they come from the cutter, are passed through draw plates of the ordinary kind, which reduce them to wires of the desired size. The wire is then wound on reels. There is a peculiar arrangement for feeding the metal disks up to the cutters. The reels are also so made as to be capable of being collapsed after a sufficient coil has been wound upon them, and thus permit the convenient removal of the wire.

Great Trial of Fire Engines.

Classic New Haven—the City of Elms—has exhibited a most astonishing and commendable fire annihilating spirit during the past few years, by inviting fire companies, with their engines, from different cities—near and remote—to come up to Collegedum once per annum, and try their skill by throwing tall streams over tall poles. This year three splendid prizes were offered them, of $500, $250, and $100, open to all fire engines. The trial came off on the 5th inst., and nineteen fire engines entered the lists—one from no less a distance than Chicago, Illinois.

Each machine played out of 450 feet of hose. The first prize was won by the *Rippowan* company, of Stamford, Conn., whose machine was made by Mr. Button, of Waterford, N. Y.; the second by the *Damper* company, Hartford, Conn., whose engine was made by H. Waterman, Hudson, N. Y.; and the third by the *Phœnix* company, of Brooklyn, N. Y., whose machine was made by Mr. Hunneman, of Boston, Mass. The engine that took the second prize was a very old one. It is said that it would have taken the first prize with ease, but was scantily manned.

The hight of the stream thrown by the first prize engine was 153 feet; by the second 152 feet; by the third 149 feet. This was pretty good playing. The result of the trial is quite flattering to the builders of the successful engines, although their reputation as manufacturers of excellent fire engines had been established "long, long ago."

Parian Ornaments.

Those beautiful small white figures—single and in groups—exposed in the show windows of large china ware stores, and on the mantelpieces of parlors are called "Parian marble," but they are formed of the same materials as fine unglazed porcelain. In softness of tint it rivals the finest marble employed in statuary. It is composed of nearly two-thirds of ground flint, one-third of fine Chinese clay and very minute portions of lime, soda, potash, magnesia, and a trace of iron. These are very carefully calcined, ground, sifted, and rendered perfectly impalpable. It is not molded from a doughy mass, but formed into a creamy consistency (as in the finest porcelain) and poured into the molds. The models of the figures are made by skillful sculptors, and from these molds are taken. The parian liquid, when poured into the molds, solidifies, and is afterwards slightly baked, until it becomes firm, when the molds are taken to pieces, the casts liberated, and the rough parts on their surfaces carefully removed. A single mold cannot be made to cast a single figure, it is the product of several. The head, the limbs, the drapery, have so many curves that only a part of a figure is produced by one mold, and some groups require no less than fifty.

After the molding and first baking, the most difficult part has still to be performed, namely, the building up and keeping the separate parts in perfect form. All the pieces have to be cemented together, and the joints so obliterated that they cannot be perceived. There is also another source of trouble to the parian artist—the shrinking of the material in drying, owing to the great amount of water it contains, and which is driven off thereby. If one part of a figure shrinks more than its corresponding part it may produce a wry-necked Venus, or a hunch-backed Adonis. And even when a figure is all made up, and its parts nicely proportioned and fitted, they have all to be further dried, and finally annealed in an oven, in which processes they are liable to be injured in their form by unequal heating, whereby they may be twisted and cracked. There is, therefore, a vast amount of waste and breakage in the manufacture of parian ornaments, and this is one reason why they are so dear. But when the gracefulness of their execution and their beautiful appearance are taken into consideration, rivalling as they do the finest chiseled marbles, they are, after all, not dear, for the same work, in marble, could not be produced at a hundred times their cost.

Parian manufactures, as a new branch of the ornamental arts, are hailed by the lovers of the beautiful, because such works are now brought within the reach of the many, and have an elevating influence.

Galvanized Iron Water Pipe.

Messrs. J. J. Walworth & Co., of Boston, having announced that they were ready to furnish galvanized wrought-iron water pipes for streets and dwellings, preparatory to the introduetion of Fresh Pond water, Prof. Horsford, of Cambridge, in the *Chronicle*, puts a few pertinent questions to them. He says he has been informed that these gentlemen considered such pipe permanently protected against the corrosive action of fresh water, and he requests that a demonstration of this be given by them, by exhibiting galvanized iron pipe used for ten or twelve years in New York or Philadelphia. The Professor also states that he has specimens of two inch cast iron pipe laid down in Boston, which was taken up after four years, and was found reduced to a quarter inch bore by incrustation; also specimens of wrought iron one inch pipe, laid down only one year, and was found completely choked up with tnbercules of iron rust. The water of Lake Cochituate is *hard* to satisfy, when it rusts and crusts wrought and cast-iron pipe. If Fresh Pond water contains any free carbonic or other acid, Prof. Horsford knows that galvanized wrought iron pipe will not withstand its action very long.

Chronological Record of Means to Prevent Corrosion and Deposits in Steam Boilers.

1779, Tubular Condenser—Watt.
1805, Tubular Injection Condenser—Evans.
1807, Tallow in use on the Thames.
1818, Sediment Collectors—Haliburton.
1819, Potatoes in use on the Thames.
1820, Tubular Condenser—Bresson.
1821, Muriatic Acid for cleaning boiler scale—D'Arcet.
1821, Barley Combings and Peat in use.
1821, Amylaceous substances in general sug gested.
1821, Blowing off—Boulton and Watt.
1822, Change Water or Brine Pumps—Mandslay and Field.
1822, Lime or equivalent alkali suggested by Faraday.
1822, Tubular Condenser—Napier.
1823, High pressure steam affirmed to forbid deposit.
1824, Marbles, Oyster Shells, etc., recommended as collectors.
1824, Oxalate of Ammonia in feed water.
1824, Plate Condenser—Joslin.
1825, Injection Condensing system; first patent of Howard.
1825, Mixture for cleaning boiler scale—Gurney.
1826, Soap and Horse Chesnuts recommended.
1826, Injection Plate Condenser—Yandall.
1826, Fat Meat and balls of grease recommended.
1827, Voltaic method for deposits—Dumas.
1827, Sediment Collectors—Scott.
1827, Plate Archimedes Condenser—Wheeler.
1828, Coal Tar recommended.
1829, Self-Acting Scott's Collectors—Armstrong.
1830, Improved Sediment Collectors—Taylor.
1830, Concentric Plate Condenser—Church.
1831, Improved Condenser—Berry.
1831, Tubular Condenser; first patent of Hall.
1831, Anti-Sediment boiler—Collier.
1831, Charcoal recommended by Ferrari.
1832, Re-injecting Condenser; second patent of Howard.
1833, Improved Condenser—Gordon.
1833, Tubular Condenser; second patent of Hall.
1833, Sperm Oil foots recommended by Bedford.
1833, Injection Tubular Condenser—Holmes.
1833, Prismatic Collectors—Jennings.
1834, Condensing system; third patent of Hall.
1834, External Plate Condenser—Napier.
1835, Tubular Condenser—Pecqueur.
1836, External Injection Tubular Condenser—Symington.
1837, Argile or Prepared Clay—Choix.
1837, Galvanic Paint—Sorel.
1838, Graphite Paste—Gantier and Kennedy.
1838, Cleaning boiler scale, Method of—Dear.
1838, Air Condenser—Collins.
1839, Zinc Protectors—Althans.
1839, Plate Condenser—Zander.
1839, Salt deposit preventing apparatus—Seaward.
1839, Blow-off valves—Kingston.
1840, Common Salt and Muriate of Potash recommended by Flesselle.
1840, Anti-Corrosive Plating—Neilson.
1840, Tubular Air Condenser—Craddock.
1840, Curved Tubular Condenser—Treadwell.
1840, Galvanic Paint—Knapp.
1841, Quick-lime in feed water—Beale.
1841, Muriatic Amalgam—Wall.
1842, Tubular Condenser—Lynch.
1843, Mahogany Sawdust used.
1843, Salinometer—Russell.
1843, Tubular Condenser—Stephens.
1844, Inverted cylinder preservers—Jones.
1844, Patent Condenser—Smith.
1844, Animal Fiber generally recommended by Greaves.
1844, Anti-deposit mixtures—Watteen.
1844, Anti-deposit mixtures—Ritterbrandt.
1846, Injection Tubular Condenser—Pirsson.
1846, Re-injection Tubular Condenser; third patent of Howard.
1846, Anti-incrustation mixture—Delfosse.
1846, Anti-Corrosive plating—Elsner and Philips.
1846, Revolving Tubular Condenser—Craddock.
1846, Anti-deposit preparation—Graham.
1846, Patent Mahogany Sawdust—Anthony and Barnum.
1847, Tubular Condenser—Ericsson.
1847, Blow-off Valve—Copeland.
1848, Anti-corrosive mixtures—Seaton.
1848, Acetic Acid and Acetate of Potass recommended.
1848, Carbonate of Soda used by Harris.
1848, Tubular Air Condenser—Stenson.
1848, Prismatic Oak Protectors—Cave'.
1848, Double Vacuum Tubular Condenser—Pirsson.
1849, Salinometer—How and Sewell.
1849, Chamber Condenser—Urwin.
1849, Regenerative Plate Condenser—Siemens.
1849, Tubular Condenser and Auxiliary Engine—Ericsson and (apparently) Newton.
1850, Salinometer—Spray.
1850, Tubular Condenser and re-heater—Baldwin.
1851, Anti-corrosive Plating—Grissell.
1851, Tubular Condenser and Evaporator—Lynch.
1851, Anti-deposit mixture—Saillard.
1851, Zinc protectors—Babington.
1851, Mono-zygmatic Condenser—Miller.
1852, Preventing Scale—Sebbald.
1853, Tubular Condenser—Crawford.
1854, Tubular Condenser—Carpenter.
1854, Tubular Condenser—Sewell.
1854, Tubular Condenser—Waterman.
1854, Tubular Condenser—Brown.
1854, Tubular Condenser—Bollman.
1854, Removing Scale—Dimpfel.
1854, Preventing Scale—Smith.
1855, Coil Condenser—Hogg.
1855, Purifying Feed Water—Weissenborn.
1856, Removing Incrustations—Everet and Thomson.
1856, Preventing Incrustations—Sloan.
1856, Tubular Condenser—King.
1856, Tubular Condenser—Miller.
1856, Tubular Condenser—Denniston.

Keeping Grapes in Winter.

The following method of keeping grapes in winter is given by a correspondent of the *Rural New Yorker*:—

"I have packed grapes in various ways—in cotton batting, in cotton wadding, with the stems tied with twine, and with paper between the layers—and have arrived at the conclusion that none of these things are necessary, unless the grapes are put into tight boxes. If so packed there must be some dry substance to absorb the moisture, (always passing off more or less until the fruit becomes perfectly dry) otherwise it will mildew and rot the grapes.

The fruit keeps the best, I think, to let it hang on the vines as late as it can and not freeze; pick on a dry day, and place it in shallow boxes, not more than two clusters deep; keep it in as cool a place as you can and not let it freeze, and where there is sufficient circulation of air to carry off the moisture. I have kept them in this way until April, and though towards the last they were indented like raisins, they still retained their delicious flavor."

Ascent of Mount Arrarat.

Five Englishmen have, according to the London *Times*, recently made the ascent of Mount Arrarat, in Armenia, which tradition points out as the place where Noah's Ark rested, after the Flood. It is 17,323 feet above the level of the sea. It is stated that they reached the very summit, which never had been ascended by any person before.

Iron Railroad Cars.

Messrs. Passavant and Archer, of this city, have six elegant iron cars, for our city railroads, nearly completed. They are constructed according to La Mothe's patent.

Our publishers, when they reprint foreign books, should always give the date of their original publication.

J. P., of N. Y.—Colza oil is held to be superior to sperm for light-houses. Rape seed oil, when purified, is very good for illumination, and is similar to Colza oil. Sunflower oil is of greater specific gravity, contains more solid matter, and does not burn with such a clear flame. The purifying of these vegetable oils is somewhat expensive.

J. S. of Mass.—Yours will be attended to as soon as possible.

W. B. of Ohio.—We do not know of any fire-proof varnish that is elastic, and fit for coating a balloon.

W. McC., of Pa.—We do not know that we shall publish an engraving of Breed's Wagon Brake. If you wish to get full particulars in regard to this invention, you had better order a copy of the patent from Washington.

S., of Va.—We are not aware that any patent has been issued of late for an improvement in steam plows.

O. O., J. H. W., and other anonymous correspondents, are respectfully informed that we will not answer letters not accompanied with the writer's name. We have a right to know the names of those who apply to us for information.

J. D. M., of Vt.—We are unable to give the information you want about hay fork makers, and dealers in mallet and auger handles. We are not personally acquainted with any one engaged in such business.

S. C. Brinson, Middletown, Pa., wishes to correspond with some manufacturer of malleable spring wire for horse rakes.

A. D. R., of Ill.—Your plan of laying R. R. tracks i very good. The chief objection is the expense. It is not patentable; no company would ever adopt it.

I. A. H., of Wis.—We are not acquainted with any method of dissolving glue in oil, for coating patterns. Coat the patterns with glue first; allow them to dry, and then apply the oil. This may answer the purpose mentioned by you.

W. R., of ——.—That scissors can be made of cast-iron, we never doubted, for that is an easy matter, but that such articles should be manufactured and sold, we hesitated to believe; they must be as poor in quality, as cast iron knives.

B. M. G., of Pa.—The only way to support your crane. is to sink it deep into the ground. Iron cranes are all supported at the base. A solid foundation and a well secured bed plate support the upper parts of the crane, and allow it to swing round freely.

M. K., of Ind.—You will obtain, we think, a greater velocity of water in the pipe, than in the open drain. The only difference between the two methods is the friction; the pipe is surely much smoother than the drain, and therefore should offer less resistance to the passage of the water.

J. S., Jr., of N. H.—There are various works on the Marine Engine. Scott Russell's contains good drawings of the side lever engine, but no other kind. It is published in London, the price we do not know: no American work has been published on the subject. Tredgold on the steam engine is the most extensive and complete work you could obtain, but its price is high—more than $50. It can be obtained in this city.

S. N. D., of N. Y.—Owing to the great speed of a railway train, it would be very difficult to operate your catch springs, to lift persons from the track. The force of the train would throw them up into the air high and dry.

J. M;, of Cal.—We have entered your name on our subscription list for the balance of the $3 paid by you for information not given.

J. G., of Brooklyn—We can discover nothing new or patentable in your washing machine. Stewart's machine, illustrated a few weeks since, is contrived on the same plan.

G. G. S., of Ohio.—We do not know where you can obtain a good hand-book for the mechanic and artisan.

J. G., of Mo.—Would you be pleased to give us a brief account of the manner of setting boilers, to which you have alluded.

S. B. K., of Mich.—You are entitled to 5 additional copies for one year each. Please send along the names.

J. R. E., of La.—You will find a description of the Lithographic Art in the second volume of Ure's Dictionary. The price of the work is $6.

J. W. P., of N. H.—See engraving of Gang Plow, lately published in our paper We have published a number of illustrations of improvements intended to accomplish the result you mention.

Richard Shaw, of Perth, Canada, wishes to procure a machine for turning spokes for carriages to be driven by steam.

J. R., of Ohio—Address Joseph Lewis, gunsmith, No 14 Pell street, this city. Mr. W. James, of Utica, N. Y., makes excellent rifles.

Money received at the SCIENTIFIC AMERICAN Office, on account of Patent Office business for the week ending Saturday, Sept. 13, 1856:—

J. P., of N. Y., $30; A. R., of N. Y., $30; J. V. J., of Mich., $25; R. D., of N. Y., $35; J. P., of Conn., $12; J. A. & Co., Eng., $101; J. B. E., of N. Y., $25; E. A. C., of Conn., $30; J. L. H., of N. Y., $30; J. P. T., of Ill., $25; J. H. Y., of Mo., $10; C. W. G., of Conn., $25; M. & C. P., of Md., $25; J. J. P., of Ohio, $30; W. G. B., of Ala., $12; T. D., of Va., $25; T. S., of Conn., $30; J. W. H., of N. Y., $25; R. P. B., of Ohio, $25; L. T. M., of ——, $10; B. G. A., of Ohio, $25; H. H., of Miss., $25; J. A. D., of N. Y., $30; J. C. B., of Conn., $40; J. B. D, of Tenn., $15; K. G., of Pa., $30; H. W. B., of N. Y., $25; W. B., of L. I., of $55; W. D., of L. I., $100; E. P. & J. N. C., of N. Y., $30; J. P., of Pa., $25; S. W. R., of Mass., $25; V. & B., of N. Y., $30; H. W. B., of N. Y., $55; N. & Co., of London, $100; W. C., of Ala., $30; O. W. S., of Conn., $45; H. R. H., of N. Y., $37; J. L. M., of Pa., $25.

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

J. L. M., of Pa.; R. P. B., of O.; B. G. A., of O.; H. H., of Miss.; J. C. B., of Conn., 2 cases; R. D., of L. I.; J. H. H., of N. Y.; J. P., of Conn.; L. J., of N. Y.; J. P., of Pa.; S. W. R., of Mass.; T. D., of Va.; J. V. J., of Mich.; J. B. E., of N. Y.; C. W. G., of Conn.; T. F. T. of N. Y.; M. & C. P., of Md.; J. P. T., of Ill.; H. W. B., of N. Y.; W. D. W., of Ohio; J. B. D., of Tenn.; H. R H., of N. Y.

Literary Notices.

IRVING'S LIFE OF WASHINGTON.—The second volume of the popular edition of this incomparable work has just been published. It is embellished with a fine portrait of Maj. Gen. Philip Schuyler. It covers a period, beginning with the assumption of the command of the American armies by the immortal Washington, down to the time of the battle of Princeton. Many interesting facts, incidents, and details, never before made public, are presented, clothed in the charming language and style so peculiarly belonging to the gifted author. G. P. Putnam & Co., Publishers, 321 Broadway, N. Y. Price $1.

MY COUSIN NICHOLAS—By Rev. Richard Barbour.—This is a highly interesting tale of fiction from the pen of a graceful and accomplished writer. The "Ingoldsby Legends," everywhere well known, are the productions of this author. The present work will find thousands of readers. Ross & Tousey, 103 Nassau street, New York, publishers.

Important Items.

MODELS—Inventors, in constructing their models, should bear in mind that they must not exceed a foot in measurement in either direction. They will also remember that the law requires that all models shall be neatly and substantially made of durable material. If made of soft wood they should be painted or stained. We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

PATENT LAWS AND GUIDE TO INVENTORS.—This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office Price 12 1-2 cents per copy. A Circular, giving instructions to inventors in regard to the size and proper construction of their models with other useful information to an applicant for a patent, is furnished gratis at this office upon application by mail.

RECEIPTS—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

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INFALLIBLE RULE—It is an established rule of this office to stop sending the paper when the time for which is was prepaid has expired, and the publishers will not deviate from that standing rule in any instance.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post office is located.

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Twenty-five cents a line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

☞ All advertisements must be paid for before inserting.

Science and Art.

Zincing Iron.

Alex. Watt, editor of the electro-metallurgical department of the *London Chemist* has taken out a patent for the following method of covering steel and iron with a coating of zinc. He dissolves 12 1-2 lbs of the commercial cyanide of potassium in twenty gallons of rain water in a suitable vessel, and to this adds 5 lbs. of strong liquid ammonia. These are stirred together, and several large porous cells, like those employed in a Daniell's battery, are placed in it, and a strong solution—6 lbs. to the gallon—of the cyanide of potassium poured into each, until the hight of this solution is on a level with the ammonia cyanide liquor outside. Several pieces of copper are now attached to a copper wire connected to the negative pole of a galvanic battery—some of these pieces of copper are placed in each porous cell. Several pieces of zinc are now immersed in the solution outside of the cells, and they are connected by the copper wire to the positive pole of the battery, which is set into action and allowed to continue until three ounces of zinc to every gallon of the solution, has been dissolved from the pieces of zinc immersed in it. This amount can be found out by measuring the liquid and weighing the zinc before the latter is immersed. The porous cells are now removed, and a solution of carbonate of potassa (5 lbs.) is added to the zinc cyanide ammonia solution in the vessel. The bath is then stirred, and a white precipitate falls to its bottom. When this has subsided, the clear is poured off into another vessel, and is fit for use. The iron articles to be coated, are first plunged in a pickle composed of one lb. of sulphuric acid, and half a pound of muriatic (hydrochloric) acid in two gallons of water. This pickle removes the scale or oxyd; they are then rinsed in rain water, brushed with a hard brush and sand, and finally rinsed in soft water—all the oxyds must be removed, and no grease or sweat from the hands allowed on them. They are now placed in the zinc solution described, and connected in the well-known way, to the negative pole of a battery, when a zinc deposition on them begins at once. As soon as they are sufficiently coated, they are removed, rinsed in warm rain water and placed in dry saw dust to dry them. They are afterwards rendered bright by a scratch brush, or gently scouring with fine sand and a soft brush.

This is a more expensive and troublesome method of zincing iron than that commonly practiced, of dipping the cleaned iron into a solution of salammoniac, and from thence into a bath of molten zinc covered with ground glass, but it may be superior to it. The zinc is liable to go on unevenly by the molten bath process, whereas it will be very evenly deposited by the electrotype process described. Iron plates and other articles can be tinned by the electrotype process, by using a solution of the chloride of tin, such articles will take on a coat of molten zinc, (if dipped into it,) on the top of the tin.

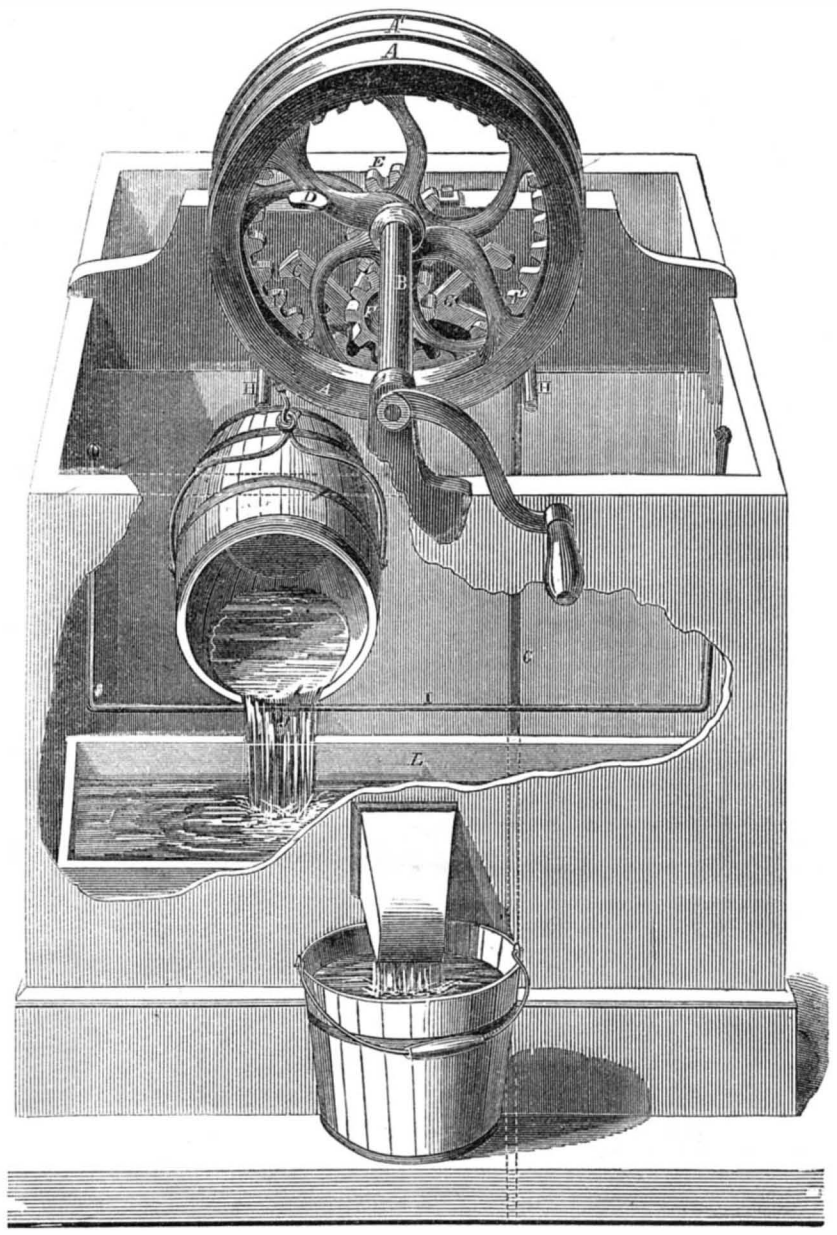
Silvering Metal.

A patent has lately been taken out in France by B. Adville, of Paris, for a new method of silvering iron or copper. The process consists in dissolving about three ounces and a quarter of pure silver in double the quantity of nitric acid, and adding to it two pounds of cyanuret of potassium dissolved in ten quarts of water. When well stirred, seven ounces of fine whiting in powder are added, well stirred, then allowed to settle. The metal articles to be silvered are placed in a bath of the clear of this liquor diluted with twice the quantity of soft water. When they have remained a sufficient time in it to be impregnated (which can be known by examining them,) they are taken out rubbed with dry whiting, washed and then rubbed with a dry cloth, when they assume a brilliant white appearance. The articles to be silverized in this manner, must be well cleaned before they are placed in the bath; no oxyd or grease must be allowed to remain on a single spot. When a new batch of articles are be silvered, the bath has to be strengthened by adding a fresh quantity of the cyanuret silver solution. The process is very simple, and is stated to be as effective as silvering by the use of a battery; if so it is a valuable improvement.

To Detect Photographic Bank Notes.

Make a saturated solution of the cyanate of potassium in soft water, and apply it with a pen or camel's hair pencil to the surface of the suspected bill. If genuine, the solution will have no effect upon it, but if a photograph, all the dark apparently printed part touched by the cyanate, is immediately decomposed, and the paper returns to its original whiteness.

NEW WATER ELEVATOR.



New Water Elevator.

Our engraving shows an improvement, the object of which is to afford an easy means of raising water, besides causing the buckets to fill and empty themselves, permit the use of one or two buckets, at pleasure, etc.

A A′ are too pulley wheels with grooved peripheries, on which the bucket ropes, C wind. Pulleys, A A′, are both placed on shaft, B, but they are loose upon it, and are also separate from each other. They are revolved by means of pinion, E, which is firmly attached to shaft B. This pinion, E, gears with another pinion, F, which meshes with a series of teeth located on the inside of pulley A′. When the crank is turned, shaft B acts through the pinions, E F, on the cogged teeth of A′, and causes it to revolve.

When it is desired to use both buckets simultaneously, one to rise, full of water, and the other, empty, to descend, the two pulleys are connected together by thumb screw, D, so that when A′ revolves A will also turn. But when it is desired to use only one bucket, the thumb screw, D, is withdrawn, and then A, being loose on shaft, B, and separate from A′, will not turn. This is a very quick and convenient mode of disconnecting the action of the pulleys.

G G are pawls, which alternately catch in the cogged teeth of A′, and prevent the latter from revolving, except in the proper direction, hold it in any given position, etc. One of the pawls is always engaged with the teeth of A′. The pawls, G, are connected with pins, H, which are so located that the bails of the buckets, when they come up, will strike their respective pins, H, and shift the pawls, throwing out the one that had been locked with A during the rise of the bucket, and causing the other pawl to lock. This permits the shaft B, to be revolved in a contrary direction, so as to return the bucket just raised to the well, and at the same time to lift the other bucket.

The buckets are emptied by means of a projecting pin, J, on the buckets, which catches under the cross rod, I, as the buckets rise, and cause them to tip over and pour their contents into trough L.

For further information address the inventor, H. B. Barker, Scott, Courtlandt Co., N Y. Patented July 8th, 1856.

Malachite.

This is a copper ore much prized in the ornamental arts. It is a peculiar variety of the green carbonate of copper, and is found in a number of localities, but perfect crystals are very rare. It usually accompanies other copper ores, and forms incrustations which, when thick, have the colors banded, and extremely delicate in their shades and blending. The copper mine of Cheshire, Conn., has produced handsome specimens, so have some of the copper mines of New Jersey, but the mines of Siberia are the most distinguished for large and fine specimens, and at the World's Fair, in London, the Russian Department was the admiration of all visitors, because of the numerous articles of ornamental malachite displayed. A pair of malachite doors, 14 feet high and 7 feet broad were much extolled. The mineral formed the veneering, one-fourth of an inch thick, built upon a frame of metal. The pieces were most tastefully arranged, and produced a fine effect. Thirty men were employed a whole year in cutting, fitting, and polishing the pieces, and the work went on, day and night, from May, 1850, to May, 1851. A fine chimney piece and numerous vases o the same material were grouped together, the whole being valued at $90,000.

In St Petersburg there is a large manufactory of malachite ornaments. The pieces—generally of only a few pounds weight—are first sawn into thin plates, with revolving metal disks, sand and water being fed into the slit, in the same manner that fine marble is cut. The curved pieces of this mineral are cut by bent saws, the management of which is very difficult.

The workman cuts his veneers according to the shades and veins of the mineral, so as to produce the best effect when all the pieces are fitted into the finished article. The edges of the pieces are ground quite smooth by revolving copper wheels, like those which our jewelers employ. The pieces are united with a cement colored with malachite powder, and when all fitted into a frame, the entire surface is ground and polished. The price of the finest specimens of malachite is about three dollars per pound. It receives a high polish, and is used for ear-rings, snuff-boxes, and other ornamental articles; but although it is so beautiful, owing to its delicate shadings of color, it is not much esteemed by jewelers, because it is so brittle, and difficult to work; it is sometimes passed off in jewelry for torquois, but it is inferior in hardness to this precious stone.

In the Palace of Versailles, Paris, there is one room furnished with tables, vases, and other articles of malachite. The specimens found in our own copper mines have only been employed to grace cabinets, in a mineralogical sense; but the time will yet arrive when it will be used in American ornamental art, rivalling the finest productions of the Russian Empire.