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### Improved Loom.

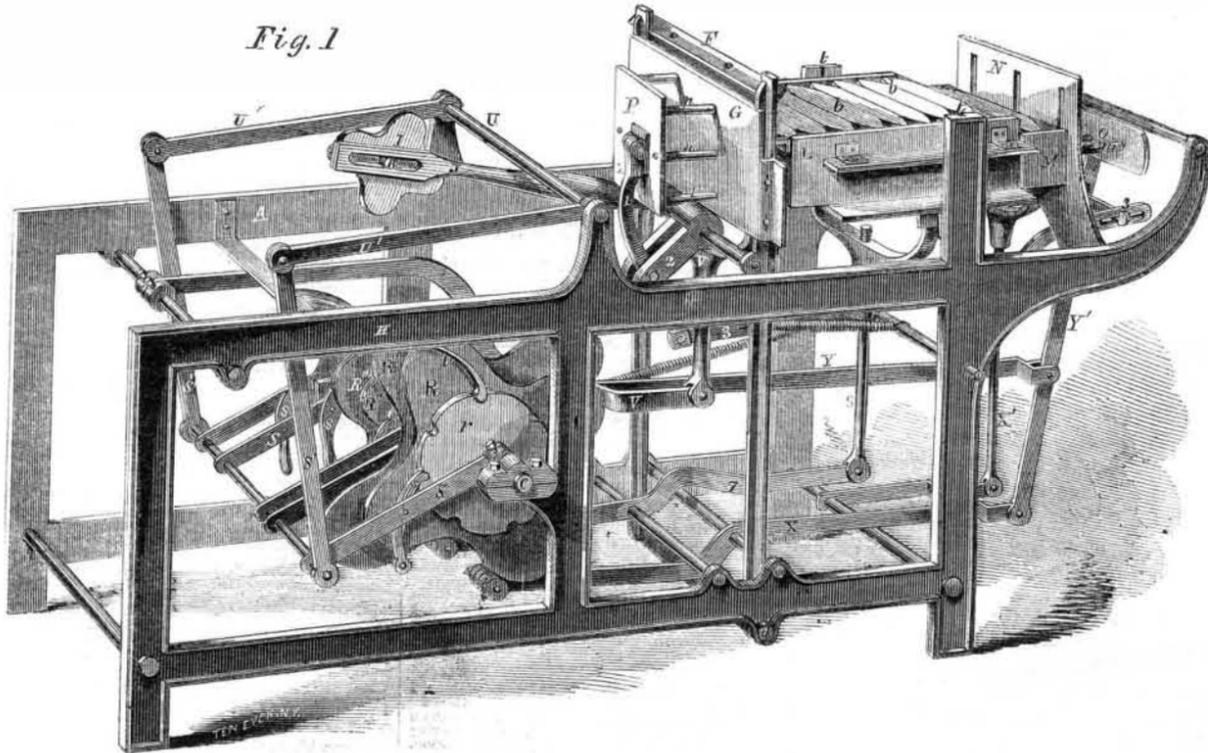
By means of this invention as many shuttles can be used in a power-loom as may be necessary to produce any pattern, and the lifting of the weight of the number of shuttles, as in the common arrangements, is obviated, only the shuttles in use being moved, so that the loom can be driven at a great speed.

Fig. 1 of our illustrations shows a perspective view of the arrangement, which is placed at the side of an ordinary power-loom. The special arrangement illustrated is designed for weaving two-ply carpets, but of course it can be applied to three-ply or other pattern fabrics.

A is the side-frame of the loom and B is the end of the driving-shaft, carrying the cam, I, and operating, by gearing not shown, the cam shaft, C. From B the lay is operated in the usual manner, but the lay does not carry the shuttle boxes, as will be shown hereafter. A similar apparatus to that depicted above is placed on the opposite side of the loom. H is a frame outside of and parallel with A, and F is one of the shuttle boxes, two in number, one below the other, and G is the vibrating frame that moves on centers, d, and which carries F. The shuttle boxes can slide up and down in the frame, G, so that each may be brought in line with the raceway of the loom. G has a shorter vibratory motion than the lay, moving back with the lay so far that the back of the shuttle box, which is on a level with the raceway, ranges with the face of the reed when the lay is in its most backward position, and advancing with the lay, not so much forward, but stopping half way and then becoming stationary. This motion of G is provided for by the cam, I, and the rod, J. The picker staff (not shown) is attached to G, and can be operated by any of the known devices. L may be called the shuttle-frame and is the feature of the invention, for it carries the shuttles, b, that are not in use. It occupies a central position in front of G and has an upper and lower bed, each of the width of a shuttle's length, and long enough to contain as large a number of shuttles as may be desirable, arranged one before the other and close together. The shuttles are arranged in the frame, L, in such order with respect to the colors of the yarn that may be necessary to produce the pattern, but it is not requisite that more than one shuttle, containing one color, should be used. Close in front of the shuttle-frame, L, is a single shuttle box, M, which is fitted to slide up and down on guides in an upright stationary plate, N. M is open towards L, so that the shuttles may be moved from L on to it as we have described, and M has a vertical move-

## CHEETHAM'S IMPROVED LOOM.

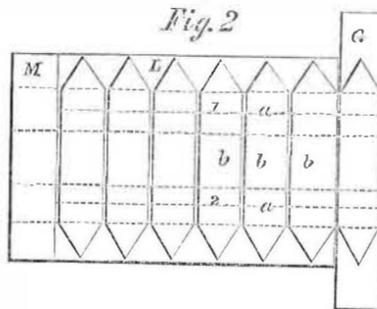
Fig. 1



ment for the purpose of bringing it on a level with either bed, L. m are pushers, attached to a plate, O, for pushing the shuttles from L into the shuttle boxes, F, and they slide horizontally through the plate, N. O is provided with guide pins that are attached to N, and on which it works. These pushers act so as to push the shuttle from M on to either bed of L, as it is elevated or depressed after it has received one from the top bed and has descended. Holes are provided in the back of M through which the pushers can work. In front of the vibrating frame, G, and passing through it, are pushers, p, attached to a plate, P, that moves on guides, n, and these pushers, p, pass through holes in the backs of the two boxes, F, and deliver the shuttles on to the top or bottom bed, L, as the case may be.

We will now, for the sake of illustration, suppose that the shuttles containing the colors are arranged on the top bed of L in the proper order for forming the pattern, and that they are moving toward shuttle-frame, G. L must remain stationary with its upper shuttle bed on a level with the raceway. The shuttle to be thrown out must be brought into the upper box, F, which must remain on a level with the raceway and the upper bed of L until the change is effected. The box, M, must also be on a level with the upper bed of L. The change takes place during the stoppage of G, while the lay completes its forward movement. The change is made by the pushers, p, moving forward and the pushers, m, moving backward, the former to push the shuttle out of the upper box, F, on the bed of L, and the latter to push the shuttles on the lower bed of L, so that the rearmost one will fall into the lower shuttle-box, F. The pushers, p, in pushing the shuttle out of the upper box, P, causes the foremost one to pass into the box, M, which, after receiving it, drops down to the level of the lower bed of L, and the pushers, m, again move back through the holes in M, and push its contained shuttle on to the lower bed of L. After m have been

withdrawn from M all the pushers remain stationary until another change is effected, when the same operations are repeated. The change from the upper to the lower box, F, and vice versa, is effected in a manner well known to weavers, by the rise and fall of the boxes. The order of succession of the boxes may be reversed by merely elevating the frame, L, to bring its lower bed on a level with the raceway. In many looms, however, this frame may be made stationary. When L is elevated then M requires also to be elevated, and another pair of pushers have to be added above as M takes the shuttle from the lower bed of L and delivers it into the top one. The driving apparatus for operating the charge motion



effect the changes of the shuttles, and then allowed to fall into gear and move the cam lowering of the shuttle-boxes, F, is effected by the cam, R', a lever of the third order, V, and a forked lever, V'. Two cams, R and R', are employed to raise and lower M. Both these cams act on rollers, z, on each side of the end of a lever, X, that actuates a forked rod, X'. The pushers are operated by the cam (not seen), by a rod, Y, a lever of the third order, Y', attached to the pusher plate, O, a lever, 1, whose fulcrum, 2, is a crank on a rocker-shaft, and a link, 3, connected by a pin and slot to Y', operates P. These cams are all the proper shape to give the requisite motions to the parts at the proper times, and springs are employed to bring-back the pushers into their normal position. The raising and lowering of the shuttle-frame is effected by R'', a lever, 7, and forked rod, 8. A frame similar to the one illustrated will be placed on both sides of the loom, and by adding another shuttle-box, F, and forming the cam the proper shape, or having a proper system of cams, a three-ply can be woven as well as two. The other mechanism will answer equally well for a three as a two-ply loom. All other looms have to be stopped when the bobbin is done to take out the empty shuttle and put in a full one, but in this one, the weaver, seeing that a bobbin is not likely to weave another change, can take it out of the frame and replace it with a full one.

Fig. 2 shows a diagram of another method of moving the shuttles which the inventor proposes to use in place of the pushers. The shuttle-frame and boxes would be provided with grooves, a a, in which bearers, 1 2, should have free play and be capable of rising a little above the bottom of the frame, so that the shuttles, b, will rest on them, and also of falling beneath the frames, so that the shuttles could rest on the bed. These bearers could be operated by any suitable machinery, and the method of operating is as follows:—The loom should be started with both shuttles on

the right side of the lay, the ground shuttle in the top box and the figure shuttle in the bottom one. At the first pick the ground shuttle is thrown out of the top box, and the bearers are moved forward in the bottom frame to be ready to take the shuttle out of the bottom box in the lay on the frame, and the bearers in the top frame are also moved forward to carry a shuttle; when the lay is coming up to the cloth the bearers drop and leave the shuttle in the box. At the second pick the figure shuttle is thrown out of the top box, the bearers in the bottom frame are moved back carrying the shuttles with them; when this is done M is raised to bring a shuttle level with the top frame. At the third pick the ground shuttle is thrown from the top box of the left side into the top box of the right side, and the bearers in the top frame are moved back. And at the fourth pick the figure shuttle is thrown from the left side into the bottom box of the right side, and then the shuttles are in the same position as when the loom first started.

This loom, to which, we are inclined to think, all others will have to give place for weaving pattern fabrics, is the invention of W. H. Cheatham, Jr., of New York City, and any further information may be obtained by addressing him at Higgin's Carpet Factory, foot of Forty-third street, New York. The patent is dated April 5, 1859, and a notice of it will be found on page 270 of the present volume of the SCIENTIFIC AMERICAN.



Issued from the United States Patent Office  
FOR THE WEEK ENDING MAY 17, 1859.

[Reported officially for the Scientific American.]

\* \* \* Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

**COTTON PRESS**—E. H. Adams, of Talladega, Ala. I claim the combination and arrangement of guide-rod, D, toggle levers, E, E, connecting rod, H, lever, G, and rack-lever, I, all operating substantially in the manner and for the purposes set forth.

[The nature of this invention consists in a combination of levers, connecting-rod and guide-rod for operating the follower-block and guiding it while entering the ball-box, whereby a superior cotton press is obtained.]

**SURGICAL SPLINTS**—David Ahl, of Newville, Pa.: I claim, as a new article of manufacture, my splint, made of the ingredients and in the manner set forth.

**STENCIL BRUSH**—V. K. Allen, of St. Louis, Mo.: I claim the mode of making the handle of the brush in two parts, and fastening the two parts by means of a screw, turned on the wedge, (which I term a wedge-screw), which is driven through the bristles in the iron band, thereby wedging the bristles in the band, and enabling the main handle to entirely cover the ends of the bristles and band, which prevents the handle and bristles, when in use, from working through the iron band holding the brush together.

**CUT-OFF GEAR OF STEAM ENGINES**—E. R. Arnold, of Providence, R. I.: I claim, first, The combination of an adjustable cam, or sector, H, Fig. 4, or its equivalent, located on the rock-shaft; a stop-block, J, Fig. 5, or its equivalent, and an arm, I, Fig. 3, or its equivalent, attached to the devices which lift the valve, the three so combined operating to regulate the cut-off of the steam, in its passage into the engine, at any desired point of the stroke, in the manner and on the principle substantially as described.

Second, I claim the same combination above specified, for the purpose of working the exhaust-valves of a steam engine, by means of the same rock-shaft and eccentric motion with which the steam-valves are operated.

**VARIABLE EXHAUST OF LOCOMOTIVE ENGINES**—Wm. S. G. Baker, of Chicago, Ill.: I claim the plug, E, arranged in combination with the shell, D, and with the exhaust pipes, A A', of a double-cylinder steam-engine, in such a manner that the exhaust of each cylinder can be varied while both are separate from each other, substantially as and for the purpose specified.

[This invention consists in arranging over the exhaust-pipe a rotary cylindrical plug, with different sized openings, which are brought to correspond with the openings in the exhaust-pipe and with the openings of the pipes leading therefrom to the chimney, by means of gear-wheels, which are easily operated from the Engineer's stand, and the whole is so arranged that the steam from the two cylinders is kept separate until it reaches the chimney, and that the opening of the exhaust-pipe for each cylinder is raised separately.]

**SEWING MACHINES**—Abraham Bartholf, of New York City: I claim applying the said lever to work on a fixed fulcrum in combination with a friction clamp, which, though it permits the said lever to be moved by and with the needle-arm, or needle-carrier, during a portion of the movement of the latter in either direction, for the purpose of drawing back the thread through the cloth, and completing the stitch, and letting it slack again to form the loop of a succeeding stitch, during the first part of the movement of the said arm, or carrier, in either direction, and so prevents the

thread getting slack till the needle has entered the cloth, and prevents its being drawn up through the cloth till the heel of the shuttle has arrived at the loop, substantially as described.

And in combination with the thread-controlling lever, constructed and applied as specified, and operated as described by the needle-arm, or needle-carrier, I claim the stationary eye, k, made adjustable, relatively to the said lever, substantially as and for the purpose set forth.

[This is a novel and very effective mode of applying and governing the operation of a thread-controlling lever, by which the needle thread is drawn back through the cloth to draw up the loop completely to the stitch, and held back to prevent its getting slack during the first portion of the descent of the needle, and before the point of the latter enters the cloth. There is also a novel arrangement of an adjustable eye in combination with the thread-controlling lever, for the purpose of adapting the operation of the thread-controlling lever to sewing different thicknesses of material with the same degree of tension on the needle-thread, and with the same tightness of stitch.]

**SEEDING MACHINES**—E. O. Baxter, of Foreston, Ill.: I claim, first, The frame, A, substantially as shown, and operated through the medium of the lever, J, or its equivalent, substantially as and for the purpose set forth.

Second, The frame, A, fitted to the axle, B, as shown in connection with the cams, t, t, interposed between the axle, B, and the frame, A, substantially as shown, so as to rotate the frame, A, when desired, to throw the seed-distributing device out of gear with the driving wheel.

Third, The arrangement of the frame, A, lever, N, connected with the frame, A, by the rod, V, and the upright, M, on draught-pole, D, substantially as shown, for the purpose of regulating the depth of the furrows as described.

[There is a class of seeding machines which are designed for planting or sowing seed either broadcast, in drills, or in bills, and the present invention is an improvement on such machines. The object of it is to place the machine under the complete control of the driver, and obviate various difficulties hitherto attending the operation of such machines.]

**ARTIFICIAL LEGS**—Douglas Bly, Rochester, N. Y.: I claim, first, Curving or deflecting the jointed extremities of the bars, J, so as to bring their axes of motion back of their direction, substantially as and for the purpose set forth.

Second, I claim the cord, T, and spring, X, acting upon the parts, D and L, substantially in the manner and for the purpose set forth.

Third, I am aware that metallic springs have been employed to simulate the functions of the natural muscles; but experience has proved their inadequacy, both as respects the results obtained and their durability. I am also aware that india-rubber, or elastic cords, have been used for the same purpose, and with no better results; and these I do not claim; but I claim the combination of the non-elastic tendon, F, with the india-rubber spring, E, in such a manner that the required effect is derived from the compression and expansion of the material, and not from its elongation and contraction, substantially as set forth.

**SEWING MACHINES**—A. H. Boyd, of Saco, Maine: I claim the employment of lever, I, a shoe and shaft, spring, J, plate, b, and sliding bar, b, with an under feed-rod, c, the shoe and shaft, b, and their durable intermittent direct horizontal reciprocating motion, and the shoe having an intermittent direct vertical reciprocating motion, the same being given substantially in the manner specified and for the purpose set forth.

**APPARATUS FOR COOLING BEER**—James Boyle, of Roxbury, Mass.: I claim the combination with two or more vessels, containing a series of tubes inserted in diaphragm plates, so arranged as to allow communication from the upper part of each vessel to the lower part thereof, and vice versa, by means of and through the said tubes of pipes, so arranged on either side of the diaphragm as to connect the said vessels alternately at the top and bottom thereof; and of a pump or any suitable device for forcing beer or any other liquid to be cooled down through one set of tubes and up the other, while a supply of cold water surrounding said tubes is forced in a direction opposite to that of the liquid contained therein, substantially as set forth.

**DEILL STOOK**—M. S. Brooks, of Chester, Conn.: I claim the arrangement and combination with a spiral, or screw-shaft, shaft, A, of a tube, D, ratchet, a, and stop, e, within the socket, E, as and for the purpose shown and described.

[A screw-shaft or rod is employed in this invention, with a tube and ratchet and socket fitted thereon, and so arranged that the screw-rod will be rotated, in one direction only, by the moving of the socket and tube back and forth on the screw-shaft.]

**PLUG FOR BLASTING ROCKS**—J. D. Buckley and S. F. Mosher, of Schaghticoke, N. Y.: We claim the combination of the tapered screw with the expanding metallic plug, having ledges, or other equivalents, to penetrate the rock, and provided with an aperture for the fuse, as set forth.

**MACHINERY FOR HARDENING HAT BODIES**—George E. Cowperthwait, of Danbury, Conn.: I claim the method of hardening hat bodies by means of a cradle, sustained in an inclined position, and having a tremulous movement substantially as set forth.

I also claim the method of subjecting hat bodies to greater or less pressure during hardening, by inclining the cradle of the hardening machine to a greater or less extent, substantially as set forth.

**ROCKING TOY**—J. A. Crandall, of New York City: I claim the flat-wound springs, C, C, pole or bar, D, elastic string, F, pin or thumb-screw, I, or their equivalent, in combination with the box, A, and frame, B, arranged and operated in the manner and for the purpose set forth as shown.

**MACHINE FOR UPSETTING TIRE**—C. L. Crowell and Robt. Smith, of Peoria, Ill.: We claim the combination of the lever and the intermediate slide, arranged substantially as described, for the purpose of giving movement to the sliding jaw.

**DRAWING HEADS FOR SPINNING MACHINES**—James E. Crowell, of Chelsea, Mass.: I claim so constructing and gearing the two pairs of drawing rollers, D, D, and E, E, that each pair will draw and release the silver or roving, and so allow the twist to pass and run back to the first rollers, D' D', substantially as and for the purpose set forth.

[The principal object of this invention is to draw and spin a silver as it is delivered from the doffer of a carding machine. To effect this it is necessary that a portion of the twist be allowed to run back as far as the back drawing rollers, in order that the silver may have some twist in it at the time of the drawing operation; and the invention consists in so constructing and gearing the pair of drawing rollers, which are arranged next the spindles, commonly known as the third drawing rollers, and the pair behind them, commonly known as the second pair, that each pair will operate intermittently in turn with the other pair, each pair letting go as the other pair takes hold of the silver, by which means the twist is allowed to pass the rollers and run back to those which first receive the silver and from which the drawing takes place.]

**SOAP**—Wm. Dawes, of Washington county, Tenn.: I claim the use of the ingredients, when combined in the proportions set forth, the whole forming an improved soap.

**TUYERE**—Geo. W. Dean, of Glenn's Falls, N. Y.: I claim the adjustable rotating chambered cylinder, C, arranged substantially as shown, with the slot, B, in the bed-plate, A, and relatively with the blast-pipe, M, to operate as and for the purpose set forth.

[The object of this invention is to obtain a tuyere by which the blast is placed under the control of the operator, and made to act upon the fire in different ways to suit the character and nature of the work, and thereby greatly facilitate its progress. The invention consists in the use of a rotating cylinder, provided with a series of chambers, having orifices of different sizes variously arranged and placed relatively with a blast pipe, and an opening in the bed-plate, whereby the desired end is attained.]

**CULTIVATORS**—Oliver H. Dennis, of Altona, Ill.: I claim the arrangement and combination of the hinged handles, t, C, hinged side-beams, E, B, and connecting bars, H, H, in relation to the central beam, A, substantially in the manner and for the purpose specified.

**STRAW CUTTERS**—J. B. Drake, of Goshen, Ind.: I claim the arrangement of the hinged feeding pawl frame, G, feeding and stop pawls, F and T, centrally arranged ratchet wheel, N, spiked feed-roller, M, and rising and falling knife frame, substantially as and for the purposes set forth.

**LAMPS**—Jno. L. Drake, of Cincinnati, Ohio: I claim, first, A wick-tube for containing two or more flat wicks, one at least of which wicks is a conductor, said tube having a double chamber, brace and opening, as stated, so that the burning wick may receive the oil from the conductor, and still be free to move upon or against it, as it is raised or lowered, to regulate the burning, substantially as described.

I also claim, in combination with a slotted and perforated dome, and a flat wick for burning heavy oils, an auxiliary flat wick and wick tube, substantially as herein described and for the purpose stated.

**APPARATUS FOR EVAPORATING SACCHARINE JUICES**—Daniel I. Durfee, of Croton, Ohio: I claim, first, A descending series of evaporating pans, each having a well or depression on the side next its immediate successor in the range, closable by sluices, substantially as set forth.

Second, The arrangement of the sluices, B, alternately on the right and left of the range, when used in the described combination with the wells or depressions referred to, for the purpose set forth.

Third, The strainer, D, in the described combination with the clarifier, A, operating in the manner and for the purpose set forth.

**WATER INDICATOR FOR STEAM BOILERS**—John L. Frisbie, of Cincinnati, Ohio: I claim, first, The described combination and arrangement of the box, C, H, adjustable pipe, B, I, J, valve, K, sleeve Q, q, and sector, M, N, operating in the described connection with the float-arm, O, for the purpose of varying the point of alarm from the outside of the boiler, as set forth.

Second, The cogged sector, M, N, provided with a segmental slot, n, in the described combination with the sliding sleeve, Q, q, float-arm, O, and bolt, p, to enable the application of the alarm to any part of the boiler, as set forth.

**NUT CRACKER**—Russell Frisbie, of Middletown, Conn.: I claim the nut cracker, substantially as described, as a new and improved article of manufacture.

**WATER WHEELS**—Omri C. Ford and Jarvis O. Ford, of Collinsville, Conn.: We claim the application of the reversed curved buckets, or guides, to form a reversed action centripetal and centre vent turbine water wheel, in combination with the inner and outer cut-off, F and K, in the manner substantially as set forth and described.

**STRAW CUTTERS**—A. W. Fox, of Athens, Pa.: I claim, first, The arrangement described and shown of the wheels, D and E, or their equivalent, in connection with the crank, G, connecting rod, H, sliding frame, I, and shafts, B and C, by which I obtain an accelerated upward and retarded downward motion to the knife of a straw cutter, as set forth.

Second, The combination of the sliding frame, I, with the knife, J, sliding in the said frame by means of the action of the angular slot and roller, or their equivalent, by which combination of parts a drawing cut is given to the knife, without interfering with the attachment and operation of the connecting rod, H, communicating motion from a shaft placed crosswise to the machine, as set forth.

**ARRANGEMENT OF KEY-BOARD FOR PIANOS, ETC.**—Alfred Gould and Cyrus Marsh, of Seneca Falls, N. Y.: We claim the arrangement of two, three or more ranges of keys of the key-board, in the manner and in relation to each other substantially as and for the purposes specified.

**SEWING MACHINES**—Joshua Gray, of Medford, Mass.: I claim, first, The combination of the reciprocating bar, G, with its side inclines, 10 and 11, and upper incline, with the bar, N, stop, v, and adjustable stop, t, arranged and operating as described, for the purpose set forth.

Second, In combination with the slide-bar, G, which operates the feeder, the bent lever, f, and universally adjustable cam, I, the several parts being arranged to operate substantially as described, for the purpose set forth.

**WEIGHING SCALES**—Wm. D. Guseman, of Morgantown, Va.: I claim in a weighing apparatus a pendulum drum or roller, which has, in addition to a rolling motion, a traveling movement, substantially as and for the purposes described.

I also claim, in combination with a rolling and traveling drum or roller, and an index, a traveling vernier, or dial, substantially as described.

I also claim the combination of the horizontal levers, G, of a platform scale, with the pendulum drums, C, and bars, F, substantially in the manner and for the purpose described.

**MACHINE FOR ROASTING COFFEE**—Josiah D. Harrington, of Rochester, N. Y.: I claim, first, The construction and arrangement of the divided handle, h, whereby the crank, G, not only serves to hold the two halves of the ball together, while rotating, but also to lift up one-half of the ball when moved into the position shown.

Second, I claim my method of uniting the two halves of a coffee-roaster, by means of the hinge, E, formed of the curved jaw attached to one half of the ball and passing into a slot in the second jaw, said slot having the pin, K, beneath which the carv. d jaw passes.

**MODE OF APPLYING LEVER POWER**—Elijah Harris, of Princeton, Ill.: I claim the use of a weight, B, a single or double lever, C, axle and pivots, D, d, acting in combination with the circular plate, E, ratchet-clicks, G, and ratchet-wheel, H, in applying lever power to machinery, substantially in the manner and for the purposes specified.

**COTTON PRESS**—Sherman S. Jewett, of Thomas Co., Ga.: I claim the combination of the screw, E, the tap-block, C, and the levers, D and H, with the packing-cases, M, and their followers, G, substantially in the manner and for the purpose described and shown.

**SEWING MACHINES**—Albert H. Hook, of New York City: I claim the combination of the cam, b, the lever, e, and spring, g, arranged and combined substantially as and for the purposes set forth.

**COOKING STOVES**—Sherman S. Jewett, of Buffalo, N. Y.: I claim the bricks, E, B, E, when constructed, arranged and supported within the stove, for the purposes of an oven, substantially as described.

**MACHINE FOR MANUFACTURING PICKET FENCING**—Wm. W. Johnson, of Clarksburgh, Va.: I claim, first, Operating a series of twisters, B, by means of pulleys and cords, arranged as set forth, so as to give a twist and reverse twist to the wire, in combination with vibrating fingers, J, hollow shaft, C, and tension plates, S, or their equivalents, substantially as and for the purposes set forth.

Second, I claim the segmental roller, N, constructed of the pieces, r' r', for the purposes explained.

[This machine makes wood and wire fences well and with great rapidity, so that they are durable and light.]

**ADJUSTABLE CANOPY FOR RAILROAD CARS**—Isaac E. Jones, of Cincinnati, Ohio: I claim the combination of springs, covers and hinges, all arranged and operating substantially in the manner and for the purposes set forth.

**CENTRIFUGAL GUN**—Wm. Joslin, of Cleveland, Ohio: I claim, first, Arranging the barrel, a, upon the same shaft with cog-wheel, F, which is secured near the periphery of the plate, I, and revolving the barrel around the wheel, f, substantially in the manner and for the purpose set forth.

Second, The combination of the bevel and spur gear wheels with the plate, I, and barrel, G, the same being arranged in the manner and for the purpose specified.

Third, I claim the arrangement of the slide, a, with the barrel and bevel table, d, for the purpose of elevating the balls to the barrel, substantially as is set forth.

Fourth, The arrangement of the revolving hopper bottom plate, J, and cylinder, e, for the purpose of conveying the balls down to the barrel, as is fully set forth.

**PUMPS**—Albert B. Keeley and James S. Beck, of Philadelphia, Pa.: I claim the combination of a solid or valveless oscillating piston with the peculiar shaped piston-chamber, and with the upper and lower valves, all arranged and operating substantially as and for the purposes set forth.

**BREAST PADS AND PERSPIRATION SHIELDS**—Henry C. Lester, of Brooklyn, N. Y.: I claim the combination of the arm-pit shields or protectors, H, and breast pads, D, substantially as described, so as to produce a new article of female apparel of the character set forth.

**RAILROAD FROGS**—David D. Lewis, of Tamaqua, Pa.: I claim the steel pin, K, dovetailed to the body of the frog, in combination with the tread-plate, K, and the block, i, when the said tread-plate overlaps and is riveted to the said point, and when the block, i, is of such a tapering or wedge-shaped form that, during the process of riveting it and the tread-plate to the body of the frog, the said block may serve the purpose of driving the point tight up into its socket, for the purpose specified.

**VENTILATING HATS**—Arthur Maginnis, of Philadelphia, Pa.: I claim the combination of the perforated hat body, the perforated sweat leather and the intervening corrugated band, C, when said band is provided with corrugation upon its two sides and made plain and smooth on its rear end, and from which the corrugation is constructed and arranged substantially in the manner and for the purpose specified.

**FILTERER AND PURIFIER**—Robt. A. Maingay, of Pottsville, Pa.: I claim, first, The combination of the fine water hopper, D, agitator, h, turbine, F, I, and alkali keg, A, substantially as and for the purposes set forth.

Second, The combination of the alkali keg, E, hogsheads, A1 A2, and turbine, F, o, substantially as and for the purposes set forth.

Third, The arrangement and combination of the purifying and filtering hogsheads, A1 A2 A3, filtering tank, C, turbines, F, o, I, purifier, F, I, and alkali kegs of hoppers, D, E, substantially as and for the purposes set forth.

[The mine water of coal regions is found, by analysis, to be strongly impregnated with carbonic acid, sulphuric acid, large quantities of alum, and sulphate of iron. These properties, as may be well known, render it very destructive to steam boilers and other apparatuses used about mines. The object of this invention is to deprive the water of those destructive properties, and at the same time filter it so that it will be useful for mechanical and domestic purposes. The nature of the improvement consists in a peculiar arrangement of a series of purifying and filtering hogsheads, a large filtering tank or reservoir, a series of purifier kegs or hoppers and a series of turbines whereby the above-named results are accomplished in a speedy, perfect and economical manner. This invention is very highly spoken of, and those who have used it say it saves them individually, by avoiding constant repairing and often substitution of new boilers, to the amount of several thousand dollars per annum.]

**ANTI-FRICTION SUPPORT FOR THE BACKS OF RUDDERS**—Albert H. Manchester, of Providence, R. I.: I claim the device or apparatus described, viz, supporting the rudder from behind by means of a backer or brace rising from the deck, or attached above it, having rollers in its face, constructed, arranged and operating substantially as described.

**GAS RETORTS**—Alfred Marsh, of Detroit, Mich.: I claim the employment of the secondary lid, h, for the purposes set forth, when the same is arranged and connected with the feed-pipe, substantially as shown and described.

**COMPOSITION FOR EMERY STICKS AND WHEELS**—Thos. J. Mayall, of Roxbury, Mass.: I claim the composition for the manufacture of emery wheels, sticks, and tools of more or less flexible nature, formed of emery-percha or india-rubber and sulphur, emery and olive oil, substantially in the manner and for the purposes set forth.

**MACHINE FOR SAWING BEVELED SURFACES**—John McDiarmid, of Brooklyn, N. Y.: I claim the employment of the oscillating frame, B, B, in combination with the center wheel, C, central hinge, N, Fig. 11, and saw, T, or cutters, t, Fig. 5, when the same shall be constructed in the manner described and for the purpose specified.

**METALLIC SEALS**—Chas. A. McEvoy, of Richmond, Va.: I claim the use of a paper label, or its equivalent, in combination with a metallic seal, substantially as and for the purpose specified.

**SEEDING MACHINES**—Chas. Messenger, of Warren, Ohio: I claim the lever, b, arm, c, levers, e, and spring, h, when arranged substantially as described, and in combination with a combined seeding-machine and ground roller.

I also claim the studs, E E' and F F', rods, I I', and shaft, J, in combination with the cam, D, D', substantially as set forth, and when used in connection with the seeding-machine and ground roller combined.

**SCREW EXCAVATOR**—Richard Montgomery, of New York City: I claim, first, Making the cylinder, a, b, which encloses the screw, a, in a conical form, for the purpose of rendering the ascent and discharge of the earth more free and perfect, as set forth.

Second, Supporting the cylinder and screw by means of the hinged frame, u s s', substantially as and for the purposes set forth.

Third, Driving the cylinder, a, b, and screws, a', by means of the gearing, y z e d, arranged and combined as described.

Fourth, Supporting and adjusting the front of the excavator by means of the friction ring, g, and chain or rope, n, as described.

Fifth, The curved swinging standard or derrick, p, for elevating the front end of the excavator without fastening, as described.

Sixth, The combination of the cylinder, a, b, and screw, a', with the swinging-frame, u s s', derrick, p, and carriage, K, substantially as set forth.

**EXTENSION LADDER**—Joel Moulton, of Boston, Mass.: I claim the improved extension ladder carrier, constructed substantially in manner and with its parts arranged and applied together as described, viz., with a series of single ladder bars, A, B, C, connected together, and provided with pins or handles, and having not only an extension line and sheaves connected with and arranged in them (the said bars) as explained, but a supporting platform and guide braces arranged at the upper part of the upper bar, as described.

I also claim the combination and arrangement of the water conduit, or hose-pipe director, and its guiding lines, with the extension ladder, constructed essentially in manner and to operate substantially as described.

**METAL DRILLS**—Jacob Murphy, of Half Moon, Pa.: I claim the shoulders on the drill, d, in combination with the braces, b, b', and pin, p, upon the sliding frame, B, E, substantially as and for the purposes set forth.

**MACHINES FOR ROLLING AND MEASURING COTTON BAGGING**—Thomas H. Murphy, of New Orleans, La.: I claim the described machine, or combination for simultaneously rolling and measuring bagging, consisting of an adjustable guide bar, E, sliding shaft, D, fitting into driver, B, the windlass and cord, E, b, adjustable pressure roller, G, carrying cam, i, lever, J, indicating wheel, L, arm, K, pawl, l, and spring, M, when all said parts are arranged and combined substantially as shown and set forth, and for the purpose specified.

[This invention consists in the employment of an adjustable rolling shaft, adjustable pressure roller, a registering mechanism and an adjustable guide placed within a suitable frame, whereby woven fabrics may be measured with facility.]

**MACHINES FOR HUSKING CORN**—Jacob Naehar, of North Orange, N. J.: I claim the reciprocating troughs, c, one or more, provided with pinners, i, in connection with the toothed plates or stripping combs, o, o', p, and with or without the retaining plate, q, the whole being arranged to operate substantially as and for the purpose set forth.

[This is a good corn-husker, doing its work well and efficiently.]

**METALLIC FRAMES FOR WINDOW BLINDS**—Charles Neer, of Albany, N. Y.: I claim constructing frames for blinds of sheet metal, bent in a U form, and connected together substantially as specified.

I also claim the bent or folded strips, f, f', provided with holes receiving the ends or tenons of the slats, as set forth.

**MOP HANDLE**—H. Norton and J. S. B. Norton, of Farmington, Me.: We claim attaching the mop cloth or yarn, B, to the handle, A, and to a slide, C, fitted on the handle, and arranged substantially as and for the purpose set forth.

[By this invention the mop cloth or yarn can be wrung out when changed with water, without, in the slightest degree, wetting or soiling the hands of the operator.]

**MANUFACTURE OF BRICKS**—Nelson Parmeter, of Gardner, Mass.: I claim a fire-proof brick or lining, composed of the above named ingredients, in the proportions set forth, and in the manner substantially as described.

**SIGNAL DOOR BOLT**—Chas. Page, of West Meriden, Conn.: I claim passing the pin which moves the bolt through the door, and permanently fixing to the projecting extremity thereof a segmental plate, so as to overlap the fixed symbol plate, and, in the manner set forth, communicate the desired intelligence.

**MACHINE FOR PLANING OR SHAVING ICE**—H. D. J. Pratt, of Washington, D. C.: I claim the machine or implement for cutting or reducing ice to small particles, as described, the same consisting of the arrangement in a hopper of suitable size and shape of rotating cutters, with or without a presser, the whole constructed and operating substantially in the manner described and applied to the purpose specified.

**CULTIVATORS**—Asa Preston, of Unionville, Ohio: I claim the construction of a combined plow cultivator, having the several parts so arranged that they can be easily attached or detached, as described, when said plow has the binged wings, W, moldboard, H, bars, L, M, and blades, J, K, arranged and operated substantially as set forth.

**WATER WHEELS**—Reuben Rich, of Albion, N. Y.: I claim constructing the pen-stock, A, dadoed joints, L, and bolts, I, in combination with gates, G and G', and center scroll plate, B, and wheel, C, when constructed and operated in the manner and for the purposes specified.

**WATER WHEELS**—Sylvanus Richardson, of Jericho, Vt.: I claim the float with hinges, as shown at point marked a, and the spiral or curved form of the lower part of the float, as shown at points marked b, combined with the extension downwards of the case below the scroll case, e, and with draft tube, h, as shown, substantially in the manner and for the purposes set forth.

**WASHING MACHINE**—John R. Rogers, of Sacramento, Wis.: I claim the combination in cylinder, B, of the diagonal slats, c, c', with the two heads of the cylinder, when said heads are provided with holes of such a shape and form that they will collect and force the water in, and empty it at alternate ends of the cylinder, as the direction of its revolutions are changed, substantially as set forth.

**WATER WHEEL**—Timothy Rose, of Cortlandville, N. Y.: I claim forming the buckets, B, of four parts, a, b, c, arranged or disposed relatively with each other, the hub, A, and annular plate, e, and with a scroll, C, specifically as shown and described, and for the purpose set forth.

[This is an improvement on that class of water-wheels which rotate in a horizontal plane, and are acted upon and propelled both by the impacting and re-acting force of the water as it passes through the wheel.]

**CAST-IRON GRINDING MILLS**—John Russell, of Troy, N. Y.: I claim, first, The combination of the breaker, B, and internally armed hopper, A, with the upper grinder, I, and lower grinder, H, all arranged and operating together as set forth, for the purpose of feeding into the mill and grinding large substances, such as corn on the cob.

Second, I claim making the armed portion of the hopper of separate rings, N, provided with internal projections, b, and arranged and secured together in the mill, as and for the purpose set forth.

Third, I claim making the lower grinder of separate toothed rings, C, arranged and secured together upon the supporting plate, E, as and for the purpose described.

Fourth, I claim making the upper grinder of separate toothed rings, J, arranged and secured together in and to the supporting plate, K, as and for the purpose set forth.

**SEEDING MACHINES**—Thos. Short, of Danville, Ill.: I claim the swinging frame, D, when provided with a seed-distributing device, actuated by a wheel, H, and cutting furrow-shares, I, and fitted within a mounted frame, A, substantially as and for the purpose set forth.

[The seed-distributing device is placed in a swinging frame that is fitted within an outer mounted frame, and swivel furrow-shares are attached to the swinging frame, the whole being arranged so that it is better adapted for planting seed in newly-turned or plowed sod ground, and also prevented from operating imperfectly by the action or presence of weeds and other trash that frequently collects around the furrow-shares as the implement is drawn along.]

**REFINING IRON IN THE HEARTH OF A BLAST FURNACE**—Christian Shunk, of Canton, Ohio: I claim the employment of an auxiliary tapers pipe within the hearth of the common blast furnace, when charged with molten iron, at such an angle as that the blast of air entering the iron may strike the circular wall of the hearth, as nearly as possible, at a tangent to its circumference, so as to cause the blast of air to pass round in the metal, giving the whole mass in the hearth a spiral motion immediately before the top of the furnace for the manufacture of pig-iron from the ore.

**SEWING MACHINES**—James C. Spencer, of Phelps, N. Y.: I claim the construction of a feeder and needle bar in one piece, or connected together, and the combination of the eccentric, D, and pin, E, with the needle bar, by means of the slot, a, for the purposes specified.

**HARVESTING MACHINES**—Wm. S. Stetson, of Baltimore, Md.: I claim, first, Connecting the finger bar to the frame of the machine by means of the saddle and its support, constructed and arranged substantially as described.

Second, In combination with the saddle, d, I claim the swiveling guide and swiveling lever, k, as set forth.

Third, I claim throwing the cutters in and out of gear by means of the shifting bar, t, constructed and operated substantially in the manner set forth.

**HARVESTING MACHINES**—W. S. Stetson and R. F. Maynard, of Baltimore, Md.: We claim, first, The double hinge joint at the end of the finger bar, consisting of the hinge, p, shaft, r, collar, s, and brace, t, arranged and operating in the manner described for the purpose specified.

Second, We claim the compound connecting-rod, m, constructed and operated as set forth.

Third, We claim so constructing or forming the upper part of the obtuse angle iron tooth bar and the base of the finger or tooth, that said base shall bear upon two plain faces of the said angle iron, in the manner and for the purposes set forth.

**FOOT-POWER MACHINE**—Frederick S. Stoddard, of Litchfield, Conn.: I claim, first, A two-throw crank, operated by one pitman, in combination with a lever and spring, or their equivalents, as described.

Second, The mode of attaching the springs to the foot-piece to operate on the pitman crank in connection with the set screws for adjusting and reversing the motion, as set forth.

**POTATO PLANTER**—J. C. Stoddard, of Worcester, Mass.: I claim, first, The support for boards and moldings, K, hooked lever, I, and sliding crosshead, a, with cutter, p, attached, the whole arranged and operating substantially as and for the purpose shown and described.

Second, I claim arranging the plowshares, L, and covering-shares, M, on parallel rock-shafts, j, k, so that a lateral and vertical adjustment can be given to the same, substantially as set forth.

[By this invention potatoes can be planted in hills at different distances, or in drills, at the option of the operator, and the dropping apparatus is so arranged that the quantity of potatoes deposited in a hill is measured, and the distance of the furrows made by plow and covering-shares, and the depth to which they cut, may be altered at pleasure.]

**STOP-GAGE FOR WEATHER BOARDING, &c.**—Worden E. Stoddard, of Horicon, N. Y.: I claim the use of the bar, A, forming a stop for boards and moldings, and the knob, C, the spur, D, and the adjustable slide, B, substantially as shown, for the purposes set forth.

**PADDLE-WHEEL**—John Thompson and M. L. Doty, of Charlton, Iowa: We claim the buckets of a paddle-wheel, arranged in combination with the segments, b, the weighted pinions, F, and the dogs, H, or their equivalents, to operate substantially as and for the purposes specified.

And in combination with the above-named parts, we also claim the arrangement of the spurs, j, or their equivalents, for the purpose of raising the buckets to the proper position while the wheels is backing, substantially as described.

[The buckets of this paddle-wheel feather take up no backwater, and act equally as well in backing as in propelling the vessel.]

**PROPELLER**—Chas. R. M. Wall, of New York City: I claim, first, An apron, G, arranged in such relation to a wheel, A, that it operates to propel a vessel, substantially as described.

Second, The arrangement of the rollers, E, E', in combination with the apron, G, whereby the wheel is made to work at any dip, substantially as specified.

Third, The springs, g, or their equivalent, arranged in combination with the rollers, E', and with the apron, G, for the purpose of regulating the strain on the apron, substantially as set forth.

[This invention consists in arranging one or more elastic and water-tight bands or aprons in such relation to a wheel, with suitable rollers and stops, that, when the wheel is rotated, the combined action of these rollers and of the water causes the apron to sag in and to assume such a position that it acts very effectively in propelling the boat without raising any backwater.]

**NEEDLE-CASE AND INDEX**—Calvin D. Wheeler, of New York City: I claim a needle-case and index combined for sewing machines, as described, whereby the appropriate size of the thread and needles to properly work together is always determined and shown.

**SEEDING CULTIVATORS**—Nicholas Whitehall, of Newtown, Ind.: I claim the combination of the stirrups, o, o', with the notched handles, N, eye bolts, D, and hooks, F, E, by which I am enabled to raise and secure the plow at any desired height, substantially as set forth.

**CEMENTS FOR ROOFING**—J. Carpenter Worth, of Little Britain Township, Lancaster Co., Pa.: I claim the composition for roofing made up in the manner and of the ingredients proportioned and mixed, as set forth.

**PUMP**—John H. Young, of St. Louis, Mo.: I claim, first, Dividing the pump cylinder into two chambers, a, a', by the division valve-seat plate, b, with its valves opening upwards, and uniting them by the water-way, E, substantially as described and for the purpose set forth.

I also claim the piston valves, m, m, connected to and operating with the buckets, K, L, in the two chambers, so that, whilst they move with said buckets, they shall have action independent of them, as set forth.

I also claim, in combination with the hollow piston and stem passing through it, the cam of the upper valve, m, to close upwards against its bucket, substantially as described.

**RAILROAD SWITCH**—Jacob Youngman, of Sunbury, Pa.: I claim the arrangement of two guards, 4, 4, so that a space, 5, exists between them at the point where the cars take an oblique direction to the switch rails, in order to run upon the lower portion of the main track on a frog plate, which has stationary frogs, 1, 2, and a rail, 3, arranged on it, substantially as and for the purposes set forth.

[By this improved railroad frog the rails of the main track and siding or turn-out are kept closed or connected with the track below at all times, and in a condition to prevent a possibility of accidents by the running-off of the train, in case the switch should have been carelessly left or moved to the wrong position, as there is at all times an unbroken or continuous line for a train to take. This is a very excellent improvement, and should commend itself to railroad managers who have the care of human life in their hands.]

**LOCK—ORON BILLING**, of La. Grange, Ohio, assignor to himself and Morris Traver, of Clinton Hollow, N. Y.: I claim the combination of the guards or plates, E, F, H, constructed and arranged relatively with each other and the bolt, B, to operate as and for the purpose set forth.

I also claim the spring tops, c, when applied to the guard or plate, E, and the latter is used in connection with its fellow-guards, F, H, for the purpose described.

[This invention consists in the use of a series of guards, arranged relatively with each other and with a bolt, whereby the lock is prevented from being picked or even opened with a proper key, unless the operator has a knowledge of the construction and arrangement of the parts. The invention is more especially designed for the doors of dwelling houses, and for use in those cases where an economical and secure lock is desired.]

**HAND-PLANING MACHINE**—Tyranus B. Butterfield, of Indianapolis, Ind., assignor to Abijah Taylor and R. Stevenson, of Morgan County, Ind.: I claim the combination and arrangement of the frame, A, knife, D, feed roller, E, springs, H, and screw, as shown, to whole is arranged, constructed and operated in manner substantially as and for the purpose set forth.

**WINDOW SASH SUPPORTER**—Sumner Cooper, of Windsor, Conn., assignor to himself, Thomas Denham and Joseph W. Briggs, of Cleveland, Ohio: I claim the combination and employment of the spring pinion to pulley, C, with the rack or perforated plate, L, tube or box, I, pin, J, key, K, latch, H, substantially in the manner as and for the purpose described.

**CONNECTING TOGETHER THE BRACES OF TRUSS BRIDGES**—L. E. Truesdell, of Warren, Mass.: I claim the method described of constructing and interlocking the diagonal braces, for the purposes set forth.

**FEEDING DEVICE FOR PLANING MACHINES**—C. B. Cottrell, (assignor to himself and Nathan Babcock), of Westley, R. I.: I claim the combination of the anti-friction and feed rollers, G, L, applied to the class of planing machines described, and driven from one and the same shaft, H, by gearing, arranged as shown, to admit of a separate lateral adjustment of each, for the purpose set forth.

[The object of this invention, which is an improvement on one patented Oct. 5, 1858, is to facilitate the feeding of the work to the cutters and also to place the feeding device more fully under the control of the operator than formerly, so that the feed may be checked or stopped independently of the movement of the cutter head and still be driven from the same shaft.]

**MACHINE FOR SHAVING STAVES FROM THE BOLT**—Harry H. Everts, (assignor to himself and P. E. Merriew), of Chicago, Ill.: I claim, first, The employment or use of the reciprocating saws, F, F, in connection with the swinging bolt frames, G, G', operated by the wiper wheels, a, or their equivalents, substantially as and for the purpose set forth.

Second, The employment or use of the segment racks, h, operated substantially as shown, and connected by the pinions, g, with the right and left screw rods, H, having jaws, i, f, placed thereon, for the purpose of dogging and undogging the bolts at the proper time, as described.

[A patent was granted this inventor for a stave machine March 23, 1858, and the present invention is designed to expedite the cutting of the staves from the bolt, and render the operation of the working parts automatic throughout.]

**VALVES FOR DRY GAS METERS**—Henry Howson, (assignor to A. Harris and J. W. Harris), of Philadelphia, Pa.: I claim, first, A pin, E, or its equivalent, fitted loosely to the valve and intervening between the valve and the driver, substantially as set forth, for the purpose specified.

Second, Constructing the driver in the form of an inverted cup, D, with driving pins in the inside, said cup being so arranged in respect to the annular flange, e, of the valve, so as to serve the double purpose of maintaining the latter in its proper position and of preventing the access of tar to the driving pins.

**SEWING MACHINES**—Warren Millar, (assignor to himself and John Nutt), of Chicago, Ill.: I claim, first, The hook, h, when constructed and operated substantially as described, in combination with an eye-pointed needle, and the screw case, c, for the burr one specified.

Second, The combination of the flange, b, and space, x, or their equivalents, of the screw case, c, when constructed as and for the purposes described.

Third, The sliding supports, a, s, or equivalents thereof, when constructed, arranged and operating in the manner substantially as described, for the purpose specified.

Fourth, I claim imparting to the screw case, c, the trilling or rickling motion to receive the loop of needle thread from the hook, h, or its equivalent, in the manner and for the purpose described.

**CORN AND COB MILL**—Wm. Sailor, (assignor to himself, Wm. S. Boyer and H. K. Boyer), of Philadelphia, Pa.: I claim, first, The plates, i, i, with their saw teeth, when the said plates are secured obliquely on the spindle and adjacent to the burr, and when both the burr and plates are arranged, in respect to the shell, substantially as set forth.

Second, Forming the burr in three or more separate pieces, adapted and secured to each other and to the spindle, substantially as specified.

**VINEGAR CRUET OR BOTTLE**—Geo. W. Simmons and Geo. H. Simmons, of Bennington, Vt., assignors to themselves and Norman Minniston, of Shattbury, Vt.: We claim, as a new article of manufacture, a bottle, cruet, or other similar vessel, for containing liquids for table, culinary or household purposes, provided with the tubes, A, and B, made and fitted to them, in the manner and for the purposes described and represented.

**RE-ISSUES.**

**GRAIN SEPARATORS**—John R. Moffitt, of Piqua, Ohio, Patented Nov. 30, 1859; re-issued March 23, 1858; again re-issued May 17, 1859: I claim the endless chains, d, composed of metallic links provided with protuberances or depressions, when used in combination with suitable driving chain gears to impart a positive motion to the straw-carrier of a threshing and separating machine, as explained.

**GRAIN SEPARATORS**—John R. Moffitt, of Piqua, Ohio, Patented Nov. 30, 1859; re-issued March 23, 1858; again re-issued May 17, 1859: I claim, in combination with a receptacle in which the tallies are deposited by the winnowing apparatus, the arrangement of the screw elevator, O, in relation to the thrashing cylinder, for the purpose of returning the tallies to be rethreshed, as set forth.

**GRAIN SEPARATORS**—John R. Moffitt, of Piqua, Ohio, Patented Nov. 30, 1859; re-issued March 23, 1858; again re-issued May 17, 1859: I claim the reversible screen, K, 2, and delivery spout, L, 2, arranged, adapted and constructed substantially in the manner described, with and to the discharging-spout of the "fanning mill" or "shoe" of a threshing-machine, so as to be isolated from the winnowing arrangement, and made to deliver at either one side or the other of the machine, as set forth.

**GRAIN SEPARATORS**—John R. Moffitt, of Piqua, Ohio, Patented Dec. 1, 1857: I claim the arrangement of disconnected shafts, H, H, carrying pinion chain gears, E, E', c, rotated at equal speeds from a single shaft or driver, and acting to drive the endless apron from its lower end, while permitting the escape of the straw through the lower openings of the apron, as set forth.

**MACHINERY FOR PREPARING OVAL PICTURE FRAMES**—Wm. Gardner, of New York City, Patented Aug. 17, 1858; re-issued March 15, 1859; again re-issued May 17, 1859: I claim the combination of a scraper, adapted to the form of the molding, with the revolving face-plate of a lathe, when the said scraper is so arranged to be self-adjusting laterally to the said molding, for the purpose set forth.

**GRAIN SEPARATORS**—John R. Moffitt, of Piqua, Ohio, Patented Dec. 1, 1857: I claim the construction and arrangement (substantially as described) of the rotary beater, A, within the apron, in combination with the falling sections, B, operating in the manner and for the purposes set forth.

**GRAIN AND GRASS HARVESTERS**—C. Aultman & Co., of Canton, Ohio, assignees of Philo Sylla and Augustus Adams, of Elgin, Ill. Patented Sept. 20, 1853: I claim, first, An elevated binding table in combination with the platform for receiving the grain as it is cut, substantially as set forth.

Second, The combination with the binding-table of one or more binders' stands, on a lower level than that of the table, substantially as set forth.

Third, The combination of a binding-table with a binders' stand, having an elevated side for the binder to rest his legs against, and thereby steady himself without the aid of his arms, both of which are thus left at liberty to do the binding, substantially as set forth.

Fourth, The arrangement of the rakers and binders' stands, substantially as set forth, so that the grain may be raked from the platform and delivered upon the binders' table before the several binders' stands, in the manner substantially as set forth.

Fifth, The arrangement of the dumping-tray with the rakers' and binders' stands, substantially as set forth.

**GRAIN AND GRASS HARVESTERS**—C. Aultman & Co., of Canton, Ohio, assignees of Philo Sylla and Augustus Adams, of Elgin, Ill. Patented Sept. 20, 1853: I claim, first, The combination of the finger-beam and the main frame with a yielding coupling arm, J, whereby the progressive movement of the finger-beam over the ground will be controlled by the main frame, and its upward and downward movements by the undulations of the ground over which it is drawn, substantially as set forth.

Second, The combination of a yielding coupling-arm, J, and a yielding brace-bar, K, with the finger-beam and main frame, substantially as set forth.

Third, The combination of the yielding bars, J, K and K', and the removable bolts, L', L', or the equivalent thereof, with the finger-beam and main frame, whereby the finger-beam may be allowed to slide loosely on the ground to adapt the machine to mowing, or be held firmly above the ground to adapt the machine to reaping, substantially as set forth.

**GRAIN AND GRASS HARVESTERS**—C. Aultman & Co., of Canton, Ohio, assignees of Philo Sylla and Augustus Adams, of Elgin, Ill. Patented Sept. 20, 1853; re-issued May 17, 1859: I claim the short finger-beam in combination with the yielding connection with the main frame or its equivalent, substantially as set forth.

**GRAIN AND GRASS HARVESTERS**—C. Aultman & Co., of Canton, Ohio, assignees of Philo Sylla and Augustus Adams, of Elgin, Ill. Patented Sept. 20, 1853: I claim the combination of the finger-beam with the hinges by which it is drawn, arranged above the plane of the cutter, substantially as set forth.

**GRAIN AND GRASS HARVESTERS**—C. Aultman & Co., of Canton, Ohio, assignees of Philo Sylla and Augustus Adams, of Elgin, Ill. Patented Sept. 20, 1853: I claim the combination of a counter-poise weight, or the equivalent thereof, with that end of the finger-beam next the main frame, to equalize its pressure upon the ground, substantially as set forth.

Also the combination of a counter-poise weight, or the equivalent thereof, with each or either end of the finger-beam, to diminish its pressure upon the ground, substantially as set forth.

**GRAIN AND GRASS HARVESTERS**—C. Aultman & Co., of Canton, Ohio, assignees of Philo Sylla and Augustus Adams, of Elgin, Ill. Patented Sept. 20, 1853: I claim the combination of a stop with the mechanism for connecting the finger-beam with the main frame, and allowing it to rise and fall, substantially as set forth.

**STOVES**—David Hathaway, (assignor of Fuller, Warren & Co.) of Troy, N. Y.

**ADDITIONAL IMPROVEMENT.**

**ORE-CRUSHING MACHINES**—Samuel F. Hodges, of Detroit, Mich. Patented May 26, 1857: I claim the alternate lifting and dropping of a stamper, or hammer, by means of the combination of the vertical rod with two or more clamping rollers, the peripheries of which are not complete circles.

**COOKING STOVES**—Samuel B. Spaulding, of Brandon Vt. Patented June 22, 1858: I claim the extension of the flues under the hearth, substantially as described for the purposes set forth.

**EXTENSION.**

**THE MANUFACTURE OF INDIA-RUBBER FABRICS**—Nelson Goodyear, late of Newtown, Conn. (Henry B. Goodyear, Adm'r.) Patented May 13, 1845: I claim the intermingling and combining of fibrous substances with the gum in forming india-rubber fabrics, solid and firm in the body, with a smooth surface resembling leather.

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