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52,120.—Process for Desulphurizing Ores.—John Absterdam, New York City:

I claim the within-described process of roasting or smelting metallic ores in vacuo, substantially as set forth.

52,121.—Process for Refining Iron and Steel.—John Absterdam, New York City:

I claim the above-described process for refining iron or making steel in vacuo, substantially as set forth.

52,122.—Horse Rake.—Daniel G. Adelsberger, Emmetsburg, Md.:

I claim connecting the rake-teeth of the machine with the main or revolving axle-shaft, F, through a connecting rod, G, wheel, V, vertical lever, Z, and sliding clutch, X, or the shaft, T, geared or otherwise properly connected with the said axle shaft, all arranged and operating together substantially in the manner described and for the purpose specified.

[An illustration of this invention appeared in No. 4 of the present volume of SCIENTIFIC AMERICAN.]

52,123.—Plow Clevis.—Loyal W. Alden, Fosterville, N. Y.:

I claim, in combination with the sectional plates and springs pivoted at their rear to the beam, and made adjustable thereto at their front ends, the equalizing bar connected thereto, substantially in the manner and for the purpose described.

52,124.—Water-proof Fabric.—Reuben G. Allerton, New York City:

I claim the water-proof fabric, formed in the manner specified.

52,125.—Curb Bit.—William C. Baker, New York City:

I claim the application of a spiral spring to the cheek piece of the curb bit, in combination with a movable, sliding, driving eye, the whole constructed, attached and operated substantially in the manner hereinbefore described.

52,126.—Carriage Top Prop Block.—William N. Barnett, Urbana, Ohio:

I claim carriage top prop blocks, made as described above as an article of manufacture.

52,127.—Sugar Mill.—George Bevitt, Madison, Wis.:

First, I claim the combination and arrangement of the bar, E, and spring, Q, for supporting the rollers, G and D, as shown and described.

Second, I claim the scraper, O, constructed as shown and described, and arranged to operate in connection with the rollers, C and D, as set forth.

52,128.—Billiard Cue.—George Bevitt, Madison, Wis.:

I claim securing a leather to a billiard cue, by means of a split conical-shaped screw plug, in combination with a proper shaped ferrule, attached to the cue, substantially in the manner described.

52,129.—Mode of Combining Photographic Lenses.—Charles B. Boyle, New York City:

I claim the system of combining lenses in geometrical ratios, of each other as described and set forth on the foregoing and accompanying drawings.

52,130.—Spoke Machine.—R. H. Boynton, Oshkosh, Wis.:

I claim the rotating cutters, u, bent levers, 4, lever, m, and cam-shaped pattern, S, arranged with reference to each other and to the endless bed or cam, y, substantially as and for the purpose herein set forth.

52,131.—Hand Saw.—R. Moss Breckinridge, Meriden, Conn.:

I claim securing the saw in any desired position in the frame by means of the journals, E and G, revolving in sockets, D and H, to which the saw is attached, and in which are pins, a, a', a'', fitting in notches, b, b, and clamped in place by the screw, d, and nut, e, when arranged and constructed substantially as described.

52,132.—Method of Disintegrating and Desulphurizing Gold, Silver and Copper Ores.—Frank F. Brower and George C. Campbrell, Ottawa, Ill.:

We claim the within-described method of disintegrating and desulphurizing ores found in combination with quartz or silver, by smelting them in combination with carbonate of soda or other suitable flux, and then precipitating the fused mass into water, substantially as described.

52,133.—Process for Treating Fur.—Alfred C. Brush, Darien, Conn.:

I claim the process substantially as above described, for treating fur, wool and hair, and preparing them for felting or other purposes.

52,134.—Horse Hay-fork.—E. & A. Buckman, East Greenbush, N. Y.:

First, I claim the pivoted forks, B, B, at the lower ends of the arms or levers, A, A, connected to said arms or levers by rods, e, to cause the forks to move automatically by the movement of the arms or levers, substantially as described.

Second, The bars, C, C, connected to the pivot bolt, a, of the arms or levers, A, A, in combination with the rods, F, F, fitted in the upper parts of the arms or levers, and having the holding rope and discharging ropes, G, attached respectively to the m, and all arranged to operate substantially as and for the purpose specified.

52,135.—Seeding Machine.—Henry Burdell, Dayton, Ohio:

I claim combining with the shafts, the sets of zig-zag channeled wheels and interposed agitating wheel, working in the hopper and in the sectional case and shield below the hopper, substantially in the manner and for the purpose described.

52,136.—Mop Wringer.—Mary P. Carpenter, Buffalo, N. Y.:

I claim the combination of a wringer with a mop, substantially as specified.

52,137.—Cotton Tie.—Wm. R. Carroll, Natchez, Miss.:

I claim the device or fastenings, d and E, constructed and arranged as herein-described and for the purpose set forth.

52,138.—Shoe.—Edwin Chesterman, Roxbury, Mass.:

I claim interposing a lining of hair, wool, felt, or some other material between the upper or outside and the usual lining of a boot

or shoe, for the purpose of keeping the feet warm in cold weather, substantially as specified.

[This invention is particularly applicable to rubber boots and shoes, such, for instance, as Mr. Chesterman obtained a patent for on the 27th of June, 1865. The invention consists, as the claim indicates, in interposing a lining or filling of any suitable material which will retain the warmth of the feet, between the outside of the shoe and the inside lining usually employed. The felt, hair, wool, or other material may be properly distributed throughout the shoes, and it is claimed that this is better than placing a lining of fur or flannel next the stockings, as the tendency is often to sweat the feet instead of retaining their natural heat.]

52,139.—Safety Bridle.—Amos B. Christ and Henry H. Stehman, Manor Fork, Pa.:

First, We claim the combination of a strap, E, and roller, e, f, with a safety strap, B, having one end affixed to the ring, A, of the bridle bit, and carried up over a roller, and then down through the ring, A, of the bit, to its connecting and retaining ring, D, in the manner and for the purpose specified.

Second, We claim a short elastic branch, L, attached to the ring, D, on the safety strap, B, whose both branches are connected to the ends of an ordinary single line, in the manner and for the purpose specified.

52,140.—Iron Holder.—Wm. B. Coates, Philadelphia, Pa.:

I claim the application of wooden strips, B, covered or faced with metal, C, riveted or secured to a fire-proof stay piece or pieces, A, for the purpose of holding hot or cold iron, the whole being constructed in the manner and for the purposes as already fully described and set forth in the foregoing specification.

52,141.—Sled for Children.—Jesse A. Crandall, New York City:

First, I claim, in combination with the sled, A, the use or employment of the secondary bed, B, when the same shall be constructed and combined, substantially as set forth and for the purpose specified.

Second, I claim constructing the secondary bed, B, and frame work to support the same in such a manner that the same may be readily converted into a chair for the purpose specified.

52,142.—Toy and Doll.—Frank E. Darrow and Deon E. Peck, Bristol, Conn.:

We claim the employment of raw hide in the manufacture of toy dolls, substantially as described.

52,143.—Anchor Tripper.—Edward Davidson, Providence, R. I.:

I claim the lever or arm, A, having a hook-shaped end, b, in combination with the button, G, arranged together and operating as and for the purpose specified.

[To facilitate and enable the heaving of a ship's anchor from the cat-head to be readily accomplished is the principal object of this invention, and it consists in a novel arrangement of a hook-lever upon the cat-head, upon the hook end of which one end of the chain by which the anchor is suspended from the cat-head is hung, while the other, passing over a suitable pulley of the cat-head to the deck of the vessel is drawn or hauled in by any proper means, thereby raising the anchor, which, when at the desired height there held by the use of a suitable chain stopper for holding the chain.]

52,144.—Manufacture of White Lead.—Clarence Delafield, Staten Island, N. Y.:

First, I claim manufacturing white lead by the use of the above-described chemicals or their equivalents, for this purpose, so combined, applied or united as to yield saltpeter as a residue of the process.

Second, I claim the use of the above-described chemicals, or their equivalents for this purpose, when so combined, united or applied as to produce the white lead of commerce.

Third, I claim the manufacture of the saltpeter of commerce, by substituting the above-described process.

52,145.—Manufacture of Saltpeter.—Clarence Delafield, Staten Island, N. Y.:

First, I claim manufacturing saltpeter by the use of the above-described chemicals or their equivalents for this purpose, so combined, applied or united as to yield white lead as the residue of the process.

Second, I claim the use of the above-described chemicals or their equivalents for this purpose, when so combined, united or applied as to produce the saltpeter of commerce.

Third, I claim the manufacture of the saltpeter of commerce, by substituting the above-described process.

52,146.—Cradle.—Alexander Dick, Buffalo, N. Y. Antedated Jan. 17, 1866:

I claim the arrangement of the cradle basket, B, the hoop, C, the screw, N, the bearer, O, the pivots, P, P, and the frame, A, substantially as and for the purpose specified.

52,147.—Powder-flask Charger.—Clement C. Dickey, Philadelphia, Pa.:

I claim the combination of the nozzle, C, connected by the trunnions to supports, D, the valves, E and B, and spring, G, all arranged and constructed to operate as and for the purposes described.

[This invention consists in mounting the charger on a trunnion, which works in a suitable support, arranged on the top plate or cap of the flask, so that the same will turn freely in such manner as to permit the insertion of its end in the muzzle of the gun, and at the same time, in order to discharge its contents therein, make it necessary to turn the flask in a horizontal position and thus bring the hand-way from over the muzzle of the gun, so as to prevent injury by a premature discharge.]

52,148.—Boring or Drilling Tool.—Lorenzo Dow, Piermont, N. Y. Antedated Jan. 10, 1866:

I claim attaching the diamonds or other stones which constitute the cutters of the boring tool, by soldering, brazing, or otherwise securing the settings of the said stones into removable blocks of steel or other hard metal, which are dovetailed or otherwise secured in the stock, substantially as herein described.

52,149.—Manufacture of Wrought Iron directly from the Ore.—Charles M. Dupuy, New York City:

I claim the process of obtaining wrought iron from ore by subjecting them to heat when mixed with carbonaceous matter and charged in iron canisters, which latter are welded up and balled together with their contents, the process being conducted substantially in the manner described.

52,150.—Operating Gun Carriages.—John Ericsson, New York City:

First, I claim a rotary compressor composed of a series of metallic disks secured to a shaft provided with pinions, which pinions, by means of toothed racks, check the recoil of cannon, said metallic disks being contained within a cog wheel which revolves freely on the said pinion shaft, and to which said cog wheel is secured a series of disks composed of wood or similar material inserted between the metallic disks, substantially as described.

Second, I claim a rotary compressor, for changing the direction of the slide frame and pointing the gun, substantially as described.

52,151.—Apparatus for the Distillation of Tars and other Substances.—Levi S. Fales, Boston, Mass.:

First, I claim, in combination with a cooling chamber at or near the outlet of a retort between it and the ordinary condenser for the separation of the heavier from the lighter vapors eliminated in the distribution of tar and heavy oils and substances, the employment of means of regulating the supply or action of the cooling medium, substantially as herein described, whereby a uniform density of light oil is obtained.

Second, I claim increasing the cooling effect of the heat of the still is increased either by increasing the effective cooling surface or increasing the flow of the cooling medium, substantially as herein described.

Third, The arrangement of the cooling surfaces around or with in a dome or elevated chamber situated directly over the retort, and in such unobstructed communication therewith as to form, in effect, a portion thereof, substantially as and for the purpose herein specified.

52,152.—Horse Rake.—Charles H. Finson, Bangor, Maine:

First, I claim the combination of the teeth, arms, G, bars, E and F, and levers, c, as and for the purposes specified.

Second, The tilting device, as constructed, with levers, c, bars, E and F, and lever, g, when arranged to operate substantially in the manner and for the purpose specified.

52,153.—Roller for Wringers.—James B. Forsyth, Roxbury, Mass.:

First, I claim a roller in which the core is permanently secured independently of the shaft, and which, together with its core, can be removed from the shaft or attached to the same, substantially as described.

Second, The adjustable collars, b, in combination with the shaft or barrel, B, tube or hollow core, A, and roller, substantially as and for the purpose set forth.

[This invention relates to certain improvements in rolls for clothes wringers or other machines, which rolls are made of india-rubber or other vulcanizable gum.]

52,154.—Buckle.—R. E. Frye, Manchester, N. H.:

First, I claim the combination of the frame, E & D, and sustaining bar, A, with the pawls, B, substantially in the manner and for the purpose set forth.

Second, I claim the combination of the sustaining bar, A, the pawls, B, and friction roller, C, substantially in the manner and for the purpose described.

[This invention relates to a novel construction of the biting or jamming parts of buckles, and consists in jamming the running part of a strap against a cross-bar or bed plate by means of a pawl, the face of which may be serrated or otherwise; and also in combining with such jamming pawl a friction roller, which comes into action as the pawl is elevated, and reduces the friction on the passing strap when it is being tightened or drawn through the buckle.]

52,155.—Wrench.—Edward P. Furlong, Westbrook, Maine:

I claim constructing a groove on the inner surface of the jaws of a wrench, as and for the purposes described.

52,156.—Brick Machine.—Emery R. Gard, Chicago, Ill.:

I claim the continuously revolving spiral wing or wings, D, D, when applied to a mold table or bed, F, which has a continual reciprocating motion communicated to it, by gearing or the equivalent thereof, substantially as and for the purpose herein specified.

I also claim the combination of the pins, v, v, in the projecting stems of the followers, with the double ledges, w, w, of the tracks N, N, for the purpose herein specified.

52,157.—Ice Creeper.—Edward M. Gardner, Nantucket, Mass.:

I claim the improved ice creeper, constructed substantially as described, viz., of the flexible or elastic frame and the cloth covering, arranged together as specified.

52,158.—Railroad Car Truck.—John L. Gill, Jr., Columbus, Ohio:

First, I claim making a bolster recessed on each side, making a space to admit of the springs between the bolster and the bolster frame.

Second, I claim making a bolster recessed in the middle to admit of the springs, vertically, with one end attached to the bolster and the other to the bolster frame, as specified in the foregoing specifications.

Third, I claim the arrangement of bolster in combination with the ball elliptic springs.

52,159.—Cultivator Plow.—James S. Gilmore, Millersburg, Ill.:

First, I claim the arrangement of the plow shanks, F, F, square shafts, E, adjustable clevises or arms, E, H, chains, J, J, G, K, L, and lever, I, as and for the purpose specified.

Second, I claim the arrangement of the shaft, O, curved bar, P, stirrups, Q, vertical arm, K, bar, k, uprights, S, S', curved bars, V, V, and pins, t, t, as and for the purpose specified.

Third, I claim the reversible lever, W, in combination with the shaft, O, and set screws, w, as described.

52,160.—Washing Machine.—Joseph S. Godfrey, E. S. Godfrey, and Russell Godfrey, of Leslie, Mich.:

First, We claim constructing the reciprocating rubbers, C and D, with stepped slanted surfaces, the slats of which are so arranged that they shall rub, squeeze, and roll the article between them, substantially as described.

Second, We claim the combination of the rubber, C, with a rubber, D, which receives a backward and forward movement and also a rising and falling movement, and which is held down at the proper time to squeeze the article by means of the strips, g, g, substantially as described.

Third, We claim the combination of two reciprocating stepped rubbers, C and D, with the swinging supports, d, d, and the holding down strips, g, g, all arranged to operate substantially as described.

Fourth, We claim arranging the slats of the rubber, D, in planes, which are above the slats of the rubber, C, in combination with the holding-down strips, g, g, substantially as described.

52,161.—Loom.—Oliver W. Gordon and Nathan T. Frame, Salem, Iowa:

First, We claim a device for communicating motion from the batten, C, to the picker staff, E, without the use of auxiliary pulleys, by means of the drivers, D, and flexible hinge, substantially as set forth.

Second, We claim constructing the harness shafts, G, and their uprights, g, and projecting ends, g', g', as and for the purposes set forth.

Third, We claim raising and lowering both ends of the harness shafts, simultaneously, by a positive action, substantially as and for the purpose set forth.

Fourth, We claim the cylinders, F, so arranged as that their axes shall be at right angles with the planes of the harness shafts, and by means of pins thereon, giving a positive motion both ascending and descending to the harness shafts.

Fifth, We claim the combination of the batten, C, the cord, I, lever and ratchet, H, with the cylinder, F, substantially as and for the purpose set forth.

Sixth, The removable guide, L, in combination with the harness and shafts, G, having eyes or their equivalents, for such guides, constructed and arranged substantially as and for the purpose set forth.

Seventh, We claim the arrangement of the cases, B, and the pawl and lever, X, and ratchet, H, cylinder and harness shafts, constructed and combined substantially as set forth.

52,162.—Coupling for Shafting.—Lyman Gray, Pittsburg, Pa.:

I claim the application and use of two or more pawls, within a metallic sleeve, arranged at such an angle to the axis of the shaft or shafts, that one end of each pawl presses against and bites into the periphery of the shaft or shafts, so as to prevent their rotation in either direction within the sleeve when in use.

52,163.—Paper Collars.—Solomon S. G. Gray, Boston, Mass.:

I claim a paper or paper and cloth turn-over collar, with a curved or concave bottom, and turned over on a line curved in the same direction, substantially as and for the purpose set forth and described.

52,164.—Drill for Wells.—John Grieves, Brooklyn, N. Y.:

First, I claim the drill constructed of the two curved pieces, A, B, and trimming bit, D, combined, substantially as herein described.

Second, The casing, F, in combination with the portions, A, B, of the drill, substantially as and for the purpose herein set forth.

Third, The valve box, H, constructed and applied to secure the drill to the tubular rod and to secure the casing, F, substantially as herein described.

52,165.—Cartridge Retractor for Revolving Fire-arms.—Henry Hammond, Bridgeport, Conn.:

I claim the cartridge shell extractor for revolving fire-arms herein described, consisting of an external sleeve or thimble fitting over

the cylinder and down behind the rim of the cartridge and sliding on the cylinder, substantially in the manner herein set forth.

52,166.—Washing Machine.—John J. Herrick, Horicon, Wis.:

I claim the combination of the shaft, link and staples, and the standard to the crank shaft or windlass, whereby the shaft and movable wash-board is moved forward and backward, as specified.

52,167.—Reaping and Mowing Machine.—L. B. Hoyt, Cedar Falls, Iowa:

First, I claim the cam, F, provided with oblique wings or flanges, g, arranged as shown, to impart a reciprocating motion to the sickle through the medium of the link and pitman, and at the same time cause the latter to be automatically thrown out of gear with the cam, at either side of the same when the machine is backed, substantially as described.

Second, I also claim the yoke or levers, D, employed to so connect the finger bar, E, and cam, F, that the latter will partially counterbalance the former.

Third, I further claim the combination and relative arrangement of the raising lever, K, yoke, D, cam, F, and finger bar, E, to facilitate the elevation of the cutting apparatus and adapted to be raised to any height without throwing it out of gear.

[This invention relates to a sickle-driving mechanism whereby several very important results are attained, viz, the finger bar and sickle are placed in a balanced state, so that they may be raised with facility whenever required, and allowed to conform readily to the inequalities of surface over which they may pass. The sickle-driving mechanism also favoring the draught of the machine and possessing the advantage of throwing the fulcrum out of gear automatically whenever the machine is backed, so that there cannot be any motion of the sickle during a retrograde movement of the former.]

52,168.—Harvester.—Chester C. Holman, Clayville, N. Y.:

First, I claim the frame, A, A', constructed as shown and described and used, in combination with the reversible brace frame, C, and shoe, O, as specified, whereby the cutting mechanism may be operated on either side of the machine, as herein described.

Second, I claim the connecting brace frame, C, with the pinion, d, spring catch, f, cord or chain, g, foot lever, G, and segment lever, F, arranged and operating in the manner, and for the purposes specified.

Third, I claim the shoe, O, and roller, q, constructed as described, in combination with the connecting brace frame, C, and the cutting mechanism, D, substantially in the manner and for the purpose herein set forth.

Fourth, I claim attaching the pole or tongue, L, to the upright portion of the frame, A, which is in advance of the brace frame, by means of the lugs, c, c', pivot, e, stirrup, b, and spring, r, arranged in the manner shown and described.

Fifth, I claim the employment of the connecting spur gear or ratchet wheel, Q, with its pawl, S, arm, t, spring, u, and pin, W, arranged as described, for connecting and disconnecting the driving wheels with the working mechanism.

52,169.—Marking Wheel.—Horace Holt, Brooklyn, N. Y.:

First, I claim the combination of the type wheel, A, ink roller, C, and ink reservoir, e, all constructed, arranged, and operating as specified.

Second, The yielding flanges, h, on type wheel, A, constructed and operating substantially as and for the purpose described.

Third, The spring, g, applied in combination with the type wheel, A, steel, h, and pin, i, or their equivalents, substantially as and for the purposes set forth.

52,170.—Coupling for Carriage Thills.—James Howarth, Monroeville, Ohio:

First, I claim the plates, A and B, and clutch, G, in combination with the bolts, E, h, when arranged as and for the purpose substantially as set forth.

Second, I claim, in combination with the above-described construction, the heads, A, B, concaved, and the bar points, b, b', all arranged as shown, for the purpose specified.

52,171.—Hand Corn Planters.—D. H. Howell, Independence, Iowa:

I claim the reverse cranks, d, d, on the shafts, E, E, provided respectively with the cups, G, and handle, P, and arranged substantially as shown, with the box, B, having the seed-conveying tubes, A, A, attached, to operate in the manner as and for the purpose set forth.

[This invention relates to a new and improved hand corn planter and it consists in the employment or use of the seed-conveying tubes arranged with seed boxes and a seed-distributing device, and all constructed in such a manner that the device may be manipulated with the greatest facility, and two rows of corn planted simultaneously.]

52,172.—Fruit Ladder.—Sidney Hudson, Milford, Mich.:

First, I claim tapering ladder, H, the sides of which are brought to a point, as and for the purpose herein shown and described.

Second, I claim the extending of pointed ladder, H, by connecting its lower end to the upper end of a corresponding tapering ladder, R, by suitable couplings, as and for the purpose herein shown and described.

Third, I claim platform, A, which consists of two steps at right angles, with four adjusting blocks, as and for the purpose herein described.

52,173.—Tool for Making Lighters.—Albert Klein-schmidt and Francis Schlatter, Philadelphia, Pa.:

We claim the within described plane, with its longitudinal groove, e, diagonal cutter, B, and diagonal groove, f, the whole being arranged substantially as and for the purpose herein set forth.

52,174.—Bits for Boring Holes.—Charles F. Kimball and Alex. Parsons, Portland, Me.:

We claim the combination of the part, A, having the hole and knive, and r, as described, with the screw, B, the nut, d, and the gage, c, all as and for the purposes specified.

52,175.—Grain Binder.—J. Lancaster, Baltimore, Md.:

First, I claim the band carrier, M, constructed of two parts connected by a chain in the operation of the cord carrier, R, arranged to operate in the manner substantially as and for the purpose set forth.

Second, I claim the sheaf presser, Y, in connection with the band carrier, M, and the wire twisting apparatus, consisting of the rotating cylinder C, E', all arranged to operate in the manner substantially as and for the purpose specified.

Third, The sliding plates, A, swing, B, comprising the gatherers, arranged to operate substantially as described and for the purpose set forth.

Fourth, I claim the sheaf dischargers, H', H', arranged to operate in the manner substantially as described.

Fifth, I claim the reciprocating bars, D, P, W, A', F', arranged as herein described, to communicate motion to the various operating parts from a single driving shaft, K.

[This invention relates to a new and improved device for binding grain, and is designed for an automatic attachment for reapers, to operate in conjunction therewith, and gather up the cut grain as it is presented to the device, and bind it into sheaves, which are cast from the reaper as they are bound.]

52,176.—Suspended.

52,177.—Chimney Cap.—Peter Lear, Medford, Mass.:

First, I claim the combination as well as the arrangement of the stationary conical case, A, with one or more rotary wings, g, and a wind wheel, D, or buckle or cap applied to the spindle, C.

Second, I claim the combination as well as the arrangement of the support tube, B, with the stationary conical case, A, one or more rotary wings, g, and a wind wheel, D, applied to spindle, C.

Third, I claim the combination as well as the arrangement of the socket tube, F, applied, or to be applied, to the chimney with the support tube, B, the stationary conical case, A, and one or more rotary wings, g, and a wind wheel, D, arranged as specified.

Fourth, I claim the operation of the step bar, H, of the spindle to the support tube, B, when combined with a conical case, A, having one or more rotary wings, g, and a wind wheel, D, arranged with respect to it and applied to spindle, C, as described.

Fifth, I claim the application of the pivot-supporting bar, d,

directly to the conical case, A, having one or more rotary wings, g, and a wind wheel, D, arranged and combined with it as specified.

52,178.—Belt Coupling.—Worley Leas, Kokomo, Ind.:

I claim a belt coupling composed of two parts, A, A, of metal or other suitable material, bent or otherwise formed so as to have two parallel parts, a, a, between which the ends of the belt are secured by rivets or screws, and having rounded edges, b, with recesses, c, made in them to form projecting portions, d, the latter of one part, A, fitting in the recesses, c, of the other with a pin or pinicle, e, passing through the portions, d, substantially as described.

52,179.—Eyelet.—Rufus L. Smith, Melrose, Mass.:

I claim the eyelet herein described as a new article of manufacture.

52,180.—Post-hole Auger.—Josiah M. Leeds and Joseph E. Hallowell, Kokomo, Ind.:

We claim a post-hole auger having its body, A, composed of spring metal, and with its cutting rod beveled as at f, f', in combination with braces, B, B, or their equivalents, substantially as described.

52,181.—Railroad Car Box.—George F. Lynch, Milwaukee, Wis.:

First, I claim the construction of railroad car boxes in two distinct but dependent parts, substantially in the manner and for the purposes herein described, set forth, and explained.

Second, The truncated and conical form of the railroad-car box, substantially as herein set forth as described.

Third, The combination of set screw, Fig. 2, jam nut, Fig. 3, shock plate, Fig. 4, washer, Fig. 5, plate 3, and shock springs, Figs. 7 and 8, plate 2 arranged substantially as herein described, in combination with railroad car boxes, to be constructed and operated as herein described and set forth.

52,182.—Barrel Head.—Joseph McCammon, Dayton, Ohio:

I claim the metallic piece, C, and disk, D, used in connection with the barrel head in two parts, as and for the purpose herein specified.

52,183.—Lock.—M. McGonnigle, Alleghany City, Pa.:

I claim the use of two bolts which answer the double purpose of bolt and guards to the keyhole, which are arranged in the lock case so as not to come opposite to each other, as herein described and set forth.

52,184.—Cultivator.—Stephen G. Mills, Des Moines, Iowa:

I claim the arrangement of the double-shovel plow beams, F, standards, I, guides, J, chains, E, wheels, L, bridge, M, bar, C, lever, N, and sifting seat, R, substantially as described and represented.

52,185.—Washing Machine.—Alexander Mitchell, Frederickton, New Brunswick:

I claim a washing machine formed by combining the roller, O, covered with india-rubber or its equivalent, with the inclined washboard, G, the frame N, the cross piece, A, the springs, x, and v, the rods, R, and the treadle, S, substantially as described and for the purpose set forth.

[The design of this invention is to furnish a machine so constructed that the force to be applied to the articles being washed may be regulated at will to correspond to the delicacy of the fabrics. The machine is operated by a treadle in connection with springs, and the washing is done by passing a roller up and down the surface of an inclined washboard. The washboard is removable and is made plane, or fluted or covered with rubber, as may be required by the quality of the articles washed.]

52,186.—Hay Fork.—J. A. Montgomery, Williamsport, Pa.:

I claim the combination of the tines, A, bent as described, band, B, and plate, E, substantially as and for the purpose described.

52,187.—Thill-holding Loop.—William Morley, Rolfe, Iowa:

I claim a metallic thill-holding loop, A, A, constructed substantially as described, and the suspending of the same between two parts of a suspending strap, E, E, substantially in the manner and for the purpose set forth.

[This invention relates to a new and useful thill-holding loop for harness, and also to an improved mode of suspending the same, whereby a saving of labor and material is made, and a loop produced which is more durable and snug, and much more neat in appearance than the ordinary loops now in use. It consists in a metallic loop which is provided at its top and bottom with strap guides, and on its sides with fixed tongues which engage with the suspending straps, the loop being suspended between two parts of the suspending straps in such a manner as to be adjustable therein and without impairing the strength of the suspending straps, but leaving the two parts of the same at their full strength.]

52,188.—Feed Rollers to Circular Saws.—John Mutty, Brewer, Maine:

I claim the grooved smooth-faced cylinder feed roller when used singly to feed the wood to be sawed to a circular saw, and revolved by the means substantially as described and for the purpose set forth.

52,189.—Hollow Grate Bars for Furnaces.—G. S. Nevins, Bushnell, Ill.:

First, I claim in furnace and other grates, securing the ends of their bars together by means of rods passing through hollow spaces made through said bars, so as to allow the bars to expand and contract without breaking their joints, substantially as shown.

Second, I also claim in tubular grates, placing a copper gasket between adjacent bars, each alternate gasket fitting close about the rod which connects the bars to each other, so as to form a continuous water course, substantially as shown.

Third, I also claim connecting the discharging pipe, i, of the grate with the top of the water reservoir from which the hollow bars of the grate are supplied with water, so that steam, &c, as hot water, may pass over in the reservoir without obstruction, preventing the bars from becoming filled with steam and being blown empty, substantially as set forth.

52,190.—Loading Attachment to Hay Wagons.—W. B. Niles and S. M. Gillett, Little Rock, N. Y.:

We claim the crane placed on a mounted frame, A, arranged with an adjustable step so that it may be kept in a vertical position, in combination with a fork, N, and rope or chain, M, arranged with the crane and attached to a pulley, D, on the axle, C, to operate in the manner substantially as and for the purpose set forth.

52,191.—Apparatus for Desulphurizing Ores.—Butler G. Noble, New York City:

First, I claim the sower chamber, k, in combination with the desulphurizing chamber, l, substantially as and for the purposes set forth.

Second, I claim the mode of constructing the desulphurizing chamber, l, with the inclined grate, d, and discharge door, g, as set forth in combination with the sower chamber, k, as specified.

Third, I claim the adjustable steam trawl in combination with the desulphurizing vessel, constructed as specified, so as to regulate the temperature as set forth.

52,192.—Looms.—Benjamin Oldfield, Williamsburg, N. Y. Antedated Jan. 7, 1866.

I claim the application of two or more shuttles for plain weaving and one or more figured shuttles, to operate in conjunction, substantially in the manner, and for the purpose herein set forth.

[This invention relates particularly to looms for weaving figured goods, and it consists in the arrangement of two or more shuttles for carrying the plain part of the weft, and one or more shuttles for carrying the figured part of the weft, in such a manner that the shuttles which form the plain part are drawn simultaneously through the same opening in the warp or shed, and the figured shuttle or shuttles are moved at such intervals, as the pattern

may require, and that by driving two or more plain shuttles simultaneously through the same opening, much time is saved and stronger and heavier goods can be produced at less expense than on looms of the ordinary construction.]

52,193.—Flyer Boards of Spinning Frames.—Oliver Pearl, Lawrence, Mass.:

I claim a flyer board, occupying a position above the level of the top of the frame or above the depression made in the top of the frame for the purpose of preventing waste or locks of cotton from entering the cone of the flyer.

52,194.—Low Water Detectors.—Milo Peck, New Haven, Conn.:

I claim the arrangement of the double cylinder, B, D, in combination with a spindle, E, and a fusible metal, F, to operate substantially in the manner as herein set forth.

52,195.—Binding Attachment to Reaping Machine.—T. W. Peirce, Minneapolis, Minn.:

First, I claim the fixed tube, V, in connection with the sliding tube, W, and the expanding tube, B', arranged to operate in such a manner as to compress the gawls, and admit of the bands being applied, substantially as set forth.

Second, The revolving rake, C', in combination with the tubes, V, W, B', substantially as and for the purpose specified.

Third, The frame, N, when used in connection with the tubes, V, W, B', and rake, C', and operated in the manner substantially as and for the purpose set forth.

Fourth, The springs, Y, applied to the tube, W, and arranged to operate in the manner substantially as and for the purpose specified.

[This invention relates to a new and improved raking and binding attachment for reapers, whereby the grain as it is cut is raked up, and gawls of proper size are bound into sheaves.]

52,196.—Traveling Bag.—Victor Percheron, New York City:

First, I claim the folding cross legs, E, pivoted in a frame, D, and thereby attached to a traveling bag or satchel, substantially as set forth for the purpose specified.

Second, The straps, d, applied to a traveling bag or satchel when such bag is provided with folding legs all substantially as set forth for the purpose specified.

52,197.—Vacuum Pan for Condensing Milk and Other Substances.—George R. Percy, New York City:

First, I claim the combination of the shell, A', with the series of pipes F, the feeder, a, the connecting tubes, g, substantially as described in vacuo.

Second, The combination of the feeder, a, with the shell, A, whether with or without the pipes, f, when used in vacuo.

Third, The combination of the ordinary vacuum condensing pan, with the percolating, tricking and heating apparatus as above described.

Fourth, The introduction of, into a vacuum pan of liquids in drops, small particles or their sheets, when for the purpose of evaporation or condensation in vacuo, and when used in combination with a direct heating surface and not one formed by radiation, and the liquor to be condensed or evaporated running a tricking over such heated surfaces.

Fifth, The method or mode as above described of evaporating and condensing in vacuum at low temperature.

Sixth, The percolating, separating description and disintegration of substances as above described.

Seventh, The production and application of a uniform rate of temperature to substances while undergoing evaporation and condensation in vacuo, by means of their running or tricking over a surface of pipes or metals heated by the direct application of steam, hot air, or hot fluids to said pipes or metals above described.

52,198.—Sheep Rack.—David L. Pettigrew (assignor to himself and Jacob Smith), Claremont, New Hampshire:

I claim the above described rack for feeding sheep as a new article of manufacture, substantially as set forth.

52,199.—Straw Cutter.—Thomas J. Price, Auburn, Ky.:

I claim the series of circular revolving knives, C, and hinged rack or apron, J, for the purpose set forth.

Second, in the described combination, the series of circular revolving knives, C, hinged rack or apron, J, and fingers.

52,200.—Support for Flower Pots.—Thomas Prince, Roxbury, Mass.:

I claim a series of number of flower pots, B, upon a rod, A, passing through them, substantially as and for the purpose specified.

52,201.—Knob Latch.—Thomas B. Pye, Trenton, N. J.:

First, I claim the lever, F, with its sharp point, d, oscillation resting in an angle as shown and described, and so constructed as to pass in front of the hub, D, instead of in rear of the same, as and for the purpose set forth.

Second, The reversible latch bolt, C, arranged to operate in connection with the lever, h, and spring, f, for their equivalents, as herein shown and described.

Third, The spindle reduced or shown at, y, of Fig. 8, for the purpose of causing it to yield instead of the interior portions of the lock, and thus prevent burglars or others from forcing open the lock by means of the knob or spindle.

Fourth, I claim the knob for locks having its body corrugated as shown in Figs. 2 and 5, for the purpose of making it strong and light.

Fifth, I claim forming the lock bolt by casting the head, E', with the ridge, x, and pins, m and n, on the flat, bar, E, as herein shown and described.

52,202.—Wine Press.—A. L. Raud, Chicago, Ill.:

First, I claim the box, A, provided with the perforated plates, A, and rollers, e, in combination with the drawer, E, all arranged and operating as and for the purpose set forth.

Second, The follower, D, having its under face grooved as shown and provided with the tubular handle, E, as herein set forth.

Third, The screw, a, bar, s, and rod, e, all arranged as shown, and made detachable for the purpose of converting the press, from a hand to a power press, and vice versa, as will, substantially as herein described.

52,203.—Cider Mill.—John Redlein, Brooklyn, N. Y.:

I claim the scraper, E, made three sided and applied in such a way to the endless apron, b, as to enable the position of its edges to be changed, substantially as set forth for the purposes specified.

52,204.—Pump Filter.—S. D. Richardson, and T. S. Hughes, Syracuse, N. Y.:

First, I claim the tube, A, running up into the chamber, B, with the parts, v, u, r and b, attached thereto.

Second, the same parts described in said claim, in combination with any form of pumps in common use, made and operated substantially as and for the purpose described.

52,205.—Grape Trellis.—Daniel T. Rickey, Marshalltown, Iowa:

I claim the hinge joint, F, as applied to the grape trellis, substantially as herein described.

52,206.—Steam Blower.—Alexander R. Rider, Hydeville, Vt.:

I claim so applying one or more steam pipes in connection with a rotary fan-blower, that the rotary motion will be produced by the impingement of steam upon its pans, and that such steam mixing with or bearing diffuse among the air entering the blower, will be delivered along with said air into a furnace, substantially as herein described.

52,207.—Mill for Grinding Sugar Cane.—Thomas L. Roberts, Indianapolis, Ind.:

I claim so constructing a sugar mill, that the top roll may be lifted out with the journal boxes, by means of the handles, H, the journal boxes operating in the opening, G, of the frame, F, substantially in the manner and for the purpose set forth.

Second, I claim the adjustment of the scraper, L, M, S, when operated in the slot, S, by means of the set plate, O, and set screw, N, substantially as set forth.

52,208.—Wine Press.—James, Robertson, East Boston, Mass.:

I claim a portable wine press for family use, having a cross head, A, pillars, b, b, with knuckle hinges, a, c, and with india-rubber

bottom and gasket as described, together with two removable bottoms one of which is perforated, and the other ground and the conduit therefrom, all arranged and combined substantially as herein specified.

52,209.—Obtaining Oil from Wells.—Otto Rotton, Brooklyn, N. Y.:

I claim an induction pipe for introducing water into the well to force up the oil, and the static pressure of the water in said pipe, or by pressure mechanically applied, in combination with a vertically adjustable reduction pipe for the discharge of oil from the well, substantially as and for the purposes herein set forth.

52,210.—Hydraulic Jack.—Joseph Ryan, St. Louis, Mo.:

First, I claim the combination of a hydraulic cylinder, E, with a suitable base or bed plate, D, by means of a hinged support, E', substantially in the manner and for the purpose herein set forth. Second, The combination of an adjustable brace, M, with a hydraulic cylinder, E, and base or supporting frame, D, for the purpose of staying the cylinder at any desired angle of inclination, substantially in the manner herein described.

Third, The combination of a suitable force pump, B, reservoir, C, and hydraulic cylinder, E, with each other and with a single supporting frame or base, D, substantially in the manner and for the purpose herein set forth.

Fourth, In combining and connecting a suitable force pump, B, with an adjustable hydraulic cylinder, E, by means of a jointed flexible pipe, substantially in the manner and for the purpose herein set forth.

52,211.—Library Step Ladder.—Charles C. Schmitt, New York City:

I claim the arrangement of a series of steps within any suitable frame, substantially as herein described and so as to operate as specified.

[This invention consists in a novel arrangement in connection with a suitable stand or frame, of a series of steps so that when not desired to use them, they can be swung or folded up into a very compact form within the said stand, and thus out of the way, such an arrangement of steps, being especially intended for use in private libraries, drawing rooms, law offices and other offices, as well as many other places in which a neat, convenient and compact step ladder is desirable.]

52,212.—Skate.—George B. Sennet and Henry Essex, Meadville, Pa.:

First, We claim the making of the foot rest and runner of a skate and without either weld, rivet or joint, out of one and the same piece of steel, substantially in the manner described.

Second, The forming of the heel-fastening or screw from one, and the same piece of steel of which the runner and the foot rest of the skate are made, substantially as described.

[This invention relates to the production of a skate, possessing great strength, elasticity, and beauty, and at a considerable less cost than skates as now manufactured, it consisting in forming both the runner and foot rest of the skate of one and the same piece of steel, by and through a novel mode of manipulating the said steel.]

52,213.—Cultivator.—Thomas N. Sherwood, Dunlapville, Ind.:

First, I claim the lever, N, placed on the rear part of the draught pole, L, and connected by a rod, O, to a lever, E', at the rear of the bar, E, in combination with a staple, M, attached to bar, E, passing through the draught pole to receive the front end of lever, M, and the connecting of the rear end of the draught pole to the bar, E, by a hook, e, substantially as and for the purpose herein set forth.

Second, The rollers, K, K, when applied to the device in front of the plow, substantially as and for the purposes set forth.

Third, The combination of the adjustable plow beams, B, C, C, rollers, K, wheels, P, P, and draught pole, L, all arranged to operate in the manner substantially as and for the purpose set forth.

52,214.—Car Coupling.—George Shone, Carondelet, Mo.:

I claim the double inclined surface, b, of the key way for the purpose of taking the key pressure upon axial line of the coupling, thus insuring a tight joint and making the efficiency of the coupling independent of the skill of the operator, as hereinbefore mentioned.

52,215.—Wood-splitting Machine.—John H. Silkman, Milwaukee, Wis.:

I claim in wood-splitting machines the arrangement of the working beam or helve, oscillating centrally on pivot, i, in position, H, between two splitting axes that are firmly fixed to said beam, when said beam is extended beyond one of the axes to receive the operating power, substantially as herein described.

52,216.—Ax for Wood-splitting Machines.—John H. Silkman, Milwaukee, Wis.:

I claim the splitting ax or wedge, when constructed as described, of parts, A, A and B, and having the form substantially as described.

52,217.—Cultivator.—James B. Skiuner, Rockford, Ill.:

First, I claim the frame of a cultivator so constructed of two longitudinal pieces as to have its front constitute the tongue, while the rear extends behind the axle, to support the driver's seat and plow, substantially as set forth.

Second, Uniting the frame to the axle by levers arranged as described, in combination with the mechanism, substantially as described for rendering the frame rigid when raised to its greatest height, for the purpose set forth.

Third, The combination of the standards with the frame, the bent levers and tool levers, when arranged and operating substantially as and for the purpose set forth.

Fourth, The combination of the standards with the frame so that they shall be raised and lowered with it, and be capable of a side-wise and pivotal movement, and these with the mechanism, substantially as described, for locking the standards rigidly when adjusted for the purpose set forth.

Fifth, In combination with the standards, 3 and 4, the cross bar, I, ratchet bar, M, and the catch plate, l, and the catch hooks, 13 and 14, arranged and operating as and for the purpose set forth.

Sixth, The combination of the adjustable mold boards, R, with the standards and plows, substantially in the manner and for the purpose set forth.

Seventh, The combination of the doubletree, N, with the main frame and with the levers, P and P', arranged and operating substantially as described, for the purpose set forth.

52,218.—Saw Set.—Eli Smith, Winsor, Vt.:

I claim the combination of the pieces, C or C', F, or F' E or E' E', and G or G', with a suitable frame or case, B, substantially in the manner and for the purpose described.

52,219.—Tenoning Machine.—H. B. Smith, Lowell, Mass.:

I claim, First, So arranging the cutter heads of a wood tenoning machine and upon the frame of the same, that while they can be set or adjusted to any distance apart, according to the thickness of the tenon to be cut, they can be, after such adjustment, either raised or lowered, as may be desired, and thus brought to any position with regard to the board or wood to be operated upon, without in the least degree disturbing their relative position with regard to each other, substantially in the manner described.

I also claim hanging the cutter heads in sliding frames, B and E2, of the machine, each having a screw shaft, B, and U, with pinions, c and d, in combination with the swinging arm, V, and pinion gear, f, arranged with regard to the said pinions, c and d, and all arranged together so as to operate substantially in the manner and for the purpose specified.

52,220.—Scrubbing Machine.—Wm. T. Smyth, Philadelphia, Pa.:

I claim the combination of the brushes, C, with the top piece, A, and wheeled bed piece, constructed and operating substantially as described and for the purposes set forth.

52,221.—Cut-off Valves.—Robert Stewart, Elmira, N. Y.:

I claim, First, The valve crank, C, provided with corners, x, and arms, a, substantially as described, when used in combination with the pawls, G G', or their equivalents, and the weighted yoke, D, D, or its equivalent, substantially as and for the purposes specified. Second, The weighted yoke, D, D, D, constructed and operating substantially as described, and in combination with the arms, x, and sockets, z, and air chamber, D3, substantially as specified.

Third, The operating crank, F F1 F2, constructed and operating substantially as specified, in combination with the pawls, G G', and valve crank, C, for the purposes specified.

Fourth, The pawls, G G', constructed and operating substantially as described, in combination with the regulating yoke, H, H, valve crank, C, and operating crank, F F1 F2, substantially as and for the purposes specified.

Fifth, The regulating yoke, H, H, constructed and operating substantially as specified, in combination with the pawls, G G', or G', or G', substantially as and for the purposes specified.

Sixth, The combined construction and arrangement of the weighted yoke, D, and valve crank, C, for the purpose of closing the ports, substantially as described.

Seventh, The arrangements of all the parts above described.

52,222.—Cultivator Plow.—Lafayette Strickland, Tallyrand, Iowa:

I claim the upright bars, H', attached to the plow frames, E, E, and connected at their upper ends to handles, K, the front ends of which, as well as the front ends of the plow frames, are connected to the framing, D, by the front joints, substantially as and for the purpose specified.

Second, I also claim the adjustable plate, N, secured to the inner surfaces of the bars, H', in connection with the eyes or guides, F, arranged as shown, to regulate the depth of the penetration of the plows in the earth, as set forth.

I further claim the shoulders, i, attached to the rear sides of the bars, H', in connection with the spring catches, J, on the framing, D, for the purpose of holding, when required, the plows above the surface of the earth, substantially as set forth.

52,223.—Instrument for cutting Oilcloth.—Marcus A. Sunderland, Utica, N. Y.:

I claim the described foot, A, knife, B, and caster, E, the whole constructed and operated as and for the purposes above set forth.

52,224.—Water Wheel.—Frederick Swatzel, Germantown, Ohio:

I claim, First, the buckets, A, A', in combination with the inclined or curved spout, g, operating in the manner substantially as described.

Second, I claim the auxiliary buckets, e, e, in combination with the wheel, as described.

52,225.—Combined Seed Drill.—Joseph Tedford, Hartford, Iowa:

I claim the combination and arrangement of the rotary digger, A, seed drills, D, hopper, L, roller, E, frame, G, and levers, N, K, R, as and for the objects herein set forth.

52,226.—Lock.—Chas. F. Toll, Boston, Mass.:

I claim the combination of the stopping pin, i, with the bearing, h, and the piston, g, when applied to the two cylinders, C, P, arranged in the manner and to operate together as described. I also claim the combination of the connection screws, H', I, or their equivalent with the key, H, and the cylinder, E, C, D, and the pistons, f, g, and spring supports, h, the whole being made and applied together, substantially as specified.

52,227.—Watch.—Arthur Wadsworth, Newark, N. J.:

I claim holding the outer end of the hair or pendulum spring of time pieces, by and between a fixed shoulder or lip and an eccentric or cam, substantially as herein described and for the purposes set forth.

52,228.—Window.—Sigourney Wales, Boston, Mass.:

I claim the application of the connection bar, B, to the sash, by means substantially as described, viz. the parts, C, D, whereby a lateral and a longitudinal movement of one with respect to the other, the two parts may be either connected or disconnected, under circumstances, and in the manner, and for the purpose as specified.

I also claim the arrangement and combination of the elastic or weather strip, b, with the sash and its connection piece, B, substantially as described.

I also claim the combination of the flap or part, b', with the rest of the weatherstrip and sash, and to operate in the recess, c, and with respect to the socket piece, c, in manner substantially as explained.

I also claim the construction of the window sash or its part, B, with the recess, c, x, x, and the weather strip, b, applied thereto and so as to operate in the window frame, substantially as described.

52,229.—Carriage Seat.—Richard Walker, Batavia, N. Y.:

I claim the changeable carriage seat, a, hung upon the arms, e, d, hinged near the bottom of the body of the carriage, and also hinged to the bottom of the seat, in combination with the guide irons, m, m, roller, n, and the duplicate seat, b, all arranged substantially as described and for the purpose set forth.

52,230.—Self-locking Sail Board.—Sylvanus Walker, New York City:

I claim the combination of the hinged curved arms, D, D, with the connecting rod, H, operating by their own weight as a self lock, by the notches coming in contact with the staples, e, e', combined and arranged with a hinged tail board, substantially as set forth.

52,231.—Lamp Wick.—Benj. F. Walton, Philadelphia, Pa.:

I claim a wick composed of fibrous strands contained within an outer covering of paper, a, as set forth.

52,232.—Valve Gear for Steam Hammer.—James Watt, Buffalo, N. Y.:

First, I claim the beveled arms, k, k', made adjustable on the valve rod, and the tappet armor roller, f2, in combination with the piston rod for the purpose of operating the steam valve, substantially as described.

Second, Giving the cylindrical valve, G, a bearing, f2, against the valve chest opposite the piston in combination with the passage, f3, through the valve, to produce a balanced valve, as described.

52,233.—Harrow.—M. D. Wells, Morgantown, West Va.:

I claim a harrow composed of a solid body or bed, A, rounded upward at its front end and having teeth, B, inserted in it, substantially as and for the purpose herein set forth.

I further claim in combination with the body or bed, A, having the teeth, B, inserted in it, the runners, C, C, attached to the upper surface of A, with their rear ends projecting beyond the rear end of the harrow to form the handles, substantially as and for the purpose specified.

[The object of this invention is to obtain a harrow of simple construction which will effectually pulverize the earth, crush the clods of earth, and leave a fine mold upon the surface without disturbing or tearing up the soil where plowed soil ground is harrowed. The invention has further for its object the ready conveyance of the harrow from place to place.]

52,234.—Stencil Plate.—Jacob Wentz, Shelby, Ohio:

I claim the stencil plates in combination with the holder, when constructed and arranged in the manner described, being a new article of manufacture.

52,235.—Steam Oven.—J. G. Whitlock, New York City:

I claim, First, An oven heated by a coil of steam pipe arranged in a close coil at the lower part of the oven and in a more open coil at the upper part, so as to allow the pipes themselves to be used as shelves in baking, substantially as described and for the purpose set forth.

Second, Combining with the walls of the oven and with the coil of steam pipe an inner casing or lining so arranged as to produce a circulation of heated air within the oven, substantially as described and for the purpose set forth.

52,236.—Furnace Grate.—Charles Whittier, Roxbury, Mass.:

I claim hanging a series of grate bars loosely on one or more rods passing transversely through or under them, substantially as described, whereby the grate bars are allowed a free expansion from the center.

52,237.—Sorghum Cane Stripper.—Hulsey B. Wolf, Truro, Ill.:

I claim, First, The plate, A, with the spear-shaped part, B, substantially as and for the purposes described.

Second, The parts A, B, and C, substantially as shown and described.

Third, The parts, A, B, and D, substantially as shown and described.

Fourth, The parts A, B, C, and D, substantially as shown and described.

52,238.—Branding Tool.—J. P. Worrall, Philadelphia, Pa.:

First, I claim constructing the case, A, of a single piece, so arranged that the follower and type can be inserted or removed by simply loosening the handle, as herein shown and described.

Second, In combination with the frame made as above described, I claim the square-shouldered type, when arranged to operate in connection therewith, as and for the purpose set forth.

52,239.—Photographic Apparatus.—Nelson Wright, New York City:

First, I claim suspending the entire back of the camera, substantially as herein specified, on pivots, p, supported upon the carriage, c, which slides back and forth upon the bottom board of foundation, B.

Second, In combination with the carriage, T, of the plate holder constructed with grooved sides, v, v, with a hollow rod, w, I claim the central rod, K, constructed extending downward right through and below the hollow rod and carriage and operating substantially as herein specified.

Third, Furnishing the developing trays and the baths for photographic purposes with sliding covers, so applied and furnished with means of attachment to the plate holder that the said covers may be slid off and drawn back to their places substantially as herein described by the application of the holder to the plate or bath, thereby allowing the plate to be transferred from the holder to the tray or bath, without exposure to the light.

Fourth, Providing the developing tray with a sight box, G, connected by means of a bellows-like extension, substantially as and for the purpose herein specified.

Fifth, Furnishing the bottom of the developing tray with elastic corner pieces, k', k', having their upper surfaces inclined toward the glass back, b', substantially as and for the purpose herein specified.

Sixth, The construction of the developing tray with one side, m, g', movable substantially as herein described, to provide for the cleaning.

Seventh, The elastic lining, m, of the lid, in combination with the elastic lower corner pieces, k', k', substantially as herein described, for the purpose of holding the plate during the developing and washing processes.

52,240.—Machinery for Making Eyelet Blanks.—Solomon W. Young, Providence, R. I.:

I claim the combination and arrangement of the four punches, 1, 2, 3 and c, substantially as described, with a series of four or more equal-form dies, the same being constructed and operated by means substantially as described, for the purpose specified.

52,241.—Molasses Faucets.—Henry D. Blake (assignor to P. & F. Corbin), New Britain, Conn.:

I claim the combination in a faucet of the bent or curved arm, m, with the lever handle, c, arranged together and operating in the manner described, and for the purposes specified.

52,242.—Sash Fastening.—Isaac B. Cottrell (assignor to himself and Marcus D. Ball), South Orange, N. J.:

I claim the cams, D, D, mounted upon weighted shafts, e, e, so as to be operated in the manner described, and so arranged that while the two cams perform their respective functions of sustaining the upper and lower sash at any desired height, the lower cam can be made to lock the lower sash when down, as set forth.

[This invention has for its object to produce a fastening to hold up window sashes when they are raised, and also to secure them from being opened from without, and it consists in applying, as a locking device, a weighted cam, whose face is corrugated, and which holds the sash when opened by contact with its adjacent side, the same cam serving to lock the lower sash when closed, by swinging over it, and to hold it up when it is opened.]

52,243.—Steam Generator.—Charles Henry Ford (assignor to himself, Hayward Hutchinson, Jesse L. Hutchinson, and Elias S. Hutchinson), Baltimore, Md.:

I claim the adjustable water-displacer, adapted to be raised and lowered within a steam boiler, substantially as and for the purposes set forth.

52,244.—Lathe for Turning Spherical Shot and Shell.—Charles Forster (assignor to himself and Robert C. Totten), Pittsburgh, Pa.:

First, I claim the use of the cup, h, in combination with the arch, z, connecting the head stock and tail stock of the lathe with or without the bracket, j, and screw, x', for securing the accurate centering of the shot or shell during the operation of turning.

Second, Also the revolving side rest, n, operated by a worm and worm wheel, in combination with the cup, h, on the live spindle, d, and the tapered mandrel, i, for fitting into the fuse-hole of shells, or the bit, m, with knife edges on its face for holding solid shot, the whole being constructed, arranged, and operating substantially as hereinbefore described.

52,245.—Brick Machine.—Joseph Grant (assignor to himself and Henry T. Grant), Providence, R. I.:

I claim placing the rollers, f, which work in the cam grooves, F, in different planes, substantially in the manner and for the purpose described.

52,246.—Hydrocarbon Stove.—A. J. Griffin, Lowell, Mass., assignor to himself and Wm. T. Vose, Newtonville, Mass.:

First, I claim the employment or use of a water reservoir within a stove, placed in such relation with a vapor burner that the water will be vaporized, and the steam decomposed, by the heat from said burner, substantially as and for the purpose herein set forth.

Second, The vaporizing chamber, E, provided with partitions to form a sinuous passage, substantially as and for the purpose specified.

52,247.—Screw Cutting Chuck.—Francis H. Higgins, (assignor to himself and Alfred Thomson), Borden town, N. J.:

I claim the within described cutter-head, composed of the section, a, with its cutters, and the section, a', with its cutters, the latter being hinged to the former, and the whole being constructed and combined with the locking spring lever, c, substantially as and for the purpose set forth.

52,248.—Revolving Fire-Arms.—Henry S. Josselyn (assignor to himself and W. E. Woodward), Roxbury, Mass.:

First, I claim in fire-arms an endless chain of cartridge chambers, arranged to rotate upon an axis, which is parallel with the bore of the barrel, and which has a series of sprockets that engage with the interspaces of the chain, substantially as shown.

Second, I also claim in combination, the endless chain, J, of cartridge chambers, the spring latch, c, and its arm, c, and the pin, E, of the hammer, substantially as shown.

[This invention consists in providing a fire-arm with a series of cartridge chambers connected so as to form an endless chain, which is carried upon a shaft whose rotation is effected by the cocking of the hammer.]

52,249.—Mode of Sinking Tubular Wells.—Milton V. Nobles, Rochester, N. Y., assignor to himself and John C. Nobles, Rushford, N. Y.:

I claim, in combination with an external tube furnished with a series of vanes, an inner tube without the holes connecting to a rod extending to the surface, by which said inner tube may be raised or lowered to cover or uncover said holes, and with a suitable pump valve, so that when water is reached it is only necessary to raise the inner tube and work it by the pump rod and the pump is complete, substantially as described.

52,250.—Process for Bleaching Fibrous Substances.—Joseph Short (assignor to himself, John J. Eckel, and Isaac S. Schuyler), New York City:

First, I claim the cold alkaline solution composed of the liquid potassa, spirits of ammonia, or chloride of sodium, about in the proportion specified.

Second, The bleaching of fibrous substances by first washing them in the alkaline solution, and then submerging them in the bleaching

fluid, composed of the ingredients herein named, and about in the proportion as specified.

[This invention relates to a new and improved process for bleaching fibrous substances, and is more especially designed for bleaching straw and flax and hemp fibre for paper stock.]

52,251.—Machine for Silvering Wood.—John Taggart, Roxbury, Mass., assignor to himself, J. H. Lester, and Charles D. Ellis, Boston, Mass.:

I claim the combination of the annular plate, D, provided with sheet and scoring cutters, as specified, with the stationary drum, G, or its equivalent, and one or more of a series of block holders, applied to such drum, substantially as described, the whole being to operate as and for the purpose set forth.

52,252.—Apparatus for Making Aerated Bread.—Robert Luke Howard, London, England, and John Danglish, Reading, England, assignors to Steuben T. Bacon, Boston, Mass.:

We claim combining the vessels, B and C, and apparatus connected therewith, substantially as herein described.

Also, the combination with a mixing vessel, B, of apparatus such as is herein described and shown for mixing the dough, reference being had to figures 2 and 6.

52,253.—Apparatus for Making Extracts.—James Miller, Upton, Canada East:

I claim the arrangement and combination, substantially as specified, of the elongated evaporator, A, the vessel, B, and the condenser, F, connected as explained, and the discharge pipe, Z, the said condenser being provided with means of exhausting it of air and throwing water out of it, as and for the purpose hereinbefore explained, the whole constituting an apparatus for making bark extracts as explained.

I also claim the combination as well as the arrangement of the vessel, C, the elongated evaporator, A, the vessel, B, the pipe, V, and the condenser, F.

I also claim the combination and arrangement of the partition, S, with the vessel, B, and the elongated evaporator, arranged and applied together as explained, such vessel, B, being provided with an escape pipe connected with an air-exhausting pump, or with the same and a condenser, as described.

52,254.—Machine for Setting and Distributing Printing Types.—H. W. Alden and W. Mackay, New York City:

First, We claim the conveyors, cd, in combination with the links, e16, d16 constructed and operating substantially as and for the purpose set forth.

Second, Giving to the conveyors a direct motion in the direction of the indicator points upon them by means substantially as herein described, or any other equivalent means for the purpose set forth.

Third, The method herein described of compelling the conveyors, after they have been arrested, to overtake and reassume their original position on the carrier-wheel consisting of the lever, u24, and studs, u25, as specified.

Fourth, The mechanism, substantially as set forth, consisting of the arm, u39, and spring, e23, in combination with the lever, u24, and conveyors, c, or d, or any equivalent thereof, for the purpose of moving said conveyors back at the proper intervals.

Fifth, The sectional flange, u17, on the carrying wheel, J, in combination with the pin, u16, projecting from the edge of the conveyors, applied and operating substantially as and for the purpose described.

Sixth, Placing the excavated rim on the outside of the conveyors instead of on the inside, substantially as and for the purpose set forth.

Seventh, The rail, j16, applied in combination with the conveyors, c, and sections, m25, and indicators, m26, substantially as described, so that free access can be had to the conveyors, and the labor of making the excavated rim is reduced.

Eighth, The projections, K23 K26, on the pusher cord, K17, to operate in combination with the tilting lever, S7, and spring stops, s18 s19, substantially as and for the purpose set forth.

Ninth, The arrangement of cams, u18, on the under surface of the carrier wheel, J, to operate in combination with the levers, c20 d20, and pushers, c24 d24, substantially in the manner and for the purpose specified.

Tenth, The gripper springs, c18 d18, on the conveyors, in combination with the studs, u25, and indicators, u26, with suitable mechanism for pushing the types out of the type cases or channel, a, constructed and operating substantially as and for the purpose set forth.

Eleventh, The revolving receiver, R2, applied in combination with the carrying wheel, S, and conveyors, c, d, substantially in the manner herein specified, so that the conveyors can deposit their type without stopping.

Twelfth, The type levers, z3, with quadrants, r4, in combination with segments, w43, and indicators, w47, constructed and operating substantially as and for the purpose set forth.

Thirteenth, The latch, ya, or any equivalent device, applied in combination with the type channel, ay, and the type levers, z3, substantially as herein described, whereby the types are pressed up against the edges of the type levers, instead of pressing said levers against the types.

Fourteenth, The sliding stop, cf, in combination with the type levers, z3, and with the channel, ay, constructed and operating substantially as and for the purpose described.

Fifteenth, The dog, u4, or its mechanical equivalent, applied in combination with the mechanism for transmitting the set of the type levers to the indicators, in such a manner that the indicators which are not to act on a certain conveyor are positively held until the conveyor has passed.

Sixteenth, The apron, h4, and stud, h41, in combination with the sliding stop, cf, and type levers, z3, applied substantially as herein described, for the purpose of regulating the motion of said sliding stop, when a thin space is presented.

Seventeenth, Producing the set of the one class of conveyors from the inside and that of the other class from the outside, substantially as and for the purpose set forth.

Eighteenth, The rods, mo, with plates, Ko Kol, on one, and indicators, e7, on the opposite end, substantially as described, for the purpose of transmitting the desired set from the register wheel to the indicator points of the conveyors.

[An engraving of this really wonderful invention has been published, in No. 2 of the current volume of the SCIENTIFIC AMERICAN. The machine is too complicated to admit of an explanation without a full set of drawings.]

REISSUES.

2,149.—Gas Holder.—Martin R. Cook, Jersey City, N. J., assignor by mesne assignments of S. Hill and W. S. Wood. Patented Nov. 6, 1855:

I claim, in gas holders for locomotive purposes, dividing the vessel into two compartments by an inclosed flexible diaphragm, or the equivalent thereof, when one of the said compartments is provided with a tube or tubes to supply gas to burners, and the other is provided with a suitable aperture for the admission of air or equivalent gaseous fluid, substantially as and for the purpose described.

2,150.—Cork Hat.—A. Courlander Crondal, New York City. Patented Nov. 8, 1864:

I claim manufacturing coverings for the head of sheets composed of one or more layers of cork and one or more layers of canvas, muslin, or other textile or flexible material, substantially as herein set forth.

2,151.—Lock.—Philo S. Felter, Cincinnati, N. Y. Patented Dec. 17, 1861:

First, I claim the bar or guard, D, provided with the recess, a, in connection with the notched disks, G, spring, F, provided with the projections, o d, and the key, H, arranged substantially as and for the purpose herein set forth.

Second, In combination with the subject matter of the above, I claim the employment of numbered or lettered dials, by means of which the lock may be used as a burglar-proof or common lock, as desired, substantially as set forth.

2,152.—Puddling Furnace.—Philip Keenan and Edward O'Connor, West Manchester, Pa. Patented Nov. 14, 1865. Antedated Aug. 26, 1865:

We claim the use of iron ore as a fixing for puddling or boiling furnaces, when mixed with fire clay or other refractory material and used for fixing those portions of the furnace which need protection, without previous melting of the fix.

2,153.—Fix for Puddling Furnaces.—Hugh McDonald, Pittsburgh, Pa. Patented Oct. 17, 1865:

I claim the use of iron ore as a fixing for puddling or boiling furnaces, when applied as a fix to those parts of the furnace which require protection, and so used without previous melting.

Also, the use of raw or unmetted iron ore as a fixing for puddling or boiling furnaces, when ground or pulverized and mixed into a pasty mass with water or other suitable liquid.

Also mixing raw iron ore, ground or pulverized with carbonaceous matter and made into a pasty or adhesive mass, and used as a fixing for puddling or boiling furnaces.

2,154.—Thrashing Machine.—Nelson Palmer, Hudson, N. Y. Patented May 16, 1865:

First, I claim the cylinder, h, when constructed as described, for feeding the unthrashed straw to the thrashing cylinders, as specified.

Second, The guard, g, in combination with the feeding cylinder, h, operating as specified.

Third, The corrugated, ribbed, or granulated thrashing cylinder, b, in combination with a concave or rubber, ribbed, corrugated, or granulated.

Fourth, The lever, d, or its equivalent, in combination with the concave, c, for adjusting the same, as set forth.

2,155.—Thrashing Machine.—Nelson Palmer, Hudson, N. Y., assignee of P. W. Mills. Patented Jan. 19th, 1858:

First, I claim the thrashing cylinder, D, one end thereof being of greater diameter than the other and provided with ribs of corrugation and a fixed purpose specified.

Second, I claim the concave, E, when so constructed as to fit the cone-shaped thrashing cylinder, D, the parts and sections thereof being made adjustable in relation to each other, in combination with the adjustable concave, F, and apron, B, as and for the purpose specified.

Third, I claim the arrangement of the screws, k s u b, in their relation to the thrashing cylinder, D, and fan wheel, B, and operating as set forth.

2,156.—Horse Rake.—Randal Pratt, Marple Township, Pa. Patented Jan. 8, 1866:

First, I claim the method described of firmly uniting the tooth with the elongated collar, by bending and shrinking the hinging collar, to the area of the collar, substantially as described.

Second, I claim providing the elongated collar with a groove into which the tooth is shrunk, as and for the purpose described.

2,157.—Process for Preserving Eggs.—Richard S. Rhodes and Ebenezer Whyte, Chicago, Ill. Patented Dec. 12, 1865:

We claim as our invention the herein described process for preserving eggs from decay, substantially as herein specified.

5,158.—Coal Oil, Lantern.—Sumner Sargent, Watertown, Mass., (assignor through Mesne Assignments to himself, A. P. Knapp, and Edward Miller.) Patented Sept. 17, 1861:

I claim the employment of an aperture, or its equivalent, in the lantern case, through which the shaft or its equivalent of the wick regulator extends, so as to be reached outside of the lantern case, said aperture having a lot or lateral passage leading to it, for the introduction of the said shaft, or its equivalent part of the wick regulator into the aperture, and its withdrawal therefrom, in the act of inserting and taking out the lantern lamp, the whole constituting an improved and complete arrangement of the wick to be regulated outside of the lantern case, and at the same time keeping it closed so as not to disarrange the draught, substantially as and for the purpose herein specified.

In combination with the above, I also claim the plate, M, or its equivalent, for covering and uncovering the passage leading to the regulator aperture in lantern case, as set forth.

I also claim the arrangement and combination of the perforations, n, in the base flange of the lamp, D, the draught collector, u, division plates, N N, perforated regulating plate, P, and guard cylinder, R, in the manner and for the purposes herein specified.

2,159.—Feed-water Heater and Filterer.—Edwin R. Stillwell, Dayton, Ohio. Patented Oct. 4, 1864:

First, I claim the depositing plates, a a a, constructed and arranged substantially as described and for the purpose specified.

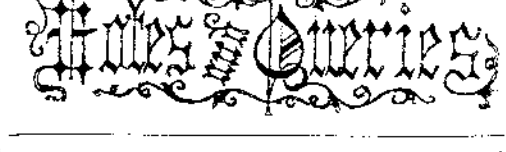
Second, I claim the arrangement of the steam pipes, m and n, and the reference to the plates, a a a, substantially as described and for the purposes specified.

Third, I claim the combination of the vessel, A, the plates, a a a, the plate, d, the steam pipes, m n and e, and water pipes, f and r, substantially as described.

2,160.—Feed-water Heater and Filterer.—Edwin R. Stillwell, Dayton, Ohio. Patented Oct. 4, 1864:

First, I claim the overflow box, e, the pipe, b, arranged with reference to the vessel, A, substantially as described and for the purposes specified.

Second, I claim the arrangement of the steam pipe, E, to the overflow box, e, for the purposes set forth.



H. N. S., of Mass.—Your plan for carrying cars over mountains by a series of vertical lifts, using the weight of a descending train to aid in the lift, might work in a small model, but would not probably be practicable on a large scale. The preference of Major McNeill and the other West Point engineers who built our first railroads for inclines so moderate that they could be overcome by the locomotive, has been justified by experience.

F. H. S., of Md.—You ask how many half-inch openings you may make in the steam chest of a ten horse-power steam engine, and still have it work up to ten horse-power. If you mean openings into the air, you cannot have a single one. The loss of steam would vary very materially with the location of the opening, especially if the steam chest was small; if the opening should be made in front of the current of steam and parallel with it, the loss would be greater than if the opening were made at right angles with the current.

E. B. J., of N. Y.—To tin iron; proceed as follows:—Cover the article with dilute sulphuric acid, let it stand a little, and, when clean, plunge into warm water. After this take a liquid made by dissolving a small quantity of zinc in muriatic acid, and wash the articles to be tinned. Plunge immediately into a tin bath, and out of that into hot water. If you wish to anneal the iron, keep the goods in a warm sand bath for some time—not over 40°.

G. R. E. asks:—"If an article patented in the United States is manufactured in Canada, or other foreign country, where it is not patented, can the patentee prevent the sale and use of the same in the United States? ANS.—Yes.

H. F. of Pa.—There are a number of governors which control the speed by varying the cut off. We could not decide which is best without a thorough trial of each, and must, therefore, refer you to practical men who have tried them.

M. S.—The best water wheels, and the best of everything in the mechanical line, you will find advertised in the SCIENTIFIC AMERICAN.

H. B. of N. Y.—The great advantage of plaster of paris as a lining for safes is due to its containing a large quantity of water; until this water is nearly all evaporated the temperature of the interior of the safe cannot be raised much above 212°.

R. MCA., of Mass.—You may use your exhaust steam with advantage for drying purposes, provided you exhaust into large pipes, so as to have no more back pressure than you would by exhausting into the open air.

C. B. S. of Conn.—The presence of magnetic iron ore in very large quantities may sometimes cause a deviation of the compass; excepting this there is no instrument that will indicate minerals in the earth. That water may be found by means of witch hazel is one of the delusions of ignorance.

C. E. P. says:—"I wish to correspond with some one who can furnish information in regard to a suitable material for coating the inside of wooden water pipes to render them impervious to water without making the water unwholesome. If a suitable material can be or has been discovered, a large amount will be wanted." Any person having an invention corresponding to the above will do well to advertise the fact in the SCIENTIFIC AMERICAN.

J. A. M., of D. C., and T. R., of R. I.—In ordinary boilers it is usual to allow about nine square feet of heating surface to evaporate one cubic foot of water per hour; and this will give you about one horse-power.

H. B. N., of Mass.—You get more power with a long screw driver than with a short one by using both hands.

A. B., of Mass.—We have published twice quite recently F. Grace Calvert's plan for making leather water proof by paraffine with a "few per cent" of linseed oil.

C. D. R., of Tenn.—We know of no better materials for paint than linseed oil and zinc white, or linseed oil and white lead.

E. A. A., of R. I.—We should think white zinc paint mixed with varnish, well dried and rubbed down, would answer your purpose.

G. H. A.—We refer you to back numbers of this paper; many heaters for steamboilers are there described.

A. J. S., of Ill.—Tincture of iodine diluted with half its bulk of water is a superior liquid for browned gun barrels.

J. M. S., of Ky.—For crossed belts leather is the best material.

A. B. C., of N. Y.—The best way to decide your query exactly in regard to the two thermometers is to try the experiment. They would not vary materially.

C. H. A., of N. Y.—A course of scientific study can be pursued at several of our universities.

J. H. G., of Md.—We gave you our opinion of the packing you speak of sometime ago. It is useless.

PATENT OFFICE.

PATENTS GRANTED FOR SEVENTEEN YEARS. MUNN & COMPANY.

In connection with the publication of the SCIENTIFIC AMERICAN have acted as Solicitors and Attorneys for procuring "Letters Patent" for new inventions in the United States and in all foreign countries during the past twenty years. Statistics show that nearly ONE-HALF of all the applications made for patents in the United States are solicited through this office; while nearly THREE-FOURTHS of all the patents taken in foreign countries are procured through the same source. It is almost needless to add that, after so many years' experience in preparing specifications and drawings for the United States Patent Office, the proprietors of the SCIENTIFIC AMERICAN are perfectly conversant with the preparation of applications in the best manner, and the transaction of all business before the Patent Office.

Judge Mason, formerly Commissioner of Patents, says, in a letter addressed to us:—"In all your intercourse with the office, I always observed a marked degree of promptness, skill, and fidelity to the interests of your clients."

Ex-Commissioner Holt says:—"Your business was very large, and you sustained and justly deserved the reputation of marked ability and uncompromising fidelity to the interests of your clients."

Ex-Commissioner Bishop says:—"I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys."

EXAMINATIONS.—If an inventor wishes our opinion in regard to the probable novelty of his invention, he has only to send us a pencil or pen-and-ink sketch of it, together with a description of its operation. For an opinion, without examination at the Patent Office, we make no charge, but if a

PRELIMINARY EXAMINATION AT THE PATENT OFFICE

is desired, we charge the small fee of \$5. This examination involves a personal search at the Patent Office of all models belonging to the class, and will generally determine the question of novelty in advance of an application for a patent. Up to this time we have conducted over ELEVEN THOUSAND Preliminary Examinations, thus showing a more intimate knowledge of inventions at the Patent Office than can be possessed by any other person or firm.

If an inventor decides to apply for a patent, he should proceed at once to send us by express, charges prepaid, a model not over one foot in size, and substantially made. He should also attach his name and residence to the model.

PATENTS ARE GRANTED FOR SEVENTEEN YEARS, the following being a schedule of fees:—

Table with 2 columns: Fee description and Amount. Includes items like 'On filing each caveat', 'On filing each application for a Patent, except for a design', 'On issuing each original Patent', 'On appeal to Commissioner of Patents', 'On application for Reissue', 'On application for Extension of Patent', 'On granting the Extension', 'On filing a Disclaimer', 'On filing application for Design (three and a half years)', 'On filing application for Design (seven years)', 'On filing application for Design (fourteen years)'. Amounts range from \$5 to \$10.

In addition to which there are some small revenue-stamp taxes Canada have to pay \$500.

MUNN & CO., No. 37 Park Row