money in oil property, we doubt not that as many men would get rich from this business as from any other, just as many, perhaps, and no more. The great thing that we complain of is, that a lot of relentless speculators heat up the money loving spirit of our people to a consuming fever; thousands are thus allured into the tempting snare, and lose, perhaps, their little all. It is absurd to suppose that the whole community are to be lifted suddenly upon the high places of wealth by these joint stock petroleum well companies.

## THE CORRELATION AND CONSERVATION OF FORCES.

This is a collection in one octavo volume of 438 pages of the treatises on the new philosophy, by Professor Grove, Professor Helmholtz, Dr. Mayer, Dr. Faraday, Professor Liebig, and Dr. Carpenter, collected and arranged with a clear and comprehensive introduction of 32 pages, by Edward Youmans, M. D., and published by D. Appleton & Co., 443 and 445 Broadway, N. Y. Dr. Youmans introduces each of the treatises with a brief biographical sketch of the author. We extract that of Mr. Grove, who claims to be the first who taught the correlation of forces as a connected system.

William Robert Grove, an English lawyer and physicist, was born at Swansea, July 14, 1811. He graduated at Oxford in 1834, and during the next five years was professor of Natural Philosophy at the London Institute. Professor Grove is a rare example of the ability which has achieved a distinguished eminence in different fields of effort. While pursuing with marked success the profession of an advocate, he has devoted his leisure to original scientific researches, and obtained a high distinction both as a discoverer, and a philosophical writer upon scientfiic subjects. In 1852 he was made Queen's counsel, and afterwards Vice President of the Royal Society. He is the inventor of the powerful galvanic battery known by his name, and his chief reseaches have been in the field of electricity. Many of his experimental results are referred to in the following pages, which will also attest his high position among the founders of the new philosophy of forces.

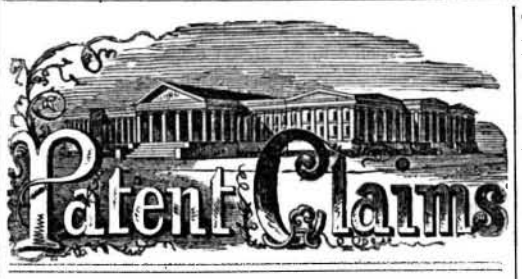
We shall give a fuller account of this work when we have examined it more carefully; in the mean time we commend it to our readers, as being a complete exposition, by the greatest intellects, of the Conservation of Force, in its simple grandeur the the most sublime idea that the progress of knowledge has evoked from the human mind.

## REDUCING CAST-IRON TO STEEL BY CARBONIC ACID.

At the meeting of the Polytechnic Association on Thursday evening, Dec. 22d, Professor Fleury exhibited some specimens of cutlery which had been made by casting the forms in cast iron, and then converting the metal to steel by means of carbonic acid. The carbonic acid is obtained from carbonate of soda, of potash, or of lime. The cast iron articles are packed in an airtight box with the carbonates, and placed in a furnace, where they are subjected to a bright red heat for two days. The carbonic acid, which is set free from the carbonates, is decomposed by the carbon in the iron, giving up one equivalent of oxygen and becoming carbonic oxide, and the oxygen that is set free combines with the carbon of the iron to form also carbonic oxide. The 5 per cent of carbon in the cast iron is thus reduced to the 1½ or 1¾ per cent. necessary to form steel. If the operation is still further continued, the remaining carbon is removed, and the metal is reduced to maleable iron.

White charcoal iron is the best for use in this process, but it is found that gray iron is changed to white by the carbonic acid. White iron is formed by the chemical combination of iron and carbon, but in gray iron there is also some free carbon not chemically combined. This free carbon is first removed by the action of the carbonic acid, and the gray iron becomes white.

Professor Fleury further stated that this process does not make metal equal to the best steel, but good enough for hammers, shovels, plows, and agricultural implements generally.




ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING DECEMBER 27, 1864.

*Reported Officially for the Scientific American.*

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying 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.

45,570.—Pamphlet File.—R. M. Abercrombie, Rahway, N. J.:

I claim a case for the filing, marking and indexing of pamphlets and tracts, constructed substantially in the manner described in the foregoing specification and the annexed drawing.

45,571.—Ladies' Work Basket.—Seymour Ainsworth, Saratoga Springs, N. Y.:

I claim a ladies' work basket, constructed substantially as herein described.

45,572.—Safety Fuse.—John H. Andrews, Avon, Conn.:

I claim, first, The inner tube, B, as herein described, and also the coating of the same with rubber or other equivalent material, for the purpose herein set forth.

Second, The substituting of paper or paper parchment in the place of cloth or other material now used in the manufacture of tape fuses, substantially as herein described.

45,573.—Oil Well Pump.—E. H. Ashcroft, Lynn, Mass.:

I claim the tubes, C' and C'', for the escape of gas from the bottom of oil wells, thereby relieving the ower valve box from injurious pressure or opening which prevents the operation of the pump, the same located and operated substantially as described.

45,574. Lamp Trimmers Shears.—Wm. B. Barnard, Waterbury, Conn.:

I claim constructing improved shears or lamp trimmers, substantially in the manner herein set forth.

45,575.—Apparatus for filling Cigarettes.—Ezechel Berg, New York City:

I claim, first, The employment or use of the packer, B, and hopper, D, constructed and arranged so as to operate substantially in the manner and for the purpose herein specified.

Second, The mold or receptacle, F, constructed substantially in the manner herein shown and described.

45,576.—Twine-cutting Ring.—Theophilus L. Bishop and George K. Hall, Boston, Mass.:

We claim the new or improved twine-cutting ring, made substantially as described, viz: with the beak and the knife or recessed cutter, arranged and combined with the hoop and head of the ring, substantially as specified.

45,577.—Cess-pool.—George T. Bohen, San Francisco, Cal.:

I claim the angular or outwardly inclined walls in combination with the curved or straight partition wall and cast-iron oval plate above, substantially in the manner and for the purpose herein described.

45,578.—Ladies' Felted Skirt.—Almanzor W. Boynton, Norwalk, Conn. Ante-dated Dec. 13, 1864:

I claim, as a new article of manufacture, a whole skirt for ladies of one piece of felting, substantially as herein described and set forth.

45,579.—Machine for molding Sugar for Table Use, etc.—Leander W. Boynton, Hartford, Conn. Ante-dated Dec. 15, 1864:

I claim, first, The main cylinder, with its movable segments containing the cavities or molds, in combination with the rows or bars of plungers, when the whole is constructed, arranged and fitted for use, substantially as herein described.

Second, I claim the main cylinder and its series of plungers in combination with the upper cylinder armed with its series of projections, when they are constructed and fitted to produce the result, substantially as herein described.

Third, I claim the main cylinder and its series of plungers, in combination with the anti-friction rollers and cams when they are constructed, arranged and fitted to operate, substantially as herein described.

Fourth, I claim the combination of the main cylinder and its appendages with the vat and absorbing roller, when arranged and used substantially as herein described.

Fifth, I claim the adjustable cams, s, and ratchet wheels and cords in combination with the hopper when so constructed and arranged as to regulate the quantity of sugar in the molds, substantially as herein described.

Sixth, I claim the hopper, in combination with the spurred rollers, p p, when those rollers serve to support the superincumbent weight of the sugar in the hopper so as to prevent unequal pressure on the surface of the main cylinder, as herein described.

45,580.—Sawing Machine.—N. B. Brown, Antwerp, N. Y.:

I claim, first, The arrangement of the saw bar, D, connecting rod, H, crank pulley, C, rock shaft, G, and lever, K, connected with the guide, F, by the cord, c, substantially as and for the purpose herein set forth.

Second, The arrangement of the crank, f, on shaft, B, clutch, M, actuated by the levers, N O, rod, Q, rock shaft, V, arm, R, paw, T, ratchet, U, and roller, S, all substantially as and for the purpose specified.

Third, In combination with the saw bar, D, and saw, E, I claim the double guide ways, a a b b, gliding gates, F J, and roller, I, arranged and employed in the manner and for the purposes specified.

[This invention relates to a new and improved machine for sawing wood transversely with the grain, and is more especially designed for sawing logs into pieces of requisite length for fuel.]

45,581.—Flat Iron-holder.—Frederick W. Brocksiefer. New Britain, Conn. Ante-dated July 10, 1862:

I claim, as a new article of manufacture, viz: a handle or holder made longitudinally in two or more parts, a a, and secured together by spring hinge, d d, or other mechanical equivalents, to act as a partial non-conductor of heat, substantially in the manner as and for the purpose described.

45,582.—Rock or Ore Crusher.—James Brodie, San Francisco, Cal.:

I claim the eccentric applied direct to the movable jaw when connected with the liuk, C, thereby giving the crusher an oscillating and eccentric motion.

I also claim the water chambers between the eccentric and the movable jaw, as described.

45,583.—Car Truck.—Nahum F. Bryant, Boston, Mass.:

I claim the combination with a car wheel and an axle upon which said wheel slides, of flanges or projections, e f, which control the extent of lateral movement of the slide wheel, and a device or devices placed on one or both sides of the hub for confining the wheel against the flange, e or f, and between said flange and the locking device, in the manner and for the purpose substantially as set forth.

I also claim the removable cylindrical collar to be placed between the hub and the flange, e or f, on either side of the wheel, substantially as described.

Also the manner of securing the collar in position upon the axle by means of the ring.

Also the springs which keep the ring from lateral movement.

I also claim in combination with a sliding wheel, the spline in the hub thereof, and the groove, in the axle, operating together to guide the wheel in its lateral movement, and to prevent its rotation on the axle, substantially as specified.

45,584.—Apparatus for making Extracts from Animal and Vegetable Substances.—John Chilcott, Brooklyn, N. Y. Ante-dated Dec. 20, 1864:

I claim the combination within the steaming vessels or digester, A, of the series of open perforated or granted shelves, B B, and the baskets, C C, for containing the matters to be heated, arranged upon the said shelves, substantially as and for the purpose herein specified.

45,585.—Machine for forming Baskets.—Thomas and Jehiel Churchill, Detroit, Mich.:

We claim the form or block placed on a horizontal shaft so as to rotate freely, and provided with any suitable fastening or fastenings for securing the splints and bottom to the form or block, substantially as and for the purpose herein specified.

[This invention consists in the employment or use of a form or block, made in the shape corresponding to that designed for the basket, said form or block being fitted on a shaft or mandrel so that it may turn freely, and all so arranged that the splints may be interwoven together on the form or block with the greatest facility.]

45,586.—Elastic Breech for Ordnance.—John F. Cleu, New York City. Ante-dated Dec. 22, 1864:

I claim, first, The combination of the breech block, A, sliding piston, C, packing spring and recoil spring, constructed and operating substantially as and for the purposes set forth.

Second, The sliding needle, j, constructed with a collar or shoulder, j, faced with india-rubber to act as a gas check, as and for the purpose specified.

45,587.—Apparatus for making White Leads.—Thomas J. Coggeshall, New York City:

I claim, first, Surrounding the sides and top of the corroding rooms, wherein metallic lead is converted into carbonate of lead by the process above described, with a stratum of air confined between double casements of glass as herein described, for the purposes specified.

Second, Connecting one or more of the vests, in which the acetic acid is formed, with one or more of the generators in which the carbonic acid gas is formed with one or more of the corroding rooms by means of pipes, fitted with stop cocks, as shown, and operated by a pump, F, substantially as described for the purposes specified.

Third, Providing each of the corroding rooms with a revolving frame upon which the metallic lead is suspended for the purpose of subjecting all portions of the lead to the uniform influence of the decomposing and carbonating agents,

45,588.—Machine for pressing Hats.—Samuel G. Congdon, Mansfield, Mass., and D. C. Moury, Milford, Mass. Ante-dated Sept. 24, 1864:

I claim, first, The use in a machine for pressing hats of two dies placed edgeways towards each other, substantially in the manner and for the purpose herein shown and described.

Second, The clamp nut, G, with toggle arms, d e, and hand lever, f, applied in combination with the screw spindle, E, follower, D, and die, E, in the manner and for the purpose set forth.

Third, The use of a wooden block, E, in combination with a steam die, B, constructed and operating substantially as and for the purpose specified.

45,589.—Steam Boiler.—Benjamin F. Cowan, New York City:

I claim, first, Combining in sectional steam boilers and other vessels of wrought or malleable metal for sustaining pressure from within, a stay rod, D, extending through the same, with the following joints, f, and the flanges, h, of the sections, substantially as described.

Second, I claim the sectional joints, f, of the several sections of the boiler made with curved or flaring edges, projecting inwardly, substantially as and for the purpose described.

Third, I claim placing anchors like J, or its equivalents, across the boiler or other vessels in the line of its diameter, substantially as above described.

[This invention consists in making a boiler in sections united by means of flanges which project inwardly from the circumference of the sections, the end sections being rounded at their outer ends and the sections being held together by a rod extending axially through them and secured by means of washers and nuts, thereby making a boiler capable of vibration without tearing open its joints.]

45,590.—Apparatus for graining Pails.—J. R. and A. J. Cross, Chicago, Il.:

We claim, first, Constructing the bed of elastic material used in graining machines in the form herein shown, substantially as and for the purposes specified.

Second, We claim arranging the elastic material aforesaid, whether curved or rectangular in form in a series of distinct staves or designs, substantially as and for the purposes herein shown and set forth.

Third, We claim the arrangement of the expansible plate, E E, and the handle, F F, provided with the hinge, h, and spring, s, as and for the purposes described.

Fourth, In combination with the last foregoing, we claim the employment of the handle, C, and plates, D D, as and for the purposes shown and described.

45,591.—Stone-cutting Machine.—Gustavus Cuppers, New York City:

I claim pivoting the chisel frame, H, to the main frame, E, of the stone-cutting macoine so as to maintain a vertical position or to adjust the inclination of the chisel for rough hewing and finishing, substantially in the manner and for the purposes described.

I also claim the combination of a pivoted adjustable chisel frame with a spring or recoil chisel, when constructed and operated substantially as and for the purposes described.

I also claim the combination of the pivoted adjustable chisel frame, H, with the frames, E and S, for the purpose of feeding the chisel in two different directions over the stone, substantially as herein described.

I also claim the combination of the frames, A B E, with the sliding and hinged chisel frame, H, and spring or recoil chisel, K, when constructed and operated substantially as and for the purpose described.

45,592.—Shingle Machine.—E. Drake, Gardiner, Mich.:

I claim, first, The arrangement of the rack, D, pinion, D', levers, K L G, and the loaded lever, H, all combined with the plate, P, to regulate the feed movement of the frame, C, as set forth.

Second, The lever, W, provided with the pawls, V V', in connection with the oblique slat, d', in the plate, X, and with the double adjustable ratchets, u u', or with single ratchets, for the purpose of giving and regulating the lateral feed movement of the bolt, for the purpose specified.

[This invention relates to a new and improved shingle machine of that class in which a circular saw is employed for cutting the shingles from the bolt, and the invention consists in a novel means employed for feeding the bolt to the saw, and also in a novel means for adjusting the bolt so that the same may be cut of any required thickness and of different tapers as may be required.]

45,593.—Mode of attaching Thills to Axles.—Edward Dugdale, New York City:

I claim the thill iron, E, provided with the clip, F, and the flange, G, and fitted on the arm, B, of the axle between the two shoulders, C, D, with the inner part of the hub projecting over the flange, substantially as and for the purpose herein set forth.

[The object of this invention is to obtain a means for attaching thills to axles which will admit of the former being fitted and secured to the latter with the greatest facility, and a so of being readily detached therefrom, the invention at the same time admitting of the thill iron being readily tightened at any time should it become loose by wear or otherwise.

45,594.—Preserve Jar.—Timothy Earle, Valley Falls, Smithfield, R. I.:

I claim the use of a cover, A, the external surface of whose sides when the cover is in place, shall be coincident with the external surface of the neck of the jar, in combination with an elastic pressure band and a flanch, a, on the neck of the jar, substantially as described for the purposes specified.

45,595.—Animal Trap.—J. M. Flautt, Reedsburgh, Wis.:

In combination with the trap door, C, upright, B, weighted line, d, wheel, e, escapement, b, gate, D, levers, h j, and chain, i, all constructed and operating as specified, I claim the catch, f, spring f', and tappet, g', so arranged in connection with the aforesaid gate, D, and door, C, as to lock the gate, D, shut when the trap door, C, is open and release the gate when the door is shut, in the manner and for the purposes explained.

45,596.—Rotary Pump.—Randolph S. Foster, New York City:

I claim the eccentric cylinder, D, placed within the cylinder, A, and in relation with the pipes, B C, as shown in connection with the sliding abutments or cut-off working in a case, G, connected to the cylinder, A, all being arranged to operate in the manner substantially as and for the purpose set forth.

I further claim the construction of the sliding abutment of two plates, F H, one of which, H, has an independent sliding or adjustable movement, and provided with a packing, I, and spring, J, arranged to operate in the manner substantially as and for the purpose specified.

[This invention consists in the employment or use of a cylindrical case provided with a section and a discharge pipe and having within it an eccentric cylinder connected with a sliding abutment or cut-off; all being arranged in such a manner as to form a very simple and efficient rotary pump.]

45,597.—Raking Attachment to Harvesters.—John Fox and John W. Vanhook, Uniontown, D. C.:

We claim, first, A rake for a reaper constructed and operated substantially as herein set forth, in combination with the interior or central platform, constructed substantially as herein specified.

Second, We claim the arrangement of the means or devices herein recited for delivering the cut gram from the box or receptacle.

Third, We claim the raising of the main platform, so that a space exists between it and the cutter bar for the escape of the short grain and for affording the free operation of the rake, as described.

45,598.—Beehives.—Andrew H. Frank, of Buffalo, N. Y.:

I claim, first, The bee entrance or regulator, c, constructed and operating in a manner substantially as described.

Second, The removable miter pieces, H, constructed and applied in the manner and for the purposes suostantially as described.

45,599.—Steam-Engine Governor.—Robt. W. Gardner, of Quincy, Ill.:

First, In combination with the valve, e i, constructed substantially as described, and a governor adapted to close it by centrifugal action, I claim the weighted lever, C, employed to close the said valve when the governor stops.

Second, The self-releasing hook, stop or catch, F, applied in combination with the governor, A, and valve, e, substantially in the manner and for the purpose herein shown and described.

Third, The adjusting screw, i, and elastic seat, m, in combination with the valve, e, and governor, A, constructed and operating in the manner and for the purpose substantially as herein specified.

45,600.—Vapor Burner.—James S. Gray, of New York City:

I claim, first, The conical ring or supplementary heater encircling the heater cap, substantially in the manner described.

Second, The combination of a heater cap and ring heaters with a fluid chamber by means of conductors arranged and operating so as to communicate heat both to the top and bottom of the fluid chamber, as described.

Third, The division wire, H, or its equivalent, to divide the jet and prevent hissing, as set forth.

Fourth, The combination of a fluid chamber, conductors, division wire and heater cap, substantially as described.

Fifth, The combination of a fluid chamber, division wire, heater cap and ring, substantially in the manner described.

Sixth, Constructing the fluid chamber with a central tube for the screw valve, to prevent overflow and impart heat, as described.

Seventh, The combination of the fluid chamber, central tube and perforated screw cap, when constructed, arranged and operating as described, for the purposes specified.

45,601.—Self-sealing Can.—John F. Griffen, of New York City:

I claim, first, The lip or cover, D, formed with a depression, e, and a vent hole, k, the whole constructed to operate in the manner set forth.

Second, I claim forming the packing ring or gasket, S, with a lip, t, so as to protrude from the jar and cover (where they come together) at the point only where said lip is formed, as and for the purpose set forth.

Third, I claim the combination of the tapering neck, c, and packing ring, h, with the cover, D, when the latter is formed with a dish, e, vent, k, and recessed rim, D f, the whole arranged and operating together, as set forth.

45,602.—Mode of Raising Sunken Vessels.—Caleb Harrison, of Milwaukee, Wis.:

I claim the raising of sunken vessels and other bodies in the manner and by the means substantially herein recited.

45,603.—Steam Engines.—A. Hartupee, of Pittsburgh, Pa.:

I claim the receiver or moderator, F, applied in combination with the high and low-pressure steam cylinders, A and A', when the pistons are attached to a common piston rod, C, and the induction and eduction valves operated from a common rock shaft, and all arranged substantially as described.

[The object of this invention is an engine in which steam is used at a very high pressure (say 135 to 160 pounds to the square inch) in a small cylinder exhausting in a receiver of sufficient capacity for the steam to expand, thereby decreasing the back pressure, and allowing the temperature and pressure of the steam to fall to the proper degree to be used in a large cylinder working at low pressure, and exhausting into a condenser in which the steam is finally condensed.]

45,604.—Gaveling Attachment to Harvesters.—James W. Harvey, of Marshalltown, Iowa:

First, I claim the hinged platform, C, operated through the medium of a roller or pin on the arm, G, and a cam groove, E', in the wheel, E, substantially as herein described.

Second, In combination with the aforesaid hinged platform, C, I claim the concave, C', employed in connection with the rake, D D', to permit the grain from the grain platform of the harvester to be carried upward and delivered to the fingers which form the gavels, as set forth.

Third, I claim the grooves, h, and rollers or pins, l, employed in the described combination of the frame, I, bar, L, and pendants, L' L', for opening and closing the fingers, N N'.

Fourth, I claim the combination of the grooves, h', rollers or pins, j, frame, J, arms, J' J', and pendants, M M, whereby the fingers are moved forth and back, to receive and discharge the grain, as herein explained.

Fifth, I claim the yielding arms or retainers, Q, in combination with the spring, Q2, whereby the gaveling fingers are afforded access to the grain when above the concave, C, and the grain prevented from falling into the dumping platform in a loose condition, substantially as described.

45,605.—Horse Rakes.—H. R. Hawkins, of Akron, Ohio:

I claim securing the finger clearers, M, to a rod, which is pivoted to the rear extension pieces of the thills, substantially as and for the purposes described.

I also claim connecting the clearer fingers, M, with the treadle levers, O, in the rear of the axle, A, in such a manner that the outer ends of the clearer fingers are depressed when the rake is tilted, substantially as and for the purposes described.

I also claim the use of the lateral bed pieces, I, resting lengthwise on the thills, D, as a foundation for the platform, driver's seat and standard, rendering those parts easily removable for storing and transportation, substantially as and for the purposes described.

I also claim the combination and relative arrangement of the thills, D D, axle, A, cross bars, N O, teeth, C, and clearers, M, substantially as and for the purposes set forth.

45,606.—Turning Machines.—Abijah S. Hosley, of New York City:

First, I claim the employment or use of a rotary hollow cylinder, I, provided at one or both ends with sliding cutters, K, operated through the medium of a coil spring, R, and slides, L, for the purpose herein set forth.

Second, The toothed rim, O, pinions, N, and screws, M, operated by the cylinder, I, substantially as shown, for the purpose of moving the slides, L, as described.

Third, The dial, M', and index, N', employed in combination with a turning machine, substantially as and for the purposes herein specified.

45,607.—Safes.—Joseph P. Howard, of Brooklyn, N. Y.:

First, I claim a portable safe for containing coin, constructed substantially as above described.

Second, I also claim making slots, s, in one or more of the parts of the safe, so as to expose parts of the edges of the coin, substantially as and for the purpose above set forth.

[This invention consists in constructing a receptacle for coin which shall answer the purposes of a safe, a means of transporting the coin placed in it, and shall expose enough of the edges of the different pieces to enable them to be counted without removal.]

45,608.—Borer for Artesian Wells.—Henry Howson, of Philadelphia, Pa.:

I claim the employment for enlarging and chipping and scraping the sides of artesian wells, of chipping or cutting arms suspended within the well, and operated by a weight which is raised and permitted to fall, all substantially in the manner described.

45,609.—Car Trucks.—George G. Hunt, of Bridgeport, Conn.:

I claim the slotted axle boxes, P P, in combination with the movable bolts, D D, and the truck frame, for the purpose of removing the axles and axle boxes from said truck frame with facility and dispatch.

I also claim the adjustable bolts, F F, in combination with the truss, K, in order to bring the weight of the car chiefly upon said truss, and thus throw the strain upon said truss in a line with the grain of the iron.

45,610.—Oil Cans.—Elam D. Hurst, of Lancaster, Pa.:

I claim the construction of the inner screw tube, C, with its lateral opening, f, and head, g, in combination with the double, B, for its reception and operation within the neck, A, of the oil can, substantially arranged in the manner and for the purpose specified.

45,611.—Locks.—James Hutson, of Janesville, Wis.:

I claim, first, The use of plate, C, in combination with supplemental bolt, D, ward, F, and key, G, when constructed and used substantially as and for the purposes described.

Second, Ward, F, having the double capacity of holding the main bolt, J, and supplemental bolt, D, firmly in place, substantially as described.

Third, Plate, C, when made with a beveled edge around the key hole, substantially as and for the purposes described.

45,612.—Cultivators.—Hanford Ingraham, of Naples, N. Y.:

I claim, first, The construction and application of a cast-iron flange-shaped wedge, for the adjustment of the thills, substantially as in the manner and for the purpose herein described.

Second, I also claim the construction of a T-shaped frame, in combination with the adjustable thills, as herein arranged, substantially in the manner and for the purpose herein set forth.

45,613.—Washing Fluid.—Danforth Johnson, of Chicago, Ill.:

I claim making a solution out of wood ashes and borax, to take the place of soap in washing clothing, as above described.

45,614.—Raking Attachment to Harvesters.—Robert V. Jones, of Canton, Ohio:

I claim the carved endless guide, H, in combination with the endless belt, F, provided with the rake, G, and arranged in relation with pulleys, to operate substantially in the manner as and for the purpose set forth.

[This invention relates to a new and improved raking device for reapers. The object of the invention is to obtain a device for the purpose specified which will be extremely simple in construction, operate perfectly, and be capable of being applied to any of the reapers in present use.]

45,615.—Cultivators.—John Kirkman, of Peoria, Ill.:

First, I claim the spring, E E S, and thumb screw, o, employed in combination with the levers, B B, to retain the plows in either a working or an elevated position, and secure the same against liability to injury by contact with immovable bodies, as set forth.

Second, In a machine constructed in the manner herein described, I claim supporting the neck yoke, y, and the end of the tongue, by means of bows, C, or their equivalents, fitting upon or over the top or upper part of the horse's neck, substantially as and for the purpose set forth.

[This invention relates chiefly to devices for adjusting the plows, the same being simple in construction, effective in operation, and of such a character as to be manufactured and applied at little cost. It also relates to the employment of yokes attached to the tongue and adapted to rest upon the upper side of the horses' necks, thus retaining the tongue in such an elevated position as to allow it to pass over the tallest plants without injuring them.]

45,616.—Mechanical Movements.—Silas H. Lancaster, of Leclaire, Iowa:

I claim the reversing rods, G G', adapted to retain one pair of pawls out of connection with its ratchet wheel while the other pair is in operation, substantially as described.

[This invention relates to the employment of rods, in connection with a driving shaft and two ratchet wheels fixed thereon, the use of the rods being to allow pawls to be retracted and advanced alternately in pairs, and thus the motion of a steam engine may be reversed without reversing that of the piston.]

45,617.—Car Brakes.—John W. Latcher and Wm. J. Powell, of Amsterdam, N. Y.:

We claim the arrangement of suspending or hanging brakes by means of ways or guides, in the manner substantially as shown and described and for the purpose specified.

In combination with the stationary guide, A, brake, B, rod or stem, V, and spring, c, operating as set forth.

45,618.—Devices for Stopping Leaks in Boiler Tubes.—Richard Lavery and S. Stuart, of South Boston. Mass.:

We claim the combination of the open cap, E, with the split ring, C, provided with ears, c, and secured in the end of a boiler tube, substantially in the manner and for the purpose herein set forth.

45,619.—Rings for Stopping Leaks in Boiler Tubes.—R. Lavery and S. Stuart, of South Boston, Mass.:

We claim, first, A sectional or split ring, to be secured within a tube by means of one or more wedges, substantially as and for the purposes herein described.

Second, We further claim constructing the aforesaid sectional or split ring, with a bead, a, to fit within the cavity, a, of the tube, in the manner specified.

45,620.—Book-binder's Cloth-cutting Table.—Charles Lemon, of Washington, D. C.:

I claim, first, The combination of the drawing and receiving roller, B, with the knives, D, and table, A, in the manner and for the purpose described.

Second, Constructing the drawing and receiving roller, B, in two tapering parts, e e, in the manner and for the purpose described.

Third, Mounting the knives upon stocks constructed in such a manner as to be clamped to the front edge of the table and adjusted in the manner described and shown.

45,621.—Machine for Making Paper Collars.—Thomas McSpedon, of New York City:

First, I claim the pushers, 32, constructed and operating as described, in combination with a collar-making machine, as described.

Second, I claim the friction roller, 39, and the cords, 40, in combination with the pushers, 32, as arranged with the cords or tapes, 41, and the folding knife, all operating substantially as described.

Third, I claim the arrangement of the stops, 28, and the embossing die, 13, as shown and described.

Fourth, I claim combining with the embossing die the punches for cutting or forming the button hole in the collar, g, when both shall be held in the cross head, 12, and operates by the connections, 11, and eccentrics, 9.

Fifth, I claim the male and female dies for cutting out or forming the collar and the embossing die, when the same shall be arranged and operated, substantially as shown.

Sixth, I claim combining the folding knife for holding the collar, with the male and female dies, and the embossing die, when the same shall be combined and operated as herein fully described.

Seventh, I claim the friction roller, 39, cords, 40, cords, 41, cords, 47 and 45, and grooved rollers, 44 and 46, which convey the collar from the embossing die to the folding knife, as described.

Eighth, I claim so constructing a machine for the manufacture of paper collars, or collars made from paper, combined with some fibrous or textile material, that the various operations of cutting or forming the collar, embossing and providing the same with the button holes, and finally folding the same, shall be accomplished continuously, and by one and the same machine, substantially as shown.

Ninth, In combination with the carriers, 30, constructed and operating as described, I claim the side guides, 34, for the purpose specified.

45,622.—Trusses.—Leverett Munson, of Saybrook, Ohio:

I claim the spring, A, arm, B, studs, a a, and holes, a' a' a' a', in combination with the pad, D, circular pieces, E, and ball and socket joint, Fig. 3, the several parts being constructed, arranged and operating as and for the purpose set forth.

45,623.—Many-barreled Cannon.—Gabriel Natcher, of Sidney, Ohio:

I claim a battery consisting of a circular or elliptical range of barrels, B B B, diverging in horizontal planes, a removable-chambered breech, F, adjusted to the said range of barrels by a shaft, C, and tongue, c, and an annular groove, f3, to communicate fire to the range of barrels or chambers from a single nipple, G, all as herein described and for the purpose specified.

[This invention relates to a gun or battery, consisting of a cluster of barrels diverging horizontally, and exploded simultaneously by powder contained in a circular groove formed in the movable breech piece.]

45,624.—Sorghum Evaporator.—Daniel B. Neal, of Indianapolis, Ind.:

I claim the inclined partitions, d, and inclined strainers, C, placed within the pan, B, substantially as and for the purpose herein set forth.

I also claim the straps, D, attached to the partitions, d, and the bottom, e, of the pan, substantially as and for the purpose specified.

I further claim the deflector or plate, D, attached to the under side of the bottom, e, of the pan, at the rear part of the same, for the purpose described.

[This invention consists in providing a sugar or evaporating pan with inclined partitions and strainers, whereby the strainers are prevented from filling up or choking during the process of the boiling of the juice, and a free flow of the juice between the several compartments of the pan allowed at all times. The invention also consists in a means employed for holding the bottom of the pan in proper position, preventing it from springing or warping, so that it will always fit snugly to the strainer. The invention further consists in the employment or use of a deflecting plate, attached to or arranged below the bottom of the pan in such a manner as to exclude the fire from the rear and finishing compartment of the pan.]

45,625.—Boom and Gaff Joints.—Joseph W. Norcross, of Middletown, Conn.:

I claim a boom or gaff joint with a triple motion, substantially as and for the purpose set forth.

Also, the swivel, a, in combination with the bracket or grooved rail, a', and with a boom or gaff, constructed and operating substantially as and for the purpose herein described.

Also, combining with a boom or gaff a universal joint, the fulcra of which are situated in one and the same vertical plane, substantially as and for the purpose specified.

[This invention consists in a boom or gaff joint with a triple motion, or composed of a universal joint, in combination with a curved jaw, in such a manner that the boom or gaff is free to accommodate itself to the position of the sail, and shut without straining the joint. The universal joint is so arranged that the fulcra of the same are situated in one plane, and a change of the position of the boom does not increase the strain on the joint as it does with joints of the ordinary construction, and when this joint is used for a gaff joint it is applied in combination with a slide secured to the mast, so that the gaff can be raised and lowered without obstruction.]

45,626.—Horse Rakes.—L. L. Pollard, of Worcester, Mass.:

I claim the combination with the hand lever, I, of the adjustable foot lever, K, when used for operating the rake head, substantially as herein set forth.

I also claim the combination with the rake head and chain support, H, of the stop lever, L, and spring, m, substantially in the manner and for the purpose described.

I also claim making the front chain support, g, adjustable on its lever, I, for the purpose herein stated and described.

I also claim the combination of the lifting and holding devices herein described, consisting of levers, I K, chain supports, H, g, chain, b, and spring, m, with the rake head, F, and axle, substantially as and for the purposes described.

45,627.—Cooking Stoves.—Daniel E. Paris, of Troy, N. Y.:

I claim an elevated oven cooking stove, having perforations, A, in the end plates, B, of an air chamber, C, arranged between the bottom of the oven and a fire flue, F, under it, in combination with an aperture or apertures, G, in the bottom of the oven, and an air passage or air passages, H, from the oven into a fire flue, I, along or around the oven, substantially as herein described.

45,628.—Sewing Machine.—Truman W. Pepper, Louis Planer and Joseph Kayser, of New York City:

We claim, first, The arrangement of devices, as above described, for effecting a longitudinal feed motion, in combination with the narrow sewing table, A, for the purpose herein stated.

Second, The arrangement and combination of the compound levers, C and E, with the springs, R and P, and the cam, G, and studs, i i, for the purpose of producing a feed for sewing machines.

Third, The employment of the lever, J, in combination with the cam, G, and studs, i i, and the levers, E and C, for regulating and changing or reversing and stopping the feed motion of sewing machines.

Fourth, The arrangement of the standard, L, with the lever, E, and cam, G, to regulate the vertical throw of the feed lever, C, as herein described.

45,629.—Circular Loom for Weaving the Covering of Cords, etc.—Isaac E. Palmer, Middletown, Conn.:

I claim, first, The employment for carrying the weft yarn, in a machine for weaving the covering of shade cord, or other circular or tabular fabric, of a gravitating shuttle, I, applied and operating substantially as herein specified within a rotating cylinder which carries the warp yarn.

Second, In combination with the rotating cylinder, E, having its axis horizontally arranged and carrying the warp bobbins, G G, and with the gravitating shuttle, I, I claim the transversing yarn guides or carriers, H H, having eyes, e e, provided in them, and applied and operating substantially as and for the purpose herein described.

Third, In combination with the said rotating cylinder, E, and the traversing yarn guides or carriers, H H, I claim the stationary cylinder, F, arranged at one end of the said rotating cylinder, and having two crossing grooves, p p', in its outer periphery, and the switch pieces, n n, or their equivalents attached to the said guides, the whole operating substantially as and for the purpose herein set forth.

Fourth, The hook, J, combined with the gravitating shuttle, substantially as and for the purpose herein specified.

Fifth, I claim the elastic yarn guides, V V, forming double springs and serving the purpose of guiding the warp yarns from the bobbins to the traversing guides or carriers, that of producing friction upon

the bobbins and that of taking up any slack of the yarn, substantially as herein described.

45,630—Combined Ash Sifter and Shovel.—John H. Porter, New York City:

I claim a combined screen and fire shovel constructed or cast with a bottom having a screw, C, and solid shovel part, D, in different planes, substantially as shown and described.

[This invention consists in combining a screen with a fire shovel in such a manner that the device may be used either in the capacity of a screen or a shovel, and answer equally as good a purpose as articles made separately for each.]

45,631.—Apparatus for the Manufacture of super-phosphate of Lime.—Robert B. Potts & Frederick Kletts, Camden, N. J.:

We claim the use in the manufacture of superphosphate of lime of an agitator, a b and tank, d, substantially as herein shown and described and capable of being driven by power, as set forth.

[This invention consists in an apparatus which is driven by a steam engine or other source of power, and which serves to agitate and slice up the bone ash while the sulphuric acid is being added, and thereby the sulphate of lime is prevented from combining into compact lumps, and the bone-ash is readily and easily transformed into superphosphate.]

45,632.—Lightning-rod.—James Pratt, Chicago, Ill.:

I claim enclosing the cord of continuous, twisted wires, with a continuous copper strip arranged and operating substantially as and for the purpose herein shown and described.

45,633.—Meat-masher.—George W. Putnam, Peterboro (town of Smithfield), N. Y.:

I claim the use of a reciprocating or rolling lever, C C*, with flat or rough beating surfaces to operate in combination with the table, B, or its equivalent, substantially in the manner and for the purpose herein shown and described.

[This invention consists in a reciprocating bruising lever connected to a vertically adjustable swivel standard, and provided with a toothed or rough surface plate of iron or other suitable material to operate in combination with a suitable block of wood or other material provided with or without a rough surface, in such a manner that a piece of meat placed on said block of wood can be thoroughly pounded by the action of the lever and its fibers broken or bruised to render the same tender previous to cooking.]

45,634.—Hay-elevating Fork.—Edmond Reynolds, Corunna, Mich.:

I claim the combination and arrangement of the braced tines, A, and the catch, G, with the block, B, the arm, E, and the small lever, D, substantially as and for the purpose set forth.

45,635.—Store Dexters.—Edmond Reynolds, Corunna, Mich.:

I claim the store dexters or implement for culinary and other uses above described, constructed substantially as above described.

45,636.—Rotary Engine.—Alexander K. Rider, Hyderille, Vt.:

I claim, first, A rotary engine composed of a cylinder of hemispherical form, a rotating spheri-conical abutment, a rotating and oscillating piston, and a rotating shaft, the whole combined to operate substantially as and for the purposes herein described.

Second, The attachment of the rotating and oscillating piston, D, to the main shaft by means of the pin, e, inserted into a groove in the straight edge of the piston and passing through the shaft, substantially as herein specified.

Third, The T-shaped piston packing, c, applied in combination with the pin, e, which attaches the piston to the main shaft and with the inside of the cylinder head, substantially as and for the purpose herein specified.

45,637.—Rotary Engine.—Alexander K. Ryder, Hydeville, Vt.:

I claim, rst, A rotary engine composed of a spherical or hemispherical cylinder, a rotating obliquely cranked shaft, a rotary piston or piston of sober-conical form and an oscillating abutment, the whole combined to operate substantially as herein specified.

Second, The combination of the spherical collar, F, to which the abutment is attached, and the partition, B, or cylinder head formed of two plates, l m, substantially as and for the purpose herein specified.

45,638.—Magazine or Self-loading Fire-arm.—Robert Roberts, Utica, N. Y.:

I claim, first, The lever, K, constructed and operating as described to prevent the premature exit of the cartridges from the magazine and elevate them successively to the level of the bore.

Second, In combination with a suitable lifting device, I claim the posts or ways, m m, employed to guide the cartridges in their upper motion and retract the exploded shell, substantially as described.

[In this fire-arm the cartridges are passed one at a time from a cylinder or magazine containing a large number and raised successively in line with the barrel from which they are fired. While one device is raising a cartridge to be fired another contrivance ejects the shell of the exploded cartridge.]

45,639.—Eccentric Cage.—T. E. Rollins, Corning, N. Y.:

I claim the application of slots, c, in the sides of the cage, G, to operate in combination with the shaft, C, and eccentric disk, E, in the manner and for the purpose substantially as set forth.

[This invention consists in the application of two guide slots in sides of an eccentric cage to operate in combination with the shaft or stem to which the eccentric is attached in such a manner that by means of the slots the cage is held in line and prevented from being forced on one side by the action of the eccentric, and the shank or rod to which said cage is attached is preserved against being bent or made to bind in its bearings.]

45,640.—Curry-comb.—Cyrus W. Saladee, Putnam, Ohio:

I claim, first, The metallic handles, A1 A1, or their equivalents secured to the sides or ends of the curry-comb on a parallel line with the teeth of the same, in the manner and for the purpose substantially as shown and described.

Second, I claim the frame or plate, A, rivets, B B B B, studs, D D D D, Fig 1, plate, 1, projections, x x x x, Fig. 3, in combination with the adjustable handles, A1 A1, in the manner and for the purpose substantially as shown and described.

45,641.—Expanding Tompion for Fire-arms.—Thomas K. Schermerhorn & Joseph Anderson, Brooklyn, N. Y. Ante-dated Dec. 17, 1864:

We claim the stationary nut, g, in combination with the expander B, sectional ring, A, elastic bands, d, and flange, D, constructed and operating as and for the purpose shown and described.

45,642.—Harvester.—Jacob Seibel, Manlius, Ill.:

I claim, first, The combination of the shaft, D, provided with the arms, i k, the rod, l, chain, l', and spring, n, all arranged and operating substantially as and for the purposes specified and shown.

Second, I claim the arrangement in combination with the above of the frame carrying the endless apron, E, and auxiliary belt, G, substantially as and for the purposes herein set forth and shown.

45,643.—Truck for Transporting Casks.—M. L. Senderling, Jersey City, N. J.:

I claim the bent or cranked axle, C, runners, D D, and windlass, E, in combination with each other and with the frame, A, open at its rear end, substantially as herein specified.

45,644.—Valve Arrangement for Pumps.—Wm. Sewell & Adam S. Cameron, New York City:

We claim the combination of the two valves, F and E, constructed and arranged in relation with each other and with the openings of the valve chamber, to operate in the manner substantially as and for the purpose herein set forth.

[On steamships, floating docks, and in similar situations, where steam and other pumps are employed, it is customary to furnish the latter with two sets of feed-pipes, one set connecting the pump with the sea and the other set connecting the pump with the bilge water which requires to be removed from time to time. This invention relates to an improved arrangement of valves for this purpose.]

45,645.—Device for Working Jib-sails.—John W. Sharrett, Portsmouth, Va.:

I claim, first, The application of the jib-sheet to the mast, B, substantially in the manner and for the purpose described.

Second, The use of catches, h h, or equivalent devices applied at or near the ends of the traveler bar, A, substantially in the manner and for the purposes described.

45,646.—Sleeve Button or Fastener.—Samuel J. Shaw, Marlboro', Mass.:

I claim the said improved sleeve fastener, made in manner and so as to operate substantially as described.

45,647.—Pump.—Wm. Shoup, Saltsburg, Pa. Ante-dated April 26, 1862:

I claim the combination of the pump tube, A, and concentric tube, C, the latter provided with the gate, D, and seed or packing bag, F, all arranged substantially as and for the purpose set forth.

45,648.—Photographic Glass-rack.—Willison G. Smith, Carlisle, Pa.:

I claim constructing the grooves on the shelves of photographic racks, substantially as above described.

[This invention consists in making a photographic rack for holding negatives and other plates for drying, etc., the grooves of which are made by nailing corrugated plates on the inside faces of the rack.]

45,649.—Anchor Tripper.—Wm. Stacey, Kittery, Maine:

I claim the combination of the tripping line, E, with the hook, D, the block, A, the davit or cat-head, B, and the rope, C, arranged together substantially as specified.

I also claim the combination of the belaying pin, G, or its equivalent, and the guide, F, with the davit or cat-head, B, the rope, C, the block, A, the hook, D, and the tripping line, F, the whole being arranged so as to operate together substantially in manner and for the purpose set forth.

45,650.—Rest for Grindstones.—Frank M. Stearns, Berea, Ohio:

I claim the curved iron rod with its cross head, A, substantially as described in combination with the clutch, C, nut, D, spring, E, and frame, B, as and for the purpose set forth.

45,651.—Manufacture of Shot.—Samuel Stevenson, Oil City, Pa.:

I claim the mode of manufacturing shot, by throwing the molten lead into the air by means of a forcing pump, sufficiently high or distant to secure their spherical form when lodged in the basin adapted for their reception, as set forth and specified.

45,652.—Exercising Machine.—Charles F. Taylor, New York City:

I claim the employment or use of oscillating platforms, one or more, provided with adjustable weights, and arranged to operate in the manner substantially as and for the purpose herein set forth.

I also claim in connection with the oscillating platforms, the adjustable bars, H, for retaining the platforms in a horizontal position when required.

I further claim the slides, K, when used in combination with the oscillating platforms, C, substantially as and for the purpose set forth.

45,653.—Truss.—G. W. Taylor & A. E. Wright, Philadelphia, Pa.:

We claim, first, The staple, C, applied in combination with the cross-bar, b, back braces, B, and body spring, A, in the manner and for the purpose substantially as herein shown and described.

Second, The spring, g, and friction plate, E, applied in combination with the front pad, D, and body spring, A, in the manner and for the purpose substantially as set forth.

45,654.—Grain Separator.—Walter Todd, Ottawa, Ill.:

I claim the rotating perforated screen, B, provided with the plates, C, in combination with the wire or other screen, D, all arranged substantially as and for the purpose herein set forth.

[This invention relates to a new and useful improvement on a grain separater for separating oats and foreign substances or impurities from wheat.]

45,655.—Drum Gas Heater.—Wm. H. Towers, New York City:

I claim the application and arrangements of the drum and cylinders to the common gas burner or any gas burner, applied and arranged as above described.

45,656.—Heater.—John C. Underwood, Richmond, Ind. Ante-dated Dec. 3, 1862:

I claim, first, The plate, J, and plate, K, in combination with the flange, s, and holes, x x x x x x x x, substantially as described.

Second, I claim the air-chamber, H, and smoke pipe, F, in combination with the air conveyor, G, all arranged, constructed and operated substantially as described.

Third, I also claim the air chambers or passages, B8 and B9, in combination with the conveyor, G, all being arranged, constructed, and operated substantially as described.

Fourth, I also claim the air-chamber or space, B4, in connection with the space, B10, and chamber, B3, all in combination with the holes, A1 A1 A1 A1 A1 and A2 A2 A2 A2 A2, all being arranged, constructed, and operated substantially as above described.

45,657.—Beehive.—J. T. Vanduzer, Tyrone, N. Y.:

I claim the combination of the converging guides, K, the diaphgram, H, with its openings, I, the wire gauze bottom, G, and the door, J, constructed substantially as above described.

[The object of this invention is to entrap any vermin which enters the openings of the hive, to provide perfect ventilation, and to enable one to withdraw the honey with ease and without deranging any part of the hive in the operation.]

45,658.—Wheelbarrow.—James J. Van Kerson, Kalamazoo, Mich.:

I claim the combined arrangement of the revolving box and folding head frame, substantially as and for the purposes herein set forth.

45,659.—Hand-shear.—John N. Wallis, Fleming, N. Y.:

I claim the friction pulleys, O and P, working against the levers, C and D, in combination with the slots, I and J, or their equivalents as set forth.

45,660.—Breech-loading Fire-arm.—James Warner, Springfield, Mass. Ante-dated Dec. 14, 1864:

I claim the bevelled grooves, l and m, in the barrel and frame, in combination with the sliding pin, F, substantially as and for the purpose herein specified.

45,661.—Machine for making Horse-shoes.—Thomas J. West, Alfred, N. Y.:

I claim, first, The adjustable curved bed and pressure roller, operating substantially in the manner and for the purpose herein set forth.

Second, I claim the creasing apparatus constructed and operating substantially as described.

45,662.—Supporter for Artificial Leg.—James W. Weston, New York City:

I claim the rest, a, connected to and combined with the artificial leg by means of the strap, e, passed up and down through rings or eyes on the respective parts so as to support the leg and produce a self-adjustment, as specified.

45,663.—Valve Gear for Steam Engines.—A. H. Woodruff, Lansing, Iowa:

I claim the attachment of the valves operating rockshaft and valves to a movable column, I, by which they may be raised or lowered or otherwise moved in such a manner as to effect the induction at one or other edge of the valves, substantially as and for the purposes herein specified.

[This invention consists in a novel construction and arrangement of the valves and ports by and through which the induction and eduction of steam to and from the cylinder of an engine are effected, and a novel mode of operating the valves whereby the valves are worked for running the engine in either direction with one eccentric, and the stopping, starting, and reversing of the engine can be effected by means of one lever.]

45,664.—Shovel Plow.—S. H. Wooldridge, Venice, Ill.:

I claim, first, The construction of the forward standard, E, with a supporting lip or shoulder, b, formed on its forward edge, substantially as and for the purposes described.

Second, The combination of the standard, E, having a lip, b, formed on it, shovel, D, having a bar, D2, formed on it, and rear standard, F, with a plow beam, A, all arranged substantially as described.

45,665.—Balloon.—A. G. Wright, Santa Cruz, Cal. Ante-dated Dec. 24, 1864:

I claim attaching the lower edge of the casing of the balloon, A, directly to the upper edge of the boat-shaped car, B, substantially in the manner and for the purpose set forth.

45,666.—Cartridge for Ordnance.—Theodore Yates, Milwaukie, Wis.:

First, I claim the fulminate tube, E, employed for ignting the charge at or near the front end of the cartridge and *operating* in connection with the rod, C, disks, c c', and wire, e, substantially in the manner explained.

Second, I claim the disk, C', held within a corresponding seat or cavity in the forward end of the cylinder, D, by the action of the spring, C'', and adapted to be pressed to its seat by the gases generated by the charge, as stated.

[In this invention simple and unfailing means are provided for igniting the powder in a cannon cartridge, and preventing the escape of the gases generated by the explosion of the charge.]

45,667.—Steam Pan for Evaporators.—T. C. Bartle and C. F. Putney, Independence, Iowa, assignor to T.C Bartle:

We claim the employment of a series of steam pans, C C C, provided with the slides, E E, for closing the spaces, D D, in combination with the evaporating pan, B, arranged and operating substantially as and for the purposes herein shown and described.

45,668.—Drop Plate for Casting Solder.—James Cartwright, South Reading, Mass., assignor to himself and H. C. Sweetser, Boston, Mass.:

I claim the employment or use of the drop plate, A, provided with mold holes, b, and air channels, c, in the manner and for the purpose, substantially as herein shown and described.

[This invention consists in a plate provided with a series of cavities corresponding in size and shape to the drops to be cast, and suspended from suitable bails or handles in combination with legs and air channels passing through the plate between the cavities, in such a manner that by dipping said plate into a kettle containing molten metal all the cavities are filled, and when taken out of said kettle and placed on one side, the air has free access to all parts of the plate and the drops in the cavities will cool rapidly, thus allowing the plate to be used over and over again in rapid succession; it consists also in producing soldering drops by casting them in suitable molds in contradistinction to the ordinary way of cutting them from the bars, and thereby saving a considerable amount of metal.]

45,669.—Edge Plane.—James H. Conklin, Yorktown, N. Y., assignor to George P. Marshall, Peekskill, N. Y. Ante-dated Dec. 1, 1863:

I claim, first, The combination of the grooved lips, D D, immediately beneath the surface of C, substantially as set forth.

Second, The combination of the knife, E, and the screw, F, with the grooved lips, D D, substantially as set forth.

45,670.—Apparatus for Extracting Gold from Foreign Matters.—A. W. Hall (assignor to the Hall Mining Machinery Company), New York City:

I claim an apparatus for separating gold from foreign substances composed of a series of bent pipes or tubes, A A' A'' A''', combined by means of a series of connecting basins, B B' B'', containing quicksilver, substantially as herein specified.

45,671.—Operating Cultivator Teeth.—Thomas W. Hammon (assignor to himself and J. H. Lincoln), Montfort, Wis.:

I claim the employment or use, in cultivators and grain drills, of two parallel shafts, B B, connected by toothed segments, C C, or their equivalents, and having the arms or standards, D, of the teeth, E, attached to them, to operate in the manner substantially as and for the purpose herein set forth.

[This invention consists in having the standards or arms of the teeth attached to two separate shafts which are connected by toothed segments, arranged in such a manner that when the teeth of one shaft is raised those of the other shaft will be depressed or lowered, the toothed segments serving as equalizers to insure a proper action of the teeth in the soil.]

45,672.—Ventilator.—Peter Lear, Medford, Mass., assignor to himself and Samuel A. Bradley, Dorchester, Mass.:

I claim the said improved ventilator, constructed substantially in manner and so as to operate as described.

45,673.—Varnishing Machine.—Levi L. Martin (assignor to himself and Horace Thayer), Warsaw, N. Y.:

First, I claim the within-described machine adapted to varnish or paint rigid articles on one or more faces by means of one or more elastic rollers and suitable supplying means arranged relatively to each other and to the moving article, being operated on so as to apply and press the varnish or its equivalent on one or more faces of the articles passed through, substantially in the manner herein set forth.

Second, I claim, in such machine, mounting the roll, C, and its supplying apparatus on a movable part, a, moving relatively to fixed part, A, so as to adapt the machine to varnish articles of different thicknesses, substantially as herein specified.

Third, I claim in such machine the within-described arrangement of a roll, a tank and a scraper, so as to take up and apply the varnish by a single operation in proper quantities, as herein set forth.

45,674.—Skate.—Edgar Murray, New York City, assignor to Chas. W. Dunlap, Brooklyn, N. Y.:

I claim, first, The combination of the heel clamp, l, adjustable bar, k, and lever, g, whereby the heel clamp, l, is actuated by the toggle joint, formed between f h and o, substantially as specified.

Second, I claim the toggle joint, k, and lever, g, in combination with the plate, e, and clamps, d, for grasping the edges of the sole of the boot or shoe, as set forth.

Third, I claim the pin, q, forming a fulcrum for the toggle joint lever, g, in drawing back the plate, e, and releasing the clamp, d, as set forth.

45,675.—Pianoforte Action.—George Pratt, West Roxbury, Mass., assignor to Chickering & Sons, Boston, Mass.:

I claim a jack with a projection on the back for the regulating screw to act on, and another projection on the front, which is acted on by a straight, curved or elliptic wire spring, one end of which is inserted in a slot in said projection, the other end of the spring being inserted into and moving with the key; the jack thus operated upon by the spring and by the regulating screw, and thus constructed, acting immediately upon and behind the butt of the flange, substantially as and for the purpose herein specified.

Second, Making the rest rail and regulating rail separate and with a space between them when both these rails are behind the jacks, substantially as and for the purpose herein specified.

[This invention consists in an improved construction of the jack of a pianoforte action whereby the peculiar advantages of what are known as the French and the Pleyel actions are combined. It also consists in the construction of what are known as the rest rail and the regulating rail of separate parts and arranging them at some distance apart, whereby greater convenience is afforded for regulat-

ing the jacks without the detachment of the key from the action, as is necessary when the two are attached and arranged behind the jacks.]

45,676.—Grain Thrashing and Separating Machines.—Joseph Raynor (assignor to himself and John R. Moffit, Harvey Clark and H. Tamplin), Piqua, Ohio:

I claim the combination of the spout, l, fan, s, tube, o, and conductor, P, constructed and arranged as specified, and operating in connection with the shaking shoe and thrashing cylinder, substantially as and for the purpose set forth.

45,677.—Mode of Adjusting Circular Saws on their Arbors.—C. B. Rogers (assignor to C. B. Rogers & Co.), Norwich, Conn. :

I claim, first, The combination of the key tenon and slot, g g', with the four collars, c c' d d', saw, b, arbor, a, and nut, e, substantially in the manner and for the purpose described.

Second, Producing the desired changes in the degree of obliquity of the saw and at the same time registering and indicating the change, in the manner and by means substantially as described.

45,678.—Portable Forge.—Samuel Rohrer, Palmyra, Mo., assignor to himself and W. W. Granger, Lewis Co., Mo.:

I claim the case or box, A, adjustable fire box, D, detachable smoke stack, L M, and bellows, C, all combined and arranged substantially as and for the purpose set forth.

I also claim the plates, H H, attached to the fire box, D, and arranged with the projections, k k, at the sides of the box, A, to hold up the fire box, substantially as described.

I also claim the plate, G, when hinged to the fire box, D, and used in connection with the smoke stack, L M, substantially as and for the purpose specified.

I also claim the hinged bottom, b, when applied to the box, A, provided with the bellows, C, substantially as and for the purpose set forth.

45,679.—Machine for Sand-papering Pencils.—Phillip Schrag (assignor to Eberhard Faber), New York City :

I claim, first, The employment or use of one or more slotted racks, substantially such as herein described, to operate in combination with a revolving polishing disk, in the manner and for the purpose substantially as set forth.

Second, Imparting to the slotted racks an automatic reciprocating motion, substantially as and for the purpose described.

45,680.—Low Water Signal for Steam Boiler.—Thomas Shaw, Philadelphia, Pa., assignor to Philip S. Justice :

I claim the employment of the metallic rod, in combination with a wood bearing, when arranged to operate substantially as and for the purpose set forth.

45,681.—Paper Collar.—Charles Spofford and Valentine Fogerty (assignor to themselves and W. S. Bell), Boston, Mass.:

We claim converting the ends of a paper collar into an imitation neck tie, substantially as described.

45,682.—Shut le for Looms.—William Tunstill (assignor to Theodore H. Conkling), New York City :

I claim the employment or use of the case, B, in combination with a shuttle, A, constructed, applied and operating substantially as and for the purpose set forth.

[This invention consists in the employment of a case made sheet-metal or other suitable material, just large enough to rec a cup of suitable form and size, and secured in a shuttle in place of the ordinary quill, in such a manner that the weft thread is perfectly protected, and the liability of such thread becoming entangled is materially reduced.]

45,683.—Thrashing Machine.—George Westinghouse, Schenectady, N. Y., and Lorenzo Smith, of Sharon Springs, N. Y., assignors to George Westinghouse, aforesaid :

We claim, first, The rotary feeder, L, in combination with the riddle, F, and shaker, J, arranged and operating substantially as and for the purpose set forth.

Second, The grain receptacle or grain carrier, M, hung or suspended, as shown and described, in combination with the riddle, F, and thrashing cylinder, B, concave, C, and screw, D, all constructed and arranged to operate in the manner as and for the purpose specified.

Third, Encompassing the wooden shaft, d, of the shaker, J, with metal bands or ferrules, g, as and for the purpose set forth.

45,684.—Manufacture and Purification of Magnesium.—Edward Sonstadt, Loughborough, Eng. Patented in England May 21, 1863 :

I claim the manufacture of the metal magnesium by acting by means of sodium on a material obtained by evaporating to dryness and then heating to redness a mixture, in solution, of chloride of magnesium with chloride of potassium, substantially as described.

I also claim the distillation of metallic magnesium by means of an apparatus made of iron, from which atmospheric air is excluded during the distilling process, such apparatus consisting of a receiver placed immediately beneath the fire bars of the furnace which heats the vessel containing the crude metal, so that the receiver may, when required, be heated sufficiently to keep the magnesium which distils over in a fused or liquid state, and so that the pipe connecting the two vessels may be kept sufficiently hot to prevent the condensation of magnesium in it, substantially as herein described.

## RE-ISSUES.

1,840.—Tobacco Pipe.—Charles Houghton, Trustee, Roxbury, Mass., assignee of Philip C. Rowe, Boston, Mass. Patented July 12, 1864 :

What is claimed is a smoking pipe having its parts constructed and arranged in the manner and for the purpose substantially as described.

1,841.—Boots and Shoes.—The McKay Turned Shoe Company, Massachusetts, assignees by Mesne Assignments of L. H. and B. S. Holden, Woburn, Mass. Patented April 2, 1861 :

What is claimed as the invention is so preparing the sole and upper for sewing that the parts thereof to be sewed together are brought to the condition substantially as shown and described, that is to say, projecting from or beyond the sole at right angles, or nearly so, to the general surface thereof, in such manner as to bring both faces of the seam on the outside of the work while the sewing is being performed.

1,842.—Boots and Shoes.—The McKay Turned Shoe Company, of Massachusetts, assignees by Mesne Assignments of L. H. and B. S. Holden, Woburn, Mass. Patented April 2, 1861 :

Claims a boot or shoe having the construction substantially as specified

1,843.—Cupola and other Furnaces.—Addison Smith and James M. Sayre, New York City, assignees by Mesne Assignments of Philip W. Mackenzie, Jersey City, N. J. Patented May 25. 1857. Re-issued Feb. 10, 1863 :

We claim, first, a furnace of elongated form and having its surrounding shell concave on the sides, substantially as described for the purpose set forth.

Second, We claim introducing the blast in cupola or blast furnaces in a thin sheet or sheets, substantially as described, in contradistinction to a series of round jets, whereby the blast is caused to act more uniformly in the charge.

Third, We claim a furnace having the plan of its bosh of a shape substantially like that shown, and provided with a means for the introduction of the blast all along both sides whereby the mass of fuel and metal is presented in thin vertical strata to the action of two continuous sheets of blast entering at the opposite sides of the furnace, substantially as and for the purpose set forth hereinbefore.

Fourth, We claim projecting the inner edge of the bosh (or the inner lower portion of the furnace chamber) inwardly beyond the tuyere or blast opening, or tuyere mouths, substantially as described.