

tongue. Glass is considered almost a synonym for insolubility; and yet it has all degrees of solubility according to its composition, and there is a kind of glass, differing from the common article only in the proportions in which the ingredients are combined, which will dissolve in water like any other salt, and not only yields a strong alkaline taste to the tongue, but will also wash the hands, if you please, of dirt and skin at once. It is sometimes used in making soap, but in Prussia this is prohibited, on account of its destructive effect upon textile fabrics. Hence we may understand the taste of a glass tumbler, although we can get at it only by imagination because the substance is too hard to dissolve on the tongue.

But again, more particularly, what is glass?—Silicon, oxygen, and any metal or metals the maker chooses, according to the color or hardness he wishes to produce: the metals being necessarily taken in their oxides—of which that of sodium (soda) and that of potassium (potash) are most used—and the silicon also in its combination with oxygen, with which its quick and tenacious affinity for that element keeps it always united, forming silicic acid. Most persons who have observed rock crystal or quartz, everywhere veining or speckling the rocks, or gleaming in sand, wherever sand is washed clean, have as little suspected that this apparently tasteless because almost utterly insoluble substance is an acid, as that glass is a salt. It is silicic acid, or one part of silicon with three of oxygen. The base silicon, like boron (to the analogy of which to carbon we referred in an article on borax) becomes a wonderfully interesting substance under the light of "chemic fire." From what has just been said, it is apparent that silicon is the main characteristic constituent of the inorganic earth, as carbon is of the animal and vegetable kingdoms. It is capable of the three allotropic conditions of boron and carbon, described in a former article, and is only hardened by the action of heat, unless exposed to air or oxygen, in which it takes fire and burns superficially; the silicic acid formed on the surface protecting the mass from oxidization. Silicic acid, silica, or quartz, can be melted by nothing short of the oxygen hydrogen blow pipe; but when heated with metallic oxides, the silicates resulting from union with those substances are melted at various temperatures, according to the metal involved, and the result is glass.

We might go on to describe numerous beautiful forms besides common quartz, in which silica presents itself in nature, such as opal, amethyst, chalcidony, cornelian, onyx, sardonyx, agate, and others, which owe their brilliant variety to various tinging materials, chiefly oxides of iron and other metals. Besides these, it is the stiffening in the framework of plants and leaves and animal cartilages. But as our object in setting out was merely to define the nature of glass, we close with a mere reference to the principal metals used in producing the usual varieties of that "salt."

What may be termed the highest variety of glass, is the *strass*, or "paste," used in imitation of precious stones. This is made with potassa and oxide of lead: the latter metal being remarkable for the high lustre, refractive power or brilliancy, specific gravity and softness, which it gives to the silicate. These qualities appear to be proportioned to the atomic weight of the bases employed, that of lead being among the greatest. Flint glass and crystal for optical purposes, are of like composition with strass. Common window glass and English crown, are silicates of potassa or soda, lime and alumina. Plate glass differs from this only in the purity of the materials. Oxides of gold, silver, copper and other metals, are employed to impart a variety of brilliant colors. The native glass which gives occasion to this article, as we have observed, is silicate of iron, with some added mixture of alkalies, alumina, or other "fluxes" (bases) of which we are not precisely informed, but which are among the usual elements of green bottle glass.

#### FRICITION OF ROLLING STOCK.

A series of practical experiments of great importance to railroad men, were inaugurated on Wednesday, Jan. 16th, on the New Jersey Central Railroad. The trials were made by Mr. Wm. Loughridge, of Paterson, N. J., under the patronage of some of the leading railways of the country, who have appropriated funds for the purpose of investigating the laws of friction in their practical relation to rolling stock. Many circumstances made it impossible on this occasion to obtain very accurate results, but the mode of operation was shown, and a report of careful experiments now being conducted, was promised at some future time.

The programme for the day's proceedings embraced the solution of nine problems, including the testing of wrought, cast and chilled iron and wooden shoes under the same pressure against the wheels, to determine which will produce the greatest retarding effect on the car. Applying different pressures on the several shoes and noting if the retarding effect is proportional to the weight of the car, and if the same at all velocities. Also whether the resistance is in proportion to the pressure on the brakes. Determining by means of a dynamometer the average strength of brakemen. The resistance of journals, or the power required to start a car, or several coupled together. Observing in a moving train whether a car or train has a retarding power with it, proportional to its weight, when the brakes are applied in proportion to the weight of the car. Lastly, the determination of the effect of using different sized journals. As intimated above, the results were not perfectly satisfactory, but we have been promised a full copy of the final report, and will then present to our readers a full solution of these important problems.

Mr. Loughridge is the inventor of a steam brake giving the engineer complete control over the train, which he can stop almost instantly even when under full head of steam.

The locomotive has a small cylinder secured under the foot board, the piston of which works the brakes and steam is admitted directly from the boiler. The length of stroke is augmented by a combination of pulleys, and by a series of rods and chains under the cars all the brakes are operated simultaneously, and the braking up of the train is accomplished, by the movement of a lever. In case of any derangement interfering with the working of the steam brake, hand power can be applied and the train stopped as usual. In several trials made the other day, a full train of five cars running at the rate of thirty miles per hour, was brought to a dead halt in thirty seconds. By a simple contrivance, the amount of brake pressure which can be applied to the wheels is regulated, being greater in a heavy train, and so changed in a light train that the sliding of wheels is a thing absolutely impossible.

The experiments were witnessed by engineers and master mechanics from various parts of the country. Unavoidable delays, and the necessity of leaving the tracks open for the regular trains, prevented the completion of all the proposed trials at the time. The remainder were promised to take place upon the following day, but the severe storm caused an indefinite postponement of the public trial.

#### Science Familiarly Illustrated.

Under this caption we propose, occasionally, perhaps weekly, to publish facts well known to scientists and experienced mechanics but not familiar to the juvenile portion of our readers. We are daily in receipt of letters from young persons—mechanics' apprentices and workmen—soliciting replies to them which it is hardly appropriate to place in the column usually devoted to replies to correspondents. These requests imply a want of the information which is possessed by experienced mechanics and scientific students, and an ardent desire to understand those fundamental truths which lie at the foundation of philosophy. As our object in the issue of the SCIENTIFIC AMERICAN is to educate, elevate, and improve those who are to become the pioneers of material progress, as well as to note the improvements now being made in the domain of physics, we deem it but proper that a portion of our columns should be set apart for the instruction of the younger and less experienced of our readers.

#### Suction.

Suction is a common term applied to the force of the atmosphere, and is simply weight or gravitation. Air, however, unlike some more solid substances, acts equally in every direction, up or down having no influence on its action. By the way "up" and "down" are simply relative terms, having no absolute signification, but meaning simply toward or from the surface, or rather the center of the earth. The atmosphere which surrounds the earth exerts a pressure on it and every object upon it of about fifteen pounds to every square inch exposed to its action. Now, then, if the air can be kept from acting on the undersurfaces of bodies they would adhere to whatever surface they were placed upon and would stick or "suck," so that the object, if not too heavy, could be lifted. Boys frequently cut out disks or circular pieces of leather and put a string through their centers by which to lift them. The leather being moistened with water can be pressed upon a smooth surface, and the edges adhering airtight prevents the atmosphere from acting on the under surfaces. By this simple device we have seen a common bucket, full of water, lifted with a "sucker" of only about four inches diameter. It was done by the pressure of the atmosphere on the upper surface of the disk, amounting in the aggregate to over one hundred and ninety pounds, as the area of a disk four inches diameter is over twelve and a half inches, each inch sustaining the pressure of fifteen pounds.

So the water in the pump barrel is elevated by the pressure of the atmosphere on the surface of that on the outside of the pump. The upward movement of the plunger containing an upward lifting valve, draws or lifts the air out of the barrel between the plunger and the fixed valve near the bottom of the barrel. This creates a vacuum more or less perfect, and the pressure of the atmosphere on the outside water forces the liquid up through the fixed valve into the pump barrel.

The sucking of cider through a straw, which every boy who lives in the country has often done, is another exemplification of this same property in the atmosphere. The boy inserts one end of the straw into the cider, and with his lungs draws out the air, when the atmosphere at once lifts the cider up through the tube. If the straw was secured airtight in the barrel and no atmosphere admitted, or if the pump well was so covered in that no air could have access to the water, "suction" would be merely a name without any reality.

#### Extension of Patents.

Many valuable patents are allowed to expire every year for the want of a little care on the part of patentees in not applying for an extension. The petition must be filed in the Patent Office at least ninety days before the expiration of the patent, which gives time for the preparation of testimony. Inventors who have patents dated in 1853 and who may wish to have them extended for seven years, can receive all necessary advice how to proceed by addressing Munn & Co., this office.

#### American Inventions in Europe.

American inventors are taking a renewed interest in patenting their valuable inventions in European countries. As an evidence of the fact we may state that since January 1st we have entered twenty-three foreign applications upon our records. Parties wishing to take foreign patents can, through our Agency, depend upon prompt and careful attention to their interests.



ISSUED FROM THE U. S. PATENT OFFICE  
FOR THE WEEK ENDING JAN. 15, 1867.  
Reported Officially for the Scientific American.

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

On filing each Caveat.....	\$10
On filing each application for a Patent, except for a design.....	\$50
On issuing each original Patent.....	\$20
On appeal to Commissioner of Patents.....	\$50
On application for Extension of Patent.....	\$50
On granting the Extension.....	\$50
On filing a Disclaimer.....	\$10
On filing application for Design (three and a half years).....	\$10
On filing application for Design (seven years).....	\$15
On filing application for Design (fourteen years).....	\$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay \$500 on application.

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.

61,133.—MODE OF FINISHING TOOLS, ETC.—John Allen, New York City, and Gaston D. Smith, Washington, D. C.

First, We claim the finishing devices of machinery, engines, sewing machines, tools, etc., instruments of all descriptions, by the mode and means hereinbefore described, and for the purpose of preserving them from damage by oxidation or corrosion, as set forth.

Second, The restoration of damaged tools and machinery to good condition by the method and means set forth.

61,134.—DRILL.—Leonard Andrews, Biddeford, Me.

First, I claim the combination of the tube, a, rod, b, ring and springs, e, f, horizontal cutters, g, h, as and for the purpose set forth.

Second, The combination of the double drill, fig. 5, constructed as described, with the tube, r, as and for the purposes specified.

61,135.—TURNING LATHE.—Frantz A. Armbruster, New York City. Antedated Jan. 3d, 1867.

First, I claim the oscillating spindle, E, in combination with the chuck, I, carrying one or more tools, and with the longitudinally-sliding back center, F, constructed and operating substantially as and for the purpose described.

Second, Controlling the oscillation of the spindle, E, by means of the chain, c, and adjustable crank, e, substantially as and for the purpose described.

Third, Giving the oscillating motion to the cutter head by means of two shafts, i, j, carrying the cranks, e, and chain, c, substantially as and for the purpose set forth.

61,136.—APPARATUS FOR BUNDLING SCRAP METAL.—Lewis J. Atwood, Waterbury, Conn.

I claim the bundling or consolidation of scraps of sheet metal, by the means and substantially as set forth.

61,137.—WATER ELEVATOR.—W. E. Babcock, East Pembroke, N. Y.

I claim the drum, A, shaft, B, the head, C, the ratchet cone, c', and the spiral spring, o, when arranged and combined substantially as described for the purposes herein set forth.

61,138.—CATTLE TIE FOR STALLS.—Cyrus M. Baker,ingham, Me.

I claim the tie chain herein described, the same consisting of the bar, B, chains, D and E, and rings, G, G, when all connected together, so as to be used for the fastening or hitching of cattle and other animals, substantially as described.

61,139.—PHOTOGRAPHIC CAMERA.—Thomas Barbour, Boston, Mass.

First, I claim the arrangement of the plate, f, racks, g, g, pinions, h, h, rod, i, wheel, k, k, and adjustable arm, p, p, as hereinabove described and for the purpose specified.

Second, Arranging a case upon a pivot so as to turn thereon, in combination with suitable stops, as in and for the purpose specified.

Third, The use of the lever, e, e, for elevating and depressing the case, as described.

Fourth, The use of the movable plate or frame, f, f, operating as described and for the purpose specified.

61,140.—APPARATUS FOR MAKING ENVELOPES.—E. L. Barrett, Springfield, Ohio.

First, I claim the plates, e, f and g, in combination with the slides, a, a', substantially as and for the purpose set forth.

Second, The stop, c, gage, d, in combination with the slide, a', and plate, f, substantially as and for the purpose specified.

Third, Pivoting or hinging the plate, g, e, f, to the slides, a, a', substantially as and for the purpose described.

Fourth, The stuffer, M, fig. 7, constructed and operating as and for the purpose substantially as set forth in the herein described process of making envelopes.

61,141.—VALVES OF STEAM ENGINES.—Louis D. Bartlett (assignor to the Putnam Machine Company), Fitchburg, Mass.

I claim the arrangement of the casings, steam passages, and valves, within the steam chest, in relation to each other and operating substantially as described.

61,142.—NECK YOKE.—Alonzo Benedict, Jonesville, N. Y.

I claim the curved or U-shaped metallic bars, D, D, attached to the neck yoke by means of clips, C, C, and grooved at their inner parts to receive and clamp the chauling leather, E, substantially as herein shown and described.

61,143.—MODE OF PROTECTING ARMOR PLATES.—Mayeul Bernabe, Toulon, France.

I claim the herein described method or process of covering the steel, iron, or cast-iron plates, with an insulating and protective coating of copper for neutralizing the electric currents and rendering the plates inoxidizable.

61,144.—APPARATUS FOR CHARGING AND DRAWING GAS REPORTS, ETC.—Sealy James Best and James John Holden, London, England.

We claim the apparatus and machinery, substantially as herein described.

61,145.—WOOL DRYER.—Carl Beu, Dessau, Dukedom of Anhalt Dessau. Antedated Jan. 2, 1867.

First, The arrangement of a series of drying boxes, placed one above the other, in a suitable case, A, in combination with a suitable mechanism, whereby an automatic downward motion is imparted to said boxes, substantially as and for the purpose set forth.

Second, The recesses, t, b, in the drying boxes, f, b, etc., in combination with the cams, a, constructed and operating substantially as and for the purpose set forth.

Third, The stop motion, a', b', c', in combination with the drying boxes, f, g, h, etc., constructed and operating substantially as and for the purpose described.

61,146.—SPRINKLER FOR CLOTHES AND FLOWERS.—Dana Bickford, Boston, Mass.

I claim the combination of the elastic bulb, A, the valve, B, the perforated nozzle, c, all constructed as and for the purpose specified.

61,147.—RUDDER BEARING.—Joseph N. Bitting, Sr., Camden, N. J.

I claim the projection, e, on the rudder post, in combination with the plate, D, and its inclined recess on the edge, when the latter and the said projection are formed in relation to each other, as described.

61,148.—APPARATUS FOR STORING PETROLEUM AND OTHER INFLAMMABLE LIQUIDS.—Felix Bizard and Pierre Larbarre, Marseilles, France.

We claim, First, An oil tank of ordinary or suitable construction, provided at the top thereof, with a pipe through which said tank is supplied with oil, charged of oil, in combination with a pipe, also passing through the top, into and down to near the bottom of said tank, said pipe being branched and provided with cocks and level indicator for regulating the flow of water to and from the tank, in the manner and for the purpose set forth.

Second, The combination, in an oil tank or reservoir, of an elevated man-hole and pipes connected therewith for supplying or drawing off the oil to or from the tank at a point higher than the top or dome of said tank, as herein shown and described.

Third, In combination with the arrangement claimed in the 1st preceding clause, we claim the level indicator, when constructed to operate in the manner substantially as described.

Fourth, The channel or depression formed in the bottom of the reservoir for receiving and collecting the sediment, and facilitating the entrance to the same, substantially as specified.

61,149.—BRICK KILN.—George C. Bovey, Cincinnati, Ohio.

I claim a brick kiln entirely open at top and provided with folding covers, substantially as and for the purposes set forth.

61,150.—DEVICE FOR PLANTING HEDGES.—C. D. Brown, Sterling, Ill.

I claim, First, The employment of clamping beams, A, A, and post, B, B, in the operation of planting hedges, substantially as described.

Second, Providing for adjusting the beams or clamps, A, A, vertically as well as horizontally, substantially as described.

61,151.—SULKY PLOW.—George Burket and Samuel M. Gas-kill, Bluffton, Ohio.

We claim, First, The attaching of the rear part of the plow beam by a chain or rope, b, to a pulley, d, on a shaft, H, on the hounds, a, a, of the draft pole, said shaft, H, having a lever, I, attached, and all arranged substantially as and for the purpose specified.

Second, The slotted plate, K, attached to the platform, D, in such a manner that it may be turned forward to embrace the plow handles, so as to serve as a bearing or fulcrum for it, and be turned backward free from the plow handle when it is necessary to liberate the latter, substantially as set forth.

61,152.—LAMP.—Francis Burrows, Peoria, Ill.

First, I claim the chamber, C, formed in the manner herein described, and adapted for the reception of water to prevent the heating of the reservoir, as and for the purpose explained.

Second, I claim the combination and arrangement of the reservoir, A, two-part wick tube, D, D, and casing, C, C, with their several adjuncts, applied and operating in the manner and for the purpose explained.

61,153.—SEED PLANTER.—John W. Buttrick, Farmington, Wis.

I claim, First, The cam, Z, when constructed and used substantially in the manner and for the purpose set forth.

Second, The combination and arrangement of the cam, Z, feed bar, Q, spring, P, and part, M, substantially as and for the purpose set forth.

Third, The combination and arrangement of the cam, Z, feed bar, Q, and shut-off lever, K, substantially as and for the purpose set forth.

Fourth, The combination of the wheel, A, constructed with the cam, Z, and pins, c, and the brake, G, with the operating lever, I, when constructed and used substantially as and for the purpose set forth.

Fifth, The combination and arrangement of the shovels, U, and operating bars or levers, R and M, substantially as and for the purpose set forth.

61,154.—CASE FOR PEN AND INK.—A. G. Buzby, Philadelphia, Pa.

I claim the pen, B, with its flange and collar, a, and button, c, and the case, A, with the cover, A', and operating for the reception of the pen, the whole being constructed as described.

Second, The cover, A', with its cap, d, and recess for the reception of the bottle, D, in combination with the case, A, and its pen, B, as set forth.

61,155.—PUMP VALVE.—Adam S. Cameron, New York City.

First, I claim a valve composed of a metallic case, A, in which india-rubber or other material is held in place, and a plug, B, and suitable means, in combination with the seat, C, substantially as and for the purpose described.

Second, A valve formed by putting the rubber into the case or recess in a plastic state, and vulcanizing it therein, substantially as and for the purpose specified.

61,156.—PEN.—R. M. and D. Cameron, Edinburgh, North Britain.

We claim the construction of pens possessing the improved qualities in the manner substantially as hereinbefore described and shown in the accompanying drawings.

61,157.—TRUNK.—Lazare Cantel, New York City.

I claim the grooved wooden frames, c, d, secured to the edge of the trunk, or other article, by means of a hinge, b, and suitable means, in combination with the elastic strip or pipe, i, as and for the purposes specified.

61,158.—RAILROAD RAIL.—Robert Chambers, Cincinnati, Ohio.

I claim, First, The compound railroad rail, A a c A' a' c' B b, secured or locked together by the same spike or spikes which fasten the rail to the sleeper or cross-tie, substantially as set forth.

Second, In combination with the aforesaid compound rail I claim the single-tipped chair, E, c.

61,159.—COTTON AND HAY PRESS.—Nathan Chapman, Milford, Mass.

I claim traversing and holding the ratchet rods which work the follower by the stationary locking boxes, P, P, provided with ratchet wedges or pawls, and connected by vibrating links and crank rock shafts to traversing locking boxes, N, N, provided with ratchet wedges or pawls to work the press by levers inserted in the holes in the rock shafts and vibrated.

I claim the four arms on the follower, extending through the press box and fastened to the ratchet rods working at the corners of the press.

I claim the use of four rods, or one at each corner of the follower, to move it even and keep it from tipping.

61,160.—CHURN.—James M. Chritton, Joliet, Ill.

I claim the water pockets, e, in combination with the movable box, d, the movable piston and shaft, b, and the air tubes, f and g, when constructed and operating substantially as described.

61,161.—CAN OPENER.—S. O. Church (assignor to himself and S. S. Wilcox), West Meriden, Conn.

I claim the lever, A, provided with a fulcrum, a, in combination with a hook, C, and the handle, B, constructed and arranged so as to operate in the manner described.

61,162.—STEAM GENERATOR.—Mirtillow R. Clapp (assignor to himself and E. P. Jones), New York City.

First, I claim the water and steam generating tubes, G, exposed to the action of the fire or heated gases, as specified, and provided with diaphragms, g, having openings, s, in them inclining downwardly, substantially as and for the purpose or purposes herein set forth.

Second, The construction of the diaphragms, g, within the tubes, G, whereby they support or retain each other in place, as described.

61,163.—CRACKER CRUSHER.—Arthur Clarke and Thomas Reece, Philadelphia, Pa.

We claim the arrangement of section, B, with its perforated or bottomless cup, C, and ribs, a, or their equivalents, and section, A, with the flange, D, and ribs, b, or their equivalents, both of said sections having suitable handles, and hinged together in either of the modes herein described, and operating substantially as and for the purposes set forth.

61,164.—BEEHIVE.—Orson Colvin, Belvidere, Ill.

First, I claim the inner case, B, provided with inclined sides, a, a, and a perforated top piece, c, in combination with an outer box, A, to receive B, with an air space allowed between, and the ventilating openings, j, m, in the box, A, substantially as and for the purpose set forth.

Second, The spare box, C, with perforated bottom, registering with the perforated partition plate, e, and with the perforated top piece, c, in combination with the case, B, with perforated sides registering with the perforated spare boxes, D, whereby air will be admitted into all parts of the hive, in the manner described for the purpose specified.

61,165.—MILKING STOOL.—David Connor, Fulton, Ill.

I claim the circular frame, F, bench, H, and seat, A, when constructed, arranged, and operating substantially as and for the purpose set forth.

61,166.—TOOL REST FOR LATHES.—T. J. Currier and A. M. Black, Worcester, Mass.

We claim the combination with the poppet block, A, of the tool rest, D, shaft, H, and screw, G, substantially as set forth.

61,167.—JET CONDENSER.—J. P. F. Datchy, West Hoboken, N. J.

I claim a condenser composed of three compartments, A, B, F, valves, a, a, M, rose, C, and connecting pipes, E, G, I, all constructed and operating substantially as and for the purpose described.

61,168.—FAGOT FOR RAILROAD RAILS.—Herbert Davis, Troy, N. Y.

I claim the rolling or making of rails for railroads of a pile composed of a series of iron bars, A, provided with a steel cap, B, formed or rolled with a pendant flange at each side, and with longitudinal grooves and projections, e, b, at its under surface, and the upper iron bars of the pile rolled or formed with corresponding grooves or projections, a, d, to admit of the steel cap and upper iron bars being locked together, substantially as shown and described.

I further claim forming the iron portion of the pile of bars, A, A', of superior and inferior iron, arranged or disposed substantially in the manner and for the purpose set forth.

61,169.—HOOP SKIRT.—Thomas B. De Forest, Birmingham, Conn.

I claim protecting the attachment of the lower hoop to the tapes by extending the tapes below the bottom hoop, and covering in extension with metal, substantially in the manner and for the purpose specified.

61,170.—HOOP SKIRT.—Thomas B. De Forest, Birmingham, Conn.

I claim attaching a cord to skirt wire outside the covering which incloses the wire, substantially as herein set forth.

61,171.—BINDING FOR SKIRTS.—Thomas B. De Forest, Birmingham, Conn.

I claim a binding having one edge protected substantially as described, as a new article of manufacture.

61,172.—BINDING FOR SKIRTS.—Thomas B. De Forest, Birmingham, Conn.

I claim a binding presenting an india-rubber or similar flexible edge, substantially as herein described, as a new article of manufacture.

61,173.—MANUFACTURE OF RUBBER BELTING.—George Pomeroy Dodge, London, England, assignor to Nathaniel Shattwell Dodge, Washington, D. C.

I claim the mode of manufacturing bands or belts composed of fabrics and gum or sticky substances, substantially as herein described.

Second, I also claim the separate union of the parts, B and C, before the rubber is packed in by means of screw bolts, h, h, or their equivalent, substantially as and for the purpose herein set forth.

Third, I also claim the combination and arrangement of the counter die part, A, with the parts, B and C, substantially as herein specified.

61,175.—STEAM-PUMP VALVE GEAR.—George Doyle, Worcester, Mass.

First, I claim the arrangement of the spring, h, the dogs, j, j, and the lugs, 1, 1, on the valve stem, substantially as and for the purpose specified.

Second, I also claim the arrangement of the dogs, j, j, for putting tension on the spring by restraining it during the stroke or part of the stroke of the piston, substantially as and for the purpose specified.

61,176.—SEWING MACHINE.—Jehiel C. Driggs, New York City, assignor to Matthew T. Higgins.

First, I claim the combination in needle-feeding machines of the horizontally-slotted arm, G, operated by a crank or eccentric pin, D, and carrying the vertically-slotted needle arm, H, with its adjustable branch and spring, J, and rotating cam, F, for giving to the needle its two-fold motion, substantially as specified.

Second, The combination with a needle working from below up through the table, of a looper, L, above the table, acted upon by a spring, Q, and guide, N, and the combination of the pawls, b, b, arms, b', b', and angular lever, c, c, with the reciprocating bar, E, and a lever whose movements are regulated by adjustable stops, F, substantially as and for the purposes described.

61,177.—DEVICE FOR PROTECTING TREES FROM THE BORER.—George W. Dudderar, Unionville, Md.

I claim the application of an adjustable appliance to the trunks of fruit trees to protect them, as herein described, using for that purpose the aforesaid cylinder and oil-cloth top or addition, or any other substantially the same, and which will produce the intended effect.

61,178.—HEAD BLOCKS FOR SAW MILLS.—J. W. and W. Ebert, Zanesville, Ohio.

First, We claim providing for adjusting knees upon head blocks by means of rectangular reciprocating pawls, which are allowed to vibrate vertically, in combination with a lever, H, which will admit of said pawls being engaged with or disengaged from their knees at pleasure, substantially as described.

Second, The locking plates, J, J, a, piled so as to take into the racks of adjustable knee head blocks, substantially as and for the purpose described.

Third, The construction of the bar, H, substantially as and for the purpose described.

Fourth, The combination of the locking plates, J, J, or their equivalents, with rack, D, upon the knees, C, C, and with the bar, H, which raises and depresses the pawls, b, b, substantially as and for the purpose described.

Fifth, The combination of the pawls, b, b, arms, b', b', and angular lever, c, c, with the reciprocating bar, E, and a lever whose movements are regulated by adjustable stops, F, substantially as and for the purposes described.

61,179.—CONVERTING MOTION.—Augustus Eckbert, Trenton, Ohio.

I claim the lever, C, with its nose, c, pivoted at one end to the link, 1, and to the other end to the pendulum, D, connected by the rod, h, to the heelbow lever, e, having its fulcrum on the stationary hanger, operating in combination with the escape wheel, B, with pin, b, in the manner described for the purpose specified.

61,180.—RAILWAY-CAR AXLE.—Albert E. Elmer, Greenfield, Mass.

I claim my improved railway carriage axle, made as described, i. e. with the concave and convex shoulders, d, e, arranged and combined with the tubular and cylindrical parts, a, b, and with respect to the wheels, substantially as described.

61,181.—STEAM GENERATOR.—John R. Fish and H. C. Hartman, Fort Wayne, Ind.

First, We claim the heater, B, when placed inside the fire box of a tubular or fire boiler, in such a manner as to be exposed to the direct action of the fire before the heat passes through the flues of the boiler, in combination with the pipe, C, and the check valve, C', and pipe, D, arranged substantially as set forth.

Second, In combination with the heater, B, we claim the blow-off pipe, E, arranged substantially as and for the purpose set forth.

61,181.—MACHINE FOR FINISHING LEATHER.—Edward Fitz-Henry and Isaac Ball, Portland, Oregon.

First, We claim the set screws, D', and rod, D, with the springs, E, substantially as and for the purpose set forth.

Second, We claim the plate, B, pivoted to the plates, A, so as to communicate motion to the rubber centrally, and without pressing upon the springs attached to the sliders.

Third, In combination with the plate, B, we claim the rods, G, and pin, G', for the purpose of raising the sliders and brushes when not in action, substantially as set forth.

Fourth, We claim the jaws, F and I, hinged substantially as set forth, in combination with the hair spring, I, substantially as and for the purpose set forth.

Fifth, In combination with the jaws, F, we claim the springs, K', and brushes, K, substantially as set forth.

Sixth, We claim the cleaner, S, in combination with the sliders, P, operating substantially as and for the purpose set forth.

Seventh, We claim the lever, L, and notched plates, O, or the equivalent, in combination with the rods, G, attached to the jaw, F, substantially as and for the purpose set forth.

Eighth, We claim the arrangement of the points, M', so as to permit the raising of one or all of the rubbers, substantially in the manner and for the purpose set forth.

61,183.—DEVICE FOR FORMING HASSOCKS OR STOOLS.—John G. Flagg, Philadelphia, Pa. Antedated Jan. 10, 1867.

I claim an apparatus for making hassocks, consisting of the screw, D, disk, E, and a suitable frame, all arranged and operating substantially as herein specified.

61,184.—METHOD OF ATTACHING ROOFING TO BUILDINGS.—Lorenzo D. Ford, Canaan, Columbia County, N. Y.

I claim the connecting of the edges of the sheets or strips of plastic roofing by means of a lock joint, formed by bending the edges or selvages of the fabric, substantially as shown and described.

61,185.—DOOR BOLT.—Benjamin E. Fowler, Hartford, Conn.

I claim the rack bolt, b, in combination with the pinion, c, spindle, d, pin and groove, h, g, substantially as and for the purpose described.

61,186.—PRINTING PRESS.—James H. Frey and William Heckert, Sharon, Pa., assignors to themselves and E. A. Wheeler.

First, We claim so constructing and operating the platen, B, that it shall move bodily in a right line up to and from the form bed, c, and also assume an inclined position when at the termination of its outward stroke, the said platen performing these movements without revolving, substantially as described.

Second, Supporting and guiding the platen, B, by means of four bearings, a, a, a', which move in slots, a2, substantially as described.

Third, Communicating motion in opposite directions to the plates of the platen of the inking table, and also a separate and independent motion to either of the plates, e, e', at will, all by means substantially as described.

Fourth, Communicating motion to the rock shaft of the inking roller arms, c, c, by means of segments, b, b, which are on a crank, E', that is connected to the shaft, D, substantially as herein described.

Fifth, Providing for giving a rapid and slow motion to the platen and its appendages by the employment of two cranks, in conjunction with the treadle and its rod, either of which cranks will communicate motion to the shaft of the crank wheels, D, D2, substantially as described.

61,187.—PAPER PANTELET.—Edward P. Furlong, Portland, Me., assignor to himself and Henry Inman.

I claim a paper pantelet constructed and applied to drawers, substantially as described.

61,188.—CARRIAGE BOOT.—P. Tenny Gates, Plattsburgh, N. Y.

I claim, First, The boot, A, constructed substantially as described, and used as and for the purposes herein set forth.

Second, The dash cover, provided with its flaps, D, and straps, d, constructed as set forth and used as specified.

Third, The combination of the dash cover, C, and boot, A, when formed as herein fully described, and used with the dash of a vehicle either stationary or adjustable, in the manner and for the objects described.

61,189.—HOG PEN.—Burton Gifford, Pedeo, Iowa.

I claim, First, Attaching the trough to the outside of the pen, with graduated openings leading into it from the inside of said pen, substantially as herein shown and described.

Second, The combination of the hinged cover, G, chains or cords, H, and sliding board, with the trough, E, and with the perforated side of the pen, substantially as herein shown and described.

Third, Forming a portion of the bottom or floor, B, of the pen of slats, or with slots, substantially as herein shown and described, and for the reason set forth.

Fourth, The combination of a removable box, D, with the slotted portion of the floor, B, substantially as herein shown and described, and for the purpose set forth.

D' E and E', with their lugs, d e, and the straps F and F', or equivalent devices for operating the said levers beneath the plate, A, the whole being constructed and operating as and for the purpose described.

61,194.—MATERIAL FOR STUFFING MATTRESSES AND FOR OTHER PURPOSES.—H. R. Hildreth and W. H. Smith (assignors to H. R. Hildreth, George B. Hobbs and John Dibblee) Dutch Flat, Cal.

We claim as a new article of manufacture, and as a substitute for the ordinary curled hair, the fibre of the soap plant when properly heated and manipulated therefor.

Treating the fibre of the soap plant, substantially as herein described and for the purpose specified.

61,195.—CORN PLOW.—John Hindmarsh, Henry, Ill.

First, I claim the lever, N, in combination with the standard, O', for sustaining the plow in an elevated position when required.

Second, The rods, O, O, plow beams, G, G, cross bar, P, and screw, Q, combined and operating as described.

Third, The combination of the plow beams, G, G, standards, L, L, lever, N, and brace rods, J, J, all arranged and applied to a mounted frame, A, to operate in the manner substantially as and for the purpose specified.

61,196.—ARTIFICIAL SLATES.—Henry W. Holly and Sidney L. Geer, Norwich, Conn.

First, We claim the use of liquid siliceous as a menstruum or binding material in liquid slating.

Second, Liquid slating, composed of the ingredients specified in or about the proportions set forth.

61,197.—SMOKING STAND.—John Holmes, New York.

I claim a smoking stand constructed as herein shown and described.

61,198.—SAD IRON.—Phineas B. Hood, Milford N. H.

I claim a sad iron, composed of a metallic face, and with a body of soapstone, when constructed and arranged substantially as herein shown and described.

61,199.—PUMP VALVES.—Wm. D. Hooker, San Francisco, Cal., assignor to himself and Volney Cushing.

I claim the valve, A, constructed with guides, b b b, on its sides, arranged substantially as described and for the purpose set forth.

61,200.—FILTERING, EVAPORATING AND GRANULATING SACCHARINE LIQUIDS.—James R. Hopkins (assignor to himself and Jacob O. Joyce, Dayton, Ohio).

First, I claim the evaporator lid or cover, A, as described and for the purposes set forth.

Second, The mode herein described for filtering and purifying the juice, in combination with the granulating process, substantially as and for the purposes set forth.

Third, The mode herein set forth for producing granulation, in combination with the evaporator lid, A, and the filtering process, substantially as described.

61,201.—SEEDING MACHINE.—Benj. F. Horton, Ithaca, N. Y.

First, I claim the combination and use of the stationary bar, C, with the two movable bars or slides, B, B, when made as described, and the use thereof with one or more series of studs in the opening between the bars, or immediately connected with the said opening.

Second, I claim the bars, B, B, when held in constant parallelism with each other by means of the rods, H, H, H, thus securing a uniform and a stable opening between the bars, and the even sowing of the seed; and I claim the set clamp, I, and its set screw, J, for the purpose of adjusting the opening for the sowing of various seeds or articles.

Third, I claim the arrangement of the studs, G, one series on the fixed bar, C, and at least one on the sliding bar, B, B.

Fourth, I claim the combination of the wheeled carriage, the cam, E, seed box, vibrating bars, stationary bars, gear lever, when made as described, the same constructing one whole or machine.

Fifth, I claim the making of the zigzag cam adjustable by set screws, so that it can be applied to the wheels of the horse rakes, and the use of my machine in combination with the wheels and carriage of horse rakes, as shown and described.

61,202.—FLOORING FOR MALT KILNS.—Wm. W. Hughes, and James C. Adams, Philadelphia, Pa.

First, We claim constructing malt kiln floors of perforated flanged plates, extending over two or more joists stiffened by the side bars or clips, G, H, and the transverse bars or strips, J, K, the flanges of said plates being also secured together by pin bolts or rivets passing through the contiguous flanges.

Second, We claim securing the flanged plates, G, H, as above described, to the iron joists below by means of clips, m, m, and wires or their equivalents.

61,203.—PLOW.—William S. Huntington, Byron, Mich., assignor to himself and C. P. Devereaux, North Newburgh, Mich.

I claim the iron elbow scraper, a, suspended to the beam, A, of a plow, in combination with the drawing rod, b, arranged and operating substantially as and for the purpose herein described.

61,204.—REGULATORS FOR WATCHES.—J. Little Hyde, New York City.

I claim so constructing the index and scale of the regulator that the edge of the index shall form such an angle with the lines of the scale that one of the said lines shall always be but partially covered by the index, substantially as herein described for the purpose specified.

61,205.—SWEEPING MACHINE.—Allen S. Jimmerson, Greenpoint, N. Y.

First, I claim the combination of the transverse rotating brush, D, with the two oblique rotary brushes, C, arranged and operating substantially as herein set forth for the purpose specified.

Second, The construction of the sections, F, with the brushing splints, 1, clamped between the two metallic strips or plates, u, substantially as herein set forth for the purpose specified.

62,206.—DOUGH KNEADER.—H. P. Jones, Davenport, Iowa.

First, I claim the employment of a traversing rotary blade, of a hexagonal form, in connection with a box, A, having flaring sides and ends, substantially as described, and for the purposes set forth.

Second, The construction of the blade, C, with toothed gudgeons, g, g, on its ends, in combination with the sliding keepers, c, c, and shouldered rack plates, B, B, substantially as and for the purposes described.

61,207.—STEM SETTING WATCHES.—Jules Jurgensen, Locle, Switzerland.

First, I claim, in combination with mechanism for setting the hands of the watch, the pendant bow, C, constructed and arranged so that by its movement said mechanism is thrown in or out of gear, substantially as specified.

Second, The combination of the cap or guard, E, with the pendant bow, C, and the setting mechanism, whereby the said cap while closed is made to prevent the bow from throwing the hand-setting mechanism in gear, substantially as specified.

Third, The combination of the spindle, D, pendant bow, C, with the eccentric pin, m, sliding rod, h, spring, l, clutch lever, k, clutch, b, contract wheel, c, and pinion, d, in gear with the cannon pinion of the watch, substantially as shown and described.

61,208.—AUGER.—A. C. Kasson, Milwaukee, Wis.

First, I claim an auger having a twist whose front or working faces are concave, and whose rear surfaces are convex, substantially as represented in Fig. 2 of the drawings.

Second, An auger constructed substantially as herein shown and described, which permits the formation of cutting lips at any point in its length, by simply sharpening its edges.

61,209.—PUMP.—William S. Kelley, Schenectady, N. Y.

First, I claim the construction of the piston, B, C, with outlets, a, a, and with a valve seat formed in its lower end for receiving a valve, D, which is applied on the lower end of the piston rod, substantially as described.

Second, The combination of the flanged tapering collars, F, G', and packing, c, or their equivalents, with the piston, B, C, and valve, D, on the piston rod, E, substantially as and for the purpose described.

Third, The construction of the packing-expanders, F, G', substantially in the manner and for the purpose described.

Fourth, The employment of a tapering flanged collar, and a split flanged collar under, over and back of the packing, in such manner that the column of fluid above the piston valve will expand the packing as the piston is raised, substantially as described.

Fifth, The pump constructed substantially as herein shown and described, so that the packing, c, is expanded laterally, by the column of water being lifted, and the valve, D, opened and closed by a direct force or pull upon the piston, substantially in the manner described.

**61,215.—GATE.**—S. A. Kroner, Doylestown, Pa.  
First, I claim the combination of the arm, J, and brace, K, with the rear end of the gate, substantially as herein shown and described and for the purpose set forth.  
Second, The combination of the horizontal track bars, H and I, with the gate and with the friction pulleys or rollers, D, E, F, G, substantially as herein shown and described and for the purpose set forth.  
Third, In the arrangement of the pulleys or rollers, D, E, F, G, in connection with the posts, B, and track rails, H, I, substantially as herein shown and described and for the purpose set forth.

**61,216.—APPARATUS FOR EXTRACTING HONEY FROM THE COMB.**—L. L. Langstroth, Oxford, Ohio, and S. Wagner, Washington, D. C.  
First, We claim the frame, T, with the adjustable arms, b, and the support or post, D, for supporting and operating the revolving frame, B, substantially as set forth.  
Second, The frame, B, suspended by a shaft, C, from the frame, T, and arranged to hold the comb while being rotated substantially as herein described.  
Third, We claim providing the comb holder or frame, B, with adjustable post, l, or their equivalents, for adjusting it to receive and hold frames or combs of various sizes.  
Fourth, In combination with the stationary posts, m, and the adjustable post, l, we claim the wire gauze, B, or its equivalent, arranged to support the comb and at the same time permit the escape of the honey, substantially as described.

**61,217.—COTTON-BALE TIE.**—R. G. Latting, New Orleans, La.  
First, I claim the toothed ridge, G, g, and for the purpose described.  
Second, The shoulder, h, in the bar of the loop, C, as and for the purpose described.  
Third, The arched central bar, G, substantially as described and represented.

**61,218.—LET-OFF MECHANISM FOR NARROW-WARE LOOMS.**—J. N. Leavenworth (assignor to himself and Bela A. Mann), Hamden, Conn.  
I claim the let-off mechanism constructed and arranged to operate as described, the same consisting of the weight, I, suspended by the warp, the weighted lever, E, and its shoe, f, bearing on the warp spool.

**61,219.—SELF FEED FOR CARDING ENGINES.**—R. W. Lewis, Beacon Falls, Conn.  
First, I claim the doffer ring, d, arranged in combination with the main cylinder, A, so as to take therefrom the outside or waste roofing.  
Second, The combination of the creper, E, with the doffer rings, d, and the main cylinder of second breaker, substantially in the manner described so as to receive the waste roving directly from the main cylinder and transfer it to the second breaker substantially as set forth.

**61,220.—STONE-CUTTING MACHINE.**—James W. Maloy (assignor to the American Marble Cutting Company), Boston, Mass.  
First, I claim the combination with the revolving cutting tool, D, of the toothed wheel, H, and projection, v, or their equivalents, for imparting a reciprocating motion to the said cutting tool, as set forth.  
Second, The combination of the vibrating shaft, F, with the movable bearing, l, and spring, S, and for the purpose set forth.

**61,221.—COG RAIL FOR RAILROADS.**—Sylvester Marsh, Littleton, N. H.  
First, I claim a ratchet or cog rail composed of cylindrical cogs free to revolve upon their axes or trunnions, substantially as herein shown and described.  
Second, In a ratchet or cog rail, constructed as described, I claim forming the uprights which support the cogs or rollers of angle iron, substantially as herein shown and for the purposes set forth.

**61,222.—METALLIC SAFETY SEAT FOR RAILROAD CARS.**—Henry Martin, Chicago, Ill., assignor to himself, A. H. Towne, and A. I. Ambler.  
I claim a metallic seat consisting of a tapering strip of metal which is constructed for receiving an eyelet and having its ends secured together thereby, substantially as described.

**61,223.—HOT-AIR FURNACE.**—Peter Martin, Cincinnati, Ohio.  
First, I claim the arrangement of the fire chamber, A, the ash pit, F, the series of descending flues, J, J, J, leading from the top of the fire chamber to the ash pit and the ascending flue, O, leading directly into the discharge flue, O', all as herein described and for the purposes set forth.  
Second, The combination of the elbows, K, L, collars, M, and flanges, N, with the fire place, A, ash pit, F, and flues, J and O, as and for the purposes explained.  
Third, The combination of the supporting crank, H, lever, I, and divided grate, G, G, all constructed and arranged to operate as described.  
Fourth, I claim surmounting the fire chamber of a hot-air furnace with an arched and corrugated sheet-metal crown plate, B, as herein set forth.  
Fifth, In combination with the elements of the claim, I also claim the door, Q, and its accessories, when located as described and operating for the purpose set forth.  
Sixth, The sliding shutter, Y, Z, Z', constructed and employed as and for the purposes set forth.

**61,224.—MANUFACTURE OF SUGAR.**—Franz O. Matthiessen, Jersey City, N. J.  
First, I claim the process, substantially as herein described, of separating the products as discharged from the centrifugal machine by first running off the green syrup and afterward the cleansing liquid or liquor into distinct vessels or reservoirs for separate treatment or use, substantially as specified.  
Second, The combination with the discharge spout, D, of the centrifugal machine of a swivelling spout, E, or spouts controlled by a valve or valves, substantially as and for the purpose or purposes herein set forth.

**61,225.—PRIMING METALLIC CARTRIDGES.**—Edward Maynard, Tarrytown, N. Y. Antedated Dec. 5, 1866.  
I claim primed metallic cap for the base of a cartridge when the fulminate is secured at a single point on the inner side of said cap and the priming point or receptacle does not project externally therefrom beyond its base, all substantially in the manner and for the purpose herein set forth.

**61,226.—MACHINE FOR DRESSING BARREL HOOPS.**—Albert McAlpine, Pittston, Pa.  
I claim dressing barrel hoops their entire length to a thickness by the cutter wheel, B, which is arranged to operate with the guide or head block, H, pressure roller, V, and feed roller, L, all constructed substantially as described.

**61,227.—DREGGING MACHINE.**—James R. McClintock, and John K. Scott, New Orleans, La.  
First, We claim the adjustable frame work or guide, C, for adjusting and holding in proper position the lower ends of the pipes or hose, B, and for supporting the stirrer, D, when the same is used as described for the purpose set forth.  
Second, The combination of the adjustable guide, C, with the pipes or hose, B, and forcing pumps, A, as described for the purpose set forth.  
Third, The combination of the forcing pumps, A, pipes or hose, B, adjustable guide, C, with the stirrer, D, or its mechanical equivalent, substantially as described for the purpose set forth.

**61,228.—HARVESTER.**—Leander J. McCormick and Lambert Erpelding, Chicago, Ill., assignor to said McCormick.  
First, We claim the combination, as set forth, of the main frame, supplementary frame and hinged and pivoted finger beam, all constructed and arranged as described.  
Second, The combination of the supplementary frame, the hinged finger beam, and the coupling arm with the rocking lever, when arranged for joint operation, as described.  
Third, The combination of the shoe, O, locking piece, r, and crescent cam, s, with the lever, S, all arranged as described for the purposes both of locking the finger beam and lifting it horizontally.  
Fourth, The combination with the main and supplementary frames of the hinged finger beam, the locking lever, S, the coupling arm, Q, and the rocking lever, all arranged and operating as described.  
Fifth, The combination of the cross piece, N, and coupling bar, Q, with the shoe, O, constructed and arranged as described.

**61,229.—POCKET KNIFE.**—Royal B. Milliken, Springfield, Vt. Antedated Jan. 5, 1867.  
I claim a knife handle in two parts, connected one to the other and to the blade, and otherwise constructed, substantially as described.

**61,230.—CARRIAGE-THILL COUPLING.**—Simeon Mills, Madison, Wis.  
First, I claim the socket, D, formed solid with the exception of the slot for the pivot, substantially as described, whether fastened to the draw bar or clip or an axle band.  
Second, The combination of the solid socket, D, slide, F, and flanges, b, b, on the thill iron.

**61,231.—LOCOMOTIVE FOR PLOWING, ETC.**—Thos. S. Minniss, Meadville, Pa.  
First, I claim an endless chain or track composed of plates, B, hinged as described, with vertical flanges, E, and truck, C, in combination with the frame track, A, and wheel, D, as and for the purpose set forth.  
Second, The clutch, M, operated by lever, N, in described combination with wheel, D, and endless chain or track, for the purpose specified.  
Third, The platform, O, with guide wheel, H, J, and cam-headed lever, I, as and for the purpose set forth.

**61,232.—SEWING-MACHINE SHUTTLE.**—Stephen Moulton, Hartford, Conn.  
First, I claim a shuttle for sewing machines in which the removable bobbin, C, and adjustable tension spring, D, are arranged in the manner shown upon a plate, A, which is pivoted to a case, B, in such a manner as to cover and protect the parts named and the thread, when in use, and also that the parts named may be readily exposed for several of the threads or adjustment of the tension spring by means of the screw, H, substantially as shown.  
Second, I claim the manner of arranging the tension spring, D, so as to form a bearing for the spring, x, which holds the bobbin in place, said spring being inverted in a hole drilled directly through one end of the bobbin support, A.

**61,233.—GLASSWARE.**—Jeremiah Myers, Dorchester, Mass.  
I claim the arrangement and combination of the eccentric segment gears, n, and r, with the platen or plunger, c, connecting rods, l, and levers, s, the whole being connected to operate together substantially as set forth.

**61,234.—APPARATUS FOR THE USE OF SMOKERS.**—Myer Myers, Maurice Myers and Wm. Hill, Birmingham, Eng.  
We claim the sliding cutting edges defined as d and g, and the connecting of the same with a shifter and means for expanding and holding the parts in position, substantially in the manner and for the purpose set forth.

**61,235.—CARRIAGE-THILL COUPLING.**—Peter Myers, Newton, Ill.  
I claim the construction and arrangement of the coupling iron, J, spring, E, follower, F, thill iron, G, safety button or spring, C, grooves, P, P, all for the purposes as above set forth.

**61,236.—SKIRT ELEVATOR.**—A. F. Nathan, New Haven, Conn.  
I claim the arrangement of the slide, A, upon the loop, B, in the manner described, in combination with the tape, C, substantially as herein set forth.

**61,237.—DYNAMOMETER.**—Chas. Neer, Brooklyn, N. Y.  
First, I claim the peripheral power scale, e, in combination with the chain, l, and a steelyard or other measure of actual force, the parts being constructed and combined substantially as and for the purposes set forth.  
Second, I claim constructing the steelyard carrier, f, in two parts so as to apply the dynamometer to a shaft without removing it from its bearings, substantially as set forth.  
Third, I claim the ring, z, and columns, l, in combination with the peripheral power scale, e, for connecting the same to the coupling, c, as set forth.  
Fourth, I claim the power indicator, u, and fork, 6, combined with steelyard head, h, for the purposes and as set forth.  
Fifth, I claim the dial, q, applied to indicate the proportion of speed, in combination with the indicator, n, so as to determine the actual power consumed, substantially as set forth.  
Sixth, I claim the friction tester consisting of the cylinder, r, the boxes, s, t, in combination with the dynamometer, substantially as and for the purposes set forth.

**61,238.—BRICK MACHINE.**—Anthony Nulsen, E. Hauelsen and Albert Wagner (assignors to A. Nulsen), Cincinnati, Ohio.  
First, We claim the hopper, B, traveling bottom, E, rollers, C, D and F, throat, H, and shaver or knife, G, for the purposes set forth.  
Second, The combination of the rollers, N, when combined with the trunk composed of the two endless aprons, Q, Q, rollers, R, R', and back boards, S, S'.  
Third, The combination of trunk, Q, Q, R, R', S, S', and conducting and separating throat, T, U.  
Fourth, The described combination of separating throat, T, U, reciprocating knife, 9, and removable molds, 8.  
Fifth, The endless carrier, Y, Z, Z', when combined with the reciprocating hooks or claws, 5, substantially as described.  
Sixth, The combination of elastic roller, B, with the concave bar, C, for the purposes set forth.  
Seventh, The combination of elastic rollers, H, B, with the double concave or angular bar, L, and clearer, M, as described.  
Eighth, The combination of elastic roller, B, corrugated clearers, D, D, and concave bar, C, as described.  
Ninth, The combination of picking cylinder, P, cylinders, u, v and w, belts, L, P, rack, k, elastic roller, B, and revolving clearer, E, constructed, arranged and operating in the manner substantially as described and for the purpose set forth.  
Tenth, In combination with the clearers, D, D, I claim the pitman, c, constructed and operating in the manner shown and described and for the purpose set forth.  
Eleventh, The combination of the elastic roller, B, with the revolving doffer, Z, constructed, arranged and operating in the manner substantially as shown and described and for the purpose set forth.

**61,240.—COMBINED TONGS, LID LIFTER, HOOK, ETC., ETC.**—B. Owen and B. Pickering, Dayton, Ohio.  
We claim the above described lid lifter as a new article of manufacture, the same being constructed and used substantially in the manner and for the purposes set forth.

**61,241.—REED AND PIPE MUSICAL INSTRUMENTS.**—Isaac T. Packard, Chicago, Ill.  
I claim as my invention the use of an elastic band, or its equivalent, for the purpose herein described and set forth.

**61,242.—BED BOTTOM.**—H. H. Palmer, Rockford, Ill.  
I claim a spring bed bottom composed of a series of parallel wooden slats, D, connected near their ends by strips, b, of leather or other suitable flexible material, with wire springs, C, attached to the head and foot pieces, a, a, of the frame, A, and connected to the strips, b, centrally between the slats, D, substantially as set forth.

**61,243.—RAILROAD FROG.**—Sidney Parker, Chicago, Ill.  
I claim a railroad frog consisting of the bed plate, B, plate, A, and the steel rails, x, y, z, combined and constructed as herein shown and described.

**61,244.—MACHINE FOR PREPARING THE FIBER OF PLANTS.**—Edward Juanes y Patruilo, New York City.  
I claim the combination of the apron, C, with the sliding frame, D, operated by the lever, E, and arranged substantially as and for the purposes herein described.

**61,245.—KNIFE CLEARER.**—R. R. Pattison, Chicago, Ill.  
I claim, First, The bed or cushion, J, or its equivalent, upon which the knives, etc., are laid to be acted upon by the scourer, in combination with the cleaning material box or reservoir, L, when the two are combined substantially as and for the purpose specified.  
Second, The combination of the handles of the knives or forks, etc., made in a box form and provided with a cover, plate, or board, Q, so hung thereto as to accommodate itself to handles of varying thicknesses, substantially as described.

**61,246.—CARRIAGE BRACE.**—Jas. B. Pelton (assignor to D. H. Wood), Sandusky, N. Y.  
I claim the combination and arrangement of the braces, G, with the ordinary elliptic springs, C, on the body, A, in the manner shown and described, that is to say the braces forming double bars attaching to the body and connecting with the upper half of the elliptic springs, so that while both the body and spring are unseparated and braced against rocking and swaying, the springs are unimpeded and allowed their natural free and unimpeded elastic action, and the bars hidden from sight, as herein set forth.

**61,247.—LIGHTING GAS BY ELECTRICITY.**—Geo. G. Percival, Brooklyn, N. Y.  
I claim the attachment to a gas burner of any kind, or to the fixtures thereof, of a secondary pipe, which may be charged, as it were, with voltaic electricity, by being properly connected with any suitable source of electricity, and which will retain the charge until given off from time to time, as may be required for the purpose of lighting the gas, the whole substantially as herein described.

**61,248.—CARPENTER'S GAGE.**—Russell Phillips, Gardiner, Me.  
I claim the combination of the stock having the grooves and rails and the two slides or its opposite sides, the slides having the recesses, the lips, the projections and thumb screws, as and for the purposes herein set forth.

**61,249.—SCISSORS SHARPENER.**—D'Arcy Porter, Cleveland, Ohio, assignor to G. S. Newcomb & Co.  
I claim the adjustable knife, C, arm, B, and stand, A, in combination with the gage, D, points, a, and screw, E, arranged in the manner and for the purpose set forth.

**61,250.—MACHINE FOR SCOURING LEATHER.**—Ira W. Pray and Edward Fitzhenry, Portland, Oregon.  
We claim, First, A mechanism by which dually arranged sets of rubbers or scrapers, L, in a machine for finishing leather, may be alternately brought into action, by the reciprocating motion of a crank, substantially in the manner set forth.  
Second, In combination with the crank, N', and pitman, N, we claim the frame, A, pivoted substantially in the manner and for the purposes set forth.  
Third, In combination with the hinged arms, H, with or without the arms, I, with the springs, K, the parts being constructed and arranged for use substantially as set forth.  
Fourth, The springs, K, pivoted cross-pieces, K', and lens, O, with the hinged arms, H and I, substantially as and for the purpose set forth.  
Fifth, In combination with the hinged arms, H, I, rollers, E, adjustably suspended by the rods, E', and cross bar, P, substantially as and for the purpose set forth.

**61,251.—LEMON SQUEEZER.**—Thomas Reece and Arthur Clarke, Philadelphia, Pa.  
We claim the combination of the two handles, C and D, hinged together as shown with the two cups, A and B, one provided with a scooped recess, and the other with a flange, d, the several parts being constructed and used as and for the purpose herein set forth.

**61,252.—MILL PICK.**—H. N. Relyea, Warsaw, N. Y., assignor to himself and Mills L. Rice.  
I claim the diamond-shaped truncated head, A, formed of malleable metal, and provided with sockets, a, a, and transverse holes, b, b, in combination with the hardened blades, B, B, and key, c, constructed and arranged substantially as and for the purposes set forth.

**61,253.—FRAME FOR ARTIFICIAL SLATES.**—Wm. Jones Rhees, Washington, D. C.  
First, I claim the combination of a hollow in a slate frame, to be used as a receptacle for pencils, sharpeners, and other utensils, with a suitable covering, constituting a ruler and gage, substantially as described.  
Second, Marking upon said ruler, so arranged, measures of length, substantially as shown and described.  
Third, Marking upon the frame of a slate measures of length, substantially as described.

**61,254.—FRAME FOR SLATES.**—Wm. J. Rhees, Washington D. C.  
First, I claim making the frame to a slate of a box, or boxes, as and for the purpose substantially as described.  
Second, Using the box frame of a slate as a receptacle for pencils, rulers, sponge, or any other utensils or articles, substantially as described.  
Third, Dividing the box frame of a slate into compartments, as and for the purposes described.  
Fourth, Making letters, drawings, and measures of length on the box frame of a slate, either outside or inside.

**61,255.—APPARATUS FOR INSERTING CORKS.**—Wm. Rheiner and L. H. Wolf, Detroit, Mich.  
First, We claim the combination and arrangement of the base, B, cone, A, standard, a, holder, C, lever, D, and plunger, b, b', in the manner and for the purpose described.  
Second, Hinging the top, F, to the part, E, and fitting the plunger to said hinged part, F, all in the manner shown and described.

**61,256.—DISH WASHING MACHINE.**—Gilbert Richards, Cummington, Mass.  
I claim the combination and arrangement of the wire screen, G, extending longitudinally of the cylindrical vessel, A, from one end to the other thereof, the horizontal winged shaft, E, and gear wheels, c and d, with each other, and with the cylindrical vessel, A, as herein described and for the purpose specified.

**61,257.—FRUIT PICKER.**—George S. Richardson, Stow, Ohio.  
I claim the guards, B, of unequal lengths, and single curved fingers, B, connected with the hoops or bands, A, in combination with the socket rings, F, bag, D, and staff or handle arranged in relation to each other as and for the purpose specified.

**61,258.—HARROW.**—John W. Richardson, Sligo, Ohio.  
First, I claim the provision in a harrow of the cinctor shaped blades, J, adapted to revolve on their shanks or axes, boxed within the frame when employed with chambered metallic boxes, H, constructed as represented in figure 2, for the purpose explained.  
Second, The arrangement in a mounted or wheel supported harrow, of one or more shafts, K, K', journaled transversely of the frame, and armed with teeth or blades, L, in combination with the notched rod, Q, projection, Q, lever, N, and treadle, R, as and for the purpose set forth.  
Third, In combination with the elements of the claim immediately preceding, I claim the handle, S, on the rear part of the rod, O, for the several objects stated.

**61,259.—POTATO DIGGER.**—S. Richardson, Jericho, and J. S. Adams, Burlington, Vt.  
We claim the combination of the digger, B, cylinder gage wheels, D, D', and supporting wheels, E, E', arranged and operating substantially as described.

**61,260.—WHIFFLETREE ATTACHMENT TO PLOWS.**—J. B. Ripson, Kendall, N. Y.  
I claim the application of the wheel, A, projecting beyond the end of the whiffletree, as shown in figure 1.  
I also claim the brace, B, and pivot, a, for the purpose of securing the wheel to the whiffletree substantially as herein described.  
In combination with the wheel, A, I also claim the long staple, C, for the purpose herein set forth.  
I also claim the special arrangement and combination of the whole thing as here in set forth.

**61,261.—COVERING WIRE WITH FINE WIRE.**—William H. Rodgers, Brooklyn, E. D., N. Y.  
I claim the hollow fixed head, l, separate from the hollow axis, b, in combination with the revolving head carrying the spools or bobbins of fine wire, and revolved around the axis, b, as and for the purpose set forth.  
I also claim the grooved roller, g, in combination with the revolving head and spools around which rollers, g, the fine covering wire is wound to give the required tension from the friction as set forth.

**61,262.—AMALGAMATOR.**—D. E. Rose, Cincinnati, Ohio.  
First, I claim the combination of the spring bearing, H, and inclined sectional shaft, B, provided with spiral flange, revolving in the case, X, which enter the kettle, E, near the bottom, substantially as described.  
Second, I claim combination of the inclined casing, X, provided at its lower end with stationary grinding flange, D, and the shaft, B, provided with a grinding disc, C, introduced through the side of the kettle, and operating near its bottom, substantially as described.  
Third, In combination with the kettle, arranged as described, I claim the revolving paddle, G, as described and represented.

**61,263.—DRAINING MACHINE.**—A. P. Routt, Liberty Mills, Va.  
I claim the adjustable flaring wings, G, G, applied to the double mold board, D, in the manner described, and operating to clear away the dirt from the edges of the ditch as and for the purpose set forth.

**61,264.—PLANING MACHINE.**—Gilbert J. Rugg, Worcester, Mass.  
I claim the combination of the lever, F, with roll, D, cross-piece, G, and rods, b and c, when constructed and operating substantially as shown and set forth.

**61,265.—LEGGING.**—William G. Rule, New York City.  
I claim the combination of the elastic metal frame, substantially as described, with the covering of the same, whether made of leather or other material, for the purpose of making spatter dashes as set forth.

**61,266.—STEAM GOVERNOR.**—Robert Sanderson, Cleveland, Ohio.  
I claim the auxiliary lever, O, yoke, N, and pivot joint, b', extending through the lever, M, in combination with the lever, J, pawls, k, K', lifting toes, H, ball, P, and yoke, L, as and for the purpose set forth.

**61,267.—MANUFACTURE OF PAPER AND TREATMENT OF PAPER PULP.**—A. T. Schmidt, Pittsburg, Pa.  
I claim the process hereinbefore described of treating paper, paper pulp, and textile fabrics of vegetable fiber, with a mixture of glycerin, oil of vitriol and water, and subsequently with an alkaline bath, or the equivalent of such process, substantially as and for the purposes hereinbefore described.

**61,268.—CHURN.**—Thomas D. Shaw, Westfield, Ohio.  
I claim the dashers, I and J, provided with tubes, L, M, in combination with the sleeve, N, shaft, K, and operating conjointly by the gears, O, P and G, as and for the purpose set forth.

**61,269.—AUTOMATIC FLY BRUSH AND FAN.**—Charles C. Short, Osgood, Ind.  
I claim the combination and arrangement of the shaft, H, automatically actuated by clock work, and the cross head, H', screw head, I, and the extension arms, K, K', attached adjustably to the cross head by hooks, K'', substantially as and for the purpose set forth.

**61,270.—SEWING MACHINE.**—Isaac Merritt Singer, Yonkers, N. Y.  
First, I claim the combination of a round needle bar, and a round presser foot, by means of a sliding bracket, substantially as set forth.  
Second, The combination of a reciprocating spring shuttle holder, with a shuttle guide in such manner that the former, while moving with the shuttle, is caused during a part of its movement to press strongly against the shuttle, by the action of the spring guide, substantially as set forth.  
Third, The combination of a shuttle constructed to oscillate in a sewing machine, with a projecting thread guide for the delivery of thread, substantially as set forth.  
Fourth, The construction in a sewing machine of the lateral support for the oscillating shuttle, with a central opening, substantially as set forth.  
Fifth, The shuttle constructed with an ear, projecting at its butt, beyond the bobbin socket, substantially as set forth.  
Sixth, The combination of the shuttle with a spring ring so arranged as to hold the bobbin in its socket in the shuttle, substantially as set forth.  
Seventh, The combination of the shuttle with a spring ring provided with a branch to make pressure upon the bobbin, substantially as set forth.  
Eighth, The combination of the shuttle, with a lining in the bottom of its bobbin socket, substantially as set forth.  
Ninth, The combination of the shuttle with a hoop lining in its bobbin socket, substantially as set forth.  
Tenth, The combination of several sections of a sectional thread tension, with one movable stock, substantially as set forth.  
Eleventh, The combination of the arm of the thread take up with its stock by means of an adjustable connection, substantially as set forth.  
Twelfth, The combination of the regulating lever of a reversible feed mechanism, with a stop carried by said lever, substantially as set forth.  
Thirteenth, The combination of the turning regulating plate and feeding instrument of a sewing machine, by means of a bent reciprocating bar, substantially as set forth.

**61,271.—COMPOSITION FUEL.**—Henry Slatyer, Covington, Ky.  
I claim as new, and of my invention, the composition fuel composed and compounded as set forth.

**61,272.—GRAIN BINDER.**—Andrew J. Smith, New York City.  
First, I claim the lever, F, provided with the notched forks, E, when arranged and used as and for the purpose herein set forth.  
Second, The sliding gear block, K, constructed arranged and operating substantially as and for the purpose herein specified.

**61,273.—CORN PLANTER.**—Ellis F. Smith, Orangeville, Ill.  
I claim the traction wheel, A', provided with the markers, c, c, in combination with the gear wheels, C and D, so constructed that a hill will be planted, when the marker is on the ground for the purposes and substantially as described.

**61,274.—AMALGAMATOR.**—Syrabus Standish, Pacha, Cal.  
First, I claim the spiral shaped fingers or lips, M, of the rotating muller arms, L, substantially as and for the purposes specified.  
Second, The shoes, M, hung to the muller arms, L, so as to be susceptible of a lateral play upon such arms, substantially as and for the purpose described.  
Third, The shoes, M, having spiral shaped flanges or lips, O, upon their outer ends as and for the purpose specified.

**61,275.—MODE OF UTILIZING TOBACCO DUST.**—A. F. Stayman, Baltimore, Md.  
First, I claim the utilizing of tobacco dust, substantially as herein described.  
Second, The process herein described of preparing tobacco dust for use.

Third, I claim a material for smoking composed of tobacco dust, prepared in any of the methods herein described, or in any equivalent manner.  
 Fourth, I claim a granulated smoking tobacco composed of tobacco dust, treated substantially as herein set forth.  
 Fifth, I claim as a new article of manufacture, the smoking tobacco, composed principally of tobacco dust, and prepared substantially as herein described, whether the same be used in a granular or solid form.  
**61,276.—WATCH CASE.**—O. F. Stedman, Ravenna, Ohio.  
 I claim the spring, L, as arranged in combination with the watch case in the manner and for the purpose as herein set forth.  
**61,277.—MACHINE FOR FILING SAWS.**—Eli Stubbs, West Elkton, Ohio.  
 I claim the adjustable clamp, A, in combination with the hinged adjustable guides, B, B', constructed and arranged as described, as a new article of manufacture applied and used in the manner specified.  
**61,278.—STEAM GENERATOR.**—James H. Sturdy, Attleboro, Mass.  
 I claim a boiler constructed with helical ascending and descending grooves or flues arranged to extend around it and made to communicate at or near their upper extremities, substantially as set forth.  
 I also claim the cap, B, as made with the central passage, g, and one or more chambers, e, the same being arranged in it, substantially in the manner and for the purpose as specified.  
 I also claim the combination of the cap, B, or its equivalent, with the boiler formed with two or any other greater number of helical flues, arranged in it, substantially as described.  
**61,279.—BOAT-DETACHING TACKLE.**—James R. Taylor, New York City.  
 I claim in combination with the central windlass or shaft, C, and the hooks or bolts, I, at the ends of the boat, the rods, levers, and links, b, b', d', d', f, f', and g, for connecting and detaching boats, substantially as herein described and represented.  
**61,280.—BOAT DETACHING TACKLE.**—James R. Taylor, New York City.  
 I claim in a boat connecting and detaching apparatus the combination of the sliding ring, key, and friction rollers arranged to operate together, substantially as herein described, and for the purpose set forth.  
**61,281.—BOAT-DETACHING TACKLE.**—James R. Taylor, New York City.  
 I claim in connection with the hook in the davit block, and the ring in the boat, the lever, A, with its footpiece, e, the whole constructed, arranged and operating in connection therewith, substantially as described.  
**61,282.—ELASTIC TIPS FOR LEGS OF FURNITURE.**—E. S. Torrey, New York City.  
 I claim the combination of soft elastic tips and divided sockets, substantially as herein set forth for connecting said elastic tips with furniture as above described.  
**61,283.—TOBACCO PIPE.**—James W. Truman, Macon, Ga.  
 I claim the combination of the flanged tube, b, and rubber packing, A, with the pipe stem, B, substantially as and for the purpose herein shown and described.  
**61,284.—APPARATUS FOR LIGHTING LAMPS, GAS BURNERS, ETC.**—Philos B. Tyler, and Wm. M. Chandler, Springfield, Mass., assignors to Repeating Light Company, Springfield, Mass.  
 We claim the tube and its apparatus for holding and controlling a continuous or repeating match, substantially as herein described, in combination with the wick tube or equivalent gas burner, and an igniter, substantially as described, and for the purpose specified.  
**61,285.—COOKING STOVE.**—Samuel S. Ulter, New York City.  
 I claim the air channels, g, g', arranged within the smoke channel, I, and employed in connection with the main chamber, c, and additional air chamber, d, as and for the purpose specified.  
**61,286.—QUARTZ CRUSHER.**—I. Varney and A. Rix, San Francisco, Cal.  
 I claim iron binder, K, the toggle bar, M, and jaws, B and E, constructed and arranged substantially in the manner and for the purposes set forth.  
**61,287.—BOOTS AND SHOES.**—George Wagner, Washington, D. C.  
 I claim the combination of the piece a b c, and the piece leaving the opening on the side covered by flap, D, in the manner described for the purpose specified.  
**61,288.—PAINT BURNER.**—W. W. Wakeman, Jr., New York City and R. Ross, Brooklyn, N. Y.  
 First, I claim the within described apparatus adapted for projecting flame obliquely in a central stream upon painted surfaces, and allowing of being moved and tilted, substantially as and for the purpose herein set forth.  
 Second, The cover, K, in combination with the disk, formed and provided as above represented, and adapted to receive sufficient quantity of air at the sides and to expose only a small area of the upper surface of the vessel, through which the jet of flame may issue, substantially as and for the purpose herein specified.  
**61,289.—EYE GLASSES.**—Edwin Want, New Haven, Conn.  
 First, I claim attaching the handle, D, and the arm, E, each to their respective bows, and the spring, F, to the two bows in position relatively to the said handle and arm, so that when closed the two points at which the spring is attached and the two glasses correspond in position, the one with the other, in the manner herein described.  
 Second, Attaching the spring, F, by means of the square shoulder described and the nut, T, substantially as and for the purpose specified.  
 Third, The handle, D, and catch, p, n, d, when formed in one and the same piece, as and for the purpose specified.  
**61,290.—VEGETABLE CUTTER.**—William Weaver, Phoenixville, Pa.  
 I claim the cylindrical revolving hopper, B, its spiral vanes, m, the plate, A, and rotating knives, n, n', in combination with the annular rack, d, and pinion, e, the whole being arranged and operating as set forth.  
**61,291.—STILL FOR PETROLEUM.**—William C. Wells, Parkersburg, W. Va.  
 First, The frame work, B, for the bottom of the still and to receive the fire sheets or plate, substantially as described, and for the purpose specified.  
 Second, In combination with the bottom frame work, B, of the still, the return flues, G, of the furnace, corresponding with the fire sheets, C, substantially as and for the purpose described.  
**61,292.—PAINT AND VARNISH BRUSH.**—George A. White, Boston, Mass.  
 I claim in combination with the ferrule, a, the fender wires, c, and binder end, d, substantially as described, also in combination with such binder and the paper cylinder, e, or its equivalent, substantially as set forth.  
**61,293.—CARRIAGE HUB.**—James M. Whitney, Providence, R. I.  
 I claim, First, A carriage hub, made with its central part for receiving the spokes and elastic cylinders of bronze combined with the conical sleeves of iron, forming in two pieces the axle box and nut for comprising the elastic cylinders, and the external covering these, and forming the two ends of the hub.  
 Second, I claim the conical shaped elastic cylinders or packing.  
 Third, I claim the ventilated air space, between the axle box and the packing.  
 Fourth, I claim the tips and slats for preventing the turning of the sleeve in screwing and unscrewing with the holes giving access to the external air, all made and operating substantially as described or their mechanical equivalents.  
**61,294.—CULTIVATOR.**—Silas M. Whitney, Galesburg, Ill.  
 I claim, First, The screwing of the standard, D, to the beam, A, through the median of the sockets, B, and screw bolts, C, provided with eyes, a, all constructed and arranged substantially in the manner as and for the purpose set forth.  
 Second, The braces, E, applied to the beam and standards, substantially in the manner and for the purpose specified.  
 Third, The caster or gage wheel, H, applied substantially in the manner and for the purpose set forth.  
**61,295.—COAL SCUTTLE.**—D. Wight, New London, Conn.  
 I claim a coal hod or scuttle provided with a discharge opening or spout at or near its lower or bottom plate, for the removal of the coal therefrom, substantially as described.  
**61,296.—CAR COUPLER.**—J. T. Wilson, East Liberty, and T. J. Louis, Port Rug, Pa.  
 We claim, in combination with the draw bolt, d, and the flanged or beveled face plate, b, the coupling lever, e, when hung from the upper bar of the coupling frame, so as to leave a free space for the reception of an extra link, and allow the connecting link, c, to slide back into the coupling frame, when necessary, the parts being constructed and arranged substantially as and for the purpose above described.  
**61,297.—ALARM FOR MONEY DRAWER.**—James F. Winchell, Springfield, Ohio, assignor to himself, George C. Steele, and S. A. Simms.  
 First, I claim the combination of the drawer, B, lever, D, and sliding block, F, and spring, n, with the bell, G, all arranged and operating substantially as described.  
 Second, In combination with the above-named parts, I claim the treadle, E, for the purpose of enabling the drawer to be closed without sounding the alarm, as set forth.  
 Third, I claim the locking device, consisting of the knob, C, and opening, h, arranged to operate as set forth.  
**61,298.—BRICK MACHINE.**—Robert Wolff (assignor to himself and John H. Thiedinger), New York City.  
 First, I claim in connection with the mud box, a, and grinding shaft, B, the mangle rollers, D, sliding cover, K, the root slide, h, plunger, E, levers, g, I, and cams, F, H, all constructed, arranged, and operating substantially as and for the purpose herein described.  
 Second, I claim a duplication of the above in connection with a single mud box, a, and grinding device, B b, substantially in the manner and for the purpose hereinbefore described.

**61,299.—WATER WHEEL.**—Albert A. Wood, Manlius, N. Y.  
 I claim the adjustable chuteboard or lip, b, extending down between the guide pieces, a, parallel therewith, to conduct the water in an unbroken stream, and always in the same direction, upon the wheel, substantially as and for the purpose set forth.  
**61,300.—FASTENING FOR SHIRT COLLARS.**—Alonzo Wood, East Henrietta, N. Y.  
 First, I claim the combination of the spring clamping device a b, with the stud, l, operating as described and for the purpose set forth.  
 Second, In combination with the spring clamping device, a b, and the holding stud, l, I also claim the stud or catch, n, as and for the purpose specified.  
**61,301.—COAL HOD.**—A. A. Yeatman and J. M. Mason, Washington, D. C.  
 First, I claim a shovel, B, of suitable construction with the mouth of a coal bucket, so that the lump of coal may be passed over said sieve, and the dust thereof fall through it, as herein specified.  
 Second, The combination of the bucket, A, with chamber, C, forming shoulder, x, at its top, and sieve, B, when constructed and used substantially as herein specified.  
**61,302.—HORSE HAY FORK.**—Edmund Yeiser and J. S. Sheetz, Sheridan, Pa. Antedated Jan. 5, 1867.  
 First, I claim the metallic body, A, provided with a sliding bar, B, lever, E, catch, F, and boot, D, arranged and operating substantially as herein specified.  
 Second, The spears, a and a', connected as described, spear a' being slightly longer than spear a, and a shoulder on the end of spear a' to form a perfect joint, the whole arranged and operating as and for the purposes set forth.  
**61,303.—MOLDING FLASKS.**—James Yeump, Philadelphia, Pa. Antedated Jan. 5, 1867.  
 I claim the detachable bars, C, with their arms or enlargements, z, in combination with a molding flask, the whole being constructed and operating substantially as and for the purpose described.

RE-ISSUES.

**2,451.—LOOM.**—George Crompton, Worcester, Mass., assignor of James Greenhalgh. Patented Nov. 2, 1852. Extended 9 years.  
 First, I claim a series of long upright levers, one for each leaf of heddles, and each connected at each end substantially as described in combination with a series of vibrating attachments capable of motion in at least two directions as specified, the combination being as described, whereby power may be applied either to lift or depress leaves of heddles in the manner specified.  
 Second, I claim a series of long upright levers, one for each leaf of heddles, and each connected to a leaf of heddles substantially as specified in combination with a series of vibrating attachments capable of motion in at least two directions as described, and a pattern cylinder or chain which determines the position of said attachments, and consequently the direction in which each lever shall be reciprocated prior to the movement thereof, the combination being substantially as hereinbefore described.  
 Third, I claim the series of upright levers and of vibrating attachments, and the pattern chain or cylinder, all in combination as specified in the second claim in combination with reciprocating mechanism, which, through the intervention of the vibrating attachments, and the series of upright levers, and the pattern chain or cylinder, act on the leaves of heddles, the combination being such as herein set forth.  
 Fourth, In combination with leaves of heddles, and a series of upright levers, having characteristics as described, I claim an adjustable connection between said levers and leaves of heddles, whereby the range of perpendicular motion of the heddles may be changed without altering range of horizontal motion of the levers, or the range of motion of the reciprocating mechanism, the combination being and acting as described.  
 Fifth, In combination with a series of upright levers having characteristics as described and operating to elevate and depress leaves of heddles, I claim eveners or adjusters operating substantially in the manner and for the purpose described, also in combination with said series of levers, eveners and vibrating attachments, reciprocating mechanism to move the levers which are returned to their mean position by the eveners, these three combinations each being and operating as specified.  
 Sixth, In combination with a series of upright levers, having characteristics as specified, a pattern chain or cylinder, and a series of vibrating attachments, I claim a mechanism through which the chain or cylinder acts upon the vibrating attachments, this combination being and acting substantially as described.  
 Seventh, I claim the arrangement substantially as described of leaves of heddles side of the loom frame series of the upright levers and pattern cylinder or chain substantially as described, the gist of the arrangement being that the leaves of heddles are within the frame, the upright levers close to the outside of the frame, and the pattern chain outside of the levers, whereby the advantages herein described are attained.  
 Eighth, I claim arranging the vibrating attachments and their pivots above the axis upon which the upright levers oscillate with the pattern chain below the vibrating attachment substantially in the manner and for the purpose specified.  
 Ninth, I claim a series of upright levers, having characteristics as specified in combination with leaves of heddles, and a pattern cylinder or chain as described; and I also claim these elements of a machine in combination with reciprocating mechanism, the combination being substantially as herein specified.  
 Tenth, I claim in combination with a series of upright levers, and heddle leaves, and cords connecting them, an adjustable mechanism as described, whereby the tension of the cords may be varied as set forth.  
 Eleventh, I claim in combination reciprocating mechanism and vibrating mechanism, when the two gear together in manner described, whereby the vibrating attachments are prevented from moving faster than the reciprocating mechanism, and also these mechanisms thus constructed, to gear together in combination with a pattern chain substantially as described.  
 Twelfth, I claim in combination with vibrating pieces so constructed as to embrace reciprocating mechanism, a reciprocating mechanism, a pattern chain or cylinder, and a series of long upright levers, having characteristics as set forth, all substantially as described, and acting in combination as set forth.  
 Thirteenth, I claim constructing long upright levers, having characteristics as described, with a bend therein as specified, so that their weight is outside of the axis upon which they oscillate, thereby attaining the results desired and described.  
**2,452.—HARVESTER.**—Andrew J. Holman, Philadelphia, Pa., assignor of J. S. Butterfield. Patented March 2, 1858.  
 I claim a driver's seat, D, supported as described, lever, G, and wheel, H, in combination with the main frame and cutting apparatus, substantially as described.  
 Second, I claim the reversible arm, Q, constructed as and for the purposes set forth.  
**2,453.—HARVESTER.**—Andrew J. Holman, Philadelphia, Pa., assignor of J. S. Butterfield. Patented March 2, 1858.  
 First, I claim in combination with a reel supported on a single post, an adjustable harvester or reel which may be raised up or let down upon the post, substantially as described.  
 Second, I claim supporting a reel on a single pivoted post, so arranged that it may be leaned more toward or from the standing grain or grass in combination with an adjusting mechanism by which the reel can be raised up or let down upon the post, substantially as and for the purpose set forth.  
**2,454.—HARVESTER.**—Andrew J. Holman, Philadelphia, Pa., assignor by mesne assignment of McClintock Young, Jr. Patented July 9, 1861.  
 First, I claim driving an automatic rake on a two-wheel hinged bar machine by mechanism located outside of the wheels instead of between the wheels.  
 Second, Locating the vertical axle of an automatic revolving rake upon the platform of a harvester at or near its inner front corner.  
 Third, Driving an automatic rake located on the platform of a two-wheel hinged bar machine by means of a jointed tumbling shaft driven from the end of the main axle.  
 Fourth, The combination of a hinged platform with an automatic rake located at or near its inner front corner.  
 Fifth, I claim in a hinged bar machine the combination of a revolving rake and reel supported wholly upon the platform at or near its inner front corner in a removable frame so that said machine can be readily converted from a mower to an automatic reaper and vice versa.  
 Sixth, I claim in a hinged bar machine rigidly connecting the rake frame to the platform on which it is supported in such manner that the rake shaft does not change its relative position to the platform in passing over uneven ground.  
 Seventh, Attaching the revolving rake and reel arms directly to the upper side of the crown or bevel wheel by which they are driven.  
 Eighth, Locating the crown or bevel wheel to which the arms of the revolving rake or reel are attached below the top of the driving wheel.  
 Ninth, Combining a segmental cam or guide with a series of rake and reel arms so attached together in pairs diametrically that while one rake is moving in contact with the grain its opposite arm shall be thrown up to any desired extent to clear the driving wheel and main frame.  
 Tenth, Arranging the shaft which drives the revolving rake and reel located on the platform of a floating finger-cutting apparatus in such a manner that the said shaft shall revolve upon the main shaft at a center when the cutting apparatus is raised and lowered.  
 Eleventh, The construction and adaptation of a combined rake and reel which revolves entirely around a vertical center so that the revolving rake and reel arms may be attached to the driving hub or wheel inside of the plane of the main driving gear wheel and below the highest point of said wheel.  
 Twelfth, Combining a segmental cam or guide with a series of rake and reel arms when the arms of said revolving rake and reel are attached together to the head at such an angle as in their revolution to be thrown up so as to leave an unobstructed space on the machine.  
 Thirteenth, Attaching the frame or support of the continually-revolving rake to the removable platform so that the entire rake apparatus can be removed with the platform for converting the machine from a reaper to a mower.  
 Fourteenth, Driving the continuously-revolving rake arms by the upper surface of a crown wheel in combination with supporting that crown wheel on top of a vertical standard and attaching to the same vertical standard a horizontal stud on which the driving pinion revolves.  
 Fifteenth, Attaching the revolving rake and reel arms perpendicular to the top surface of the platform and having its arms successively elevated, substantially as and for the purpose described.  
 Sixteenth, A standard or support which sustains the sweep rake above the draft frame or driving wheel rail standard being mounted wholly upon the platform of the hinged machine and below the top of the driving wheel.  
 Seventeenth, A revolving rake and reel arm, one long one and one short, the short sections being connected to the platform and removable with it, so that as the platform is attached to adopt the machine for harvesting grain or removed to adapt it to the cutting of grass, the finger bar shall be correspondingly lengthened and shortened as has been found advantageous in harvesting the different materials, substantially as described.

**2,455.—GAS APPARATUS.**—E. A. Pond and M. S. Richardson, Rutland, Vt. Patented March 27, 1866.  
 First, We claim the use of hydro-carbonated air for head lights of locomotives substantially as herein described.  
 Second, The application to locomotive engines of an air pump, operated from an independent steam cylinder deriving its steam from the locomotive boiler, said air pump being connected with a suitable apparatus for carbureting atmospheric air, and with burners in the head lantern and the cars, substantially as set forth.  
 Third, The construction of the air pipe with branches and stop cocks, so as to supply the vaporizer with hot or cold air, at pleasure, substantially as set forth.  
 Fourth, Generating illuminating gas by means of an apparatus consisting of the combination with a vaporizer of an air pump driven by a gas engine which receives its supply of gas from the generator, substantially as herein described.  
**2,456.—RAKE FOR HARVESTERS.**—Lewis C. Ruse, Phillipsburg, N. J., assignor of Thomas S. Whitenack. Patented Feb. 5, 1867.  
 First, I claim constructing and arranging the raking and reeling apparatus in such a manner that the rake may cut a single apparatus at will at the will of the operator the raking teeth may be kept above the platform so as not to sweep the grain from the platform.  
 Second, A combination of a revolving rake on an axis, vertical or nearly so, and an unobstructed space for the driver to sit on the machine.  
 Third, The combination of a continuously revolving rake, whose arms are pivoted to an axis, vertical or nearly so, and an unobstructed space for the driver to sit on the main frame.  
 Fourth, The employment or use of the slides, G, when applied to the arms, F, substantially as shown for the adjustment of the same as set forth.  
 Fifth, The rollers I, I', when applied to the main frame, A, and used in connection with the beaters, E, to operate as and for the purpose set forth.  
 Sixth, Attaching the beaters, E, and rake, R, to the arms, F, by means of the sockets, J, constructed and arranged as shown to admit of the adjustment of the beaters and rake, specifically as set forth.  
 Seventh, In combination with the arms, F, the lever, A, attached to the main frame, A, and provided with the curved bar, I, placed in such relation with the arms to operate as and for the purpose set forth.  
**2,457.—HARVESTER RAKE.**—Samuel S. Sherman and Jeremiah G. Sherman, McHenry, Ill. Patented March 6, 1866.  
 First, We claim providing the arm, C, D, which attaches to the rake to the reel, with an elbow or joint which allows the rake at the proper time to drop down from the reel upon the platform, substantially as and for the purpose herein specified.  
 Second, In combination with the rake we claim an arm with one end attached to the rake, and the other end attached to a reel arm or its equivalent, directly behind the rake and operating upon the rake so as to cause it to sweep the platform in an arc of a circle, while one end of the rake is held stationary or nearly so, substantially as and for the purpose described.  
 Third, We claim the employment of the rods J, and cam, K, in combination with the reel and arm, C, D, for the purpose of raising the rake up from the platform when desired and arranging it upon the reel as and for the purposes specified.  
 Fourth, We claim in combination with said reel jointed arm and rake, an automatic catch operating in connection therewith so as to secure the rake to the reel until released therefrom, substantially in the manner described.  
**2,458.—COOKING STOVE.**—Joseph C. Henderson, Albany, N. Y. Patented May 29, 1860. Reissued Jan. 30, 1863.  
 I claim, First, The employment of a supply chamber, e, separated from the combustion chamber, l, by means of the division plate, g, or any equivalent therefore, and each so arranged that the fresh fuel shall be fed at the side of the burning fuel, in the manner and substantially as and for the purposes described and set forth.  
 Second, I claim the combustion chamber, l, contracted at the top to prevent the too rapid escape of the gases of combustion, in combination with the supply chamber, e, substantially in the manner and for the purposes hereinbefore described and set forth.  
 Third, I claim the employment of the division plate or partition, g, or its equivalent so constructed and arranged as to divide the fire chamber or chamber of combustion and thereby constitute the chambers, l and e, in the manner and for the purposes substantially as herein described and set forth.  
 Fourth, I claim constructing and arranging the said division plate, g, between said chambers, l and e, that atmospheric air may be admitted into and through it to the fire, so as to more perfectly consume the gases as they are evolved from the burning fuel, in the manner substantially as herein described and set forth.  
 Fifth, I claim the employment of the plate, p, for the purpose of retaining the gases in contact with the fire until they are entirely consumed, substantially as hereinbefore described and set forth.  
 Sixth, I claim constructing the plate, p, in such a manner that air can be introduced through it to the surface of the fire, substantially as and for the purpose hereinbefore specified and set forth.  
 Seventh, I claim the supply chamber, e, combustion chamber, l, division plate, g, and plate, p, all combined and operating substantially in the manner and for the purpose hereinbefore specified and set forth.  
 Eighth, I claim the employment of the narrower contracted throat, q, when applied to cooking stoves or furnaces, in the manner and for the purposes substantially as herein described and set forth.  
 Ninth, I claim the employment of the supply chamber, e, when applied to cooking stoves or furnaces and therein constructed and arranged immediately in front of the combustion chamber, substantially in the manner and for the purposes as herein described and set forth.  
**2,459.—HEATING AND OTHER STOVES.**—Joseph C. Henderson, Albany, N. Y. Patented May 29, 1860. Reissued June 30, 1863.  
 I claim, First, A reservoir or hopper contracted at its lower end to contain and supply fuel, in combination with a fire pot separate from said reservoir, and to which the coal is supplied at or near its center, so that the products of combustion pass away from the surface of the fire around the contracted base of the said hopper, substantially as specified.  
 Second, I claim a chamber or horizontal flue around the base of the reservoir or hopper supplying coal, and over the surface of the fire, to receive and detain the products of combustion in contact with the fire hat until perfectly consumed, substantially as herein fully described and set forth.  
 Third, I claim a contracting outlet or opening from the said chamber or horizontal flue formed as aforesaid, to prevent a too rapid escape of the products of combustion, as specified and set forth fully hereinbefore.  
 Fourth, I claim the surrounding case, b, in combination with the said hopper, fire pot and chamber above the fire, for receiving the products of combustion from the said chamber and radiating heat, substantially as and for the purposes hereinbefore fully described and set forth.  
 Fifth, I claim, in combination with a hopper over the fire, a circulating current of air surrounding such hopper, to aid in cooling the fuel in said hopper, substantially as hereinbefore fully described and set forth.  
 Sixth, I claim the supply door, f, and register, e', in combination with the hopper, e, and draft space, z, substantially as herein described and set forth.  
 Seventh, I claim a circulating current of air passing through the hollow lower end of the supply hopper and entering the combustion chamber over the fire, for promoting combustion and keeping the hopper from injury by heat, as described and set forth.  
**2,460.—METHOD OF BRAKING AND STARTING STREET RAILWAY CARS.**—Aaron Highley, South Bend, Ind. Patented Aug. 14, 1866.  
 First, I claim the construction and arrangement of the wheels, pulleys, chains, and windlasses in their relation to each other, in the manner and for the purpose herein described.  
 Second, I claim the combination of the loose pulley, E, E', and the loose clutch pulley, F and D', with the clutch wheel D', which latter is rigidly attached to the axle, a, in the manner and for the purpose herein described.  
**2,461.—MEANS FOR OPERATING STAMPS AND HAMMERS.**—Christopher R. James and Nathan W. Condit, Jr., Jersey City, N. J., assignees of C. R. James. Patented June 19, 1866.  
 First, In combination with the steam cylinder of a hammer or stamp, a reservoir, containing steam, compressed air or other aeriform fluid, of sufficient pressure to elevate each cylinder alternately into communication with the boiler, when constructed, arranged and operating substantially as set forth.  
 Second, The arrangement in combination with two stamps or hammers, worked by pistons moving in separate cylinders, of the valve operated by said stamps or hammers in the manner described, with passages controlled by it so arranged as to bring each cylinder alternately into communication with the boiler, and thereby produce the alternate action of the pistons and their attached stamps or hammers, essentially as herein set forth.  
**2,462.—LANTERN.**—Eugene N. Jenkins, Chicago, Ill. Patented July 24, 1866.  
 I claim, First, The hand, D, provided with a plate or disk, E, for supporting the lantern globe, substantially as specified.  
 Second, The combination of the band, D, disk E, springs, a, or ledges, c, with the base, C, substantially as and for the purpose specified.  
 Third, Extending the guard rods, F, and connecting them directly to the bottom or flanged part of an annular base having an opening in it sufficiently large to allow the globe to pass through it, substantially as set forth.  
 DESIGNS.  
**2,548.—HANDLE OF A SPOON OR FORK.**—Henry H. Hayden, New York City, assignor to Holmes, Booth & Hayden, Waterbury, Conn.  
**2,549.—BOTTOM OF A FRYING PAN.**—Henry D. Musselman, Lancaster, Pa.  
**2,550.—COPYING PRESS.**—Joseph Naylor, Newark, N. J. Antedated Dec. 18, 1866.  
**2,551.—HANDLE OF A FORK OR SPOON.**—Le Roy S. White, Waterbury, Conn.  
**2,552.—BUREAU CASE.**—Martin H. Crane (assignor to Crane, Breed & Co.), Cincinnati, Ohio.  
**2,553.—MATCH SAFE.**—Russel Frisbee (assignor to J. & E. Stevens & Co.), Cromwell, Conn.  
**2,554.—MOLDING.**—Samuel Kellett, San Francisco, Cal.  
**2,555.—ROUND COMB.**—W. S. Mingis, New York City.  
**2,556 and 2,557.—STANDARDS FOR SCHOOL FURNITURE.**—Calvin W. Sherwood, Chicago, Ill.  
**2,558.—SCISSORS.**—Samuel W. Valentine, Bristol, Conn.  
**2,559.—FLOWER GARDEN.**—Wm. Webster, Rochester, N. Y.

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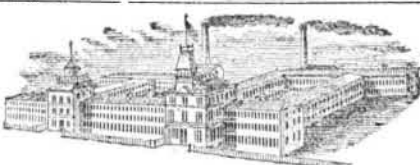
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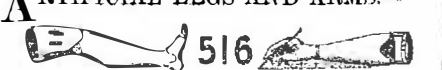
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- Weight of piles to produce boiler plates (from 2 feet to 9 1/2 feet, superficial measure, from 1/2 inch to 1 inch in thickness, allowing for heating, rolling, and cropping).
- Weight of piles to produce boiler plates (from 10 feet to 18 feet, superficial measure, from 1/4 inch to 1 inch in thickness, allowing for heating, rolling, and cropping).
- Weight of piles to produce sheet iron (from 2 feet to 9 1/2 feet, superficial measure, from 4 wire gage to 14 wire gage, allowing for heating, rolling, and cropping).
- Weight of piles to produce sheet iron (from 10 feet to 18 feet, superficial measure, from 4 wire gage to 14 wire gage, allowing for heating, rolling, and cropping).
- Weight of piles to produce sheet iron (from 2 feet to 9 1/2 feet, superficial measure, from 14 wire gage to 30 wire gage in thickness, allowing for heating, rolling and cropping, both bar and sheet).
- Weight of piles to produce sheet iron (from 10 to 18 feet, superficial measure, from 14 wire gage to 30 wire gage in thickness, allowing for heating, rolling and cropping, both bar and sheet).
- Sizes of bars to produce sheet iron (from 2 feet to 8 feet long, from 13 wire gage to 20 wire gage, allowing for heating, rolling and cropping).
- Sizes of bars to produce sheet iron (from 2 feet to 8 feet long, from 21 wire gage to 30 wire gage, allowing for heating, rolling and cropping).
- Table showing the thickness of the bar gage in decimals.
- Table showing the weight per foot and the thickness on the bar or wire gage of the fractional parts of an inch.
- Table showing the weight per foot, and the thickness on the wire gage of the fractional parts of an inch.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 2 feet long by 1 1/2 feet wide, from 4 sheets to 70 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 2 1/2 feet long by 2 feet wide, from 2 sheets to 36 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 4 feet long by 2 feet wide, from one sheet to 28 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 4 feet long by 2 1/2 feet wide, from 1 sheet to 23 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 4 feet long by 3 feet wide, from 1 sheet to 19 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 5 feet long by 3 feet wide, from 1 sheet to 23 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 5 feet long by 3 1/2 feet wide, from 1 sheet to 18 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 6 feet long by 2 feet wide, from 1 sheet to 19 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 6 feet long by 2 1/2 feet wide, from 1 sheet to 15 sheets, to weigh 112 lbs. per bundle.
- Table showing the weight per sheet, and the thickness on the wire gage of sheet iron 6 feet long by 3 feet wide, from 1 sheet to 12 sheets, to weigh 112 lbs. per bundle.
- Short weight into long.
- Long weight into short.

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