tallow is very good, and is used to some extent for many quick-running machines. These boxes last a long time and are easily replaced when worn out. A large and heavy screw engine is now building at a machine-shop in this city; the main shaft of this engine runs in cast-iron boxes well lined with Babbitt metal, but no composition of any other kind is fitted to the journal. These two metals work well together when the journals are not very large, but if we are not greatly in error this same arrangement was placed on the engine we alluded to a few lines previously, and caused so much trouble that it had to be taken out and replaced by brass boxes.

Of two evils it is far better to give to much bearing to the working parts of machines than too little, for the repairs in the first instance will bear only a proper relation to the amount of work done, while in the latter they are a continual item of expense.

WILL SUDDEN RELIEF FROM PRESSURE CAUSE BOILER EXPLOSIONS ?

Many instances are on record where boilers have been suddenly punched by the bow-sprits of vessels, and thus relieved of great quantities of steam and water in a very short space of time. The *Mound City*, a gunboat on the Mississippi, had a shot through her boilers which caused large volumes of steam to escape, scalding numbers of the crew, yet no explosion followed, the water was not "flashed into steam," neither did it, as theorizers say it should have done, become converted into a huge projectile and dash away the surrounding walls of the boiler like so much paper. Every day a most mischievous practice may be observed in commercial cities; the safety valves of steamers arriving from sea, or from inland waters, are suddenly lifted, and the mighty force pent up in the boiler shoots out into the air with a deafening roar. Is not this a sudden relief of pressure? It is so sudden that the index hand of the steam gage goes back almost as fast as the pulse beats, and ten minutes are enough to blow the steam from the largest boiler. The practice is, as we remarked, a mischievous one, not upon the theory that sudden release of pressure is attended with danger; but because the boiler is unduly strained. The whole force within is directed upon one part and that suddenly, and it is wonderful that so few accidents occur from this practice.

The occasions have been neither few nor far between, during the war and previous to it, where the boilers on gunboats have been pierced with heavy shot. The *Sassacus*, one of the new double-enders, having a large Martin boiler of the same kind as the one which exploded on the *Chenango*, was recently struck with a one-hundred-pound rifled shot which passed entirely through the boiler. The sudden escape of steam scalded many of the crew, but beyond the perforation there was no casualty to the boiler itself. From this, and the other cases we cited, it may be seen that the particular theory queried in the caption of this article must be at fault. Why is it not better in striving to account for boiler explosions to look first at purely mechanical causes? When the piston rod of a steam engine breaks men say it was too weak, or from such and such a specific cause (as water getting in the cylinder, or a follower bolt coming out and getting jammed between the head and piston), a violent strain was put upon it which it was not capable of withstanding. No one thinks of examining the chemistry of heat, of the oil which lubricated it, or of the packing which surrounded it to account for the rupture; and any one who should propose such a course would be looked upon as an idiot by his professional brethren. Because the disengagement of steam from water is both mechanical and chemical, when a boiler bursts some men seem to have passion for diving into the most profound and absurd theories, and descant about matters they know nothing of, when a defective brace or a rotten sheet was most probably the source of all the trouble.

There is great mischief in attributing boiler explosions to obscure causes, for by so doing we make practical engineers, who are not versed in the "mysteries" of their art, believe that all their care is of no avail, and that, precaution or no precaution, an explosion is sure to occur, provided a certain chain of circumstances is produced in the boiler. Let us look first, and earnestly, at the mechanical construction of steam boilers, and if it is settled that no improvement can be made in this respect, turn our attention to theories and the tedious discussion of them.

THE SLIP OF PROPELLING INSTRUMENTS.

"Slip" is a technical term, used by marine engineers to designate the receding of the water from the float of a paddle-wheel or the blade of a screw. The float or blade moving against the particles of water in order to obtain a resistance to react in propelling the vessel, obtains this resistance, but at the same time the particles of water do not remain stationary but recede or slip away from the propelling instrument. Hence, on account of this yielding property of water, the propelling instrument must move against a greater number of particles or molecules of water in order to obtain the required amount of resistance. The resistance offered by a single particle of water to a propelling instrument, decreases just in proportion as it yields to the motion of the propelling instrument. If the water did not yield at all, then its resistance would be greatest; but if it yields to the least possible force, then its resistance is of the least possible amount.

Let us illustrate the loss by slip, by means of the following example:—Let the center of pressure of a propelling instrument, have an effective velocity of 120 feet per minute, and the velocity of the vessel be 100 feet per minute. Then, making the following proportion to obtain the loss by slip, we have the loss of speed by slip expressed in per-centage, thus—

As the speed of the propelling instrument=120
: the difference between this speed and
the speed of the vesel (120—100) = 20
: : 100
: the slip expressed in per centage = $16\frac{2}{3}$

Hence, $16\frac{2}{3}$ per cent of the speed of the propelling instrument is lost on account of the yielding property of water. However, from this it seems to me to be impossible to deduce that there is $16\frac{2}{3}$ per cent of the amount of the power which has been transmitted to the propelling instrument, lost by the water thus yielding or slipping away. This loss of speed simply represents the number of extra particles of water the propelling instrument must come in contact with in order to obtain the required resistance. Or it represents the extra number of revolutions the engine must make, in order to move the propelling instrument against this extra number of particles of water. If the water did not yield in this manner it would require more steam or power to move the engine during each revolution, but as the water does yield or slip away from the propelling instrument, then the power required for each revolution is decreased in nearly the same ratio. Hence, when we can determine the amount of power expended in overcoming the friction, and other resistances of the machinery itself, in causing the propelling instrument to move against this extra number of particles of water, in order to meet with the required resistance, then we can obtain the actual loss of power by slip. Now this amount of power thus expended, would not by any means equal the per centage of the loss of speed by slip as ordinarily estimated.

I have thus endeavored in a few words to give this explanation of the loss of power by slip as I understand it. This is not the generally received theory, however, for it is taught by many of the most prominent marine engineers, that the apparent loss of speed by slip as expressed in per centage, is the true loss by slip of the amount of power which has been transmitted to the propelling instrument. Thus, in our example, it would be said that the loss by slip of the amount of power which has been transmitted to the propelling instrument would be $16\frac{2}{3}$ per centum; while I would endeavor to prove that this loss would only be the power expended in overcoming the friction and other resistances of the machinery itself while making the extra revolutions required to make the propelling instrument come in contact with this extra number of particles of water; which loss might possibly be no more than 2 or 3 per cent.

In discussing this subject it should always be borne in mind that the apparent slip of a screw is not the actual slip, as it is well known, that instead of the screw revolving in water at rest, when compared with the water through which the vessel passes, it actually revolves in a body of water dragging after the vessel. Therefore, we must add this progressive motion of the dead water, in which the screw revolves, to the apparent speed of the screw, in order to obtain the actual speed of the screw when compared with the speed of the vessel through the water. It is impossible, or at least quite difficult to obtain anything more than an approximation to this velocity of the drag water in which the screw revolves. Hence it may be observed, how very difficult it is to obtain the actual slip of a screw. In case of the common radial water wheel and feathering wheel, the actual speed of the center of pressure through the water being difficult to obtain on account of the complicated cycloidal motion of which the floats partake, it renders it difficult in the same proportion to calculate their actual slip. Hence it is perfectly safe to be very modest in making nice calculations concerning the actual slip of any propelling instrument, until more is known of the mysteries of their action. If it is difficult to obtain the actual slip, then it is evident that the attempt to obtain the actual per centage of power lost by slip, is rather more difficult, yet most of marine engineers are willing to calculate this loss of power on their thumb-nails, and almost stake their reputations too, on its being correct.

Is this usually received slip theory, then, one of the greatest fallacies taught on the subject of steam propulsion, as Robert Griffiths, that eminent English marine engineer, asserts? Is it not worth while for marine engineers to look this question of slip fairly in the face, and ask themselves if there is not something in it worth thinking about? It has for some time seemed very evident to my mind that there is a far larger per centage of power lost by oblique action, both by the side wheel and the screw, than any one seems to admit. However, I will not attempt to argue this point at present, but simply make this statement for fear any one should think that I assume that either of the propelling instruments now generally used, are more economical in the expenditure of power than is usually estimated. G.

In boring for salt water at Peoria, Illinois, some interesting observations were made. The drill has reached the depth of 770 feet. At 120 feet, a five-foot seam of coal was found; at 207, salt water; at 255, another stratum of coal three feet in thickness; at 317, more salt water, of about the strength of ocean water; at 734 a large stream of water impregnated with sulphur. This water flows upward with such force as to lift the heavy weights attached to the drill, and discharging 75,000 gallons every twenty-four hours. It has been carried in pipes sixty-five feet above the surface, and it is thought can be applied to mechanical purposes.

ISSUED FROM THE UNITED STATES PATENT-OFFICE FOR THE WEEK ENDING MAY 17, 1864.

Reported Officially for the Scientific American.

42,738.—Grind-stone Dresser.—Robert Barkley & Lewis Semple, Philadelphia, Pa.:

We claim a hand tool consisting of the solid cast-iron wheel, B, having chilled angular teeth, as described, in combination with the forked handle, A, provided with a shoulder, x, on either one or both of its sides, the whole being constructed and combined together as described for the purpose specified.

42,739.—Fire-place.—John S. Blair, Boston, Mass.:

I claim, first, The improved register cap as constructed of a plate, C, provided with a flange, b, as described, and not only having a series of openings, c c c, but a regi ter plate or valve, d, applied to such openings, the whole to be used in manner on a grate and within the open fire-place thereof, and so as to operate therewith, substantially as specified.

Second, I claim the register cap, C, constructed in manner and combined with or to be applied to a fire-place, A, and its grate, B, and used for the purpose or objects substantially as hereinbefore explained.

42,740.—Mode of securing Cloth Bushes in Holes.—Charles Bollerman, New York City:

I claim the employment or use of a screw-thread cut in the hole, a, for the purpose of securing therein the bush, b, of cloth or other soft material, in the manner substantially as herein specified.

[The object of this invention is to secure in a permanent and easy manner the cloth bushes in holes, particularly in the actions and other parts of musical instruments. The invention consists in the employment or use, for the purpose of securing the cloth bush in a hole, of a screw-thread cut into said hole, so that when the bush is inserted and expanded by immersing it in water, the cloth passes itself into the even threads and the bush is permanently and securely fastened without the use of cement.]

42,741.—Nipple Primer for Fire-arms.—L. H. Bradford, Boston, Mass. Ante-dated Dec. 29, 1863 :

I claim, first, The piston with priming wire and collar attached with or without the finger band, resting on a spiral or other suitable spring, in combination with a spring barrel, powder reservoir, tube cap, pusher and cut-off as herein described, or any device substantially the same, for the purpose specified.

Second, I claim the pusher, G, and spring, H, either with or without the cut-off, in combination with the tube-cap, powder reservoir, spring barrel, piston and priming wire, as herein described, or any device substantially the same, for the purpose specified.

Third, I claim the finger band connected to the piston playing in the spring barrel with or without a spiral spring, in combination with the powder, reservoir, tube-cap, pusher, cut-off and priming wire as herein described or any device substantially the same for the purpose specified.

42,742.—Nail-plate Feeder.—Peleg S. Bradford, Bridgewater, Mass.:

I claim, first, The combination of the cam, L, attached to the turning stock, D, with a fixed projection, m, or its equivalent on the carrier, C, substantially and for the purpose herein described.

Second, The spring catches, J J, applied and operating in combination with the carrier, C, turning stock, D, and cam, L, substantially as and for the purpose herein set forth.

Third, The combination with the spring catches, J J, of a wiper, l, substantially as and for the purpose herein set forth.

Fourth, The combination of the turning stock, D, eccentric, K, fixed bearing, s, arm, N, and spring, M, all as and for the purposes herein specified.

42,743.—Device for collecting the Dust from Stamp Mills and Crushers.—James Brodie, San Francisco, Cal.:

I claim the introduction of the wind blast through blow-pipes or tubes into batteries, or other crushing machines (as exhibited and applied in drawings), for the purpose of saving the fine dust arising from said crushings.

42,744.—Ice-cream Freezer.—George W. Brown, New York City :

I claim pressing the scraper to the interior surface of the cream can by leverage derived from the handle or crank, substantially as specified.

I also claim the stops, g, and s s, in combination with the spring cross-bar, n, and scraper, l, substantially as and for the purposes specified.

42,745.—Baby Tender.—J. S. Brown, New York City :

I claim the use of the levers, C and D, arranged with respect to each other, and attached to a frame or case, substantially as specified, for the purpose of maintaining a chair, couch, baby-jumper, and horse, in a horizontal position while moving up and down, essentially as described and in combination therewith, the standard, G, pivoted to said levers and constructed with a socket receiving a stem, l, and cross-bar, H, as set forth, for the purpose of supporting the chair, couch and horse above the case, and permitting them to be revolved.

42,746.—Dumping Cart.—Coles A. Carpenter, Glen Cove, N. Y.:

I claim the arrangement of levers, catches and bars or arms, applied to a cart in the manner substantially as shown, by means of which the liberating of the front part of the body, of the cart from the thills and the liberating of the bottom of the tail-board from the body, and the consequent dumping of the load may be effected by a single manipulation on the part of the driver or attendant as set forth.

[This invention consists in applying levers and catches to a dumping cart, arranged in such a manner that by a single manipulation the front end of the body of the cart may be liberated or allowed to tilt and the tail-board also released so as to admit of the load being dumped, thereby avoiding the trouble and consumption of time now required in releasing the above-named parts separately in order to dump the load.]

42,747.—Grain Separator.—W. C. Chamberlain, Dubuque, Iowa :

I claim, first, Attaching the two screens, E F, together, by means of an adjusting strap, g, or its equivalent, so applied as to admit of the ready adjustment of the screen, E, to adapt the machine for cleaning grain of different kinds and qualities, substantially as herein described.

Second, The combination of the two united sieves, E E, with the riddles or sieves of a grain-cleaning machine and with the receiving trough, D, and auxiliary discharging board, J, substantially in the manner and for the purpose described.

Third, The arrangement of the three screening devices, a E F, in a separating machine, in the relation to each other substantially as described and represented, and at the same time providing for the adjustment of the device, E, so that the separating and assorting of the clean and partially-cleaned gr in may be effected, as set forth.

42,748.—Breech-loading Fire-arm.—Linus N. Chapin, New Lisbon, N. Y.:

I claim, first, The groove, e, in the breech block for moving the cartridge or blank, as herein described.

Second, And in combination with the groove, c, I claim beveling the end or face of the hammer, as and for the purposes set forth.

42,749.—Parlor Cooking Stove.—Elisha Chase, Chicago, Ill.:

I claim the combination in parlor cooking stoves of the following parts, constructed as above shown, namely: the flues, A A, their entrances, e e, the horizontal plate, C, and the sectional doors or wings, D D.

42,750.—Molasses Cup.—E. R. Cook, Trenton, N. J.:

I claim a cup provided with a slide valve at its bottom and arranged with mechanism in such a manner that the valve may be opened by the pressure of the thumb as the handle of the cup is grasped, and closed by a spring, substantially as and for the purpose specified.

[This invention consists in applying a side valve to the bottom of a cup in such a manner that it may be opened readily in grasping the handle, and admit of the substance in the cup being discharged from the bottom of the latter, and cut off by releasing the valve mechanism.]

42,751.—Spring for Lanterns.—James A. Cowles, Chicago, Ill.:

I claim the spring, d, provided with the shoulder, e, in combination with the slot, o, and pin, p, substantially as and for the purposes set forth and specified.

42,752.—Raking Attachment to Harvesters.—Isaac C Crane, Edgerton, Ohio :

I claim, first, The endless chains, C C, in combination with the board, F, provided with grooves, f f, and rake head, E, provided with the arm, O, all arranged to operate substantially as and for the purpose set forth.

Second, The arm, G, attached to the rake head, E, in combination with the upright, I, attached to the platform, A, substantially as and for the purpose specified.

Third, The rod, H, when used in combination with the rake head, E, attached to the endless chains, C C, for the purpose described.

Fourth, The cone pulleys, L L', belt, M, belt-shipper, N, in combination with the endless chains, C C, rake head, E, and board, F, provided with grooves, f f, all constructed and arranged in the manner and for the purpose herein set forth.

42,753.—Easy Chair.—J. H. Devereaux, Alexandria, Va.:

I claim, first, In combination with a folding frame and cushion, suspended at the front and back as described, the swinging leg-rests and projecting cross-bars supporting said leg-rests, under the arrangement and for the purpose set forth.

Second, I claim making the leg-rests in two parts, jointed or hinged together as described, so as to allow of the folding of the same, whereby the chair may be used with or without leg-rests, at pleasure, and may be folded in compact form for transportation, substantially as shown and described.

42,754.—Adjustable Caster.—William C. Dodge, Washington, D. C.:

I claim so attaching caster wheels to sewing-machines, tables, and other household or musical implements, that the weight of said implement may be thrown on or off said wheels at pleasure, substantially as s ecified.

42,755.—Cartridge Retractor for Many-chambered Fire-arms.—William C. Dodge, Washington, D. C.:

I claim, first, The ejection simultaneously of two or more cartridge-cases from a many-chambered fire-arm, whether the chamber be stationary or revolving, and whether loaded at the front or rear, when said ejection is accomplished without the aid of a sectional cylinder, and when the device which accomplished it is so applied to the cylinder or barrels that it can be operated without detaching the cylinder or barrels from the stock or frame.

Second, I claim the retractor, a, provided with the stem, b, and spring, c, or their equivalents, in combination with the cylinder or barrels of a many-chambered fire-arm.

Third, I claim the retractor, a, whether used with or without the spring, when so applied as to be operated without removing the cylinder or barrels from the stock or frame.

Fourth, I claim providing the retractor, a, with a stem which is made to extend through the cylinder or barrels, and project at either the front or rear end thereof, for the purpose of being operated as shown and described.

42,756.—Floating Mill.—James A. Dorman, New York City :

I claim, first, The combination of one or more grinding mills, E, elevators, G J, and weighing devices, X, all constructed as specified and arranged on a barge or vessel, A, to form a floating mill, as herein set forth.

Second, In combination with the above I claim the discharging elevators, L, placed within a swinging or adjustable frame, M, and arranged with a windlass, T, to operate in the manner substantially as herein set forth.

[This invention relates to a new and useful combination of one or more grinding mills, elevators, and a weighing device, all arranged on a barge or vessel in such a manner that a vessel loaded with grain may, when placed by the side of the floating mill, be unloaded and the grain discharged into the former, weighed, and then ground into flour or meal, all the work being performed with the greatest facility and with but trifling labor.]

42,757.—Compound Paint Oil.—Z. S. Doty, Madison, Wis.:

I claim the herein described paint oil, composed of the ingredients therein named, and compounded in the manner and for the purpose substantially as set forth.

42,758.—Manure-spreader.—Philip Eley, New York City :

I claim, first, The particular manner of attaching or applying the box or hopper, B, to the cart or wagon as set forth, to wit: by having a board, n, attached to each side of the front part of the box or hopper, and a slide, o, attached to each board, n, for the purpose of accommodating the box or hopper to the width of the cart or wagon, in combination with the bars, j j, attached to the box or hopper, and the guides, k, attached to the under side of the bed, l, of the cart or wagon.

Second, The friction wheel, J, fitted in a frame, G, attached to the shaft of the cylinder, E, in connection with the belt, L, and cones of pulleys, F L, or their equivalents, arranged substantially as shown for transmitting motion to the cylinder, E, either from a wheel, K, of the cart or wagon, or by traction from the earth or ground, as herein described.

[The object of this invention is to obtain a simple and efficient device which may be readily applied to the back part of a cart or wagon for spreading manure therefrom, and either in hills, or drills, or broadcast, as may be desired, and thereby obviate the manual labor of distributing it on the land, or in the hills or drills, which consumes considerable time and is comparatively expensive work.]

42,759.—Shoe-string.—William Freeman, New Haven, Conn.:

I claim a shoe-string provided with a hole or perforation to admit of its being applied to a shoe, substantially in the manner as and for the purpose herein set forth.

[This invention is more especially designed for children's and army shoes, or those which are provided with a small number of string holes, and which consequently admit of the strings being liable to be lost when they become casually untied. Army shoes or brogans, those used by soldiers, have but few holes, and when on the march if a string becomes untied it most generally gets detached from the shoe and is lost, and, as they have none on hand, its place cannot be supplied, and in case of passing through mud or swampy places the foot is frequently drawn out from the shoe, causing much inconvenience.]

42,760.—Carriage.—A. S. Grant, Waupun, Wis.:

I claim, first, Combining with a detachable carriage or buggy top and the shifting rail, B, thereof, hooks and eyes, b c, of such a construction as will join the top to the back rail of the seat and allow of the top or cover being turned down to a convenient position for being detached, and also of being turned up on its connections when it has been attached, substantially in the manner set forth.

Second, In combination with the subject matter of my first claim, the laterally expanding side fastenings, arranged substantially as described.

Third, The combination of the hinging hook and eye fastenings, b c, applied to the back of the shifting rail, B, with the gib and wedge fastenings, g i d, constructed and operating in the manner described.

Fourth, The pivoted wedge pointed dogs, s s, in combination with gib fastenings, g g, and receiving loops, d d, the same constituting side fastenings for the arms of the shifting rail, substantially as described.

42,761.—Wicket for Canal Dock Gates.—Alfred H. Griggs, Newark, N. J.:

I claim, first, Constructing the box, B, of two parts, b b', one of which, b, is fitted in an offset, a, in the frame, A, in connection with the detachable plate, C, provided with the journal, d, and fitted in offset, a', in the frame, A, substantially as and for the purpose set forth.

Second, The rod, F, provided with the curved arm, k, fitted in the eye, l, attached to the wicket, substantially as and for the purpose specified.

[This invention consists in constructing the gate of two planes which are out of line with each other, and so disposed or arranged that they will close in line with each other when the wicket is shut and its edges brought in contact with the frame in which the wicket is hung, so as to present a surface at right angles to the pressure of the water, and insure an equal balance of the wicket at both sides of its journals or bearings. The invention also consists in a novel arrangement of the bearings of the wicket, whereby they can be removed when worn by use and replaced by new ones. The invention further consists in a novel manner of o erating or o ening and closing the wicket.]

32,462.—Composition Metal.—Julius Hacket, Bridgeport, Conn.:

I claim the within-described alloy or composition metal, prepared from the material, and substantially in the manner set forth.

[This invention consists in a composition made of copper, arsenic, and cream of tartar, to which a very small per centage of silver may be added.]

42,763.—Press.—G. E. Harding, Bath, Maine :

I claim the slide, E, and rod, g, or its equivalent, in combination with the follower, D, levers, F G, rod, i, press board, C, and fuses, m, all constructed and operating in the manner and for the purpose substantially as herein shown and described.

[This invention relates to an improvement in that class of presses in which the follower is forced against the press-board by the action of levers, which are acted upon by a rope running over suitable blocks and connecting with a windlass.]

42,764.—Hinge.—S. E. Harrington, Greenfield, Mass.:

I claim a sliding pivot bolt, passing through and confined in two eyes or bearings attached to one of two objects to be coupled together, and held in position by a spring, in combination with two eyes or bearings attached to the other of said objects, and through which the ends of said pivot bolt are made to pass when the coupling is completed, substantially as described and for the purposes set forth.

42,765.—Lamp Burner.—John O. Harris, Reading, Pa.:

I claim the combination of the wick tube, B, plates, C C, wings, D D, and jackets, E F, arranged and operating substantially as and for the purposes described.

[This invention relates to an improved lamp burner of that class designed for burning coal oil and other similar hydro-carbons, without the aid of a draught chimney.]

42,766.—Machine for threading Wood Screws.—H. A. Harvey, New York City :

I claim, first, The combination of a series of sliding and rotating receivers and holders having the characteristics substantially as specified, with a socket and a revolving screw-driver, the parts operating in combination as described.

Second, I claim in combination with a revolving screw-driver, a receiver and carrier, or a series thereof, moved towards the screw-driver by a differential or fast and slow motion, substantially in the manner and for the purpose specified.

Third, I claim a delivering apparatus consisting of a bent or curved inclined way and a slide o erating in the lever or bent thereof, the whole having a mode of o eration substantially as described.

Fourth, In combination with a delivering apparatus, substantially such as described, I claim a receiver and carrier which moves as the slide of the delivery apparatus moves, so that the blank may be delivered and received under a mode of operation, substantially as set forth.

42,767.—Apparatus for shaving the Heads of Screw Blanks.—H. A. Harvey, New York City :

I claim the combination of a series of receivers and holders, with a socket or gri er, and proper rotating shaving tools, the whole being and acting in combination under a mode of operation, substantially as specified.

42,768.—Apparatus for nicking the Heads of Screw Blanks.—H. A. Harvey, New York City :

I claim a series of sockets capable of receiving and griping screw blanks as described, and having both a sliding and a rotating motion in combination with a sliding griping apparatus, acting substantially as specified.

I also claim a series of rotating and sliding receivers, substantially such as are described, in combination with a sliding griping apparatus and a nicking saw, the combination being substantially as set forth.

And lastly, I claim imparting the motion to a series of receivers as described, not only to grasp blanks by forcing the receivers into a socket but also to feed the blank against a saw, or its equivalent, so as to cut a nick to the proper depth by means of a single cam acting in combination with a series of receivers and holders, substantially as described.

42,769.—Pen-holder and Ink-eraser.—D. E. Holmes, Halifax, Mass.:

I claim, first, the eraser, C, provided with one or more toothed sides, a, and one or more polished sides, b, as and for the purpose set forth.

Second, As a new article of manufacture, the combined pen-holder, calendar, and eraser, constructed substantially as herein shown and described.

[This invention consists in an ink-eraser, having a file cut on one or more sides, and one or more of its other sides polished, for the purpose of smoothing down the pa er. This ink-eraser is attached to a pen-holder, which is provided with a perpetual calendar, secured by means of the eraser, and with an ordinary socket for holding a steel pen in the end opposite to the eraser, in such a manner that the date can be ascertained at any moment by a simple glance at the calendar, and the holder can be used in the ordinary manner for writing, or by turning it over any mistake made can be corrected by the aid of the eraser.]

42,770.—Sewing Machine.—W. M. Horne, Boston, Mass.:

I claim combining with the thread-crossers, g h, and the stitch-forming mechanism, a device or devices for holding the ornamental thread or threads, so as to form the same into a series of loose loops on one or both sides of the binding-thread, substantially as set forth.

I also claim the mechanism for producing the movements of the loop fingers, substantially as described.

I also claim operating the thread carriers, by means of the diagonal slots, u, and pin, v, in the manner specified.

42,771.—Process of making Illuminating Gas.—John Howarth, Salem, Mass.:

I claim bringing superheated steam and liquid hydro-carbons in contact with each other in such a manner as to vaporize the latter, and then passing the two vapors thus formed and combined through heated, dry carbonaceous material, as set forth.

42,772.—Apparatus for distilling-off Gases and Vapors.—John Howarth, Salem, Mass.:

I claim so combining devices for superheating steam flues for the passage of products of combustion, and a suitable retort or retorts containing carbonaceous materials, as to cause the internal heat, or that produced by the superheated steam, to always predominate over the external heat, and perform the work of extracting the liquid and volatile products from the retort or retorts without producing destructive distillation, substantially as described.

I also claim the double-chambered upright retort, arranged and operating substantially as described and for the purpose specified.

42,773.—Double-acting Pump.—Benjamin J. C. Howe, Syracuse, N. Y. Ante-date Feb. 4, 1864 :

I claim a hollow piston-rod, having one or more a ertures near the lower end, and attached to the piston in such a manner that the apertures in the side of the hollow piston-rod shall be open only to the compressed wa er on either side, alternately, of the piston as it is moved backward and forward in the cylinder of the pump, substantially described.

42,774.—Instrument for removing Suckers from Tobacco Plants.—George R. Hughes, Glasgow, Mo.:

I claim an implement for removing the buds or germs of suckers from tobacco plants, composed of a bit, J, connected with a suitable stock or handle, A, and arranged so as to be rotated by the action of the hand in which the implement is held, substantially as herein set forth.

[This invention consists in applying a bit to a stock, which is provided with a means for rotating the bit under the action of the hand in which the stock is held, all being arranged in such a manner that the operator may, with great facility and rapidity, remove the buds or germs of the suckers from the tobacco plants, and effectually prevent the growth of suckers.]

42,775.—Rein Snap.—James Ives, Mount Carmel, Conn.

I claim, first, The double-acting lever tongue, d d', in combination with the spring, h, substantially as and for the purposes described.

Second, Forming the tongue of a "snap," with an extended finger-portion or lip, d', on it, substantially as and for the purposes described.

42,776.—Sliding Scale for Steam Engines.—Arnold Jillson, Woonsocket, R. I.:

I claim the use of the table of figures, as herein given, in combination with the ordinary slide of a carpenter's rule, for calculating for any given velocity of piston, capacity of cylinder and pressure of steam, the horse-power of a steam engine, substantially as herein described.

42,777.—Letter-opener.—Ross Johnson, Urbana, Md.:

I claim a letter-opener, constructed with a curved shank, a', flat bottom blade, a, having a blunt edge, e, and a diagonal cutting edge, c, substantially as and for the purposes herein described.

42,778.—Lock.—Henry W. Kahlke, Brooklyn, N. Y.:
I claim the tumblers, B C D, three, more or less, provided each with a serrated or notched edge and a radial slot, a, and placed on the shaft, E, in connection with the springs or clicks, F, the radius bar, H, provided with the bolt, G, and arm, I, and the lever, K, placed on the shaft, j, having the arm or lever, k, at its front end, all arranged substantially as and for the purpose specified.

[This invention relates to a new and improved lock of that class which is unlocked without the application of a key, and is more particularly desi ned for chests, desks, etc., although it may be applied to other articles and be arranged as a padlock. The object of the invention is to obtain a lock of the kind specified of simple construction, which may be economically manufactured and be capable of being opened in the dark equally as well as in the light.]

42,779.—Protecting Blank Books.—Joseph C. G. Kennedy, Washington, D. C.:
I claim the application of a rigid packing between the projecting edges of the covers of bound books, when arranged substantially in the manner and for the purpose herein-above set forth.

42.780.—Wood-splitting Machine.—John A. Knight, St. Louis, Mo.:
I claim the arrangement of the fixed and loose cranks, J M, grooved pulley, I, and bars, A A', with the supporting guide-rods, C, eared hammer, D, springs. H, and knife, E, all in the manner herein set forth and described.
I also claim the combination of the gearwheels, O O, crank, M N, and revolving lever, J, when constructed and arranged as specified and operating in connection with the cord, b, and hammer, D, in the manner and for the purpose described.

42,781.—Corn Planter.—R. B. Lanum, Washington, Ohio:
I claim the lever, K, cord, J, rod, I, and spring, H, in combination with the two seed slides, G O, rod, P, tube, L, and box, N, all arranged to operate in the manner and for the purpose herein set forth.

[This invention relates to a new and improved seeding machine of that class in which the seed-dropping mechanism is operated by hand as the machine is drawn along. The object of the invention is to simplify and render more perfect than hitherto the means whereby the seed-slides are operated and also to cover the seed in a better manner so as to leave the earth over it light and free from lumps or clods.]

42,782.—Apparatus for Bleaching.—Jeremiah Meyer, Bay Ridge, N. Y. Ante-dated May 6, 1864:
I claim, first, The endless belt, F, and rollers, G G' H D D', in combination with the compartments, B C B' C', of the vat, A, constructed and operating in the manner and for the purpose substantially as shown and described.
Second, Arranging the fabric in the compartments, B B', in serpentine piles substantially as set forth, so that said fabric is exposed to the different liquors a sufficient length of time without interrupting the continuous motion of the apparatus.
Third, The application of the slide, I, with arms, h, in combination with the apertures, g, leading from the chambers, C, to the roller, D', substantially in the manner and for the purpose specified.
Fourth, The combination with the vat, A, of a washing apparatus, L, constructed and operating substantially as and for the purpose shown and described.
Fifth, The pipe, k, with jets, k*, in combination with the rollers, j j* j' j'*, as and for the purpose set forth

42,783.—Device for attaching Sails to Mast Hoops.—David Mouat, Brooklyn (E.D.), N. Y.:
I claim the combination of the bow-shaped strap, C, (passing through the eye, b, around the leech, a), the hoop, A, and the bands, e e', all constructed and connected in the manner and for the purpose herein specified.

[The object of this invention is to provide for the attachment of the sail to the mast hoops in a more durable as well as in a more expeditious manner than has been heretofore known, and to this end it consists in the employment, for such attachment, of bow-shaped metal straps passing through eyes in the sail and around the leech thereof, and attached to the hoop by means of bands or otherwise, dispensing entirely with the use of seizings which take a much longer time to apply, and are subject to chafing by which they are soon worn out.]

42,784.—Cork Extractor.—Jesse L. Morrill, New York City:
I claim an improved cork-drawer with grooved prongs, or with grooved and serrated prongs, substantially as and for the purpose set forth.

42,785.—Device for making Minie Balls.—Peter Naylor, New York City:
I claim an automatic vibrating cutter in combination with the die, s, puncher die, r, and ejecting punch, 6, for the purposes and as speci ed.

42,786.—Grooving and sizing Minie Balls.—Peter Naylor, New York City:
I claim the wheel, f, and gage, g, fitted as specified for equalizing the size of minie balls, or for simultaneously grooving and equalizing such balls as specified.
I also claim the feeding plate, h, and ring, k, in combination with the wheel, f, and gage, g, for the purposes and as specified.

42,787.—Harness Buckle.—Daniel M. Nixon, Danville, Ill.:
I claim the frame, A, with its curved ends, and bar, a a', and cross-bar, D, in combination with the tongue, B, with its grooved end, g, and point, B', constructed and operating as described.

42,788.—Steam Trap.—Wm. Osborne, South Adams, Mass.:
I claim, first, The slide valve, G, in combination with the fixed post, B, and the longitudinally moving box, D, and steam pipe, F, substantially as herein specified.
Second, The arrangement of the steam box, C, of a steam trap to run upon rollers in a direction parallel with a face of a slide valve contained in said box, substantially as herein specified.

[This invention relates to the substitution of a slide valve for the valves commonly used in steam traps; and it consists in a novel construction of the trap whereby such valve is made to effect the shutting in of the steam and to provide for the escape of the water of condensation, and some important advantages are obtained.]

42,789.—Apparatus for evaporating Liquids.—Thomas Oxnard, Marseilles, France:
I claim the employment or use of a series of annular rims, A, supported by two or more arms, h, and secured by means of these arms to a shaft, C, rotating in a pan, B, all constructed and operating in the manner and for the purpose substantially as shown and described.

42,790.—Device for chamfering Barrel Hoops.—Hosea Pelsue, East Wallingford, Vt.:
I claim the eccentric wheel, A d, constructed and operating in the manner substantially as and for the purpose specified.
In combination with the above I also claim the automatic stop composed of the bar, F, upright, G, and pin, h, on the wheel, A, arranged substantially as described.
I further claim the combination of the bar, D, spring, E, and pin, f, for the purpose of regulating the position of the wheel, A, as set forth.

42,791.—Seeding Machine.—Albert Philipp, Appleton, Wis.:
I claim, first, T e seed cylinder, D, composed of three parts with corresponding flanches, with the central disk forming two rows of seed receptacles, whereby two kinds of seed can be sown at the same time or separately, as shown and described.
Second, I claim the tube, n i r, when constructed and arranged and employed in the particular manner herein specified.
Third, In combination with seed cylinder, D D, constructed as specified, the arms, Z Z, attached to slides, G G, by which the parts of the cylinder are operated to increase or lessen the seed apertures, as set forth and described.

42,792.—Spark-arrester.—Leonard Phleger, Philadelphia, Pa.:
I claim the arrangement of the chimney, A, conical screen, I, wide passages, H and C, and exit pipes or passages, E, as and for the purposes herein described and represented.

42,793.—Lock.—Edward S. Renwick, New York City:
I claim the combination in a lock of a series of movable tumblers with a series of keepers, operating substantially as herein set forth.
I also claim the combination in a lock of a tumbler, a keeper, a yielding stump, and a stop, the whole operating substantially as set forth.
I also claim the arrangement in a lock of the members of a series of tumbler-keepers in such manner that an engagement takes place between some one or more of them and their tumblers when the latter are properly set to permit the unlocking of the bolt, while one other or more of the said members then bear against spaces without engagement, the whole operating substantially as set forth.

42,794.—Semaphore Telegraph.—H. J. Rogers, Washington, D. C. Ante-dated Jan. 25, 1864:
I claim the combination of a ball, a spring and suspended screen, or of a light, a spring and suspended screen, with a haul-down or equivalent connection, for day and night signals, as herein set forth.
I also claim, in combination with the signal ball, the hinged arms for holding it expanded, and for admitting of its being folded up and readily packed for transportation, substantially as described.

42,795.—Composition for destroying Vermin.—Solomon Rose, Cincinnati, Ohio:
I claim the composition for destroying vermin, composed and compounded as herein described.

42,796.—Last.—J. N. C. Savels, Stoughton, Mass.:
I claim my improved last as made with the flat under surface, i i', toe protuberance, g, and the flat upper surface, h l, this whole formation being in manner and for the purpose set forth.

42,797.—Machine for planing Iron.—William Sellers, Philadelphia, Pa.:
I claim, first, Producing a motion radial to the axis of rotation of the circular piece, C, for the purpose of raising the tool, substantially as described.
Second, The use of the bell-crank, S, or its equivalent, for the purpose and in the manner substantially as specified.
Third, Prov ding the slides on the table with overhanging edges, g g, substantially as described and for the purpose specified.
Fourth, Arranging within the slides of the bed, oil receptacles, h, combined with the stops, i', substantially as and for the purpose specified.
Fifth, Arranging the outer end of the oil well so that the oil in the swinging oilers cannot touch in passing over, substantially as described and for the purpose specified.
Sixth, In combination with the channel, a, and stop, i, the oil receptacle, h, when so arranged that the oil can never rise to the level of a, substantially as and for the purpose specified.

42,798.—Apparatus for tagging Lacings.—F. J. Seymour, Wolcotville, Conn.:
I claim, first, Bending the tag blank into a U-form and then folding over the edges successively, substantially as specified.
Second, I claim the compressing die, o, actuated substantially as and for the purposes specified.
Third, I claim the folding slides, 23 and 24, constructed and actuated substantially as and for the purposes specified.
Fourth, I claim controlling the intermitted rotation of the shaft, q, by the stop, 19, arm, q2, and lever, q3, substantially as specified.
Fifth, I claim actuating the feeding rollers, 6 and 7, by the wheel, 2, with inclined grooves taking the pin in the disk, 1, substantially as specified.
Sixth, I claim the clamping lever, q, and cutter, applied and operating substantially as specified to cut off the tag blank, as set forth.
Seventh, I claim the guide eyes, 20, actuated substantially as specified, to lift or depress the tag braid, for the purposes set forth.
Eighth, I claim the holding jaws, v v', actuated substantially as specified, to clamp the braid while the tag is being put on the same, as set forth.

42,799.—Artificial Leg.—George L. Shepard, New York City:
I claim, first, Converting the ball-and-socket joint for the knee, into a limited hinge joint, by means of the slot, a a, and the flanges, b b, reg lating and limiting the motion.
Second, I claim the application of the bow or C spring, D D, with its bent or bell-crank, lever, in connection or in combination with the coil or watch spring, as before specified and described.
Third, I claim in the ankle joint or connecting the otherwise more free movements of the ball-and-socket joint, into a modified hinge joint, by the application, or by means of, first, the oblong slot, or opening above and below, with the flanges as described; second, by the pin or pivot passing through the center of the ball horizontally from side to side; third, by the shape and form of the hole through the center of the ball, as more particularly described in the specification and drawing herewith connected; all of which means, as combined, I claim as my invention.
Fourth, For the purposes herein before specified and set forth, I claim the application of the two jews-harp springs and standard underneath the socket, together with that of the two pins passing through the ends of the springs, as described and set forth in the specification and drawings.
Fifth, I claim the mode or method of constructing the toe-joint by the application of the india-rubber band passing around the two pins or rods, their ends riveted to the inner and outer side of the foot, as heretofore set forth and described.

42,800.—Shoe Last.—W. C. Shepherd, New York City:
I claim the plate, D, attached to the under side of the instep block, B, and provided with the hub, c, in connection with the slotted plate, G, attached to the body, A, and the yielding rod, E, all being arranged as shown, and used in connection with the plate, C, or its equivalent, for connecting the last hook with the instep block, substantially as and for the purpose specified.

[This invention relates to a new and improved mode of attaching the instep block to the body of the last, whereby a simple and durable fastening for the purpose specified is obtained, and one which will admit of the instep block being detached from the body of the last by means of the last hook, when the latter is applied to the instep block for the purpose of withdrawing it from the shoe.]

42,801.—Tension Indicator for Sewing Machines, &c.—S. P. Sleppy, Wilkesbarre, Pa.:
I claim the tension indicator made substantially as herein described and for the purpose set forth,

42,802.—Mail Pouch.—Marshall Smith, St. Louis, Mo.:
I claim, first, In combination with a mail pouch, the adjustable partitions, c c c, substantially as described, for the purpose set forth.
Second, In combination with a mail pouch, a lid or cover provided with a metallic frame, m m k h, for the purpose of giving strength to the said pouch and security to its contents, substantially as described.
Third, In combination with a mail pouch the broad hinge-piece, p, for the purpose of allowing the lid to fall clear away from the body of the pouch, substantially as described and for the purpose set forth.
Fourth, In combination with the adjustable partitions, c c c, of a mail pouch, a compresser, f g, for the purpose of securely keeping the letters between the said partition, substantially as described.

42,803.—Mode of utilizing the Waste Acid from Petroleum Refiners.—Robert M. Smith, Baltimore, Md.:
I claim the utilizing of the sulphuric acid that had been previously used for refining petroleum or coal oils, and which contains foul and noxious odors, by applying the acid in the manufacture of salts of various kinds, and burning out the oil or fetid matter, substantially as herein described.

42,804.—Fire-place.—D. Stoner and J. Stoner, West Overton, Pa.:
We claim, first, The combination of the damper, J, with the grate, A, and adjustable draught hole or pipe, F, constructed and operating in the manner and for the purpose substantially as herein shown and described.
Second, The adjustable valve, b, and rod, a', in combination with the draught hole, F, damper, J, and grate, A, constructed and operating substantially as and for the purpose set forth.
Third, The hearth, D, with a lid, E, and door, I, in combination with the grate, A, constructed and operating in the manner and for the purpose substantially as specified.

[This invention consists in a damper arranged in front and under the grate in combination with an adjustable draught-hole conducting air from the exterior to and under said grate, and with a front plate closing the space under the grate, in such a manner that by the combined action of said damper and draught-hole the fire in the grate can be regulated at pleasure.]

42,805.—Knapsack.—A. William Siis, New York City:
I claim, first, The suspending strap, B B, in combination with the straps, C C, the whole being attached substantially as and for the purpose set forth.
Second, I claim the straps, D D, attached in the manner described and employed for varying the position and shifting the weight of the knapsack as and for the purpose explained.

42,806.—Soap Compound.—Joseph C. Tilton, Pittsburgh, Pa.:
I claim a soap compound prepared of the ingredients hereinbefore mentioned, when combined in the proportions and manner substantially as herein set forth.

42,807.—Knife for cutting Honey.—A. W. Todd, Chicago, Ill.:
I claim the knife attached to the tang or shank, in the manner substantially as shown and described, to admit of being adjusted in different positions relatively with the tang or shank, as and for the purpose specified.

[This invention relates to a new and improved knife for cutting honey, detaching the combs from the hive and cutting them into square or rectangular pieces. The device being also applicable to other purposes, such as cutting butter, lard. etc. The invention consists in attaching a knife or cutter to a tang or shank in such a manner that it may be adjusted or secured in different positions as the nature of the work may require.]

42,808.—Fanning Mill.—Elwood Tush, Manchester, Iowa:
I claim the combination of the opening, G, seed trough, J, and grain board, K, by which the blast is conducted between and under the grain screens, over the seed screen and up through the rear end of the grain screen, as described.

42,809.—Stump-extractor.—B. F. Tuttle, Chelsea, Mich.:
I claim the combination of the brake bar, F, crossbar, E, and compound pulley, with the lever, C, axle fulcrum, B, and wheels, A, all in the manner and for the purpose herein shown and described.

42,810.—Welt-gage for Sewing Machines.—J. H. Walker, of Worcester, Mass.:
I claim, first, The spring bar, d, adjustably connected to the main bar, A, substantially as and for the purpose described.
I also claim the combination of the spring bar, the side guides, and the spring throat piece, 4, substantially as and for the purpose described.

42,811.—Bark Mill.—Martin Winger, Ephrata, Pa.:
I claim the combination of the hopper, N, and its tube or tubes, with the shaft, B, and cross beam, O, provided with scrapers, I H, all arranged and operating substantially in the manner and for the purpose described.

42,812.—Loom.—Edward Wright and Benaiah Fitts, Worcester, Mass.:
We claim, first, the combination and arrangement of the movable front, the moveable back, and the outer part or binder, d, with the stationary bottom to form a shuttle-box, substantially as described.
Second, We claim the placing the binder at the back or outer end of the shuttle-box, at a di tance sufficient to enable the shuttle to be clear of the race before its acts upon the binder, when the shuttle-boxes are detached from the lay, substantially in the manner and for the purpose described.
Third, We claim operating the lay by an intermittent crank motion, substa ntially as described.
Fourth, We claim applying the power to work the picker staff to the radius bar of the parallel motion substantially as described.
And we also claim the arranging of the picker cams upon the outer ends of the cam shaft, extended beyond the outside of the loom, so as to work in direct combination with the arms of the radius bars or their equivalent, by which the employment of straps or other similar connections is avoided.
Fifth, We claim the employment, in combination with the cam shaft or other convenient part of the loom, of the hand gear or its equivalent, by which the loom is turned forward by the operator, substantially as described.
Sixth, We claim combining the protector, the shipper and the lay so that the driving clutch or its equivalent shall be disengaged from the driving pulley or its equivalent by the direct action of the lay, substantially as described.
Seventh, We claim the combination, in a loom, of the light detached lay, operated substantially as described, the detached shuttle boxes mounted upon the frame of the loom, and a suitable picking apparatus, so arranged in relation to each other, and to the other mechanism of the loom, as to give the relative movements described, by which a g eater rapidity of working is obtained, substantially as descri ed.

42,813.—Plow.—Rodney L. and Albert C. Betts, Brunswick, N. Y.:
We claim, first, The arrangement of a branched draw- eam, B B i, in combination with a double mold-board, A A, recessed or made low in the middle portion of its top edge, between the beam-branches, B B, and having a double share, t, and spreading wings w w, extended laterally beyond the said beam-branches, substantially as herein described.
We also claim the arrangement of a branched draw-beam, B B i, in combination with a double mould-board, A A, provided with a double share, t, and lateral wings, w w, and having the upper part, D, of its low or depressed middle portion removable, substantially as herein described.
We also claim the arrangement of a branched draw-beam, B B i, having runners, S S, formed on the lower ends of its branches, B B, in combination with a double inclined mould-board, A A, having a double share, t, and oblique spreading wings, w w, extended laterally beyond the said beam-branches, substantially as herein described.

42,814.—Useful Products from the Berries of the Green Brier.—Peter Baumgras, Syracuse, N. Y., assignor to himself and Chas. E. Livingston, U. S. Army:
I claim, first, Utilizing the seeds of the smilax, glauca, and rotundifolio, in the manner and for the purpose herein-before described.
Second, Utilizing the sack which surrounds each seed of the berry of the smilax, glauca, and rotundifolio, in the manner and for the purpose herein-before described.

42,815.—Metallic Cartridge.—C. J. Bergen, assignor to Moore's Patent Fire-arms Co.. Brooklyn, N. Y.:
I claim a double metallic cartridge case, provided with a channel or channels, extending from the fulminating material to the front portion of the powder, substantially as specified.

42,816.—Furnace for burning Saw-dust.—F. Braun, Miesbach, Bavaria, assignor to Joseph Heindl, Brooklyn, N. Y.:
I claim, first, The drying-room, D, with a roof-shaped or curved bottom, e, in combination with side channels, d, and fire-grate, C, constructed and operating in the manner and for the purpose herein shown.
Second, The employment or use of the basket grate, c, composed of two inclined sections, a c, and a horizontal section, b, in combination with the channel, d, substantially as and for the purpose set forth.
The application of the reflector, E, in combination with the fire-grate, C, constructed with inclined sides, substantially as and for the purpose set forth.

[Further information in regard to this invention can be obtained by addressing the assignor, J. J. Heindl, Brooklyn, N. Y.]

42,817.—Clew Thimble.—Thomas Carroll, assignor to W. W. Wilcox and J. Hall, jun., Middletown, Conn.:
I claim the combination of a guard, c, with the interio of a clew thimble, substantially as and for the purposes set forth.

[This invention consists in the arrangement of a ring or uard in the interior of the clew thimble, to fit loosely over the body of the clew, in such a manner that the thimble is confined on the clew sufficiently close to prevent the rope from chafing against the upper portion of the ring to which it is att ched without changing the relative size of the clew and thimble.]

2,818.—Explosive Shell.—John Groves, assignor to himself, W. R. Beeston, and Thomas Bottomley, Brooklyn, N. Y.:

I claim, first, The attachment of the inner shells B B, to the outer one A, by means of chains, d d, substantially as and for the purpose herein specified.

Second, The arrangement of the grooves, e e, in combination with the connections of the chains, d d, with the outer shell, A, substantially as and for the purpose herein specified.

Third, The combination of the screwed pins, c c, on the smaller shell, with the frangible frame, C, secured within the larger shell, substantially as and for the purpose herein specified.

[This invention relates to the placing within the shell of an explosive projectile of several smaller explosive shells, the fuzes of which are ignited by fire from the bursting charge of the layer or outer shell, so that the smaller shells are caused to explode at a suitable time after the layer or outer one.]

42,819.—Hand Stamp.—Lemuel P. Jacks, assignor to Isaac H. Clark, Boston, Mass.:

I claim, first, the combination and arrangement of face-plate and fixed flexible rod, without breakage or joint, with the spring and handle, all substantially as described.

Second, I claim the hollow handle in combination with the face-plate, spring, and flexible connection substantially as described.

42,820.—Grain Separator.—J. Kefer, assignor to Owens, Lake, Dyer & Co., Hamilton, Ohio:

I claim the combination of the adjustable inclined chute and deflecting board, K, pivoted at k, within the shaking shoe, the ears, L L, screws, l l, riddle, G, inclined bottom, H, and over-blast fan, C, all constructed and arranged to operate in the manner and for the purposes herein specified.

42,821.—Producing Butter from Milk.—Nelson Orcutt, assignor to himself and G. W. Gregory, Binghamton, N. Y.:

I claim, first, The combination and arrangement of the bellows, springs, flexible tube, and the free second tube, F, operating as and for the purpose described.

Second, The combination and arrangement of the bellows, lever, springs and bail, as and for the purpose described.

42,822.—Stitching Horse.—Hiram E. Paine, assignor to Elisha Waters, Troy, N. Y.:

I claim, first, the arrangement of a circular, eccentrically movable seat, A, in combination with clamping-jaws, B B', substantially as herein described.

I also claim the arrangement of a circular, eccentrically movable seat, A, adjustable vertically, in combination with clamping-jaws, B B', substantially as herein described.

I also claim the arrangement of a circular, eccentrically movable seat A, having a back-rest, C, attachable to different parts of the periphery of the seat, in combination with clamping-jaws, B B', substantially as herein described.

I also claim the arrangement of a circular, eccentrically movable seat, A, adjustable vertically, and having a back-rest, C, attachable to different parts of the periphery of the seat, in combination with clamping-jaws, B B', substantially as herein described.

42,823.—Revolving Fire-arm.—D. Williamson, assignor to Moore's Patent Fire-arms Co., Brooklyn, N. Y.:

I claim the combination of a sliding spring bolt, parallel, or nearly so, with the axis of the cylinder to be locked, a spring-latch on the side of said bolt adjacent to the hammer tumbler, and a bevelled pin on said hammer tumbler, crossing said bolt in the act of cocking and firing, as and for the purposes specified.

RE-ISSUES.

1,670.—Breech-loading Fire-arm.—E. H. Ashcroft, Boston, Mass., assignee of Richard S. Lawrence, Windsor, Vt. Patented Jan. 6, 1862:

I claim, first, Mounting the barrel on a conical or tapering spindle to turn it aside and load it at the breech, substantially in the manner described.

Second, Screwing the barrel into a sleeve or reinforce, whereto the arms on which the barrel turns are attached, to strengthen and support it, substantially in the manner described.

Third, The combination of the barrel with the flanch, j, carrying a slot or groove, the lips, l, on the sleeve to fit in the slot, and the spring catch lever, k, as and for the purposes set forth.

Fourth, The combination of the barrel with a curved steel cutting edged breech-piece, as described, so that no loose powder can remain on the outside of the breech after the base of cartridge has been cut off, and the barrel turned into position to fire.

1,671.—Draft Regulator.—John Briggs, Roxbury, Mass. Patented Feb. 16, 1864:

I claim the employment of a flexible headed air-tight drum, connected with and operating the valves or draft passages of a heating apparatus, substantially as set forth.

1,672.—Throstle Spinning Machine.—Charles H. Hunt, Madison, N. H. Patented Sept. 28, 1852:

I claim a combination composed of a "let off" or escapement mechanism, or its equivalent, and a reciprocating rotary mangle wheel or mechanism, the whole being substantially such as described, and to be used in a spinning machine, for operating automatically its spindle rail or rails, or the equivalent thereof, in the manner and for the purpose or purposes herein-before specified.

I also claim the combination of the curved links or "goose-necks," e e, with the shaft, K, and its spindle rail connections, when the said shaft, K, has combined with it mechanism, substantially as described, or its equivalent, for turning or operating it, in the manner and for the purposes as herein-before set forth.

I also claim the combination of the adjustable annular collars, or their equivalents, with the shaft, K, and the chains, d d, and their operative mechanism, as specified.

1,673.—Cooking Stove.—Philo P. Stewart, Troy, N. Y. Patented April 12, 1859:

I claim, first, The method or means, substantially as described, of preventing the heat from passing through to the rising flue leading to the chimney by separating it from the back over plate and from the descending flues by non-conducting partitions, or their equivalents therefor, and for the purposes herein set forth.

Second, I also claim the employment of a double damper filled in with cement, or other equivalent non-conducting material, in combination with the flue above the oven and with the risingflue leading to the chimney, substantially as and for the purpose herein described and set forth.

Third, I also claim separating the direct sheet flue under the oven from the return sheet flue below, by means of a plate, constructed substantially as and for the purposes herein described and set forth.

Fourth, I also claim the dividing of the space between the bottom plate of the oven and the bottom plate of the stove, by means of the inclined plate, i, in the manner and for the purposes substantially as herein described and set forth.

Fifth, I also claim the employment of the space or chamber, i, in combination with the outer edge of the oven bottom plate, and with the back and oven plate, in the manner substantially as and for the purposes herein described and set forth.

Sixth, I also claim the sheet flue division plate, i', having a recess, h', at each front corner thereof, and the front projection, A, between such recesses, substantially as and for the purposes herein described and set forth.

Seventh, I also claim the additional bottom plate or encasement device, r, in combination with the broad sheet flue, h, in the manner and for the purposes substantially as herein described and set forth.

1,674.—Mode of reducing Silicates to a Liquor or Gelatinous State.—Geo. E. Vanderburgh, Mamaroneck, N. Y., assignor to the Liquid Quartz Company, New York City. Patented May 29, 1860. Re-issued April 1, 1862:

I claim reducing any disintegrated silicious substance to a liquid or gelatinous state, by bringing it into direct contact with superheated steam, whilst enclosed within a suitable vessel, substantially as herein set forth.

1,675.—Apparatus for treating Silicious Substances.—Geo. E. Vanderburgh, Mamaroneck, N. Y., assignor to the Liquid Quartz Company, New York City. Patented May 29, 1860. Re-issued April 1, 1862:

I claim the employment of superheated steam in a digesting apparatus, constructed and operating substantially in the manner herein represented and described, for the purpose of reducing selicious and other refractory substances to a liquid or gelatinous state.

1,676.—Manufacture of Artificial Stone.—Geo. E. Vanderburgh, Mamaroneck, N. Y., assignor to the Liquid Quartz Company, New York City:

I claim the improvement produced upon artificial stones, blocks, &c., which are principally composed of lime and sand, by saturating the same with a liquid silicate, after the said articles are put into the proper shape for use, by any known or suitable process.

DESIGNS.

1,945.—Arm of a Sewing Machine.—John G. Folsom, Winchenden, Mass.

1,946.—Lady's Hat.—John W. Partridge, Roxbury, Mass.

1,947.—Statuette Group of Figures.—John Rogers, New York City.

EXTENSION.

Preventing Fibers from inding on Drawing Rollers in Spinning Machines.—John C. Dodge, Dodgeville, Mass. Patented May 14, 1850:

I claim the improved manner of applying and using the roller, the same consisting in placing it not exactly in contact with the lower front drawing roller, but a distance therefrom, and, by means of separate or additional machinery, giving to it a rotary motion at the same velocity and in the same direction with those of the said lower front drawing roller, the whole being substantially in the manner and for the purpose as herein-before specified.

ISSUED MAY 10, 1864.

RE-ISSUES.

1,664.—Filter.—John Kedzie, Rochester, N. Y. Patented January, 10, 1854. Re-issued June 16, 1863:

I claim an inner crock, or vessel, B, having its bottom or base closed, but admitting water by means of perforations, a, a or in some equivalent manner, and provided with an eduction outlet, c, when the same is used in combination with packing, C, and an outer tub or receptacle, A, substantially as herein specified.

1,665.—Seed Drill (Div. A).—Jacob Strayer. South Bend, Ind. Patented May 14, 1861:

I claim making the teeth on one part or portion of feeding roller for seed drills, opposite the spaces between the teeth on the other part or portion of said roller, substantially as described, so as to deliver or discharge the seed more uniformly.

1,666.—Seed Drill (Dev. B).—Jacob Strayer, South Bend, Ind. Patented May 14, 1861:

I claim making the feed roller in two or more sections, substantially in the manner and for the purpose described.

1,667.—Refining Sorghum Juice and Sirup.—J. F. Sheldon, Abington, Ill. Patented Sept. 23, 1863:

First, I claim treating the juice and sirup with soda or other equivalent substance, in the manner and for the purpose specified.

Second, I claim treating the juice or sirup with soda, cream tartar and milk, or their equivalents, as and for the purpose set forth.

1.668.—Brick Machine.—R. A. Ver Valen, Haverstraw, N. Y. Patented June 29, 1852:

I claim, first, The plunger or follower rod composed of two parts, working one within the other, and connected by a pin, d, in one part passing through an oblong slot in the other or other equivalent means, in combination with the lever, H, provided with step projections, b1 b2, or any other device which will serve as a stop to control the play of the part connected with the driving crank, and regulate the pressure of the plunger or follower upon the clay in the molds, as set forth.

Second, The lever, M, connected with the mold-discharging device and with the driving crank, a, of the plunger or follower rod in such a manner that the filled mold will be discharged from the device while the plunger or follower is rising, and this I claim in connection either with the lever, N, or any other means for giving the return movement to the mold-discharging device.

Third, I claim the arrangement of the levers, I, J, N, rods, K, L, vertical lever, M, and the rod, O, with the levers, P, S, and upright shaft, R, for the purpose of operating the feeder, T, and vibrating bar V, substantially as set forth.

Fourth, I claim the employment or use of the spring, V, attached to the vertical lever, M, and operated upon by the rods. r, r, attached to the lever whereby the working of the machine is prevented by any obstruction as described.

Fifth, I claim the attachingtogether of the feeder, T, and vibrating bar, U, having a guide rod, m, working in suitable bearings, n, n, or arranged in any other suitable way.

1,669.—Machine for collecting and separating Amalgam and Mercury from Ore Pulp.—Zenas Wheeler, San Francisco, Cal. Patented July 14, 1863:

I claim the tub, A, provided with a concave bottom, a, and chamber, b, in combination with the rotating pads, L, as and for the purpose specified.

I also claim in combination with the pads, L, concave bottom, a, and chamber, b, of the tub, A, the tubular shaft, H, and arms, K, all arranged for joint operation as and for the purpose specified.

I furtherclaim the perpetual and self-regulating discharge of the mercury from under the pulp in the separator through the medium of the chamber, b, tubes, B, b', and outlet or branch, c', or their equivalents in the manner and for the purpose set forth

PATENTS

GRANTED

FOR SEVENTEEN YEARS!

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In connection with the publication of the SCIENTIFIC AMERICAN, have acted as Solicitors and Attorneys for procuring "Letters Patent" for *new inventions* in the United States and in all foreign countries during the past *seventeen years*. Statistics show that nearly ONE-THIRD of all the applications made for patents in the United States are solicited through this office; while nearly THREE-FOURTHS of all the patents taken in foreign countries are procured through the same source. It is almost needless to add that, after *seventeen years'* experience in preparing specifications and drawings for the United States Patent Office, the proprietors of the SCIENTIFIC AMERICAN are perfectly conversant with the preparation of applications in the best manner, and the transaction of all business before the Patent Office; but they take pleasure in presenting the annexed testimonials from the three ast ex-Commissioners of Patents:—

MESSRS. MUNN & CO.:—I take pleasure in stating that, while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE CAME THROUGH YOUR HANDS. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the office, a marked degree of promptness, skill, and fidelity to the interests of your employers. Yours very truly,

CHAS. MASON.

Judge Mason was succeeded by that eminent patriot and statesman, Hon. Joseph Holt, whose administration of the Patent Office was so distinguished that, upon the death of Gov. Brown, he was appointed to the office of Postmaster-General of the United States. Soon after entering upon his new duties, in March, 1859, he addressed to us the following very gratifying letter:

MESSRS. MUNN & CO.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you discharged your duties as Solicitors of Patents, while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and I doubt not justly deserved) the reputation of energy, marked ability, and uncompromising fidelity in performing your professional engagements.

Very respectfully, your obedient servant,

J. HOLT.

Hon. Wm. D. Bishop, late Member of Congress from Connecticut, succeeded Mr. Holt as Commissioner of Patents. Upon resigning the office he wrote to us as follows:

MESSRS. MUNN & CO.:—It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of inventors before the Patent Office was transacted through your agency; and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with skill and accuracy. Very respectfully, your obedient servant,

WM. D. BISHOP.

THE EXAMINATION OF INVENTIONS.

Persons having conceived an idea which they think may be patentable, are advised to make a sketch or model of their invention, and submit it to us, with a full description, for advice. The points of novelty are carefully examined, and a written reply, corresponding with the facts, is promptly sent, free of charge. Address MUNN & CO., No. 37 Park Row, New York.

As an evidence of the confidence reposed in their Agency by inventors throughout the country, Messrs. MUNN & CO. would state that they have acted as agents for more than TWENTY THOUSAND inventors! Infact, the publishers of this paper have become identified with the whole brotherhood of inventors and patentees, at home and abroad. Thousands of inventorsfor whom they have taken out patents have addressed to them most flattering testimonials for the services rendered them; and the wealth which has inured to the individuals whose patents were secured through this office, and afterwards illustrated in the SCIENTIFIC AMERICAN, would amount to many millions of dollars! Messrs. MUNN & CO. would state that they never had a more efficient corps of Draughtsmen and Specification Writers than those employed at present in their extensive offices, and that they are prepared to attend to patent business of all kinds in the quickest time and on the most liberal terms.

PRELIMINARY EXAMINATIONS AT THE PATENT OFFICE.

The service which Messrs. MUNN & CO. render gratuitously upon examining an invention does not extend to a search at the Patent Office, to see if a like invention has been presented there; but is an opinion based upon what knowledge they may acquire of a similar invention from the records in their Home Office. But for a fee of $5, accompanied with a model, or drawing and description, they have a special search made at the United States Patent Office, and a report settingforth the prospects of obtaining a patent, &c., made up and mailed to the inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made through the Branch Office of Messrs. MUNN & CO., corner of F. and Seventh streets, Washington, by experienced and competent persons. Many thousands of such examinations have been made through this office, and it is a very wise course for every inventor to pursue. Address MUNN & CO., No. 37 Park Row, New York.

HOW TO MAKE AN APPLICATION FOR A PATENT.

Every applicant for a patent must furnish a model of his invention ifsusceptibleof one; or, if the invention is a chemical production, he must furnish samples of the ingredients of which his composition consists, for the Patent Office. These should be securelypacked, the inventor's name marked on them, and sent, with the Government fees, by express. The express charge should be pre-paid. Small models from a distance can often be sent cheaper by mail. The safest way to remit money is by a draft on New York, payable to the order of Messrs. MUNN & CO. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents; but, if not convenient to do so, there is but little risk in sending bank bills by mail, having the letter registered by the postmaster. Address MUNN & CO., No. 37 Park Row, New York.

Patents are nowgrantedfor SEVENTEEN years, and the Government fee required on filing anapplicationfora patent is $15. Other changes in the fees are also made as follows:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Re-issue	$30
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

The Patent Laws, enacted by Congress on the 2d of March, 1861, are now in full force, and prove to be of great benefit to all parties who are concerned in new inventions.

The law abolishes discrimination in fees required of foreigners, excepting natives of such countries as discriminate against citizens of the United States—thus allowing Austrian, French, Belgian, English, Russian, Spanish and all other foreigners, except the Canadians, to enjoy all the privileges of our patent system (except in cases of designs) on the above terms. Foreigners cannot secure their inventions by filing a caveat; to citizens only is this privilege accorded.

CAVEATS.

Persons desiring to file a caveat can have the papers prepared in the shortest time by sending a sketch and description of the invention The Government fee for a caveat is $10. A pamphlet of advice regarding applications for patents and caveats is furnished gratis, on application by mail. Address MUNN & CO., No. 37 Park Row New York.

EXTENSION OF PATENTS.

Many valuable patents are annually expiring which might readily be extended, and if extended, might prove the source of wealth to their fortunate possessors. Messrs. MUNN & CO. are persuaded that very many patents ar suffered to expire without any effort at extension, owing to want of proper information on the part of the patentees, their relatives or assigns, as to the law and the mode of procedure in order to obtain a renewed grant. Some of the most valuable grants now existing are *extended patents*. Patentees, or, if deceased, their heirs, may apply for the extension of patents, but should give ninety days' notice of their intention.

Patents may be extended and preliminary advice obtained, by consulting or writing to MUNN & CO., No. 37 Park Row, New York.

ASSIGNMENTS OF PATENTS.

The assignment of patents, and agreements between patentees and manufacturers, carefully prepared and placed upon the records at the Patent Office. Address MUNN & CO., at the Scientific American Patent Agency, No. 37 Park Row, New York.

It would require many columns to detail all the ways in which the Inventor or Patentee may be served at our offices. We cordially invite all who have anything to do with patent property or inventions to call at our extensive offices, No. 37 Park Row, New York, where any questions regarding the Rights of Patentees, will be cheerfully answered.

Communications and remittances by mail, and models by express (prepaid) should be addressed to MUNN & CO. No. 37 Park Row, New York