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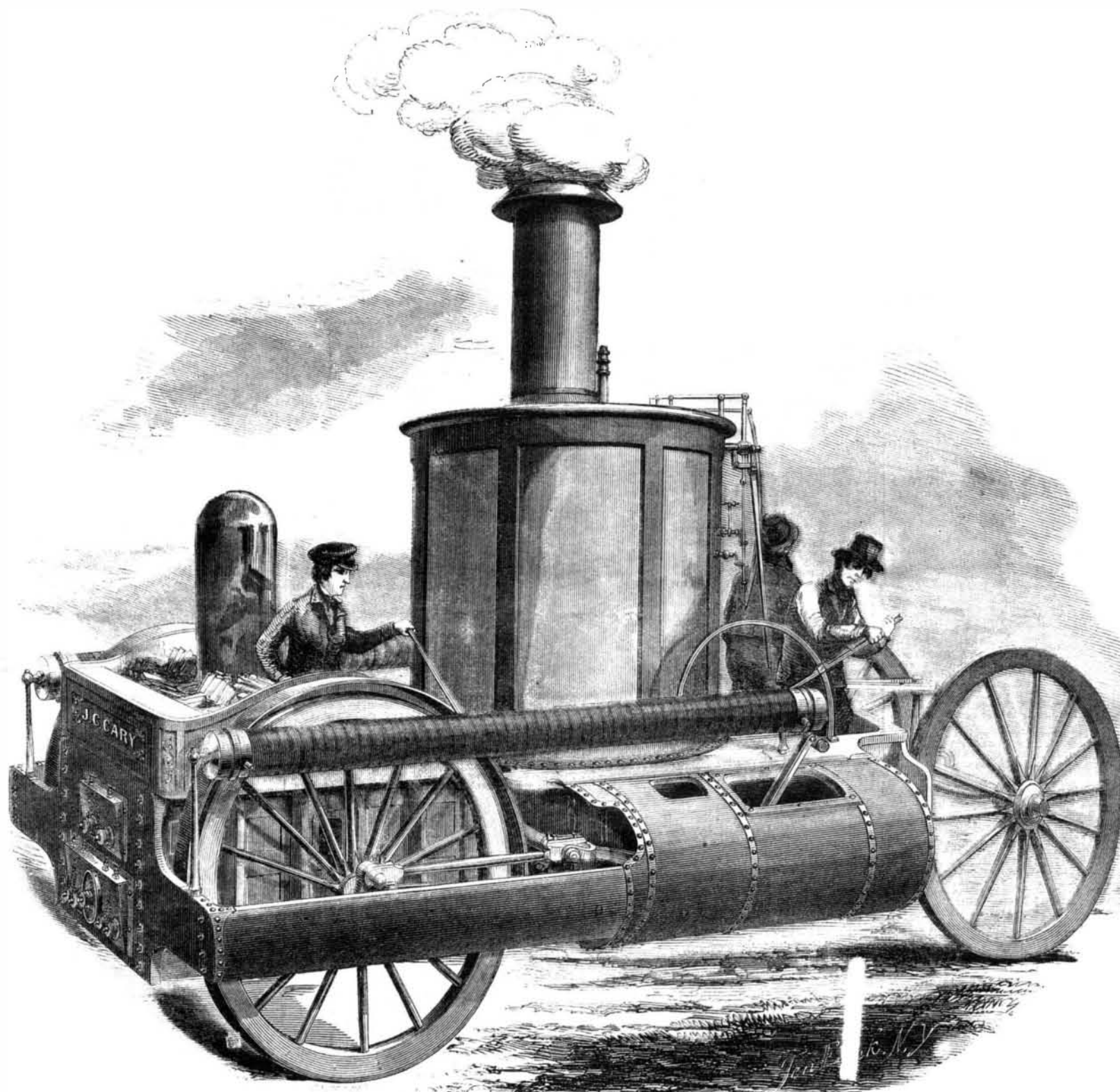
THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

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NO. 12.

LEE & LARNED'S SELF-PROPELLING STEAM FIRE-ENGINE.



We present herewith a series of illustrations of the new self-propelling steam fire-engine, "J. C. CARY," built at the Novelty Iron Works, by Messrs. Lee & Larned, under a contract with the city of New York. This engine was brought out for its first public trial at the Bowling Green on the 5th inst., and again in the Park on Thanksgiving Day, the 18th inst., and its remarkable performance on both occasions has attracted to it an unusual degree of public attention.

It is essentially a street locomotive, capable of propelling itself over any ordinary road or street, carrying with it a powerful pump, so arranged as to be driven by the same engines;

with the other usual appurtenances of a fire-engine.

In the accompanying views, Fig. 1 is the perspective; Fig. 2 a side elevation of the working parts, the outer casings being removed; Fig. 3 a plan; and Fig. 4 a front end elevation.

A is the frame, B the boiler, C the cylinders, D the cross-head, E the connecting rods, taking hold of cranks on the intermediate shaft F; G the static rod, from the cylinders to the journal bearings of F; H the eccentrics and eccentric rods; K the valve rod; L the reversing lever and shaft; M the radius rods; N the parallel rods, taking hold of

cranks on the hinder axle, O; P the pump Q the water chamber, with hydrant and suction attachments, connected with the pump by a pipe, r; R the discharge pipe and air chamber; S the main carrying springs, s the forward springs, projecting from the frame at the front end, and taking hold of the upright spindle, T; U is the front axle, which turns freely in the sleeve-bar, V, both passing through an opening or enlargement in the spindle, T, forming in connection with it a kind of universal joint.

The power is derived from one of Lee & Larned's annular steam boilers, the details of which may furnish a subject for future illustra-

tion. It is a peculiar form of the upright tubular boiler, combining in the highest degree lightness, activity, strength and safety. It contains 114 pairs of vertical tubes, arranged annularly, or one within the other; the outer of 2½ inches, and the inner of 1½ inches diameter, the annular space between the two being occupied by water. The furnace is composed of 1½ inch tubes set close together, and opening into a steam-drum above, and a ring-shaped water-bottom below. Its height, from grate to steam-drum, is 4½ feet. Height of steam-drum, 18 inches; its diameter, 51 inches. Total height of boiler, 6 feet 3 inches.

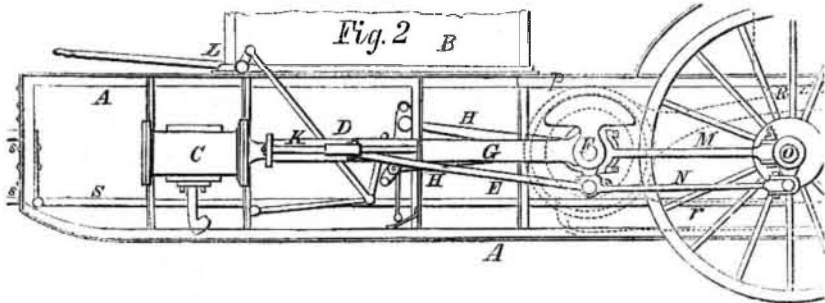
CONTINUED ON PAGE 92.

Grate area, 804 square inches; flue area, 214½ square inches. Total fire surface, 460 square feet. The boiler has been tested under a steam pressure of 200 pounds, and is safe under a much higher pressure; ordinary working pressure, 130 pounds.

The general arrangement of the machinery is that of a locomotive, with outside connections. The cylinders are of 7½ inches diame-

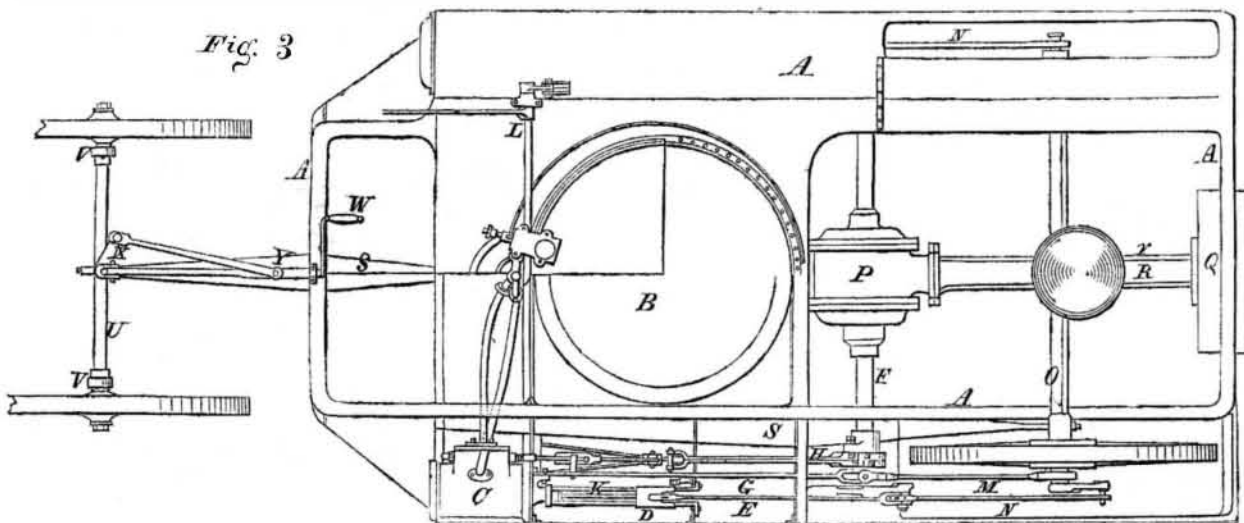
ter and 14 inches stroke. The valves are operated by a stationary link and reversing lever, by means of which the steam may be cut off at any point in the stroke, giving the benefit of expansion in any desired degree, or may be instantaneously reversed.

The connecting rods from the engines act on cranks, placed, not as in locomotives upon the shaft of the driving-wheels, but upon an



intermediate shaft, revolving in fixed bearings upon the frame, and operating the pump, which is one of Cary's Patent Rotary Force Pumps of the largest size. From this, the power is transmitted by a parallel rod to the driving wheels behind; the axle of which is kept at a uniform distance from the intermediate shaft by two strong arms, called radius rods, which take hold of

each shaft near its ends. The moving parts of the engine are consequently undisturbed by the motion of the wheels, however rough the road may be, the power being accurately transmitted to them, whatever position they may take above or below the center line of the cylinders; while ball and socket joints, at the ends of the parallel and radius rods provide against any degree of side movement,



connections, as on those with the hinder axle, ball joints are provided to secure flexibility.

The total weight is about five and a half tons. The length of the frame or body is about 14½ feet, its breadth 7 feet, and the total length of carriage 20½ feet. Fuel enough for two hours consumption can be carried in the space back of the hinder axle. Steam can be raised to working pressure in from six to ten minutes; but it is intended that steam shall be kept up at all times, so that the engine can start at a moment's warning. As the boiler is very thoroughly clothed, and the loss of heat by radiation very small, this can be done at a moderate expense compared with that of supporting a horse-establishment for hauling the engine.

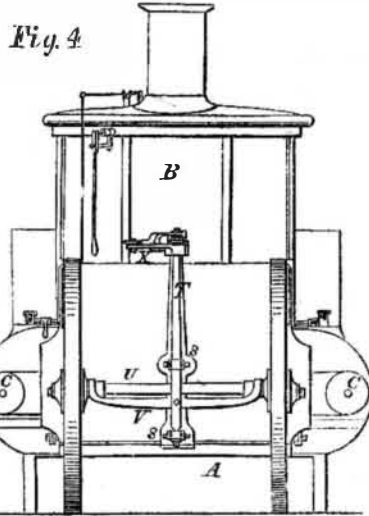
The pump discharges 46 gallons per revolution, and may be run with good effect at any speed, from 50 revolutions to 250.

At the trial on the 5th instant, before Street Commissioner Cooper and other officials, it threw from 700 to 750 gallons per minute through a 1½ inch nozzle, a horizontal distance of 252 feet, and a perpendicular height estimated at not less than 160 feet; also two 1½ inch streams about the same height and distance. The hose was then taken to the top of a five-story building, 60 feet high, and a 1½ inch stream thrown 150 feet horizontally, and an estimated additional height of 80 feet. From the same position, playing through an open butt of 2½ inches diameter, water was thrown at the rate of about 900 gallons per minute, over two intervening roofs, with great force and effect, upon the roof of the third building beyond, a distance of 60 feet.

After the trial, it ran, with fifteen men on

board, over some of the steepest grades and worst conditioned streets in the city, to the entire satisfaction of the Street Commissioner, who rode on the engine and selected the route.

At the trial in the Park, on the 18th inst., it threw a 1½ inch stream 267 feet, a two inch stream 232 feet, and a two and a half inch stream through an open butt the astonishing distance of 196 feet; the



pump making 240 revolutions and discharging 1,100 gallons of water per minute, and the boiler supplying abundance of steam at this speed, with a pressure of 150 pounds to the inch. This performance is believed to be unprecedented in the history of hydraulic machinery of a portable kind, whether for steam fire-engine purposes or any other.

Further information may be obtained from

twist, or flexure. When the engine reaches the fire, the parallel rods can be disconnected almost instantly, and the power then acts upon the pump alone.

In this important part of their apparatus, Messrs. Lee & Larned, it will be seen, have adopted substantially, with such modifications and additions as their special purpose required, the well-known steam carriage arrangement of Mr. J. K. Fisher, of which the intermediate shaft, radius, and parallel rods briefly described above are the principal elements. The screw steering apparatus is also a part of Mr. Fisher's arrangement. The use of the intermediate shaft to drive the rotary pump, with the instantaneous disconnection of the parallel rods, is a mechanical combination of very great merit.

The frame or bed, of boiler and angle iron, is hung upon four strong springs running lengthwise, and one cross spring under the hinder axle, not seen in the figures. The two front springs are placed one above the other in the line of the center of the carriage, taking hold of boxes upon the vertical steering spindle, T, by turning which, by means of the horizontal crank, X, operated by the screw sleeve, Y, and the winch, W, the direction of the axle is controlled, and the carriage steered with great facility and precision. In these

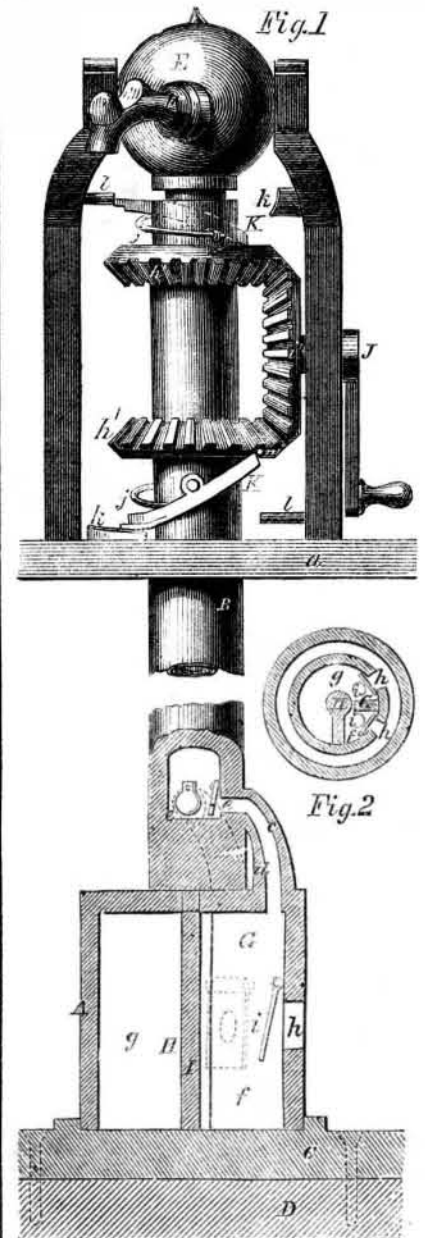
Messrs. Lee & Larned, 52 John street, New York, room No. 7.

Fagan's Improved Pump.

An interesting book might be written on pumps, if the line of thought pursued were the ingenuity of man as displayed in his endeavors to raise water by these means. There is no difficulty in the aqueous world with which inventors have not coped, and in the majority of instance have proved successful, and a specimen of such success forms the subject of our illustration, which is a novel pump invented by J. L. Fagan, of Anauqua, Texas, and on which he has applied for a patent.

Fig. 1 is a view of the pump, the lower part being shown in section. A is a hollow cylinder attached to a tubular shaft, B. The cylinder, A, is secured in a circular step, C, attached to a bed-piece, D, placed in the well. The shaft, B, has its bearing in a crosspiece, α, and the upper end of the shaft fits in a hollow stationary cap, E, having a nozzle, F. The cylinder, A, communicates with B by two curved pipes, c d, each provided with a valve, e, opening into B. Within A a flanch or piston, G, is secured, (this is better seen in Fig. 2, which is an horizontal section through A,) and extends inwards toward the vertical shaft, H, that is secured to the bed-piece, D, and is fitted loosely in the top of the cylinder. To the shaft, H, a radial plate, I, is fixed and which extends to the inner surface of A. The plate, I, and piston, G, divide the cylinder into compartments, f and g, and each compartment has an aperture, h, provided with a valve, i, operating inwards. The tubes, c d, communicate each with a separate compartment, f, g. On the upper part of the shaft, B,

are placed two bevel wheels, k' k', into which a corresponding wheel, i', on a horizontal shaft, J, gears. To the shaft, B, two pawls, K K, are attached, which are made to catch alternately into their respective wheels, k' and are alternately released from them by means of springs, j, and inclined plates, k k. The springs, j, being attached to shaft, B, and the inclined planes to the framing that supports the working parts; horizontal pins, l, are also attached to the framing. The pawls, K, bear against the smooth surfaces of the bevel wheels, k', notches, m, being made in them into which the pawls catch at the proper time.



The operation is as follows:—Power is applied to the shaft, J, in any proper manner, and a reciprocating partially rotating movement is given the cylinder, A, through the medium of the gearing, k' i', and ratchets, K K, the ratchets being made to catch alternately into the notches, m, of their respective wheels, by means of the springs, j, and elevated therefrom by the inclined plates, k k, the pins, l, preventing the pawls from dropping into the notches during the return movement of the wheels, k', when the notches pass under the pawls. The piston, G, forces the water alternately from the chambers, f g, through their respective tubes, c d, into the shaft, B, from whence it is discharged through the nozzle, F. The valves, h, close by the pressure of the water under the action of the piston, G. In this pump there are but few parts, and they simply arranged; it is not liable to get out of order, and is a very efficient submerged pump.

Any further information will be given by the inventor upon being addressed as above.

DEATH OF MADAME IDA PFEIFFER.—This lady died in Vienna on the 27th of October, of an illness contracted during her late visit to Madagascar. Her travels and adventures have been made familiar to the reading public by many interesting volumes.



Issued from the United States Patent Office FOR THE WEEK ENDING NOVEMBER 16, 1885.

[Reported Officially for the Scientific American.]

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

WASHBOARD—John Adams, of Pittsburg, Pa.: I claim as a new article of manufacture, a washboard having its rubber, B, composed of glass, as and for the purposes shown and described.

[The rubber of this washboard is constructed of glass, and fitted in a wooden frame, and so gives a smoother and more durable board than any yet produced.]

BOMB LANCE—A. F. Andrews and J. H. Andrews, of Avon, Conn.: We do not claim encompassing the tube, A, and soft metal bands, d, d, to fit into the spiral grooves of the rifle barrel, nor do we claim the expanding breech for preventing windage, for these are old and well-known devices used in various projectiles. Neither do we claim, broadly, the employment or use of a fuse, j, for communicating fire to the charge after a certain interval of time; nor do we claim a part from or irrespective of the fuse, the lighting of the charge by percussive force, for there are many varieties of percussive shells, bombs and the like, in which the charge is directly ignited by percussion; but we are not aware that a fuse has ever been used in connection with parts so as to be ignited by percussion, and thereby obviate the described difficulty attending the direct ignition of the same by the firing of the powder which projects the missile.

We claim the employment of the independent movable fuse tube, D, arranged within a bomb lance, substantially as shown and described, so that the fuse will be ignited by the motion of the missile.

[For more information regarding this invention, see another column.]

KNIFE SHARPENER—Alexander Annan, of New York City: I do not claim the employment or use of corrugated steel plate, C, for cutters, for such have been previously used for knife and scissor sharpeners.

But I claim the two cutter plates, C C, with cut or corrugated surfaces, placed in oblique positions relative with each other, and arranged or fitted between the upright plates, B B, of a base, A, substantially as and for the purpose set forth.

[This invention consists in having two cutters formed of rectangular steel plates, cut or corrugated on their sides similar to files, and fitted in oblique grooves in a metallic frame; the cutters being placed in such position that they retain each other in the frame, and are rendered capable of being adjusted in varying positions in the plane of their movement, so that the whole surface of the plates may be used as cutting surfaces.]

INFANTS' CRADLE—Thomas C. Ball, of Keene, N. H.: I claim the arrangement of the cranks, C C, pieces, D D, slot, E, and cross-bar, F, in combination with the spring and gearing operating in the manner explained for the purposes specified.

SAFE LOCK—Obadiah Bayly, Jr., of Dearborn County, Ind.: I claim the action of niche wheel, N N, in preventing the bolt, B B, from being passed back so as to unlock. The application of a movable pinion on the shaft wheel, W W, in connection with a steel plate and hand, by means of which the lock is set to unlock at any given hour by the niche passing in front of the bolt, B B, and permitting it to pass within the niche and not over it.

Also, the application of security spring, H, security lever, F F, and security catch, I, in allowing bolt, B B, to pass back and over the rim of niche wheel, N N, and again securing it opposite the rim of niche wheel, N N, when the door is shut.

Also, the application of stop levers, S S, and Q Q, in stopping the clock, when the niche is opposite bolt, B B, by levers, S S, coming in contact with the cog of wheel, U U, of the clock.

Also, the application of spring, L, in pressing bolt, B B, against the plate of the works.

LATH MACHINE—Josiah Black, of Memphis, Tenn.: I claim the vibrating table and lever, B, together with mechanism connected therewith for giving change of motion to carriage, in combination with the lever, B', and the mechanism for opening and closing the dogs, the whole being arranged for joint operation, substantially as and for the purpose set forth.

BEE HIVES—Asa Blood, Sr., of Norfolk, Va.: I claim the main or bearing core, B, in enclosing case, C, in combination with the honey cores, D, in cap, E, the several parts being constructed and arranged in the manner and for the purposes specified.

MACHINE FOR MAKING SPOONS—J. P. Brinkerhoff, of Brooklyn, N. Y.: I am aware that drop dies have been used for cutting out articles from metal plate and swaging them in proper form at one operation. I therefore do not claim, broadly, such operation.

But I claim the arrangement and combination of the rolling die, E, die, G, bolster, F, opening, H, and bar, H, as and for the purposes shown and described.

[In this invention a rolling and rectilinearly moving die is employed, combined and arranged so as to perform the desired work—the manufacture of metal spoons, forks, knives, &c.—in a very expeditious and perfect manner, and requiring but little manipulation for completion.]

ELECTRO-MAGNETIC FIRE ALARM APPARATUS—Moses G. Farmer, of Salem, Mass.: I claim, first, The dial, the snail and the key or lifting piece, A 2, in combination with an electric circuit and with the means of making and breaking the circuit, for the purpose of striking a definite number of blows upon one or more bells, and of repeating the same, and of registering or indicating the number of the blows so struck as described.

Second, The arrangement of the circuit lever, I, the lifting piece, A 2, and pin, i 2, so that the circuit shall be closed on the dropping of the lifting piece from off the pin as set forth.

Third, The arrangement of the circuit lever, c, rack W, operating in the manner set forth, whereby the circuit is completed by the falling of the rack, and broken when the required number of blows has been struck, as set forth.

Fourth, The combination of the circuit levers, I and e, operating in the manner substantially as set forth for the purpose described.

Fifth, I claim the arrangement of the arm, f, the arms, a and b, or their equivalents, for the purpose of effecting electric communication alternately with the time magnet, D, and the operating magnet, H, essentially as described.

SHOE PEG MACHINE—Azro Brown, of West Waterford, Vt.: I claim, first, The combination and arrangement of the radial slotted plate, f, eccentric helical or spiral edged plate, between which and the lower plate, e, it is confined; said lower plate, e, having depressions and gutters, in its upper surface for receiving corresponding parts formed on the lower surface of the slotted plate, f, and a raised or ridged portion nearer its center, whose inner edge corresponds with the eccentric curvature of the edge of the plate, the said slotted plate, f, and the other parts mentioned being arranged and operated substantially in the manner and for the purpose set forth.

Second, I claim giving an intermittent progressive motion to the slotted plate, f, by the combination of the ratchet notches on its under surface spring pawl, K, and oscillating lever, l, attached to a connecting rod, m, to the pitman rod, as described.

Third, I also claim forcing or conveying the strips of wood from which the pegs are formed after being cut from the block or bolt, by means of the combination and arrangement of the traversing bars, V V, guided by wheels on the end of the cross-head, at the angle where they are connected, curved groove, v, in the drum, P, and knives, W, between which the strip is first deposited and subsequently conveyed through the slot in the rim of the plate or rim, e, and under the V-shaped cutter, V, substantially as set forth.

Fourth, I claim the combination of the cylindrical knife, H, and cutters, J, as described.

[For more information about this invention see another page.]

DEVICES FOR SAVING THE SEED FROM HAY FED TO STOCK—R. A. Campbell, of Salem, Ind.: I claim the combination of the inclined conducting passage, F, intermediate hay rack, E, and sieve bottom trough, B C C, substantially as and for the purposes set forth.

MODE OF CONNECTING ELECTRO-MAGNETIC APPARATUS WITH TELEGRAPHIC KEY—G. K. of Philadelphia, Pa.: I do not desire to claim the combination of electro-magnetic machine and forceps, as that has been invented by Francis.

But I claim the employment of the foot key, K, or its equivalent, in combination with the electro-magnetic machine and forceps, arranged and operating substantially as described.

BILLIARD TABLE—H. W. Colander, of New York City: I am aware that strips of steel have been used in cushions for billiard tables, but in such cases the strips have been secured above the bed of the table to cushion blocks or frames of the usual construction, and therefore I do not wish to be understood as making claim, broadly, the use of strips of steel for the cushions of billiard tables.

What I claim is the manner substantially as described of applying steel springs as cushions to billiard tables by clamping the lower portion thereof to the edge of the bed, as set forth.

And I also claim making the height of the cushions above the bed of the table, adjustable substantially as described, so that they may be adapted to balls of different diameter, as set forth.

I also claim combining with the bed and cushions applied substantially as described, a flange or ledge outside of the cushions on a level with the bed, or nearly so, substantially as described to form a rest for the hand when playing with the ball near to the cushion, as set forth.

POWER LOOMS—John Crawshaw, of Rochester, N. Y.: I do not claim operating the take-up motion by means of a pawl attached to a lever operated upon by a stud or roller attached to the lay; nor do I claim reducing the friction on the yarn beam, as the quantity of yarn upon it is reduced by the use of weights traveling along levers connected with the friction straps.

But I claim, first, The lever, i k, applied in combination with the cloth roll and with the spring, h, of the take-up lever, to operate substantially as described for the purpose set forth.

Second, The rock beam, I, its arm, u, and pawl, v, applied in combination with the ratchet wheel, t, screw, r, and lever or levers, q, g, and weight or weights, s, substantially as described to move said weights toward the fulcrum of the friction strap lever, p p, as the quantity of yarn on the yarn beam is reduced.

[A notice of this improvement is given in another column.]

SEALING PRESERVE JARS—R. M. Dalbey, of Mount Washington, Ohio: I claim the yoke or ring, in combination with the leather or its equivalent, as applied to vessels substantially as described, for the uses and purposes set forth.

BURNING COAL DUST—G. B. Deppen and E. Devengood, of Myerstown, Pa.: We claim, in combination with a fan-blower to promote combustion, the arrangement of the fire chamber, ashbox, perforated plates, combustion and exit chambers, communicating with each other, and with the air trunk leading from the fan-blower, substantially in the manner and for the purposes described.

SAFE LOCK—Leger Dies, of Utica, N. Y.: I do not claim the several parts of my lock, separately considered.

But I claim the combination of the reciprocating stop header with the levers, h, stops, a, and the compound slotted tumbler, D, the construction and operation being as described.

VAULT LIGHT—Cornelius Donaldson, of New York City: I do not claim a vault light formed of several glasses set in a frame, as one or more glasses have heretofore been used, neither do I claim a double vault cover or roof with perforations in the lower plate or a pipe connected with the space thus formed, as the same is believed to be the invention of another party.

But I claim the annular flange, 4, on each glass, d, in combination with the supporting plates, b and c, and the ring packings of rubber, or equivalent material, in substantially the manner specified.

VEGETABLE CUTTER AND COFFEE MILL COMBINED—B. Essig, of Pittsburg, Pa.: I do not claim in this any parts or device of the cutting apparatus, such as the adjusting of the knife, or the attachment of the cutter disk to its seat, or any parts of the coffee mill considered by themselves.

But I claim the mode of arranging and combining a vegetable cutter and a coffee mill, in such a manner that by means of the sliding shaft, B, either of the two may be set in or out of gear, substantially as set forth.

STRAW CUTTERS—Wilson Green and Malcom Me. Fisher, of Chattanooga, Tenn.: We claim the arrangement of the treadle, A, leather strap, B, the regulating board, C, and knife, D, combined with the double-leaved lever, G, lever, E, and upright standard, F, for joint operation, as set forth and described.

HAND HAMMERS—Alfred Gregory, of Washington, D. C.: I claim the left regulated hammer shaft, or lever, substantially as specified and operating to secure to the implement, of which it forms the handle, an enlarged and variable capacity to deal light or heavy blows as required, essentially as set forth.

ASTRONOMICAL INSTRUMENT—Henry Glover, of New York City: I claim, first, The use of the double reflectors or mirrors, G G, in combination with a vertical sight, whether the said mirrors are fixed or made adjustable, substantially as set forth.

Second, I claim the second graduated arc, E, in combination with the main instrument, A, and with the second mirror, G', in the manner and for the purposes set forth.

Third, I claim the supplemental arc, I, in combination with the level, J, and with the main instrument, A, in the manner and for the purpose set forth.

CENTRE BOARDS FOR VESSELS—Jesse F. Potts, of Apalachicola, Fla.: I claim the two or more hinges or parallel bars, D and D, as described, when arranged in the manner and for the purposes set forth.

BINDING ATTACHMENT TO HARVESTERS—Wm. Grey, of Nicholasville, Ohio: I claim, first, The arrangement of revolving platform, F, B, and series of levers, G, H I J, with their accessories, in the described connection with a drive wheel for the automatic starting of the binding mechanism by the weight of the sheaf or gavel, substantially as set forth.

Second, In this connection the talons, 16, 17, 18, 17', 18' constructed and operating substantially as set forth.

Third, In combination with the talons, or their equivalents, the crane, I I', and its accessories, having the described compound movement, substantially as and for the purpose set forth.

Fourth, In the described combination with the talons, or their equivalent, the pliers, I I, constructed and operating substantially as set forth.

Fifth, The rod, c, "looper," a, and "trucker-in," t, constructed, operated and operating together, substantially as set forth.

AUTOMATIC FEED-BOXES FOR ANIMALS—Albert Good-year, 2d, of Hamden, Conn.: I claim the arrangement of the box, B, lid, L, spring, i, and catch, a, with sliding plate, K, dial, D, notch, n, and button, E, united together substantially in the manner and for the purpose set forth.

HARVESTERS—Stephen Hull, of Poughkeepsie, N. Y.: I do not claim connecting the finger bar to the machine by a hinge joint, nor do I claim connecting the finger bar to the machine by the double rule joint, nor with the double jointed coupling.

But I claim connecting the inside shoe, b, to which the finger bar is fastened, directly to the main frame, or to one or both the end bars of the main frame by means of circular bearings at each end of the shoe, without any coupling piece, in combination with a small wheel hinged to the inside shoe, substantially as represented and for the purposes set forth.

Second, I claim the notches, holes or slots in the shoe and flanges near the bearings or joints on which the shoe turns in connection with the movable catches or bolts that work in them to keep the finger bar in its proper place or from rising or falling too much over uneven ground, in combination with a jointed shoe constructed substantially as represented and for the purposes set forth.

Third, I do not claim simply attaching a wheel of any kind to the inside shoe; but I claim the arrangement of the small wheel, b, with the jointed frame or bar, i, hinged to the inside shoe, by which the wheel is allowed to remain in the same position when the finger bar is turned up to go from place to place, as it is when the machine is cutting grass and the finger bar rising and falling over uneven ground.

ANIMAL TRAPS—C. J. Jilson, of Worcester, Mass.: I am aware that rat traps have been made where the jaws have been sprung toward each other, and that a single jaw has been made to move in the arc of a circle; these I do not claim.

But I claim a rat or animal trap in which the jaws are moved from each other in a plane, and thus enlarge the opening between them, and which, when sprung, shall close up or contract the said opening, substantially as described and represented, and for the purpose set forth.

HORSE POWER DRAUGHT—J. Herva Jones, of Rockton, Ill.: I claim the combination of the levers, B B B B, and the flexible link, D D D D, in the manner and for the purpose set forth.

BREAST PIPE—Thomas Lewis, of Malden, Mass.: I claim the described combined nipple shell and breast pipe, constructed by the attachment of a neck and pipe to an ordinary nipple shell, as set forth, for the purpose described.

METHOD OF REGISTERING THE SPEED OF RAILROAD TRAINS—Charles T. Liehr, of Mobile, Ala.: First, I claim, in the indicating apparatus, the governor, A B C D E, placed in the lower part of a casing, which can be used as a car seat, said governor having its weights sounded by connecting rods and levers so to cause them to remain in their centrifugal and centripetal action, uninfluenced by any horizontal jars and shocks of the car.

Second, I claim the compensation beam, K, or its equivalent, with its rods and levers, to bring over the motion of the rods head of the governor to the indicator, so arranged as to cause the vertical joints and jars received by the various moving parts to absorb one another, and the indicator, X, which points out the degrees of speed on the index, W, the whole so arranged as to enable passengers and conductors to be constantly informed of the exact speed of the train, as substantially described.

Third, In the registering apparatus, I claim the circular register of metallic or other plates, with its radiating and circular lines expressive of distance and speed, said register receiving any degree of retarded motion from the car axle by means of the worms, B1 and B2, and the worm wheels, C' and C'', and the pencil holder, Z, with its adjustable pencil, substantially as described above, the whole so arranged that the various degrees of speed on all parts of the road shall be noted down on the circular register.

TELEGRAPHIC INSTRUMENT—Rufus Kendrick and Alpheus W. Arkerson, of Cambridgeport, Mass.: We claim the application to the finger key of a telegraphic instrument, of a rocking shaft, or its equivalent, to which a succession of vibratory motions of the proper proportionate durations for producing the characters required is communicated, as specified.

We also claim the construction and arrangement of the rocking shaft, B, with its dogs, i, i, &c., and of the keys, D D D, &c., operating in combination, substantially as set forth.

MACHINE FOR SAWING AND PLANING SHINGLES—George H. Mallory, of New York City: I am aware that circular saws and rotary planers have been previously used for sawing and planing shingles, and I therefore do not claim, broadly and separately, said devices.

But I claim the particular means employed for adjusting the bolt, J, to the saw, in order to give the taper form to the shingle, in combination with the means employed for adjusting or moving the planer, G, to its work, to wit, the bars, p q, connected as shown, by the pendant, q', and set screws, t, t, operated by the wiper, u, and pins, c, c, and attached respectively to the bar, I, containing the jaws, n, n, which hold the bolt, J, and the bar, v, connected with the planer head, D, the whole being arranged to operate as and for the purpose set forth.

[This is an improvement in that class of shingle machines in which the shingles are sawed from the bolt and planed at one operation. The invention consists in the peculiar arrangement of means employed for presenting the bolt to the saw, so that the shingles may be sawed from the bolt in proper taper form, and also operating a rotary planer so that the same, while at work, may be fed towards the shingle, to compensate for its necessary oblique position while being sawed from the bolt.]

HARVESTERS—James S. Marsh, of Lewisburgh, Pa.: I claim the arrangement of the bent lever, I, and the arm, H, of the caster wheel, when said lever is pivoted behind, and said arm is pivoted before the axle of the driving wheel, and the two are connected by the link, h, substantially as and for the purposes specified.

TONGS FOR COAL, &c.—James M. Meschutt, of New York City: I claim as a new article of manufacture, the metallic tongs for coal fires, &c., constructed with fingers or curved prongs and the projections for the purpose of preventing the fingers coming too closely together, substantially as s, cified.

HAND DRILLS—Frederick McNair, of Fultonham, Ohio: I am aware that drills have been constructed or formed of a sliding gate, containing the drill or bar, and having a feed screw attached, and I therefore do not claim, broadly and separately, such parts.

But I claim the arrangement of the feed screw, F, and sliding gate, D, and frame, C, in combination with the adjustable bed B, as and for the purposes shown and described.

[The object of this invention is to obtain a portable hand drill—one that may be readily manipulated, and capable of being more generally adapted to various kinds of work. The frame of the drill on or in which the sliding gate works is attached to a movable or adjustable bed, which is hinged or jointed to a permanent or stationary bed, so that the drill may be used either in a vertical or horizontal position, as the nature of the work may require.]

WASHBOARD—John Miner and Silas Merrick, of New Brighton, Pa.: We are aware that it is not new to strike up in a mold or die the metal plate of a washboard, to make raised and depressed figures in general, or even the rib work described; nor yet to make a metallic crimped plate without a support or brace in the back side thereof.

But we contend that it is new to stiffen a crimped metallic plate of a washboard, by confining the crimped portion within the frame, so that the plane border only shall be received into the narrow groove of the frame, provided the corrugations or ribs be so formed as to project equally on both sides of the medial line of the plate, so that each side of the plate shall be equally braced by the crimping of the metal, and consequently be equally adapted to washing on both sides.

We disclaim the general device of making a crimped metal washboard with a plane border received into a plane groove in a frame.

But we claim so impressed the corrugations equally upon both sides of the plate, about the medial or central line of the corrugated part of the plate may be in a line with the plane border, c, and that the ribs shall project equally on both sides, forming two equally good washing surfaces, as set forth.

MELODEONS, &c.—Isaac Rehn, of Philadelphia, Pa.: I claim, first, The employment of independent wind chests in melodeons, harmoniums, and other similar reed instruments, in combination with the suction bellows, for the purpose specified.

Second, The introduction of the stop valves between the independent wind chests and the bellows, in combination with the appliances described, or their equivalents, for operating the said valves, when the said appliances are situated within the bellows, as set forth.

CHURN—Harry Robie and Royal V. Robie, of Eaton, N. Y.: We are well aware that the beaters placed spirally around a horizontal shaft is an old and well-known device. We do not claim, therefore, any of the parts separately or in the abstract, irrespective of the arrangement as shown and described.

But we claim the perforated beater, B, in combination with the alternate beater, C, presenting a concave extremity in connection with the passage formed by the narrow base of the beaters, the several parts being constructed and arranged upon the shaft, A, with respect to each other, in the manner and for the purposes set forth.

MOLD FOR GLASS BOTTLES—Samuel S. Shinn, of Lancaster, N. Y.: I claim the mold constructed with its stationary portion, A, of clay, plaster, or material of similar character, clamped between plates, B C, and the opening portions, E E, of metal, hinged to the upper clamping plate, C, substantially as and for the purpose set forth.

[The molds in which bottles are blown, are in this invention, constructed partly of clay, plaster of Paris, or other of the earthy matters usually employed for such purpose, and partly of metal, whereby the advantages of the two materials are combined in such a manner as to make a mold superior to one made entirely of either material like the molds commonly used.]

FORGE HAMMER—Benjamin Shiverick, of Pittsburg, Pa.: I claim the cam, F, so constructed as to act on the collar, K, opposite the spindle, or nearly opposite the spindle, during the whole time of its action in raising the hammer, except when the extreme end of the cam is passing out from under the collar to let the hammer drop, as described.

I claim a wedge, or its equivalent, so constructed and arranged as to be moved by the workman or attendant while the hammer is in motion, to graduate the action of the springs upon the hammer, to make it strike light or heavy blows, as desired.

CHURN—Charles W. Stafford, of Burlington, Iowa: I am aware that many of the contrivances described have in some shape been substantially used for a like purpose before. I do not, therefore, claim them separately, except as stated.

But I claim the general arrangement and adaptation of parts, substantially as set forth by which a cheap, light, convenient, and effective churn is produced.

BREECH-LOADING FIREARMS—John C. Symmes, of Wauertown Arsenal, Mass.: I claim the elastic flexible lip, substantially as described, however it may be applied to checking the escape of gas from the breech of breech-loading guns.

MACHINE FOR MOLDING BOOT AND SHOE SOLES—Daniel J. Tapley, of Danvers Center, Mass.: I do not claim pressing soles between a convex and a concave former, in order to shape them to the last, as that is old.

Nor do I claim any one particular part of the machine, independently of its combination.

But I claim, first, Providing substantially as described the lower former, B, with a socket C, to receive the upper end of the wooden standard, D, and also with projecting ears, b b, to guide the rods, F F, and holes, c, c, in the back flange, to admit screws for confining the machine to a bench, or the side of a shop.

Second, The combination of the spring, I, lever, G, and connecting guide rod, F F, with the upper former, A, substantially as set forth, and for the object specified.

HAME FASTENER—John Tinsley, of Potter Co., Pa.: I do not claim, broadly, a metallic hame fastener, for I know there has been at least one patent granted for a metallic fastener.

I claim the combination of two books coupled together by a semi-revolving force plate, and the spring, D, Fig. 4, the catch, B, and the projection, C, when made and combined substantially as set forth, and for the purpose described.

SHIPBUILDING—Daniel Vrooman, of Hudson, Ohio: I claim the arrangement and combination of the inclined surfaces or projections, B D, and the elastic fins or wings, A, with the hull of the vessel substantially as and for the purposes shown and described.

[A notice of this improvement is given in another column.]

LOCOMOTIVE LAMP CASE—Irvin A. Williams, of Utica, N. Y.: I claim the combination of casings, B and C, with the chimney, A, as described, the plates, p and p', alternating, and the construction and arrangement of the several parts, substantially as set forth.

INSTRUMENT FOR TRIMMING THE EDGES OF BOOT AND SHOE SOLES—Isaac Rich, (assignor to Samuel C. Arnold), of Manchester, Conn.: I claim the described instrument for trimming the soles of boots and shoes, consisting of the handle, A, guard, B, knife, C, and sliding gage, D.

SPRING BED BOTTOM—Noah Warlick, of Chamber's Court House, Ala.: I am aware that wooden slats have been used with spiral springs, and therefore do not claim broadly and irrespective of arrangement, such device.

But I claim the wooden springs, D, attached to the under side of the longitudinal slats, B, and resting on the transverse bar, E.

I also claim the use of metal or india rubber springs resting upon said transverse bar, for the purpose specified.

[This invention consists in having the bed bottom formed of a series of longitudinal wooden strips or slats, having their lower ends, or the ends at the foot of the bedstead, permanently attached at equal distances apart, to a transverse bar, the slats at about their centers being attached to springs which rest on a transverse bar attached permanently to the bedstead, and the upper ends of the slats attached to a strap which serves as a stay, the whole being arranged so that a very elastic, simple, and cheap bed bottom is obtained.]

BRAIDING MACHINES—Andrew B. Clemons, of Derby, Conn., (assignor to the Birmingham Iron Foundry, of Birmingham, Conn.): I claim combining and arranging the tension and pull blocks or weights, H K, which have a rising and falling movement over the vertical guide bar, E, in relation to the lower eye, F, in the bar, E, and the bobbins, D, described, for regulating the paying out of the thread from the bobbin, and consequently its tension in the manner set forth.

[The weight which assists in regulating the tension of the thread is so formed as to enable it to have an up-and-down movement beside the vertical guide bar, and the guide bar is surrounded above the weight by a metallic block having a flanch at its side that projects over the ratchet teeth or notches formed on the top of the bobbin. The thread is passed through an eye in the upright guide bar near the bottom, thence under the lower end of the weight and thence through an eye at the upper end of the guide bar to the object to be braided. By this means the diameter of the winding portion of the bobbin may be greatly reduced, and the bobbin made to hold much more thread, and turned with much less friction than if the tension weight were arranged within a box at its center, as in the ordinary method.]

MACHINE FOR CUTTING BUNGS—James Lyon and George H. Brady, (assignors to themselves and Thomas J. Falls, Jr.) of New York City: We claim the cutters, d d, and stocks, c c, sliding in the adjustable blocks, b b, that are revolved by the face plate, E, and which cutters, d d, are projected by means of the disk, F, and act to cut a tapering bung, substantially as specified.

RAILS FOR RAILROADS—John Cochrane, of New York City: In the manufacture of wrought iron rails or bars for railroad tracks, I claim the making or forming of such rails by means of rolls, with additional metal upon the crown or head thereof, which additional metal is forced into the head or top part of the rail by a second process, thereby consolidating the head or top part of the rail, and hardening the bearing surface thereof, substantially as described.

RE-ISSUES.

SEED PLANTERS—Jarvis Case, of Bloomington, Ill. Patented January 16, 1855: I claim, in combination with a corn-planting machine that is constantly moved over the ground and drops the grain intermittently, the so combining of two slides, one of which is at or near the seed hopper, and the other at or near the ground, or their equivalents, with a lever, as that the operator or attendant on the machine can open said slides at the proper time to deposit the seed, and prepare a new charge by the double dropping specified.

PRINTING PRESS—George P. Gordon, of New York City. Patented June 13, 1854: I claim relieving the sheet from the type, and taking the sheet directly from the platen, or either of them, with or by the same nipers which shall carry such sheet to its place of deposit or piling.

I also claim giving, with one inking cylinder, two distributions to the inking rollers for each impression, viz., one distribution prior to passing the form, and one distribution prior to the return of the form to its first position.

I also claim the arrangement of the spring, connecting rod, crank, and stops, as described, to operate the bed and give the necessary dwell for the impression.

GRINDING MILLS—Edward Harrison, of New Haven, Conn. Patented June 6, 1854: I claim the improved method described of securing the runner stone on the driving spindle in a grinding mill by means of a metallic band, or its equivalent, embracing the periphery of the stone, by combining said band with a hub, and a back plate of at least as great diameter as the runner, and rigidly attached to the spindle, such combination operating to secure the stone firmly in its place, in the manner and on the principle substantially as specified.

DESIGNS.

HAT AND CANE STAND—Edward Reynolds, (assignor to Thomas W. Brown), of Boston, Mass.

COOK'S STOVE—A. C. Barstow, of Providence, R. I.

SCRIPT TYPE—James Conner, of New York City.

ADDITIONAL IMPROVEMENT.

PROPELLER—Henry Link, of Little Falls, N. Y.: I claim the wings made up of a series of horizontal hinged valves graduated in width as described, in combination with the cylindrical section, either hollow or solid, substantially as and for the purpose set forth.

DISCLAIMER.

VESSELS FOR HOLDING LIQUIDS—James H. Stimpson, executor of James Stimpson. Patented October 17, 1853: I disclaim so much of the first claim of said patent as may include the application of the double wall to other structures or vessels than ice pitchers.

INVENTIONS EXAMINED at the Patent Office, and advice given as to the patentability of inventions, before the expense of an application is incurred. This service is carefully performed by Editors of this Journal, through their Branch Office at Washington, for the small fee of \$5. A sketch and description of the invention only are wanted to enable them to make the examination. Address **MUNN & COMPANY**, No. 125 Fulton street, New York.

New Gelatinous Material.

It is announced in foreign papers that Professor Schetzer, of Zurich, in Switzerland, has discovered that a strong solution of the sulphate of copper into which an excess of ammonia has been poured, will dissolve cotton and convert it into a sort of gelatinous substance something like collodion.

A Cure for Scrofula.

The Cincinnati *Commercial* publishes the following communication from Nicholas Longworth, the great wine manufacturer of that city:—

"All the papers I had, giving the cure for scrofula, have been distributed to persons sending for the remedy. I have never heard of a case where it did not effect a speedy cure, and it can in no case do an injury. In several instances where it has been applied to old sores, it has also speedily effected perfect cures. Put one ounce of aquafortis in a bowl or saucer; drop in it two copper cents—it will effervesce—leave the cents in; when the effervescence ceases, add two ounces of strong vinegar. The fluid will be a dark green color. It should and will smart. If too severe, put in a little rain water. Apply it to the sore, morning and evening, by a soft brush or rag. Before applying it, wash the sore with water. Its first application known to me was a poor girl, sent to our city from Memphis, to have her leg cut off, as it was feared she might not live long enough to have it cut off in that hot climate. She was refused admittance to the poorhouse, and was lying on the sidewalk, as she could not even stand up. From her knee to her foot one-third of the flesh was gone, and all the skin, except a strip about two inches wide. She was laid on a bed, and the remedy placed on a chair by it. She could rise up and apply it. In a few days her peace of mind returned, and she declared her leg was getting well. It was supposed it was a relief from the pain only; but when examined, fresh flesh was found growing, and skin over it. She was soon running about, and would work, which delayed the entire cure, leaving a small sore, which was, in a few months, entirely healed. A young girl with scrofula in her neck, leaving a large open hole, and deemed incurable, came one month after entirely cured, and recently married, with her husband, on their way to the east. I have never known a case where it did not effect a cure."

New Photographic Process.

In a communication to *Cosmos*, Professor M. Godefroy, of France, described the following method of obtaining photographs:—

Float a sheet of paper upon a bath composed of two ounces of nitrate of uranium and 120 grains nitrate of silver dissolved in three and a half ounces of water. The paper is permitted to remain thus situated for three minutes, and is afterwards dried in a dark place, and kept ready for operation. To take a picture, a sheet of paper thus prepared is placed in the camera in the usual manner; or if a copy from an engraving or another picture is to be taken, it is placed under the object to be copied, and exposed to the light. After this, it is immersed in a bath made up of 40 grains proto-sulphate of iron, 20 of tartaric acid, and a trace of sulphuric to every ounce of water. This bath rapidly develops the impression, and the paper is taken and simply washed in rain water which fixes it.

The sensibility of the paper increases with the quantity of the nitrate of uranium which may be employed. Paper thus prepared is very sensitive, and Professor Godefroy thinks it will yet supersede all other kinds now used in photography. By placing a sheet of it between the leaves of a book, and closing it for three hours, a copy of the printed matter will be obtained by immersing the paper in the developing bath, as has been described for taking other impressions.

It is a remarkable fact—and a recent discovery—that objects exposed to light for a certain period absorb or retain a portion of the luminous agency. This action is illustrated in obtaining a copy of a printed book in the manner described.

ACKNOWLEDGMENT.—We have to thank the Rev. Dr. J. Constantine Adamson for the Annual Report of the Council and Officers of the American Geographical and Statistical Society, for 1857.

Enameling Iron.

A very simple method of coating iron with an enamel of glass is a desideratum. The following process, we are assured, is effective for securing this object, and is the cheapest and most simple which has yet been brought under our notice. The iron articles are first thoroughly scoured with sand and dilute acid, then washed and dried. Their surfaces are now covered with a thin coat of gum-arabic laid on with a brush, and over this the enamel powder is sifted, until all the surface is covered to a certain depth, according to the thickness of glaze desired. The articles are now put into an oven heated to 212°, and completely dried, after this they are put into a furnace, and raised to a red heat which melts the powder and it forms the glazed surface. They are now removed to a close chamber when they are allowed to cool slowly, and are then annealed.

The glazing powder for white enamel is composed of 130 parts of powdered flint glass, 20 of carbonate of soda, and 12 of borax. These substances are fused in a crucible and reduced to powder. Some glazes contain oxyd of lead; they are dangerous to employ for culinary vessels, because, if acid is employed in cooking, it is liable to take up a portion of the lead, which is a poison. The enamel powder now described is perfectly safe, and can be applied to any articles of iron.

Machine for making Shoe Pegs.

Shoe pegs, small and insignificant as they appear and may be thought by some, are yet an important manufacture; and when we look at one, and see its excellent shape and perfect finish, we are surprised to learn that by the aid of machinery they are made with such rapidity as to be sold at almost the same price as oats,—per bushel. Azro Brown of West Waterford, Vt., has invented and patented, this week, an improvement in the machine used in their manufacture, which consists, first in cutting from a bolt or block of wood, thin slips, corresponding in size with the length and thickness of the pegs to be formed, and placing them into radial slots in an intermittent rotating plate, arranged between two other plates, or heads, on the faces of which, next each other, are found projections, whose inner edges are made eccentric, helical or spiral with the center. These latter operate upon the outer ends of the slips of wood, above and below the radial slots in the intermittent rotating plate and thereby force the whole series of strips of wood in the slots towards the center, at every motion of the rotating plate, the required distance to enable a peg to be cut from the end of all of them at every depression of a circular evolving knife. The required taper is previously given the pegs by stationary and revolving knives, and the several operations necessary to this end are performed by a simple compact and novel series of parts arranged in a suitable manner. The claim will be seen by referring to another page.

Improvement in Power Looms.

John Crawshaw, of Rochester, N. Y., has produced an improvement in power looms which consists, firstly, in certain means of controlling the take-up motion of a power loom, whereby its operation is rendered perfectly uniform; and secondly, in certain means of governing the let-off motion, whereby the amount of let-off is caused to be always in proportion to the amount of take-up. It was patented this week, and the claim will be found on another page.

Georgia Prosperity.

The Macon (Ga.) *Telegraph* states that there are now 1,200 miles of railroad in that State, all clear of debt, and paying 17 per cent of yearly dividends to the stockholders. The cotton crop of the present year will bring \$21,000,000, and factories and machine shops are multiplying with great rapidity.

To make Gold Powder and Liquid.

GOLD POWDER.—Take any quantity of gold leaf and grind it with pure honey by a "muller" till the metal is reduced to an impalpable condition. The mixture of gold and honey is then placed in a china mortar containing water, and thoroughly stirred. The contents are then allowed to settle, when the gold sinks to the bottom, while the honey being soluble is taken up with the water and may be poured off. By several washings in this manner the honey will be completely separated and the gold left in the condition of a fine powder. By placing leaf gold in a mixture of nitric and muriatic acid in a glass vessel it will dissolve like sugar in water. By adding some copperas to this *aqua regia*, the gold will be separated and fall to the bottom in fine powder. The acid may then be poured off, and the gold powder washed in pure water, and dried. By triturating leaf gold with sulphate of potassa in crystals, then washing out the latter in boiling water, gold in powder is left behind. This powder is employed by artists for gilding, by mixing it with gum water.

GOLD LIQUID.—Into a solution of nitro-muriate of gold pour an equal quantity of ether, then agitate them for half an hour and allow the contents to settle. The supernatant portion is then poured off, and is called "ether gold." Naptha and several of what are called the "essential oils," such as that of lavender, rosemary, &c., possess the same property as ether in taking up gold from its solutions. Ether gold was at one period much used in medicines; but it is now only moderately employed for writing on illuminated parchment, and on polished steel. The ether rapidly evaporates, when this solution is put on paper and the gold remains adhering with considerable tenacity.

GOLD SOLDER.—Take of pure gold 12 parts (by weight), silver 2, copper 4; and fuse them together. This alloy is employed by jewelers for soldering articles of gold.

A Tall Chimney.

A chimney 256 feet in height has recently been erected at the Charlestown (Mass.) Navy Yard, and it is the tallest smoke-pipe on this continent. There are two chimneys in the old world, however, which have a greater altitude; one of these is in Liverpool, and the other in Glasgow, both of which are over 400 feet in height. A new one is about to be erected in the latter city, the height of which is to be 456 feet; it will be the tallest in existence, capable of frowning down with a well-merited conceit upon all its shorter companions. These tall chimneys belong to large chemical works, and their use is principally to carry up the noxious gases far above the adjacent houses, gardens and fields. Prior to their erection, these gases had injured the shrubbery and completely blasted the trees in the neighborhood.

Bomb Lance for Killing Whales.

A. F. and J. H. Andrews, of Hartford, Conn., have invented and patented this week an improved bomb lance for killing whales. A cylindrical tube pointed at its front end, and having two smaller tubes placed one within the other, and fitted within it is used, the smallest tube being provided with a fuse and cup, and arranged so that the missile may be fired from a rifle, and the missile exploded either by the direct concussion of the discharge, or by the concussion produced by the missile entering the whale.

SODA FROM SALT.—M. Schloesing has sought to obtain soda directly from common salt, by dissolving chloride of sodium in a solution of ammonia with an excess of carbonic acid under pressure, a reciprocal change occurs with the formation of bicarbonate of soda and chloride of ammonium. The former salt from its less solubility is deposited, separated and calcined to get the carbonate.—*Jour. de Pharm.*