



LIST OF PATENT CLAIMS  
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FOLDING LIFE BOATS—E. L. Berthou, of Farnham, Eng. Patented in England June 12, 1851. I claim hinging longitudinal ribs of the two sides to the stem and stern post, in such manner that those ribs shall be capable of being folded down, and shall lie parallel with the keel when the boat is collapsed, as described.

SWIVEL FOR WATCH CHAINS—Elihu Bliss, of Newark, N. J. I claim the specific arrangement of the joint of the swivel in the manner and for the purpose substantially as set forth.

WAGON BRAKE—J. E. Blodgett, of Haunibal, N. Y. I do not claim the originating of the idea of wagon brakes, or their invention, claiming only certain improvements in the construction and application of wagon brakes, as described, rendering them perfectly effectual and applicable to all kinds of loading.

I claim the application of wagon brakes to the forward wheels of wagons by using the hounds, sway bar, block tongue, or other appendages running back from and firmly attached to the front axle, as the frame for the support and steadying of such brakes; also the construction of a brake so light and simple as to admit of being supported by such frame, such brake having a main bar of sufficient length to receive both pads, said main bar turning upon its fastening at or near its center with the pad for one wheel firmly attached to one end, and the pad for the other wheel so attached to the other end of the main bar as to turn on such attachment, or fastening such turning pad to be of such form as to bear against its wheel on being turned partly round, and to bear harder on being turned further, and at the same time by crowding back that end of the main bar to which it is attached, to throw the other end with its pad against the other wheel, as described.

KNOBBS FOR FASTENING CURTAINS AND FOR OTHER LIKE PURPOSES—W. Z. W. A. J. W. Chapman, of New York City. I claim the combination of the eyelet mentioned, or its equivalent, with a shank or knob of metal or other material that is covered, capped, encircled, or so connected with india rubber, or the equivalent thereof, that its elastic nature the said eyelet may be secured to it as and for the purposes fully set forth.

SELF-VENTILATION FOR RAILROAD CARS—V. P. Corbett, of Corbettsville, N. Y. I claim forming a series of ventilating holes, C C C C, in the sides of the car between the ceiling and windows, B B B B, and providing in said holes vertical ventilating flues, D D D D, which are arranged so as to be caused to revolve by the rapid moving of the car through the atmosphere, and thus made to exhaust the impure air from the inside of the car.

[A notice of this invention may be found on another page.]

DEVICE FOR AIR CHAMBER OF PUMPS—John B. Cowing, of Seneca Falls, N. Y. I claim the combination and arrangement with the air chamber of vessel, F, of the pump, having its delivery spout or outlet below, or at or near the bottom of said chamber, substantially as shown and described, of a hand air valve or perforated nut, J, at or near the top of the air vessel, for the conversion by hand with facility and despatch, of the close air vessel into an open water reservoir, or vice versa, above the discharge outlet or spout of the pump, whereby the uses of the common well or lift pipe may be varied with despatch, and its conveniences augmented as set forth.

[See a description of this invention on another page of this paper.]

MACHINE FOR CUTTING BARREL HEADS—A. H. Crozier, of Oswego, N. Y. I claim the described machine for cutting out and forming the heads of barrels and other similar articles, first, in arranging and operating two rotating cutters so as to cut scores in the opposite sides of the obtuse heading at the same time, one cutter being arranged and operated so far in advance of the other that the latter cutter may cut so far into the heading and into the score made by the former without interfering with it (the first cutter) as to sever the superfluous portions of the heading from the head, at the same time cut a circular groove or bevel or form the edge to fit the groove in the cask, substantially as described.

Second, traversing or vibrating the clamp edgewise, after the heading is placed in it to bring the heading in contact with the cutters, and to remove the head from the cutters after it is formed so as to take it out of the clamp and insert material to the heading, and to contact with the cutters during the operation or time occupied in making the change.

Third, the revolving clamp in combination with the rotating cutters, arranged and operated substantially as described and for the purposes set forth.

PUMP—C. G. Curtis, of Springfield, Mass. I am aware that induction and eduction valve chambers and valves, with their case, have been arranged on the side of a horizontal pump barrel, midway between its two ends, the barrel being made to communicate with the valve case by two pipes leading from the said case respectively into the two ends of such barrel.

I am also aware that valves and their chambers have been placed at the lower end of a vertical pump barrel, and a leading pipe used to connect the valve case with the upper part of the pump barrel, the first of these arrangements only requires the valve access to the barrel, and the second of these arrangements rendered it necessary to raise from the valve case the whole pump barrel and cap plate of the valve case, in order to obtain access to the valves. I therefore do not claim either of such arrangements, my invention having reference to an upright pump barrel.

I claim arranging the eduction and induction valve chambers concentrically around the upper end of the pump barrel, and with respect to one another, substantially as specified, they being provided with valves and passages connecting them together, and with the pump barrel, as described, the said arrangement admitting one cap plate to be employed both for the valve cases and the pump barrel, and at the upper end of said pump barrel, as explained.

SHOT CARTRIDGE—Abbot R. Davis, of East Cambridge, Mass. I am aware that a shot cartridge has been with a woven wire frame filled with shot and loose sand, and covered by paper pasted around it, I therefore do not claim such a mode of making a cartridge.

But I claim an improved shot cartridge made by mixing the shot in a plastic material or compound, of the character described, subsequently reducing the mass to the shape required for the cartridge and covering its external surface with fibers of wool or other material, luted or applied thereto, substantially as specified.

FEEDING FUEL TO FURNACES—Howard Delano, of Syracuse, N. Y. I claim the combined use of the feed box and grate bars or cut-off for feeding in fuel into the under part of the burning mass, in the fire box, or their mechanical equivalents, as described.

I also claim the combination of the crank shaft, I, slotted piece, G, lever, F, and trigger, H, or their mechanical equivalents for sliding the feed box and grate or cut-off, and for raising and lowering the bottom of the feed box, substantially as described.

RAKES AND ELEVATORS—A. H. Gaston and Jos. Smith, of Sunbury, O. I claim the endless belts, D D, rakes, L, in combination with the rollers, K, revolving forks, P P, for the purpose of raking and loading hay, as set forth.

BRECH-LOADING FIRE ARMS—A. T. Watson, of Castleton, N. Y. I claim the mechanical combination and arrangement of the cylinder, G, the bent lever, H, and the forcing standard, J, J', acted upon by the rod, J, and spiral spring, K, also the spring, I, by which J, being drawn back, the cartridge constructed and arranged as described, is released from the pressure of I, and the cylinder is made to pass over the next succeeding cartridge, and the pressure

of the finger being removed from J, the cartridge is firmly gripped by I, and carried forward toward the chamber by the action of K and J, pushing before it also the next preceding cartridge ready to be deposited in the chamber upon the raising of the breech piece; which operation being repeated after each discharge in connection with raising the breech piece, secures a measured supply of charges from the magazine in the stock to the chamber to extent, and with a facility not heretofore attained in breech-loading fire arms. I claim also the forming of the breech piece of a segment of a circle, having the concave space, O, for the bottom of the chamber with its central point of depression in the line of the axis of the barrel.

I claim also the forming the lower end of the breech piece into two cutters, one front the other back, with the rounded swell between, operating as well to hold the cartridge in its place, as to cut off the end and remove the parts thus cut off, as described.

EXTENSION TABLES—Joel Haines, of West Middlebury, Ohio. I claim the construction and arrangement of the top so as to wind up in the case, substantially as described; it being understood that I do not claim in general the device of the chain of slats to wind up, as that has already been used in window blinds and shutters, but only the peculiar purposes for which it is applied to the table top, as set forth.

VALVE FOR HYDRAULIC RAM—Thomas Hanson, of New York City. I claim the mode substantially as specified, of forming a connection between the driving chamber and air vessel of water rams, the tube, and flexible cup placed within it, substantially as and for the purpose specified.

LAMPS—Elbridge Harris, of Boston, Mass. I claim using white glass lamps of any form, reservoirs of metal which are provided with the usual tubes or burning common oils, or adapted by means of protectors to burn any fluid combustible. I also claim the mode of ornamenting such reservoirs, contained within glass, by means of paper with metal or ornamental surfaces.

SHIP AUGERS, &c.—I. W. Hoagland, of Jersey City, N. J. I do not claim the cutting portion of the auger detached from the screw portion irrespective of the precise mode of attachment shown.

I claim attaching the cutting portion, B, of the auger to the screw portion, as shown and described, viz., by means of the dovetail notch formed by the shoulder, b, and inclined end, d, of the screw, e.

[A description of this invention may be found on page 316, Vol. 9, Sci. Am.]

RAILROAD CAR BRAKES—Gideon Hotchkiss, of Windsor, N. Y. I do not claim the mere application of the brake to the top of the wheels; nor do I intend to confine my claim to the application of the brake, by the means described, to the top of the wheel only, but use by a big modification and change, the principle and means claimed as of this may be applied so as to press the brake to other parts of the wheel and accomplish or tend to accomplish the same object.

But I claim the method of operating a railroad car brake by obtaining the leverage from the axle and boxes by means of the bridges, keys, and clutches, or their equivalent, substantially as set forth.

I have described my improvements as applied to trucks for wide gauge roads having axles with inside bearings, but it will be obvious that they are applicable to trucks having axle with outside bearings, and also to cars without trucks, and I therefore claim my improvements when applied to axles with outside or inside bearings, and also to cars without trucks.

HAND PRESS FOR PRINTING—Chas. Keniston, of Boston, Mass. I claim the arrangement and construction of the press described.

SEED PLANTERS—Ebenezer Morse, of Walpole, N. H. I claim the scrapers, J, J, the can, n, and sliding back board, B, as arranged, combined, and operating conjointly with the hopper, A, for the purpose of depositing seed in hills, covering it with earth, and pressing the earth upon the seed.

Also the oscillating motion of the horizontal handle connected to the front and back part of the seed box by a hinge joint at each end of the handle, substantially in the manner described.

FIRE ARMS—Frederick Newbury, of Albany, N. Y. I claim the ratchet plate with its ratchet indentations and its slot, in combination with the pin by which it connects with the cylinder, and the two support levers below the cylinder to regulate and secure the connection between the chambers of the cylinder and the barrel, substantially as set forth.

I claim the arrangement and combination of the tumbler with the hammer and cocking spring, to enable the hammer to act independently of the tumbler in the act of firing. Also the arrangement of the hammer to lie within the stock and to act in such line of direction upon the supports as to press and hold the cylinder firmly against the barrel in the act of firing; the whole substantially as set forth.

I claim the arrangement of the apparatus for disengaging and attaching the barrel with the cylinder to the stock, viz., the thumb connecting plate or detent with the spring to hold it in place and the notch in the mandrel to receive the detent, substantially as set forth.

CARTRIDGES—A. N. Newton, of Richmond, Ind. I claim the arrangement of the percussion priming with a metallic rod, in the manner specified, whereby said priming is ignited within the chamber of the gun between the ends of two metallic rods, as set forth.

SEED PLANTERS—D. H. Phillips, of Greenville, Ill. I do not claim opening the seed delivering slide by a cog or projection on the carrier, as set forth in the patents of Saggas & Johnson, June 21st, 1843, and Charles Henry Harrigret, May 22, 1840.

But I claim the manufacture of bricks, substantially as described; that is to say by first spreading the tempered mortar or clay at once upon the ground where the bricks will be left to dry, and then sides of certain length, width, and thickness, and then while the mortar is in a soft state, or before it shall crack too much drying, producing therein lines of weakening or separation defining the dimensions of the bricks, without regard to their smoothness or final finish, and after the bricks in drying shall have separated from each other along the lines thus formed turning them on edge, and squaring and polishing their edges, and defining the thickness of the same by rubbing over them the metallic tool, P, or otherwise, substantially as set forth; the desired thickness of the bed being produced by means of guide bars or molds and scraper or tute, substantially as specified, whereby I am enabled to dispense with cut-offers and otherwise to simplify the manufacture of bricks.

MANUFACTURE OF BRICKS—L. E. Ransom, of Havana, O. I make no claim to any portion of the processes of manufacturing bricks set forth in the patents of Saggas & Johnson, June 21st, 1843, and Charles Henry Harrigret, May 22, 1840.

But I claim the manufacture of bricks, substantially as described; that is to say by first spreading the tempered mortar or clay at once upon the ground where the bricks will be left to dry, and then sides of certain length, width, and thickness, and then while the mortar is in a soft state, or before it shall crack too much drying, producing therein lines of weakening or separation defining the dimensions of the bricks, without regard to their smoothness or final finish, and after the bricks in drying shall have separated from each other along the lines thus formed turning them on edge, and squaring and polishing their edges, and defining the thickness of the same by rubbing over them the metallic tool, P, or otherwise, substantially as set forth; the desired thickness of the bed being produced by means of guide bars or molds and scraper or tute, substantially as specified, whereby I am enabled to dispense with cut-offers and otherwise to simplify the manufacture of bricks.

MOWING MACHINES—Fisk Russell, of Boston, Mass. I claim arranging the secondary supporting wheel, and the cutter frame in front of the driving shaft, with such a driving shaft and the driving wheel are arranged and connected by gears as specified, the same serving to lessen the side draft or pressure on the horses or draft animals in comparison to what it would be, were the secondary wheel and the cutter frame disposed back of the driving shaft, when arranged with respect to the driving wheel, as specified.

I also claim the combination of two knives so that they shall project in opposite directions from one center plate or bar, in order that either of the knives may be used in connection with the guard teeth, and either be made to serve as a lever to the other whenever circumstances may require.

POLISHING DAGUERRETYPE PLATES—David Shive, of Philadelphia, Pa. I do not claim effecting a gyratory motion of the pad for polishing the surfaces of daguerreotype plates, or other like surfaces, by means of machinery, as such has been so effected before for similar purposes.

But I claim the shaft, B, with its arms, F, cranks, G, the pieces, C and D, or their equivalents, and the eccentric, H, with its spur wheel, I, in combination with the united spur wheels, M and N, and the spur wheel, K, when constructed and arranged substantially, and for the purposes as described.

SEED PLANTERS—B. M. Snell, of Hancock, Md. I do not wish it to be considered that I claim novelty in the devices of my plow when considered separately.

But I claim the construction of a plow wherein a double share, D, is used to open the soil, in combination with a seeding tube, H, hopper, G, striker, A, wheel, K, operating

in the manner set forth for the purpose of depositing seed in the prepared soil without the objection of an open furrow.

SELF-LOADING CART—J. A. Sprague and Bernard O'Connor, of Dayton, Ohio. We do not claim the combination of a large scoop or scraper, undivided, with the ordinary cart suspended in such a manner that the scoop or scraper may be raised or lowered by a windlass or lever, for this has been done before; neither do we claim dividing the scoop transversely near the middle, as such a device has been known and applied in dredging machines.

We claim, first, the combination of a large divided scoop constructed as described, with an ordinary cart in the manner and for the purpose substantially as specified and set forth.

Second, the angle iron, J, on the under side of the cart shafts near the forward ends, for the purpose specified and described.

MORTISING AND TENONING MACHINE—Elihu Street, of Montville, Conn. I claim the improvement on a machine for mortising, tenoning, sawing, and smoothing by combining certain tools together, used by carpenters in the manufacture of doors, sash and blinds, as described.

VALVE GEARING FOR STEAM ENGINES—H. Uhry & H. A. Luitgens, of Paterson, N. J. We do not desire to confine our claim to any precise manner of construction or application of the improvement, as from its capability of being applied to steam engines of different designs and to the use, its adaptation may, as already stated, call for modifications of parts connected to the improvement.

But we claim the differential rocker, G, operated substantially as described, in connection with the stationary or shifting link motion for the purposes of increasing the opening of the steam ports, at the higher grades of expansion, and retarding and varying the time of exhaust, without incurring early compression, attending increase of inside lap on an ordinary valve.

We also claim the duplicate valve seats, B' and B', being arranged parallel to each other, provided with steam ports, F', F', and an exhaust port, G', the two steam ports, G' and G', leading to the front of the cylinder, joining in one passage, J', lead the steam to that end of the cylinder; the other two steam ports, F' and F', leading the steam into one passage, K', towards the back end of the cylinder.

LOOMS—Lewis Van Riper, of Spring Valley, N. Y. I claim, first, intertwining the warp threads in the manufacture of gauze fabrics by the employment of needles having a compound motion, substantially as described.

Second, constructing the needles for working the warps with flat or thin and crooked ends, substantially as described.

Third, the arrangement of the needles in two series and giving to one or both series a compound lateral and longitudinal motion, to interweave the threads which the two carry, and at the same time open a shed for the insertion of the weft thread, substantially as described.

Fourth, the method described of working the needles so as to cause them to raise and lower, and intertwine the warps, alternately, with simply raising and lowering them to adapt them to weaving gauze and plain fabrics alternately.

Fifth, the combination of the needles and heddles operating automatically, substantially as described, so as to form a shed, or a series of sheds, in plain fabric, with the spaces between the bars or strips filled with gauze.

Sixth, the combination of the yielding reed, 3, the lever, with the pin, 5, on its lower end, the pin, y, on the sword of the lay, the ratchet wheel, X, with its double inclined planes, X', for the pins to act upon, and the ratchet wheel, W, with the cloth between the bars, for the purpose of winding up the fabric at a variable rate, substantially as set forth.

Seventh, the combination of the mechanism for winding up the woven cloth, the can, U, and the intermediate devices for the purpose of effecting the requisite changes in the variable rate of winding, as set forth.

Eighth, the combination of the cam, T, for the purpose of changing the operation of the needles, as set forth, to adapt them to weaving plain and gauze fabric, alternately set forth.

PUMPS—Wm. T. Vose, of Newtonville, Mass. What I claim consists in connecting the two pump barrels at two adjacent ends, as described, in combination with not only arranging the valves of their respective pistons, so that one of them shall be applied to one or the opposite or lower side of the other piston, as stated, but applying the eduction and induction pipes, respectively to the disconnected ends of the barrels, substantially as specified.

PRINTING PRESS—L. T. Wells, of Cincinnati, Ohio. I claim the plate, U, hinged or pivoted to vibrating arms, V, in combination with the stationary pin or pins, n, and retracting springs, X, or equivalent devices for the purposes explained.

CENTRIFUGAL WATER WHEEL—O. Willis, of Dizardville, N. C. I do not claim a curved bucket; nor do I claim beveling the nut and rim individually; nor do I claim them when combined in such a form as to facilitate the escape of the water only, as this has been done by Fontaine Jouval and others previously.

But I claim, first, the peculiar double curved buckets in combination with the beveled rim and hub, or nut, in the manner and for the purposes set forth.

Second, I also claim ranging the top of the bucket on a line tangential to a circle of suitable diameter described around the center, its inner being in advance of the radial line, substantially as described, for the purposes set forth.

Third, I also claim forming the annular water space on the upper side of the wheel, substantially as and for the purposes specified.

GRAIN AND GRASS HARVESTERS—W. A. Wood, of Hoosick Falls, N. Y. I am aware that a conical track clearer separate and independent of the bearing wheel has been used in mowing machines; this I do not claim.

But I claim making the inner face of the supporting wheel conical for the purpose of clearing the track for the next or return swath of the machine, as described.

I do not claim a revolving scraper on the platform between the end of the cutting point and the frame.

But I claim the forming of a quadrangular space on the platform between the end of the cutting point, and the frame of the machine sufficient to hold as much grain as will make a bundle or sheaf, before it is raked from the machine, as described.

CULTIVATORS—G. W. N. Yost, of Port Gibson, Miss. I am aware that cultivators and scrapers have been used which were laterally and perpendicularly adjustable, therefore I do not claim such a mode of adjusting the cultivator.

But I claim the combination of the adjustable scraper, E, with the bar point, A, D, as described, for the purpose of using off the row and rapping up the middle, also for scraping off the row, and rulling the scrapings over into the furrow opened by the plow, substantially as set forth.

ARRANGEMENT OF WHEELS AXLES, AND FRICTION ROLLERS—G. A. Prentiss, of Cheshire County, N. H. I claim the combination, substantially in the manner described, of the following elements, viz., a load axle with a beaver secured thereto, a securable concentric therewith or nearly so, and a ring or series of friction rollers, the whole being driven by a pair of wheels, substantially in the manner and for the purposes specified.

SEWING MACHINES—Geo. W. Stedman, of Vienna, N. J. I claim feeding the cloth along by means of the needle acting as a lever against it over a fulcrum, t, the needle carrier being driven for the purpose with a crank motion or its equivalent, substantially as set forth.

In connection with the above motion of the needle, I also claim regulating the length of stitch by the combined action of the slot, 1, of adjustable length, and the zig-zag spring, J, of the needle carrier, for retarding the motion of the loop, arranged and operating in combination with the needle, substantially in the manner and for the purposes set forth.

I also claim the construction of the finger, M, with a thin pointed beak, n, for entering the loop, with a wedge-shaped shoulder, u, for spreading the loop open to receive the needle in turn, and with a spring, v, for retarding the motion of the loop, arranged and operating in combination with the needle, substantially in the manner and for the purposes set forth.

Further claim capping the ball while in the die, and while held firmly at its base, by a punch, which, on the opening of the sections, will, by a subsequent or continuous motion discharge the ball, capped and ready for use.

ATTACHING AUGERS TO HANDLES—C. W. Cotton, of Shelburne Falls, Mass. I claim attaching or securing augers to handles by using a metallic tube, B, placed around the center of the handle, and having a transverse rectangular

taper hole, a, made through the handle and tube, and a metallic band, C, placed around the tube, B, and turning loosely thereon, said band having slots, c, d, made through it, a part of the slot, d, being of taper form. The shank of the auger being placed in the hole, a, and through the slots, c, d, in the band and secured in the handle by turning said band and causing the edges of the taper portion of the slot, d, to pass in the notches or recesses, f, in the shank, as shown and described.

[A brief description of this invention may be found on another page.]

ORE SEPARATORS—Reuben Shaler, of Madison, Conn. I disclaim the use of the screen, m, except when used in combination with the two sets of shelves, 3, 3, and the blower, a, which produces two blasts of unequal force. I disclaim also the use of two sets of shelves when used in combination with a blower of common construction.

I claim the described combination of mechanism which separates the fine earth and small particles of gold from the coarse, and exposes the finer portion of impurities and gold to a moderate blast, and the coarser portion to a more powerful blast. The said combination embraces the blower, a, which produces two blasts of unequal force, the two sets of shelves or inclined planes, 3, 3, and the screen, m, or its equivalent. This combination I claim when the several parts are used substantially as specified.

SEWING MACHINES—T. J. W. Robertson, of N. Y. City. I do not claim in itself as new, the arrangement of the feeding dog and spring clamp separately operating upon the cloth on its one or outside surface, as such has before been done by the alternate action of these devices.

Neither do I claim of itself separate and constant spring pressure applied to the outside surface of the cloth when the feeding bar or dog is otherwise arranged to operate in connection with the spring clamp, or hold, as specified.

But I claim the combination of the spring clamp, D, with the feeding bar or dog, G, constructed, arranged, and operating together against the cloth on its one side or surface, substantially as set forth.

CASTERS FOR FURNITURE—G. L. Bailey (assignor to G. L. Bailey and Nightingale Nutting), of Portland, Me. I claim the pin, B, or oval guide put into or applied to the spindle, A, in any manner, or its equivalent, and attached to a straight truck frame, G, with a socket hole, E, larger than the spindle, A, in the manner and for the purpose substantially as described.

DESIGNS.  
TABLE FORKS—J. W. Gardner, of Shelburne Falls, Mass.  
COOKING STOVES—Jacob Beesley and Edward J. Delany, of Philadelphia, Pa.

French Railways.

The number of main lines of railroad in France, independent of branch lines and prolongations, is set down at sixteen, and as giving on the 31st of December last a total length of 1169 French leagues. Of this distance the four great lines of Orleans, Strasbourg, Lyons, and the North, comprise of themselves three fourths. The total receipts of these sixteen main lines amounted for the past year to 196,534,813 francs, showing an increase of about thirty millions of francs over the receipts of the previous year, which latter had also exhibited about the same progressive movement over 1852. The report is defective, however, in one principal ingredient in such documents, inasmuch as it fails in giving the nature of the traffic—the number of travelers and weight of goods, that is, which has produced the above results.

Size of London.

London extends over an area of 78,029 acres or 122 square miles, and the number of its inhabitants, rapidly increasing, was some 2,362,239 on the day of the last census. A conception of this vast mass of people may be formed by the fact that, if the metropolis were surrounded by a wall, having a north gate, a south gate, an east gate, and a west gate, and each of the four gates was of sufficient width to allow a column of persons to pass out freely four abreast, and a peremptory necessity required the immediate evacuation of the city, it could not be accomplished under four-and-twenty hours, by the expiration of which time the head of each of the four columns would have advanced a no less distance than seventy-five miles from their respective gates, all the people being in close file, four deep.

A New Boiler.

A new form of boiler has recently been tried in its application to locomotives, in England, with great economy in fuel, and time—it is said—in getting up steam. The improvement consists in piercing the sides and top of the fire-box, and the crown plate of the boiler flue, with a number of holes about three inches diameter, into each of which, projecting into the water space, is riveted a malleable cast iron cup, from four to six inches deep, those on the sides being cylindrical, while those on the crown plate are spherical. These cups are, of course, covered in every direction by the water in the boiler, and the inside being exposed to the heat of the fire and concentrating the temperature, present so much additional heating surface, that the boiler is enabled to get up steam in a vast deal less time, with a diminished quantity of fuel. Several stationary horizontal boilers of this description, have been in use in London for the past twelve months with success, which, being worked by gas coke, have avoided the smoke nuisance.