52,095.—Pegging Jack.—Albion K. Washburn, Bridge-water, Mass.:

water, Mass.;
I claim the improved arrangement of the actuator, H. relatively to the heel and toe supporters, such actuator under such arrangement being caused to pass through the toe supporter and operate against the front part of the heel supporter, substantially as hereinbefore explained.

before explained.

52,096.—Lifting Jack.—A. F. Wagner, Ilion, N. Y.:
I claim the brackets. F. projecting from the stan ard, A. in combination with the tootted bar, D. the lever, G. connected by links. H, to the upper part of said brackets, and the detaining pawl, E. pivoted at the lower ends of said brackets, in position to be readily retracted by the foot, all as herein described.

provide at the lower enus of sand or dates, in position to retently retracted by the foot, all as herein described.

52.097.—Car Coupling.—Hazen Webster, Elgin, Ill.:
First, I claim the eath or hook, g, when placed at, and firmly attached to, the side of the draw bar of a bumper, substantially as and for the purposes set forth.

Second, I claim the hook, B, provided with a catch, f, and placed on the side of a bumper or draw bar. A, having a fixed catch, g, en its opposite side, and arranged to operate in connection with another one similarly constructed.

Third, I claim the arrangement and combination of the kooks, B, catches, f and g, so that when two are placed together each will act the periodently of the other in operation and each spring hook attach itself to a separate fixed catch.

Yourth, I claim placing the cooks of an automatic coupling on the side of the draw bar, o that they will pass the tixed catches and allout the draw bars to act as bumpers, without interference from or in larry to, the hooks, and without releasing the coupling. All of the several parts and combinations being rubstactially as and for the purposes set forth an especified.

52.098.—Horse Rake.—A. Wells, Morgantown, W. Va.:

52,098.—Horse Rake.—A. Wells, Morgantown, W. Va.: I claim the lever, C, applied to the rake head, A, as shown and provided with the spring pawl or catch, E, for the lips, b, b, on the rake head to bear agaust; In combination with the slide, F fitted to the lever, C, and provided with the cross head, G, to lap over the projecting edges, a' a', of the two teeth of the rake head, substantially as and for the purpose herein set forth.

52,099.-Railroad Frog.-William Wharton, Jr., Phila-

delphia, Pa.: laim the mode, substantially as herein set forth, of securing plates to a railroad irog, so that they can be elongated without firm hold of the frog being affected.

their firm hold of the frog being affected.
52,100.—Ship Building.—Norman W. Wheeler, Brooklyn, N. Y.:
First, I claim constructing navigable vessels, with one or more decks, c c d d, sherred in a way opposite to the sheer of the rail b b, substantially as and for the purpose described.
Second, I claim the quadrant deck, d d, in combination with the recesses, e e, substantially as and for the purpose described.

52,101.—Triangular Beam Engine.—Norman W. Wheeler, Brooklyn, N. Y.: I claim connecting the working pistons with the crank by means of the triangular beam, o. o, links, j. j, and the patallel motion, g.g., k.k.k.l., or their equivalents, substantially as and for the purposes described.

described.

52,102.—Well-boring Apparatus.—George L. Witsel, Philadelphia, Pa. Antedated January 3, 1866:

First, I claim providing for giving a rotary and vertical motion to a shaft, D, which is adapted for receiving on its lower end the tubular sections, E, and also for removing said shaft and the contrivances for operating it, from frame, A, when desired to elevate the weil tube, substantially as described.

Second, I claim the combination of a windlass, J, rope or chain, J, and pulley, g, or their equivalents, with the frame, A, removable supporting beams, B C, substantially as described.

Third, I claim the shaft, D, provided with a screw, D', bevel wheel, a, and removable half nuts, e.c. said parts being sustained upon the cross beams B c, of a frame, A, and operating substantially as described.

scribed.
Fourth, I claim constructing a rock drill with cutting points varying in length, and so arranged that sharp cutters are successively brought into action, as the longest points are worn out, substantially as described.
Fifth, I claim a center discharging drill provided with cutting points, m n p, and a center point, J, of different lengths, substantially as described.

tially as described.

52, 103. — Churn. — George Wolf, Williamsport, Md.:

First, I claim the above described box churn, divided into several compartments and provided with the separate beaters, B, worked by either the lever or the crank, substantially as set forth.

Second, I claim the combination of the lever, F, and crank, G, whether worked alternately or together, substantially as described.

52,104.—Sulky Plow.—Thomas Wolfe, Girard, Ill.: First. I claim the connecting of the front ends of the plow beams, G. G. by hinges, H., to springs, I, attached to the framing of the device, in combin atton with the shafts, o, arms, d, rods, N, and levers, P, or an equivalent means for operating the springs, substantially as and for the purpose hereia set C.rth. Second, The raising and lowering of the plow beams through the medium of the rods, K. K., crasks, K. K., shafts, L. L., and levers, N. Mi, all arranged substantially as and for the purpose specific. Third. The adjustable frame, S. constructed and applied to the plow beams, G. G. substantially as and for the purpose specific.

(This invention relates to a new and improved plow, of that class which are connected to a mounted frame supporting a driver's seat and are commonly termed sulky plows.]

52,105.—Cartridge Retractor for Revolving Fire-arms.
—S. W. Wood, Cornwall, N. Y.:
I claim a lever for removing metallic cartridges or empty cases from the chambers of cylinder in revolving fire arms, pivoted further forward than the bottoms of the chambers, or in such a manner as to act directly by lever power upon the cartridges or cartridge cases, substantially as herein set forth.

ridge cases, substantially as herein set forth.

52,106.— Wrench and Drill.—Nathaniel W. Woodbury,
South Danvers, Mass.:
I claim the combination of the handle, A K, reversible revolving
ratchet head, B, and spring pawl, C, when so arranged as to form a
wrench for the manipulation of a set screw r for the insertion of
the drill socket, O, or other bushings for analogous purposes.

[The objector this invention is to produce an implement which

shall combine in itself a set screw wrench and a ratchet d rill. The section when a section when and a receiver with a set tool is, among other uses, especially applicable to turning set screws in places difficult of access, where other wrenches will not operate, and for boring holes in wood and iron in angular direction. ns, and in places not easy of access with other tools ]

52,107.-Vulcanizing Flask.-A. B. Woodard, Alfred

52,107.—Vulcanizing Flask.—A. B. Woodard, Alfred Center, N. Y.:
First, I claim closing the flask by the pressure of steam itself, substantially as herein described, so that while the rubber is gradually heated, the flasks are automatically compressed, and all danger of crushing the plaster mold and the teeth is avoided.
Second, The loose flange, g. and packing ring, i, in combination with the boiler, clamp, and flask, constructed and operating substantially as and for the purpose set forth.
Third, the inclined planes, j, on the funer surface of the boller, in combinacion with the clamp and flask, constructed and operating substantially as and for the purpose described.
Fourth, The segmental connections, c, of the clamp, in combination with the flat surfaces on the flask and with the boller, substantially as and for the purpose set forth.

52,108.—Washing Machine.—Joseph Adams (assignor to himself and Nathaniel Dearborn), Janesville, Wis.:

Wis.:
I claim the two pendant hinged frames, H H, attached to bar, G, and connected by springs, I, to operate in combination with the double concave bed, B, substantially as and for the purposes specified.

arranged in rear or said rake head, as herein described and for the purpose set forth.

59,109.—Fan.—Gustav Anton (assignor to himself, Jacob Hirne, and Fren's Bruviere), Philadelphia, Pa.:
I claim a fan having a body composed of feathers secured to a handle of wood or other suitable material, in the manner described.
52,110.—Shoe.—John C. Bailey (assignor to Charles Eugene Woodman), Boston, Mass.:
I claim the shoe upper made not only with the fly, i, to lap over 5°,109.—Fan.—Gustav Anton (assignor to himself, Ja-cob Hirne, and Fren's Bruviere). Philadelphia. Pa.: I claim atan having a body composed of feathers secured to a handle of wood or other suitable material, in the manner described.

the quarters, and provided with the slits, g h, arranged in it as described, but having one or more straps, e f. extending from one or both the quarters, so as to be capable of being passed through the slits of the fly, as specified.

silts of the dy, as specified.

52,111.—Automatic Feed Apparatus for Steam Generators.—John B. Collen (assignor to himself and John McGill), Philadelphia, Pa.:

I claim the reservoir, A, its supply pipe. W, the valves, c. c, and float, G, the whole being constructed and operating and amplied to a steam boiler, substantially as and for the purpose specified.

Second, The combination with the cap. B, the spindle and its valves of the plate, D, tube, C, and rods, a a, or their equivalents, substantially as and for the purpose described.

Third, The comb nation of the w-lighted lever, I and screw spindle, E, with the sleeve, C, and float sleeve, c, substantially as described for the purpose set forth.

51,112.—Buckle.—Samuel P. Crafts (assignor to O. B.

North & Co.), New Haven, Conn.: I claim the combination of the lever. B. with two tongues, H I, when constructed and arranged to operate in the manner sub-stantially as and for the purpose specified.

stantially as and for the purpose specified.

52,113.—Feed Apparatus for Steam Generators.—
Charles Henry Ford (assignor to himself, Hayward,
Hutchinson, Jesse L. Hutchinson and Elias. S.
Hutchinson), Baltimore, Md.:
I claim the arrangement with the vessel, A, of the valved water
pipe, E, and the steam pipes, D C, proceeding from and to the
bolier and provided with suitable valves, the whole substantially
as described and represented and for the purpose set forth.

as described and represented and for the purpose set forth.

52,114.—Steam Damper Regulator and Indicator.—
Charles Henry Ford (assignor to himself, Hayward Hutchinson, Jesse L. Hutchinson, and Elias T. Hutchinson), Saltimore, Md.:
First, I claim the arrangement of the adjustable post, K, weighted lever, F, piston, B, and the packing arrangement c b, substantially as described.
Second. I claim in combination with the piston, B, and lever, F, the rod or chaim. I and rock shaft, R, actuating the dampler, H, and furnace door, X, one or both, substantially as described.

52,115.—Automatic Steam Generator.—Charles Henry Ford (assignor to himself, Hayward Hutchinson, Jesse L. Hutchinson and Elias S. Hutchinson),

Jesse L. Hutchinson and Embedding Baltimore, Md.:
First, I claim a suspended boiler so arranged relatively to the fire and counterpoise weights that, by evaporation and loss of water or by the influx of feed water, it shall rise or fall respectively, and by said motion actuate devices to open or close the apertures which regulate the supply of water, substantially as herein

tures which regulate the supply of water, substantially as herein set forth. Second, I claim in combination with a steam boiler, which is vertically adjustable as described, the devices which operate to open and close the dampers, furnace doors whereby control the draft or supply of air to the furnace, substantially as herein set forth.

52.116.—Cotton Seed Machine.—F. A. E. G. de Massas.

52,116.—Cotton Seed Machine.—F. A. E. G. de Massas, Hoxton, Eng.:

First, I claim a revolving cylinder with a rough surface, as described, in combination with a cylindrical casing combosed pardy of cords and partly perforated sheet metal as specified, the two acting in combination. Substantially as set forth. Second, in combination with a revolving cylinder and a cylindrical casing, both substantially as set forth, I claim a fan and a spout, the whole combination acting subsantially in the manner and for the purpose set forth.

52,117.-Locomotive Engine.-Robert Francis Fairlie,

London, Eng.:
First, I claim the arrangement of the fire box and the two boilers extending from opposite sides thereof with the two bogie frames,

extending from opposite states as set forth.

Second, I claim the arrangement of two trucks, each provided with tour or more wheels and with one or more steam cyanders, in combination with a steam boiler, B B, constructed and operating substantially as and for the purpose set forth.

(The object of this invention is to obtain a large amount of tracitive power, and at the same time; to avoid any excessive pressure of the driving wheels of a locomotive, also to provide for the blocomotive adapting itself readily to the turning of sharp curves without the disadvantages usually attending the action of large locomotives under like circumstances.)

52,118.—Brush for Cleaning Horses.—John Haworth, Manchester, Eng.:
I claim grooming and cleaning horses and other quadrupeds by means of a brush attached to a pole or shaft, having loose handles and a suitable shaped pulley, through which pulley a rotary motion is imparted to the said brush by connecting it with any suitable driving power, substantially as described.

(This invention relates to brushing and cleaning horses and other quadrupeds, by means of a rotating brush or oth r suitable instrument to which rapid motion is given by steam or other power The brush or other instrument thus used is fixed to the end of a pole furnished with loose handles, and with a roller or pulley, is p ssed the band or strap to the shaft for driving the same. The brushis capable of being moved up and down, and from one side to another, and when used is to be guided by the attendant over the surface of the animal to be brushed and cleaned, thereby economizing manual labor and performing the operation expeditiously and effectually, and removing the dandruff or other impurities of the skin without the use of the curry-comb.]

52.119.—Sash Supporter.—Francis P. Catlin, Hudson, Mich.:
I claim as a new article of manufacture, the sash supporter and astener, constructed and operated as herein specified.

## REISSUES

2,146.—Auger.—Russell Jennings, Deep River, Conn.
Patented Sept. 30, 1855. Reissued Oct. 3, 1865:
I claim the projecting of the floor lips in advance of the cutting substantially as nerein described and for the purpose herein set torth.

2.147.—Ornamental Chain. - Sackett. Davis &

2,147.—Ornamental Chain.—Sackett, Davis & Co., Providence, R. I., assignee of James Lancelott. Patented March 22, 1859:
I claim, First, A sheet-metal chain composed of links the base of each of which is a polygon of six or more sides, the chain being formed by bending each arm longitudinally, at the same angle, or nearly so, with one of the outer angles of the base, so that a cross bar on the extremity of each arm of the next preceding link in the chain shall, when bent down, bear against the angular side of two of the arms of the next succeeding link, and thereby enable the chain to withstand a strain nearly equal to the cohesive strength of the metal, the article being substantially as specified.

Second, A sheet-metalchain the aims of whose links are bent together as described, for the purpose of increasing the strength of the chain and giving to it the appearance of being made from wire instead of from sheet metal.

instead of from sheet metal.

2,148.—Horse Rake.—Ariel B. Sprout, Hughesville,
Pa. Patented June 6, 1865.

I claim the use of a foot lever for holding up the rake head of a
horse rake which has the point or center of vibration of the teeth
arranged in rear of said rake head, as herein described and for the

vertical play to the bar, F, for the purpose herein described and set forth.

Fourta, I claim in combination

net forth. Fourth, I claim in combination with the strap, g, the movable ings or their equivalents, for the purpose of preventing the verical nlay of the bar, F, relatively to the cleaners, under the circumstances described. Fifth, I claim the extension in front of the axle of the cleaners, J, which support the rake head so as by their vertical adjustment or regulate the hight or the rake head from the ground at a given elevation to the shafts.

elevation to the shafts.

Sixth, I claim the rotating notched pintled bolts, h h', with grooves therein corresponding to similar grooves on the lug, H', for coiling the spring formed on the end of the tooth unit all additions has acquired the requisite force for holding it in the desired position, said spring being held in its called position by the action of the nut on the bot, as herein described and set forth.

## DESIGNS.

2,241 and 2,242.—Plate of a Stove.—Lewis Rathbone, Albany, N. Y. (Two claims.)

2,243.—Trade Mark for Pens and Pen Boxes.—John B. Waring, New York City.



J. O. sends us a plan of a pump which is intended to elevate a column of water without the application of any force, and asks:—" Is there anything in the nature of things to prevent this arrangement for the elevation of water to an unlimited hight? Please oblige with an unequivocal answer.'' Ans —We unequivo cally reply that there is nothing in the nature of things to preven t your contrivance from operating except its lack of motive power. Like all perpetual motionists, you will doubtless aver that you do apply power. Yes, in the same manner, and with the same effect that one litts himself by getting within a tub and tugging at the hand les

. A. W., of N. B .- By the rotation of the earth, bodies at the equator are carried from west to cast with a velocity of about seventeen miles per minute, while near the poles they move more slowly. When a river runs northward the water is constantly reaching ground that is moving eastward less rapidly than itself, and consequently it tends to run upon the eastern bank. If the ice in the St. John pushes up the western bank it moves in opposition to the general law-probably from the for mation of the bottom or the course of the winds. An old file does not cut better for being rubbed with charcoal.

F. J., of Mass.—The best way to learn to be an engineer is to begin at the foot and obtain a situation as fireman ou some railroad, if possible, or in some factory. We are frequently requested to name the books in which a mau who is a good me chanic can learn to run an engine. The only road we know is the road of experience, and that is often a hard one to travel. It is distasteful to many to handle a shovel, but if a man wishes to be master of the situation," as an engineer should, he must know how to fire as well as how to handle a starting bar.

A. D., or N. Y.—Saw dust is bad stuff to throw down between the weather boards of a building, It absorbs moisture and soon rots, or at least sweats, making a very bad smell, besides luuring the building

J. F.-Drilling supports combined with lathes are not new; but if you have invented any new combination or construction thereof, a patent may be obtained.

H. F. H., of Mich.—The cotton manufacturers of New England generally run their water wheels with a velocity, at the circumference, of about six feet per second. The best overshot wheels yield about 70 per cent of the whole power of the water, the best turbinesaoout 90 per cent. With overshot wheels there is great loss of power from back water, but not with turbines. Ure's Dictionary of Arts and Sciences contains quite a treatise

T. L. W., of Ga.—At the great trial in Philadelphia the turbine of J. E. Stevenson, No. 200 Broadway, New York, yielded 88 per cent of the whole power of the water, besides the friction. which was estimated at 3 per cent more. Breast wheels have long been preferred to overshots, but they are now being super seded by turbines. There is no gain by increased leverage-what is gained in power is lost in speed.

Projectile, of Mass.—We have no doubt of the correct-

ness of the answer. The resistance of the air to a projectile during its ascent prevents it from rising so high as it would in a vacuum, and, as it does not rise so high, it would not acqui: e the same velocity during its descent, even if it fell through a vacuum; but it it falls through the atmosphere the resistance of the air still fur ther diminishes its velocity.

A. H., of Conn.—Iron is the best metal for your boiler tubes. An iron vessel is stronger than a copper one of the same Tubes a quarter of an inch thick and one inch dem eter are amply strong to sustain a pressure of 1,000 pounds per square inch.

C. L. R., of N. C.-For some nitroglycerin, address Prof. Charles A. Seely, No. 246 Canal street, New York. It is a very poisonous and dangerous substance

L. F. H., of Ohio.-Hot-air blast gives a more intense heat, as less of the heat generated by the combustion is consumed in warming the air of the blast, There would be no advantage in

J. M., of N. Y.—You should apply to the internal revenue collect or of your discrict to learn the amount of your taxes and who is to pay them

A. R. S., of Ohio.—Red lead and boiled oil is the cheapest paint we know of for iron work. The quickness with which it dries varies with the amount of "drier" you put in.

J. W. D., of N. J.—Smee's Electro-plating is generally acknowledged as the best hand-book on the subject. The latest discoveries in that line are published in the SCIENTIFIC AMERICAN so soon as they become public property.