nel substantially as hereinbefore described and represented in th remaining figures of the said drawings.

52,799.—Driving Apparatus of Metal or Wood into the Ground.—William W. Winter (assignor to himself and Stephen Brower), Cortlandville, N. Y.:

I claim a driving apparatus constructed in a manner that the weight or driver is supported and guided by the roll, a, or tube to be driven, and also the application of the pulley thereto, substantially as herein shown and described.

52,800.—Fastening for Paper Boxes.—George. F. Wright, Clinton, Mass., assignor to himself and William Orr. Jr.:

I claim the application of metallic clasps upon the joints of the pasteboard in paper boxes, substantially as and for the purpose specified.

52,801.—Brick Machine.—Thomas Matthew Gisborne, Lymington, Eng.:

First, I claim arranging a series of kilns, burning on the principle of the New Castle kiln, side by side in such a manner that the front or combustion end of the one kiln is contiguous to and can communicate with the back or chimney end of the next kiln, while the chimney end of each kiln can furthermore communicate either with a chimney common to all, or with a separate chimney.

Second, Constructing a series of kilns burning on the principle of the Newcastle kiln, placed side by side and made to taper from the combustion end to the chimney end, the chimney end of one kiln being made capable of communicating either with the combustion end of the kiln or with a common or separate flue or chimney.

Third, Constructing a series of kilns, burning on the principle of the Newcastle kiln, made to taper from the combustion end to the chimney end, and arranged side by side alternately in reversed positions, the chimney end of the one kiln being made capable of communicat on either with the combustion end of the next kiln or with a common or separate flue or chimney.

52,802.—Machine for Making Boots and Shoes.—Charles Henry Southall, and Robert Heap, Staleybridge, Eng.:

First, We claim the brake, i, lever, f3, and lever, J, for instantly stopping the drum, e when the driving power is taken off.

Second, The improved vises for holding the boots and shoes so firmly that they can be operated upon with ease and certainty.

Third, The bearings or brackets, y, on the tables, for enabling the vises, and consequently the boots or shoes, to move up and down, according to the shapes of the bottom of soles.

Fourth, The system of employing under each a rack round at one end and straight at the sides, so as to be adapted to all sorts and sizes of boots and shoes.

Fifth, The cam or pattern plates for determining the aforesaid up and down movement with certainty.

Sixth, The employment of the long shaft, o', plates, n' and e', the casting, k', the long pedestal shaft, c', and the shaft, g', for enabling the table to move to and fro and up and down easily.

Seventh, The deep wheel, a2, or an ordinary wheel which rises up and down with the wheel, l', for maintaining the wheel, f', constantly in gear.

Eighth, the balance lever, g', for raising the table and its appendages when a catch is removed.

Ninth. The cam-shaped hammer, s', raised by the chain, z', and weight, y', for forcibly pressing the sole of the boot or shoe against the nose of the shears.

Tenth, The cam, v', on the shaft, k, the lever, u', and the chain, x, for taking off the weight of the hammer when the boot or shoe has to be moved for a fresh screw, and allowing the weight to be put on immediately the cam has passed the tail of the lever.

Eleventh, The system of making the holders, guards, and cutters, as shown in Figs, 12 13 and 14, for paring and shaping the soles and heels after they have been screwed on, and also the employment of similar holders for the finishing tools.

Twelfth, The movable arm or lever, l3, Fig. l, for carrying the holders with the paring and finishing tools, and also the levers, m3 nd n3, for enabling the tools to follow the surface and sides of sole nd heel.

Thirteenth, The cams, x3 and x4, Fig. l, for acting on the levers, v3, for giving, by means of the gearing and clutches, r3, alternate motion to the table, k3.

Fourteenth, The weight, g3, or its equivalent, connected directly or indirectly to the slide, p3, jointed to the movable arm, l3, for keeping the cutters and tools in their places as their guards ride on the surface of the sole or heel.

Fifteenth, The apparatus shown in Figs. 15 and 16, for holding the leather to be cut into sides, and also the application to a holder similar to those shown in Figs. 12 13 and 14 of a cutting knife, Fig. 17, for cutting the soles from the hide.

Sixteenth, The adaptation of our improvements either to one machine, as shown in the drawings, or to a machine employed only for cutting the soles, or to a machine for only screwing the soles and heels on to the uppers or coverings, or to one employed only for paring and finishing, as all such improvements are herein described and illustrated in the accompanying three sheets of drawings.

52,803.—Mode of Printing Photographs.—W. Bentley Woodbury, Manchester, Eng.:

I claim the use, in connection with the plates herein described, or with any engraved plate, of semi-transparent or partially transparent inks, substantially in the manner and for the purpose specified

52,804.—Machine for Cutting Flies.—James C. Cooke, Middletown, Conn.:

I claim, First, The securing of the cutter stock, F, to the reciprocating head, E, in the manner shown, or in any equivalent way, so that said cutter stock may be turned and adjusted at any point within the scope of its movement, to give the cutter a proper oblique position with the file blank, and the cutter always have its cutting edge in a horizontal plane.

Second, Placing the reciprocating head, E, between inclined guides, a a, so that said head will work in an inclined direction when said head, thus arranged, is used in combination with a cutter stock, F, applied in the manner substantially as described.

Third, The securing of the file blank, L, to the bed, K, by means of the jaws, n n', arranged substantially as set forth.

Fourth, The raising and lowering of the bed, I, to compensate for the varying thickness of the file blank, L, by means substantially as described.

Fifth, The means employed for communicating from shaft, B, motion intermittingly, and in either direction to the shaft, Y, which turns the central screw, T, to wit the two ratchets. Z Z', pawls, A A', operated from the shaft, B, as shown and described, the sleeve or collar, F', on shaft, Y, with pinion, G', and the cam, H', and collar, I', upon it, the brake, J', and the segment, L', all arranged substantially as set forth.

Sixth, The bar, P', connected with the arm, M' having the tooth segment, L', attached when said parts are used in connection with a bar or feeler, Q*, connected with cutter stock, F, and all arranged to operate substantially as described.

Seventh, The bar or feeler, Q*, applied to the cutter stock, F, in the manner substantially as set forth.

52,805.—Horse Hay Fork.—B. F. Hisert, Norton Hill, N. Y.:

First. I claim the bar, A, provided with the pivoted tine, H, in combination with the slide, C, connected to the tine by a rod, I, the catch, D attached to the spring, E, and the bar, c, in the slide, C, all arranged to operate substantially as and for the purpose set forth.

Second, The bar, A, with i spivoted tine, H, in combination with the rod, I, pivoted to the tine, H, near its center of motion, the locking bar, c, and spring catch for the purpose described.

Third, The combination of the catch, D, the tripping lever, F, and the sliding locking bar, c, with the bar, A, and pivoted tine, H, substantially as and for the purpose described.

Fourth, The combination and arrangement of the catch, D, tripping lever, F, bar, A, loop, f, and cord, G, as and for the purpose described.

2,806.—Guard Plate for Boilers.—Andrew O'Neill, Portsmouth, Ohio.:

First, I claim a cast-metal guard plate or shield for attachment to the bottoms of boilers, either with or without the openings, feet or marginal flange, substantially as described and represented.

Second, the cast-metal guard plate in combination, with the feet, for the purpose described.

Third, In combination with the cast-metal guard plate, I further aim the rim or marginal elevation, B, embracing the shoulder of e pit or drop of a sheet-metal boiling vessel.

Fourth, In combination with the guard plate I claim the slot, E, r the passage of the rivets in case of the unequal expansion of the ssel and plate.

2,807.—Plow.—Thomas J. Cornell, Decatur, Ill.:

First, I claim the plate or cover, G, placed between the upper edges of the land side and mold board when used in connection with the wheel, E, for the purpose specified.

Second, The wheel, I, constructed and arranged substantially as shown. Journaled on a horizontal axis set obliquely to the line of draught, and rotated by contact with the furrow slice.

52,808.—Operating Horse Hay Forks.—Henry Maycock, Verona, N. Y.:

I claim the arrrngement of the guard rope, D, weight, F, pulley, E, and whiffletree, D, constructed and operating in the manner and for the purpose herein specified.

In combination with the above, I claim the arrangement of the guide rope, G, ring, d, and rope, C, constructed and operating in the man er and for the purpose herein specified.

REISSUES.

2,176.—Eyelet for Lacing Shoes.—Charles Goodyear, Jr., New York City, assignor of Jacob Autenrieth, Philadelphia, Pa. Patented Jan. 6, 1863:

First, I claim a shoe lacing with its eyelets and cords, constructed and arranged substantially as described.

Second, The metallic lacing, eyelet or loop constructed and arranged substantially as herein described, so that the lacing cord shall run through the same without traversing the leather or material of the shoe or other article of wearing apparel to be laced.

Third, The arrangement of the metallic eyelet or loop transversely in relation to the fastening device, as herein described, so that the said eyelets or loops, when fastened on to the leather or material shall be situate in vertical planes relatively to the surface of the leather or material, as set forth.

2,177.—Apparatus for Drawing Soda Water.—William Gee, New York City. Patented May 19, 1863. Reissued Feb. 2, 1864:

First, I claim the valve, D, and its parts, e G H H', and passage or aperture, g, in combination with the valve, B, and its parts, c E F F', and passage or aperture, h, forming a cock, for the purpose set forth.

Second, I claim the means of drawing soda or mineral water from a small and a large outlet passage or aperture having one connection with a draft tube or soda-water apparatus, substantially as and for the purpose herein specified.

Third, I claim the small passage or aperture, a, for the purpose of compressing the soda water while being admitted into the large passage or outlet ape ture, g, for the purpose set forth.

Fourth, I claim drawing soda water in a large stream passing first through a smaller passage into a larger passage or space from which proceeds the larger stream.

Fifth, I claim drawing soda or mineral water in a large and small stream from one nozzle or opening in connection with a fountain or other apparatus, substantially as herein described.

2,178.—Distributing Grain to Different Bins.—Charles S. Hamilton, Fond du Lac, Wis. Patented June 21, 1864:

First, I claim the combination, with a revolving spout for delivering grain or similar material to different bins, of the shaft, M, or any equivalent device, to enable the attendant to move or adjust said spout, substantially as and for the purpose set forth.

Second, I claim the combination of a revolving spout, of an indicator, arranged to show the position of said spout, and to enable the attendant to properly adjust the same, substantially as and for the purposes set forth.

2,179.—Manufacture of White Rubber.—F. Marquard, Rahway, N. J. Patented Dec. 5, 1865:

First, I claim the method or process of treating india-rubber gutta-percha, or other similar gums, with hot water, for the purpose of washing them, after they have been previously bleached with chlorine gas, substantially as herein before set forth.

Second, I also claim the method or process of treating india-rubber, gutta-percha, or other similar gums, by distillation, after the gum has been bleached with chlorine gas, for the purpose hereinbefore set forth.

Third, I also claim the method or process of treating india-rubber, gutta-percha or other similar gums, that has been previously bleached with chlorine gas, and washed and distilled as hereinbefore set forth by redissolving it in chloroform or other solvent, and mixing with it phosphate of lime, and subjecting the compound to pressure in hot molds to harden and solidity it for the purposes described.

2,180.—Manufacture of White Rubber.—F. Marquard, Rahway, N. J. Patented Dec. 5, 1865:

First, I claim the method or process of treating india-rubber, or other similar gums when dissolved in chloroform or other solvent with caustic ammonia gas, chloride of ammonia for the purposes substantially as hereinbefore set forth.

Second, I also claim the method or process of washing the dissolved and bleached gum as hereinbefore set forth with hot water, for the purpose described.

Third, I also claim the method or process of distilling the dissolved and bleached gum, while in the washing process, or by a subsequent process, for the purposes hereinbefore set forth.

Fourth, I also claim the method or process of re-dissolving the water or gum obtained by the foregoing operations, and combining the same phosphare of lime or a carbonate of zinc, by means of pressure in hot molds to harden the compound for the purpose set forth.

DESIGNS.

2,265.—Coffin.—Thomas Devins, Cambridgeport, Mass.:

Notes and Queries

S. C. D., of Tenn.—The object glasses of the best compound microscopes are usually made by the combination of three lenses; the distance from the object glass to the eye piece is 10½ inches, that being the distance of most distinct vision. The reflecting mirror is generally made plane on one side and concave on the other. Carpenter on the Microscope is a standard work. For a practical treatise on optics write to Henry Carey Baird, of Philadelphia, or to John Wiley, of this city. Compound microscopes range in price from $15 to $600. You can get a very good one for $20 or $30.

H. B., of Wis.—Your plan of suspending a rod of iron without material support in a coil of wire through which a current of electricity is passing, and then giving the rod a rotary motion would not be called "perpetual motion," as there would be an expenditure of power in the battery. Professor Page made an engine several years ago in which an iron rod was alternately drawn in and out of a hollow helix by changing the poles of the battery. This engine would drive machinery, but as the power was obtained by consumption of zinc, it was more costly than steam power.

R. C. B., of Mich.—That the ascent of liquids in capillary tubes is due to atmospheric pressure has been suggested; but the fact that the liquids will rise vertically more than 34 feet is fatal to this theory.

A. H., of Pa.—No substance will dissolve lampblack.

B. Q., of Mass.—"The ingredients which supply the motive power of Ericsson's caloric engine" is hot air, and it is adapted to doing any kind of light work where one or two horse-power is needed.

W. B. G., of N. Y.—If you will read W. J. Macquorne Rankine's treatise on shipbuilding you will get a different idea of the attainments of the builders.

H. S. W., of Conn.—You can take steam from your heater in the manner proposed, but the heat you derive from it will be in proportion to the pressure in the heater; as your engine cuts off short, it will probably not be very great. Why do you dry your wet substance over the top of your boiler, not in contact with it? There is heat enough radiated from most boilers to do a great deal of work.

A. S.—If an inventor applies for a patent, and the Patent Office erroneously rejects the case and for many years maintains its refusal, but finally corrects its error and grants a patent, we know of no reason why the patent is not valid. The fact that the thing has come into general public use during these years of delay does not prejudice the rights of the inventor.

H. B. S.—There is no more pressure in the steam drum of your boilers than in the boilers themselves; there is less, it anything.

R. O., of Ohio,—We cannot give you the information you desire about the latest method of getting ice out of the water into the house.

W. V. V., of N. Y.—You will see by the files of the SCIENTIFIC AMERICAN that your question has been asked several times, without any satisfactory answer.