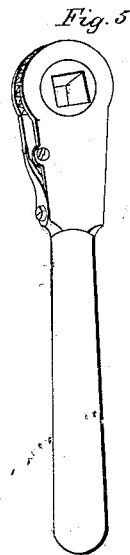
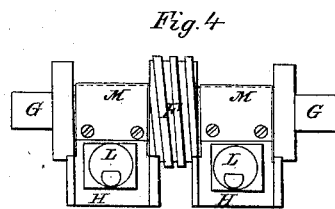
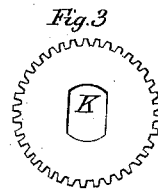
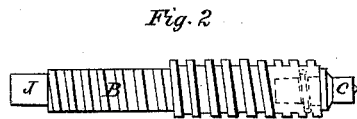
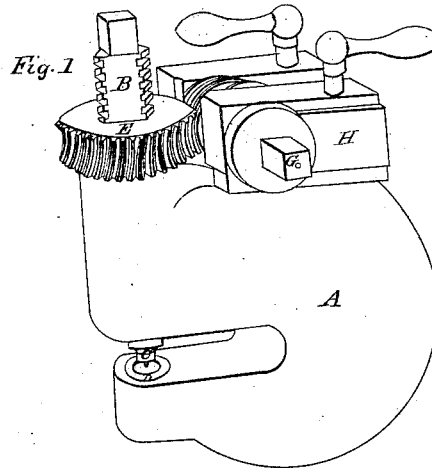


Fitzpatrick & Barker, Metal Punch,

No. 49,616,

Patented Aug. 29, 1865.



Witnesses:

James C. Cobb
Bernard Morahan

Inventors:

Michael J. Fitzpatrick
Benj. Barker

UNITED STATES PATENT OFFICE.

MICHAEL J. FITZPATRICK AND BENJAMIN BARKER, OF NEW YORK, N. Y.

IMPROVED PUNCH.

Specification forming part of Letters Patent No. 49,616, dated August 29, 1865.

To all whom it may concern:

Be it known that we, MICHAEL J. FITZPATRICK and BENJAMIN BARKER, of New York city, in the county and State of New York, are the joint inventors of a new and useful Machine for Punching Rivet-Holes in Steam-Boiler and other Iron Plates; and we do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure I is a perspective view of the "Little-Giant Punch," in which A represents the body or stock of the punch; B, a portion of the main screw; C, the punch; D, the die; E, the worm-wheel; F, the worm-screw; G, the square end of the worm-wheel shaft upon which the pawl-wrench is applied; H, the eccentric-box; I I, the pins which work the eccentrics.

Fig. II represents the main screw and punch, in which C is the punch, which is held in the screw by a steady-pin which allows it to turn in the screw; B, the portion of the screw which is flattened or cut off on two sides to prevent its turning in the worm-wheel; J, the top end, which is square, in order that the pawl-wrench may fit upon it.

Fig. III is a vertical view of the worm-wheel, in which K is the opening through which the main screw passes.

Fig. IV is a top view of the worm-screw shaft with the eccentrics connected, in which F represents the worm-screw; M M, the thin bands which pass around the shaft, the ends being secured to the eccentric-boxes H H for the purpose of drawing the worm-screw out of gear with the worm-wheel; L L, the eccentrics; G G, the ends of the shaft to which the wrench is applied.

Fig. V is a perspective view of the pawl-wrench.

The operation of our punch is as follows: Place the edge of the plate to be punched in the jaw of the punch, so that the punch may be directly over the point desired to perforate. The eccentric-pins being turned forward to throw the worm screw and wheel into gear, apply the pawl-wrench to the end of the worm-

screw shaft. By turning the shaft the worm-screw, working in the gear of the worm-wheel, causes the wheel to revolve. As the opening in the wheel corresponds in size and shape to the outline of the flattened portion of the main screw which passes through it, the wheel operates as a wrench upon the screw, and as the screw advances into the stock it passes down through the wheel, at the same time revolving in unison with the wheel.

The advantage of our invention is the power gained in connection with the limited space required in which to operate the machine. The power gained by our invention is such that a person exerting a force of fifty pounds upon the end of the pawl-wrench (it being eighteen inches in length) will press one hundred and eighty-three tons and twelve hundred pounds upon the punch, allowing nothing for friction. Allowing one-half for friction, the power exerted on the punch would be ninety-one tons and sixteen hundred pounds. By the use of the pawl-wrench the machine can be operated in a limited space inside the boiler, without the inconvenient necessity of taking off the wrench at each turn, as in other machines for the purpose. By the arrangement of the worm-screw shaft the wrench can be applied on either side, so that the punch can be used close up to either side of the connections inside the boiler, where other punches cannot be used. The advantage of the punch being held in the main screw by the catch-pin is that the punch does not revolve while passing through the plate, and consequently does not wear out so fast at the edge as if it turned with the screw. It is also easy to remove the punch by taking out the pin in case it is desired to put in a new one or one of a different size. The opening in the die is made a little larger than the punch, so that it may not bind the plug or the punch as it passes in and out. The object of the eccentrics is to throw the worm screw and wheel out of gear after the iron is punched, in order that by applying the pawl-wrench to the top of the main screw it may be turned up in less time than if it were done by means of the worm-screw.

Having thus described the construction and

operation of our punch, what we claim as novel, and desire to secure by Letters Patent, is—

1. The bands surrounding the worm-screw shaft, and connected to the eccentric-boxes in the combination, as and for the purpose specified.

2. The combination of the worm screw and wheel, the flattened main screw, the eccentrics,

and main stock, substantially as and for the purpose set forth.

MICHAEL J. FITZPATRICK.
BENJ. BARKER.

Witnesses:

DARIUS COBT,
GEO. S. WENDELL.