No. 608,725. Patented Aug. 9, 1898.

J. P. STARK.

PUNCHING MACHINE.

(Application filed Mar. 30, 1898.)

(No Model.)

Fig. 1.

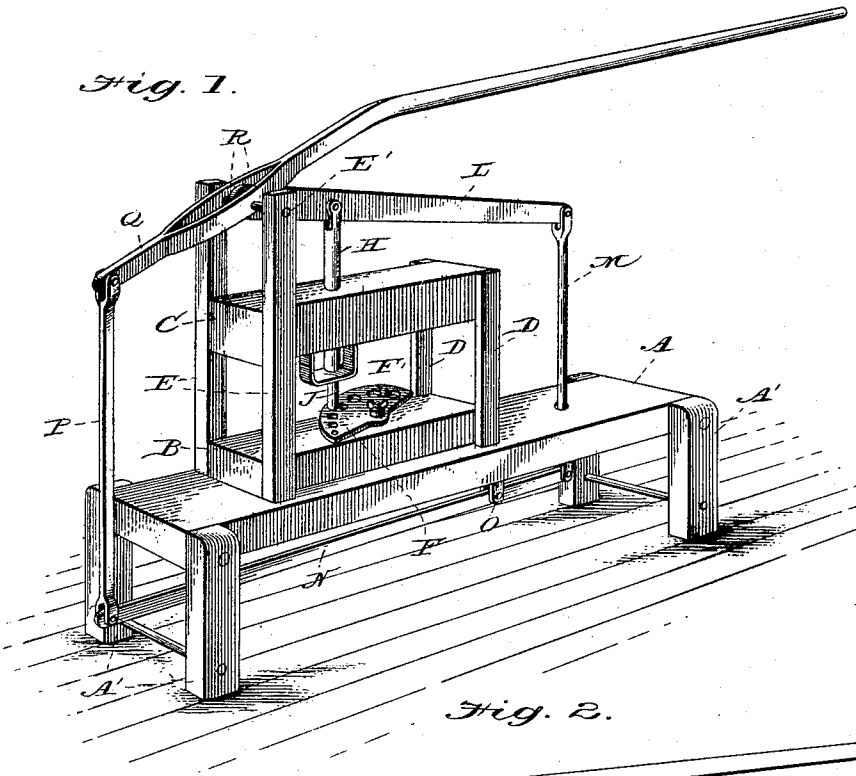
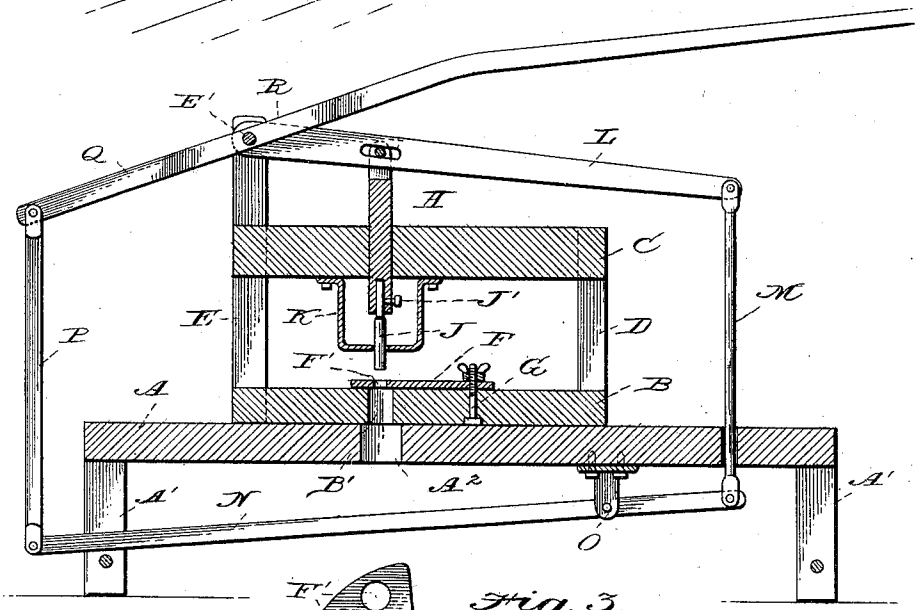


Fig. 2.



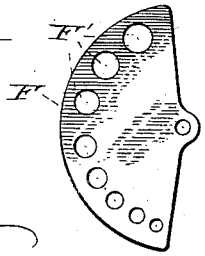


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN P. STARK, OF ICONIUM, MISSOURI.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 608,725, dated August 9, 1898.

Application filed March 30, 1898. Serial No. 675,693. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. STARK, a citizen of the United States, residing at Iconium, in the county of St. Clair and State of Missouri, have invented a new and useful Punching-Machine, of which the following is a specification.

My invention relates to machines for punching holes in metal, and has for its object to generally improve the construction of such machines, the special object being to simplify and cheapen the structure while increasing the utility thereof.

With this object in view my invention consists in a metal punching-machine comprising a pair of metal blocks secured together upon a table by metallic corner pieces or uprights, those at one end extending some distance above the upper block, an improved adjustable die-plate upon the top of the lower block, a plunger fitted to reciprocate through the upper block and to carry different sizes of punches to fit the different sizes of holes in the die-plate, said plunger being pivoted to a plunger-lever mounted upon a bolt passing through the two higher uprights, a rod pivotally secured to the outer end of the plunger-lever, extending through the table upon which the machine is mounted, and pivotally secured at its lower end to a lever pivoted under the table in brackets depending therefrom and extending at its longer end beyond the end of the table, and a rod pivoted at its lower end to the extended end of said lever and at its upper end to the short end of the handle-lever, said handle-lever being open or split for a portion of its length and pivoted upon the same bolt which serves as a pivot for the plunger-lever, said bolt passing through the double portion of the handle-lever.

In order to enable others skilled in the art to which my invention most nearly appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view illustrating a punching-machine constructed in accordance with my invention in position for practical operation. Fig. 2 is a vertical longitudinal section through the same. Fig. 3 is a detail view illustrating in top plan the die-plate detached from the machine.

Like letters of reference mark the same parts wherever they occur in the different figures of the drawings.

Referring to the drawings by letters, A indicates a wooden table supported upon suitable legs A′.

B indicates a block of metal which I designate the "die-block," and C a block of metal which I designate the "plunger-block," the die-block resting upon the table A and supporting the plunger-block at one end by means of corner metallic uprights D D and at the other end by similar metallic uprights E E, the latter pair extending some distance above the plunger-block and being connected together near their upper ends by a bolt E′.

F indicates the die-plate, provided with a series of holes or dies F′, arranged in a curved line on the arc of a circle having a hole F^2 as a center, a pivot-screw G passing through the hole F^2, and thereby pivotally securing the die-plate F to the die-block B.

H indicates a plunger fitted to reciprocate vertically through an opening in the plunger-block C and through a stirrup K, depending from the lower face of said plunger-block.

J indicates a punch fitted in a socket in the lower end of the plunger H and securely held therein by means of a set-screw J′.

The die-block B is provided with an opening slightly larger than the largest hole F′ in the die-plate and directly in a vertical line with the punch and the die in which it is operated. The table A is provided with an opening immediately below and in line with the opening B′, (marked A^2.) The punches J, any one of which may be fitted in the socket in the plunger H, reciprocate through an opening in the stirrup K, depending from the under side of the plunger-block, the stirrup acting as a stripper to clear the metal off the punch when the punch is withdrawn. The plunger H is pivotally connected at its upper end with a lever L, which I designate the "plunger-lever" and which is pivotally mounted at one end upon the bolt E′. The

opposite end of the lever L is pivotally connected with a vertical rod M, which passes through an opening in the table A and at its lower end is pivotally connected in the short end of a lever N, pivotally mounted in the bracket O, depending from the under side of the table. The long end of the lever N extends beyond the end of the table and is pivotally connected to the lower end of a vertical rod P, which is pivotally connected at its upper end to the handle-lever Q. The handle-lever Q is split or divided into two branches R, which straddle the shorter end of the plunger-lever L and are also pivoted upon the bolt E', which forms the pivotal support of the plunger-lever. The holes F' in the die-plate F are graduated in size, and each machine is provided with a set of punches J corresponding in diameter with these holes. By changing the punch and adjusting the die-plate upon its pivotal bolt G the device will be adjusted to punch holes of the diameter of any of the holes in the die-plate.

From the foregoing description it will be apparent that I have produced a punching-machine in which great power is developed and in which the levers are very compactly arranged, so as to take up but very little room in the shop, the only projection beyond the size of the table itself being a few inches at one end, all the mechanism except the handle being arranged within the vertical plane of the edges of the table. A glance at the arrangement of the levers will also reveal the fact that by the exertion of a very small amount of power the punch J will be brought down with sufficient force to punch a hole through metal of a considerable thickness.

While I have illustrated and described what I now consider efficient means for carrying out my invention, I do not wish to be understood as restricting myself to the exact details of construction shown and described, but hold that such changes or variations as might suggest themselves to the ordinary mechanic would properly fall within the limit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a punching-machine, the combination with a die-block and a plunger-block connected by corner-uprights, of which those at one end project above the plunger-block, of a plunger arranged to reciprocate vertically in the plunger-block, a stripper-stirrup depending from the under side of the plunger-block, a plunger-lever pivoted on a cross-bolt between the extended uprights and pivotally connected to the upper end of the plunger, a branched handle-lever straddling the plunger-lever at its pivoted end and pivotally supported on the same bolt, and suitable connecting means between the short arm of the handle-lever and the long arm of the plunger-lever, substantially as described.

2. In a punching-machine, the combination of a table or support, a die-block resting thereon, a plunger-block above the die-block, corner-posts connecting the die-block and plunger-block, two of which project above the plunger-block, a bolt connecting the long uprights near their upper ends, a plunger adapted to reciprocate in the plunger-block, a plunger-lever pivotally mounted on the cross-bolt between the uprights and pivotally connected at its upper end to the plunger, a vertical rod passing through the table pivotally connected at its upper end to the long arm of the plunger-lever, a lever below the table pivotally mounted in a depending bracket and pivotally connected at its short arm to the vertical rod, its long arm extending beyond the opposite end of the table, a second vertical rod pivotally connected at its lower end to the long arm of said lever, and a handle-lever divided into branches for a part of its length which straddles the pivoted end of the plunger-lever and is mounted on the same bolt, the short arm of the handle-lever being pivotally connected to the upper end of the last-named vertical rod, substantially as described.

JOHN P. STARK.

Witnesses:
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