

J. CLARK.

Machines for Punching Metal.

No. 141,629.

Patented August 12, 1873.

FIG. 1.

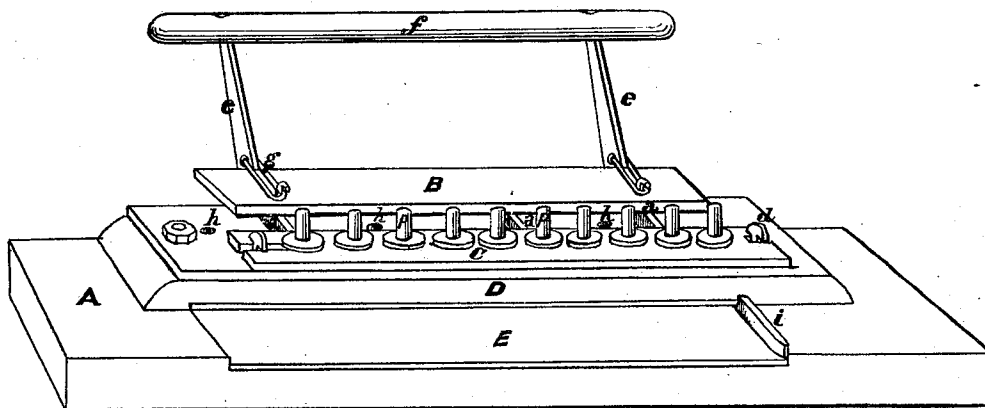


FIG. 2.

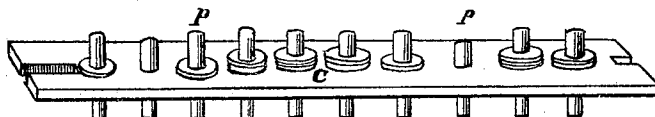


FIG. 3.

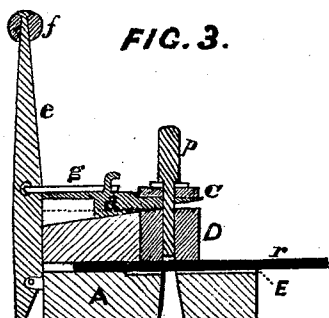
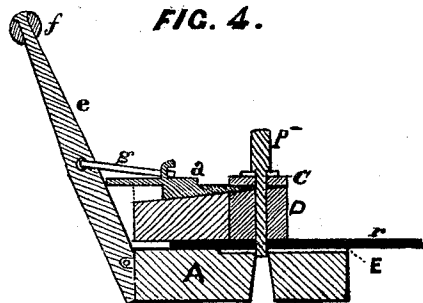


FIG. 4.



WITNESSES

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IMPROVEMENT IN MACHINES FOR PUNCHING METAL.

Specification forming part of Letters Patent No. **141,629**, dated August 12, 1873; application filed March 28, 1873.

To all whom it may concern:

Be it known that I, JOHN CLARK, of Haverstraw, Rockland county, State of New York, have invented a new and useful Improvement in machines for punching sheet-iron and sheets of other metals or similar substances for stove-pipes or other purposes; and I do hereby declare that the following is a full, clear, and exact description thereof, and of its mode and manner of operation, reference being had to the accompanying drawings and to the letters of reference marked thereon, and making a part of the specification.

In punching sheet-iron and other metal sheets, when it was desired to have the holes in the extremities opposite each other to enable them to be connected by rivets or in other suitable ways, it has been customary to mark the places by hand where the holes were to be made, and then with a hand-punch to make the holes one at a time, until one side of the sheet was perforated, when the same operation would be performed on the other side or edge, the sheet to be punched being generally placed upon lead or other soft metal; or, sometimes a strap has been used, which, having holes made in it at the required places, served as a guide, and being fastened to the sheet of metal to be perforated, the punch was placed in the holes in the strap and driven through the metal, and when the same strap was fastened to the opposite edge or side of the sheet and the operation repeated, the holes would be opposite each other in the proper places. All such methods as have been in use, however, are very slow and tedious, and require workmen familiar with, and, to some extent, skilled in the business.

My invention is an apparatus or a machine whereby iron or other sheets can be quickly and evenly perforated, and the work done by unskilled labor.

Figure 1 is a perspective view of my apparatus. Fig. 2 is a like view of the punch-holder or lifter with the punches in it. Fig. 3 is a cut-section, showing the punches raised. Fig. 4 is a like view, showing the punches driven through the material.

Similar letters of reference indicate like parts in all the figures.

A is a frame, made of wood, which may be

screwed or fastened in any convenient manner to a work-bench, having an opening through which the pieces or chips of metal cut out in operating the machine may drop. At the back of this frame are arranged two eyebolts, to which the lower ends of the uprights *e e* of the handle *f* are fastened by a rod running through them, or they may be attached to the back of this frame in any way to make a hinge-like connection. This handle is attached to the slide B by links *g g*, which enables the slide to be drawn back while, as it rests against the uprights *e e*, it is pushed forward in drawing the handle toward the operator. To this slide B are attached three or more wedge-shaped pieces *a a a*, preferably made of metal, which play in cuts made in the under surface of the lifter C or in cuts made in the frame A and guide D, which I prefer, as it does not weaken the piece C, for the purpose of raising and lowering the lifter C with the punches, as required. C is a strip of metal, which is perforated for the reception of the punches *p p*, and in which they play loosely. This may be made of any length, to give room for any number of punches desired to be used, and should be increased in strength as it is enlarged.

For working sheet-iron for stove-pipes it may be a little over two feet long, and arranged for ten punches. It will then be large enough for punching Russia iron, the sheets of which generally used for such purpose being about two feet long, to be fastened with ten rivets. This lifter C is kept in position and prevented from becoming displaced by the two headed pins, *d d*, one at each end. At each end of the lifter an open slit is cut, as shown in Fig. 4, one of them a little longer than the other. The end having the longer opening is placed under its pin first, and then the lifter is shifted until the holes in it for the punches come over the holes in the punch-guide D, when the other end will be under its pin, after which the punches are inserted.

D is the punch-guide, which may be made about an inch in thickness, and perforated with holes corresponding to the holes in the lifter C, but these holes are made of such size that the punches play in them more snugly than they do in the lifter, in order that the

punches passing through them may enter the corresponding holes in the die-plate E with exactness. This piece D may be made entirely of metal or of hard wood lined with metal on each side. At *h h h* are holes that run through to the die-plate or frame A, in which pins or pieces of wire are placed for guides, and against these and the guide *i* the sheet to be punched is fed. There may be several series of these holes, so that sheets can be punched at different distances from their edges, if desired. E is a steel die-plate with holes corresponding to the holes in the guide D, through which the pieces of metal punched out are driven. These holes are made at the top a very little larger than the punch, and enlarge downward through the frame A in order that the pieces cut out may readily drop through them. The die-plate E is placed far enough below the punch-guide D to allow the sheets to be fed in easily. *p* represents the punches used with this machine, which are somewhat larger in the drawings, in proportion to the other parts of the machine, than they require to be. For punching sheet-iron they may be about an inch and a half long, and are of two unequal diameters, the larger diameter preventing them from slipping through the holes in the lifter. They may be made of steel or other hard metal, and as they become worn are ground off, and the length of their projection below the lifter C is regulated by washers, as shown in Fig. 2. Through the medium of this lifter they are all raised and lowered together to facilitate feeding the sheets.

The machine shown in the drawings and described herein is such a one as would be gen-

erally used in punching sheet-iron for stove-pipes and other purposes; but, of course, it may be enlarged and made stronger, if desired, for other uses.

The manner of operating is as follows: The punches are all placed in the lifter, or as many as it is desired to use. The handle *f* is then drawn forward, by which the lifter and the punches therein are raised. The iron or other sheet *r* is fed into the machine; then the handle *f* is pushed back, which allows the lifter and the punches to drop down, and the operator drives the punches through the sheet with a hammer. The handle is then drawn forward again, which disengages the punches from the sheet, and it may then be reversed, and the operation repeated, when the holes will be in proper places for riveting or fastening. By driving the punches at the extremities of the sheet through first, it is fixed in its position.

Having now described my invention, what I claim is—

1. In a machine for punching or perforating, the combination of the device C for holding the punches, the punches *p*, and the wedge-shaped raising and lowering apparatus described.

2. The improved machine described for punching or perforating, having a frame, A, die-plate E, punch-guide D, punch-lifter C, punches *p*, and the wedge-shaped raising and lowering device with its handle, substantially as described, and for the purposes set forth.

JOHN CLARK.

Witnesses:

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