M. Wells.

Hydraulic Press.

No. 45,103. Patented Nov. 15, 1864.

Fig. 1

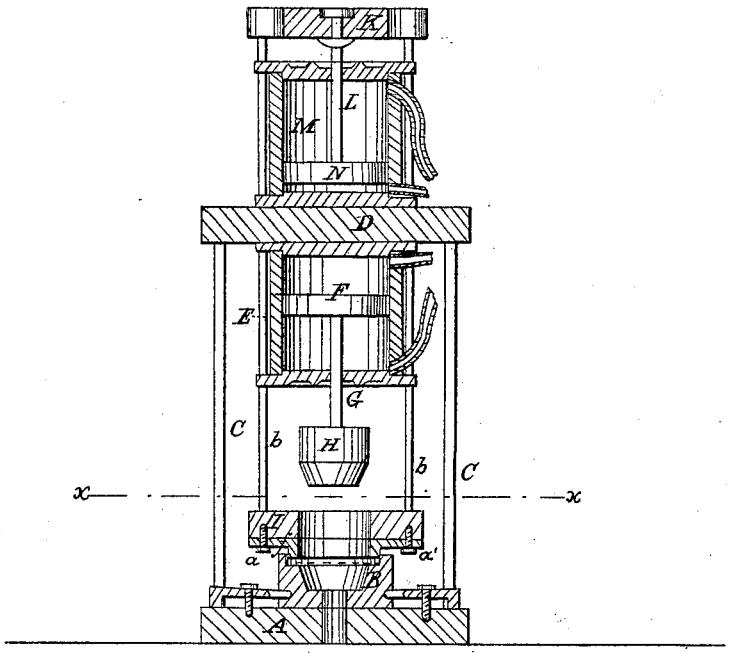
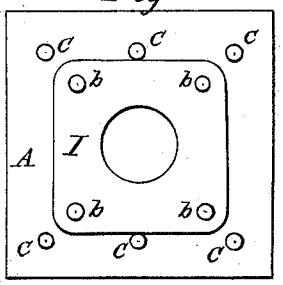


Fig. 2



Witnesses

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MORRIS WELLS, OF WILLIAMSBURG, NEW YORK.

MACHINE FOR MAKING SHEET-METAL WARE.

Specification forming part of Letters Patent No. 45,103, dated November 15, 1864.

To all whom it may concern:

Be it known that I, M. WELLS, of Williamsburg, in the county of Kings and State of New York, have invented a new and Improved Machine for Forming Articles of Sheet Metal; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a vertical central section of this invention. Fig. 2 is a horizontal section of the same, the line *x x*, Fig. 1, indicating the plane of section.

Similar letters of reference indicate corresponding parts.

This invention relates to an improvement in that class of machines in which the operation of raising sheet metal is effected by the action of a punch or plunger connected to a piston, to which motion is imparted by hydraulic pressure or by steam. The metal blank is placed in the female die and held there by a flanged plate, which, in machines of the ordinary construction, is depressed by lever or screw power. In order to operate this plate one or two extra men are required, and the operation of the whole machine is thereby rendered expensive, and, furthermore, the lever or screw acting on said plate bears on the same at or near one of its edges and the power required to hold the same down is much larger than it is when applied uniformly to all its corners.

To obviate these defects is the object of this present invention, which consists in connecting the plate which holds the blank in the die to a piston which works in a suitable hydraulic or steam cylinder, the connection between said plate and the piston being effected by means of four rods rising from the four corners of the plate and secured in the four wings of a cross-head attached to the upper end of the piston-rod in such a manner that by the simple change of the induction-valve the plate is depressed or raised with a uniform force on all sides, and that one man can attend to the plunger and to the plate with the greatest ease and convenience.

A represents the bed-plate, which supports the female die B, and from which rise a series of columns, C, to sustain the top plate, D. The die B is fastened to the bed-plate A in such a manner that it can be readily removed and replaced by one of different shape, and it is situated directly under the center of the cylinder E, which is rigidly attached to the under surface of the top plate, D. This cylinder is fitted up for hydraulic pressure or for steam, and it is provided with two ports, one near its bottom and the other near its top, to admit water or steam to either side of the piston F, according to the direction in which said piston is to be moved. The piston-rod G extends through the lower head of the cylinder E, and secured to its lower end is the plunger or punch H, which, when acting on a suitable blank in the female die B, raises the same to the desired shape.

I is the plate, which is intended to hold the blank in the female die until the plunger H begins to act. This plate is provided with a flange or lip, which fits into the female die and presses on the edge of the blank whenever it is depressed, and said plate is attached by screws *a'* to a plate, J, which is suspended by means of rods *b* from the cross-head K, fastened to the upper end of the piston-rod L, that rises through the upper head of the cylinder M. This cylinder is secured to the upper surface of the top plate, D, and it is arranged precisely like the lower or main cylinder, E, so that water or steam can be made to act on either side of its piston N. The rods *b* extend from the four corners of the plate J to the four wings of the cross-head K, so that the pressure on said plate is uniform all round, and said rods are guided in suitable holes in the top plate, D, as clearly shown in Fig. 1 of the drawings.

After a blank has been placed in the female die steam or hydraulic pressure is made to act on the piston N of the upper cylinder, causing the plates J and I to descend and to hold the blank firmly in its place. Without releasing the blank, steam or hydraulic pressure is made to act on the top of the piston F, and the plunger is depressed and causes the blank to assume the desired shape. By admitting steam or water under the two pistons the plates J and I and the plunger H are raised, the pan or other article formed by the action of the press is removed from the female die, and by placing a fresh blank in said die the press is again ready for action.

Both cylinders can be readily and easily at-

tended to by one man, who can do all the work requisite for the operation of the press without assistance, and one man without help is enabled to produce more work with my press than he can produce with another press where he requires the assistance of one or two men.

I claim as new and desire to secure by Letters Patent—

The application of the secondary cylinder M, in combination with the plates I J, female die B, plunger H, and main cylinder E, constructed and operating substantially as and for the purpose set forth.

MORRIS WELLS.

Witnesses:
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