2 Sheets—Sheet 1.

W E. BROOKE.
Punching-Press.

No. 205,997. **Patented July 16, 1878.**

Fig. 1.

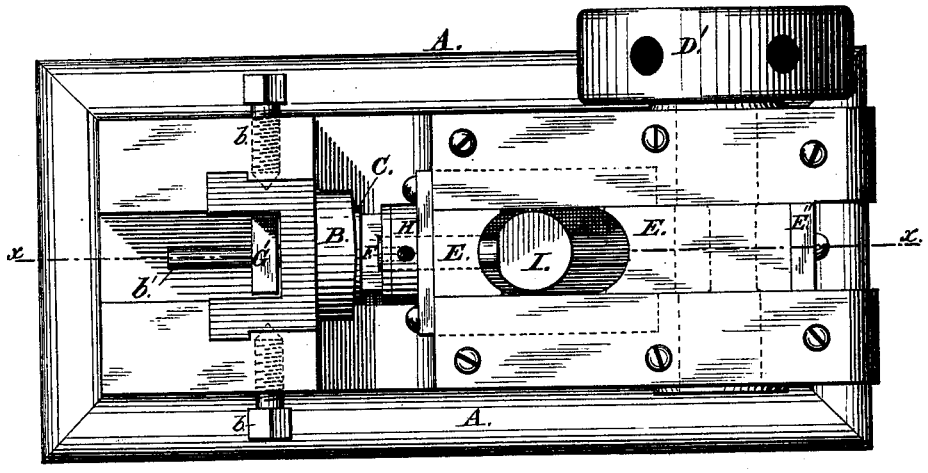
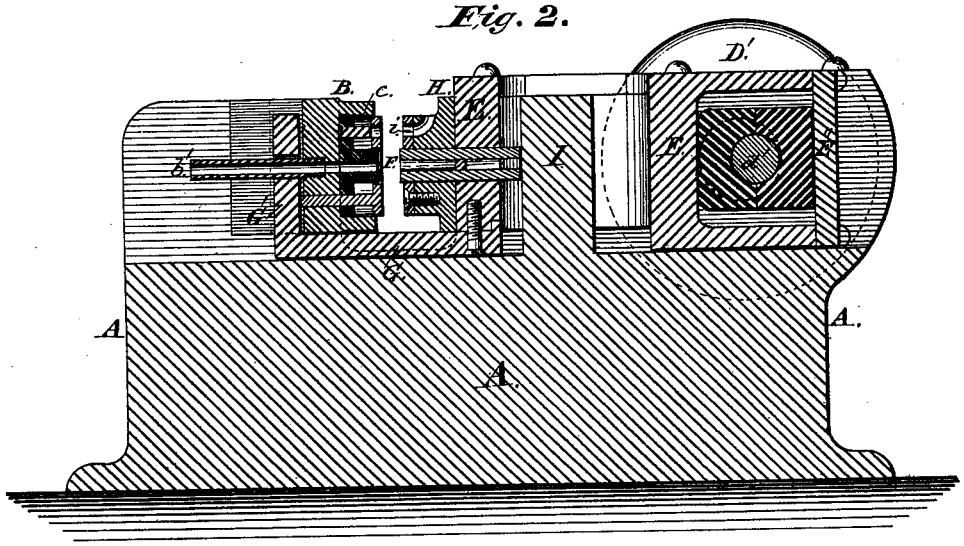


Fig. 2.



Witnesses:
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John C. Tasker

Inventor:
Wm. E. Brooke

2 Sheets—Sheet 2.

W E. BROOKE.
Punching-Press.

No. 205,997. **Patented July 16, 1878.**

Fig. 3.

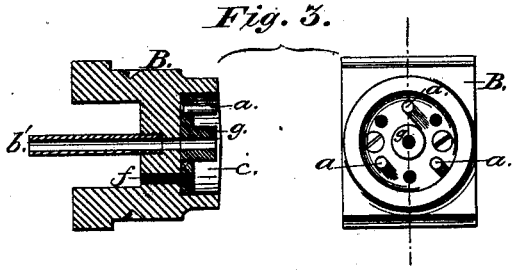

Fig. 4.

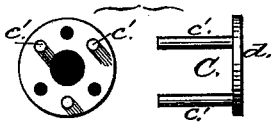

Fig. 6.

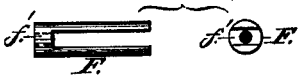

Fig. 5.

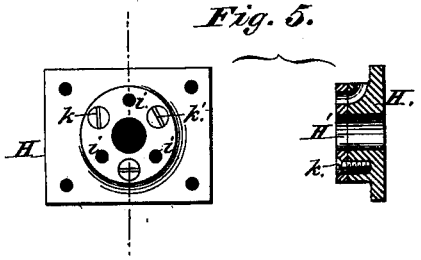

Fig. 7.

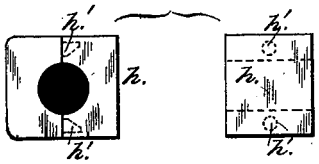

Fig. 8.

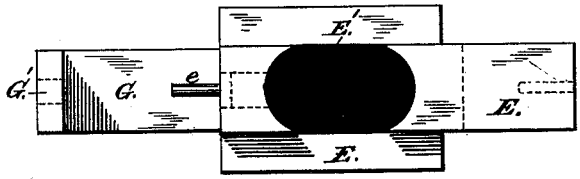

Fig. 10.

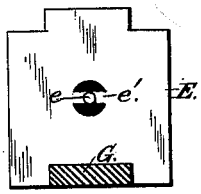

Fig. 9.

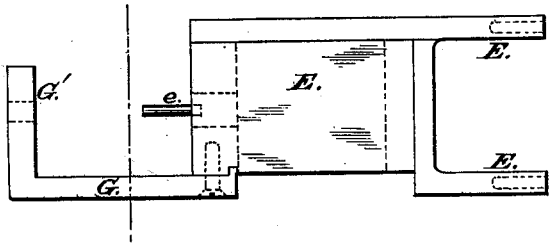

Fig. 11.

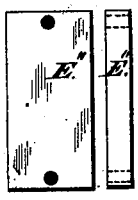

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Fig. 12.

Inventor:

Wm. E. Brooke

UNITED STATES PATENT OFFICE.

WILLIAM E. BROOKE, OF TRENTON, NEW JERSEY.

IMPROVEMENT IN PUNCHING-PRESSES.

Specification forming part of Letters Patent No. **205,997**, dated July 16, 1878; application filed May 24, 1878.

To all whom it may concern:

Be it known that I, WILLIAM E. BROOKE, of Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Punching-Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my invention is to improve the construction of what are termed "punching-presses;" and it consists in a frame one end of which is provided with a stationary circular die, while the other die is secured to a sliding head, which moves horizontally in suitable guides, preferably made so in order that the punchings may fall away from the die when pushed out. In the bottom of the die is fitted a circular plate of steel, which holds the smaller punches for making the holes; and in the larger punch, which, with the larger die, forms the disk of metal, are small dies to receive these punches. These small punches are upset on their inner ends, and the plate which holds them is secured to the bottom of the die by screws. Moving freely in the large die is a piece of steel of the exact shape (with all the holes) of the piece of sheet metal to be formed by the device, and of sufficient thickness to act as a stripper to push out the piece after it is formed, and to support and guide the small punches while punching. Attached to this stripper at the back are three short rods, passing through the plate which holds the small punches, and also passing through the large die and its bed, so as to appear outside and back of the bed, where the upright end of a rigid bent bar (attached at its opposite end to the sliding head of the machine, and moving with it) strikes against the ends of these rods in its backward movement, and actuates the stripper to push the punched piece from the die. The small dies in the large punch have the necessary openings backward and outward to clear the punchings; all of which will be more fully described hereinafter, reference being had to the accompanying drawings, and the letters of reference thereon, in which—

Figure 1 is a plan or top view of the machine. Fig. 2 is a vertical cross-section on line *x x*. Fig. 3 is a front view and section of the fixed die. Fig. 4 is a front and side view of the stripper. Fig. 5 is a front view and section of the movable die. Fig. 6 is a side and front view of the piece of steel forming the large hole of the sheet-metal piece. Fig. 7 shows the journal-brasses for the crank-pin. Figs. 8, 9, 10, and 11 are views of the sliding head. Fig. 12 is a side view of the crank-shaft.

In the drawings, A represents a suitable frame, in which is secured the fixed die B at one end, and held by set-screws *b b*. The inner end of this die is recessed out, as shown at *c*, to admit the plate *d* of the stripper C, to which are attached three pins, *c'*, which enter suitable guide-holes *f* of the die B. In the center of the die B is a punch or die, *g*, against which the steel center-pin, hereinafter mentioned, presses and cuts out the metal. Three pins, *a*, are also secured therein, by which the small holes are punched. This die is also provided with a tube, *b'*, at the rear end, through which the small central pieces of metal punched out are passed. In the opposite end of the frame A is journaled the crank-shaft D, provided with the pin *d'*, which fits into brasses *h*, held together by dowel-pins *h'*, and sliding in the recessed end of the sliding head E, having the cap E''. This head E is provided with a pin, *e*, which punches the central hole for washers, and is secured to a cross-piece, *e'*, over which the two parts of the small steel punch F fit and freely move. These two parts are circular on the outside and flat and parallel on the inside, and are connected by the piece *f'*, which is pierced to allow the pin *e* to pass through. To the front end of the sliding head and at its lower side is secured a bar, G, bent at its outer end, as shown at G', Fig. 9, and forming the stripper-bar. Attached to the sliding head is the die H, provided with three holes, *i*, into which the pins *c'* of the stripper C fit. The holes *i* are curved at their rear, as shown in Fig. 5, so that the punchings will freely drop out. The front plate H' of the die H is made of steel, and made remov-

able, being held by the screws *k*. The sliding head is recessed, as shown in Fig. 8, with an oblong hole, E′, which allows it to move backward and forward over a stud, I, flattened at one side, and this serves for the punch F to abut against. The crank-shaft D is provided at its outer end with a wheel, D′, having a number of holes in it for the insertion of a bar of iron or a lever to operate the machine by, or it may be a pulley or gearing when driven by machinery.

The operation is as follows: The press being in the position shown in the drawing, the sheet of metal is placed between the dies, when, the wheel being turned, the sliding head, with the die H, moves forward and punches the large circle, the stripper C being pushed back, while the outer small holes are made by the pins *a*, and the central hole is made by the pin *e*, the larger hole being cut by the small punch F, which thus forms small washers out of the metal. In the return movement of the sliding head the piece G′ comes in contact with the pins *c*′ of the stripper C, which pushes the punched metal piece from the recess *c* of the die B, when it can be removed. At the same time the small punch is stripped by the piece *f*′ coming in contact with the stud I.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The die B, with its detachable punches *g* and *a*, and detachable punch-holding plate, in combination with the die H and punches F and *e*, as and for the purposes set forth.

2. The improved punching-press consisting of the frame, its sliding head E, die B, punches H, F, *e*, and *a*, stripper C, and crank-shaft D, constructed and combined as and for the purposes set forth.

3. In a punching-press, the stripper C, with the attached rods *c*′, in combination with the angular stripper-bar G′, attached to the sliding head E, for pushing out the piece cut by punch and die, and for supporting and guiding the small punches, and the small punches *a*, all constructed and arranged as shown and described.

In testimony that I claim the foregoing as my own I hereunto affix my signature in presence of two witnesses.

WILLIAM E. BROOKE.

Witnesses:
E. A. DICK,
FRED. E. TASKER.