

(No Model.)

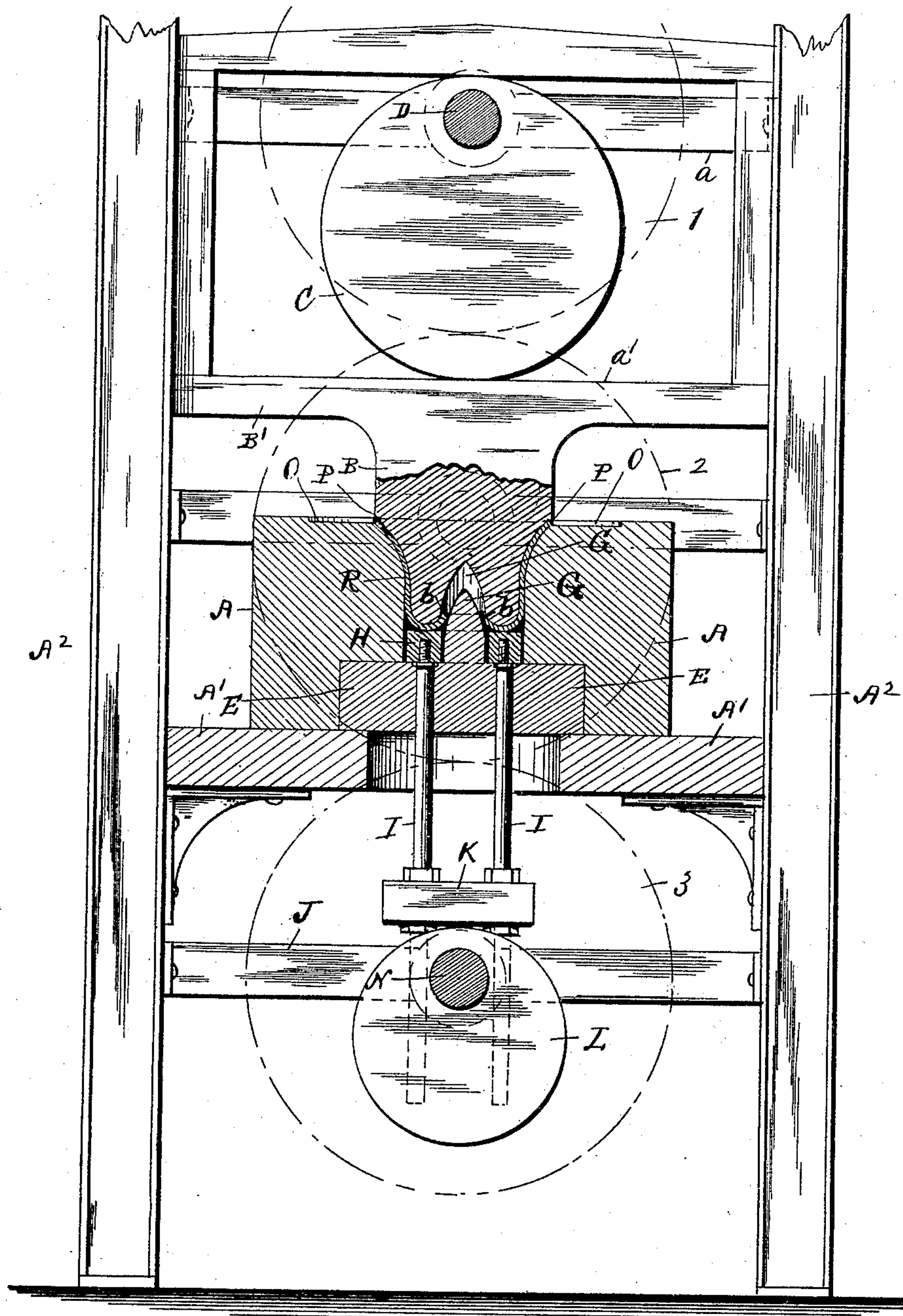
2 Sheets—Sheet 1.

W. A. TURNER.

MACHINE FOR STAMPING AND PERFORATING SHEET METAL.

No. 445,603.

Patented Feb. 3, 1891.



Witnesses.  
Walter S. Brown  
Rufus B. Fowler.

Fig. 1.

Inventor  
William A. Turner.

(No Model.)

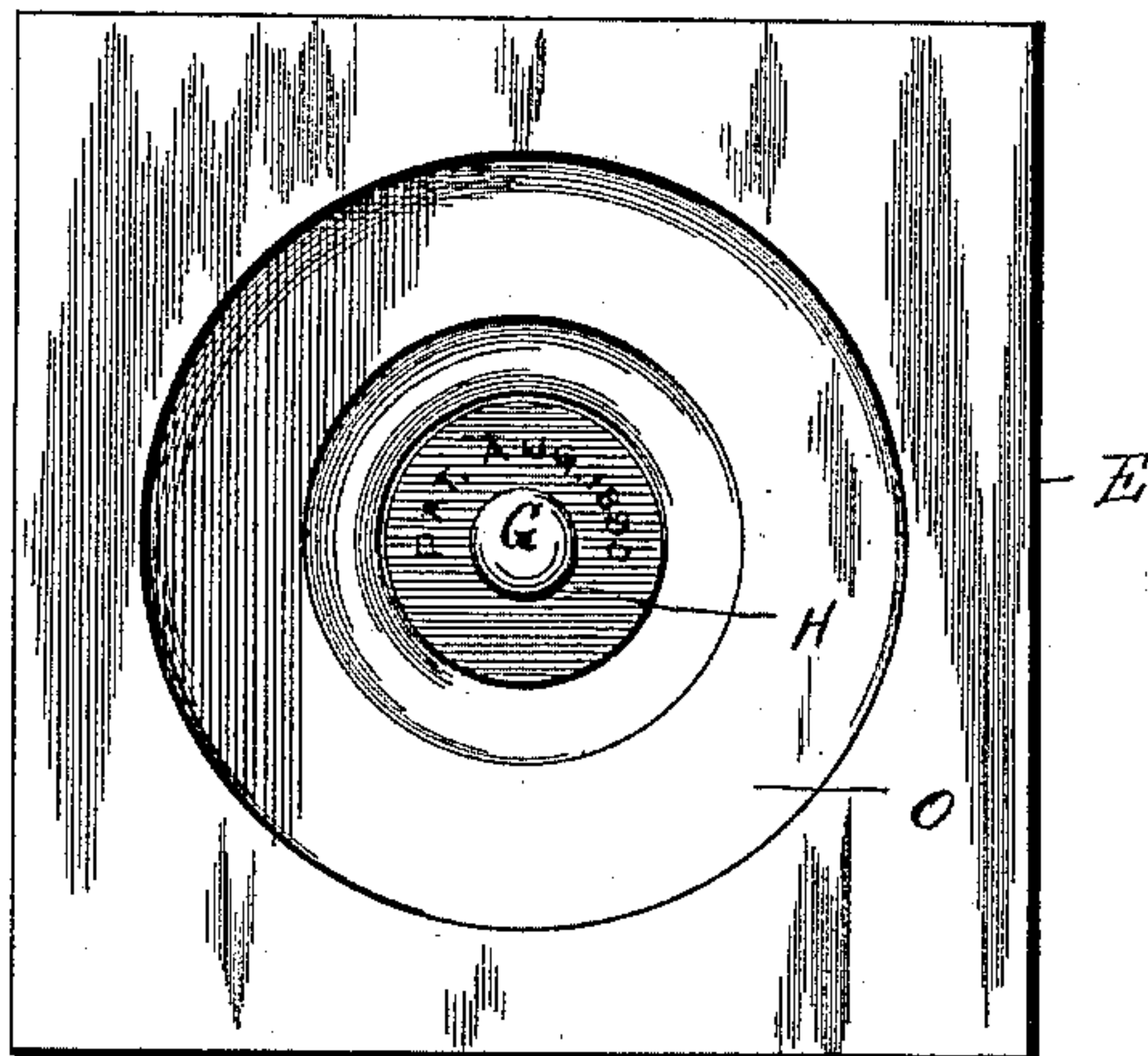
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W. A. TURNER.

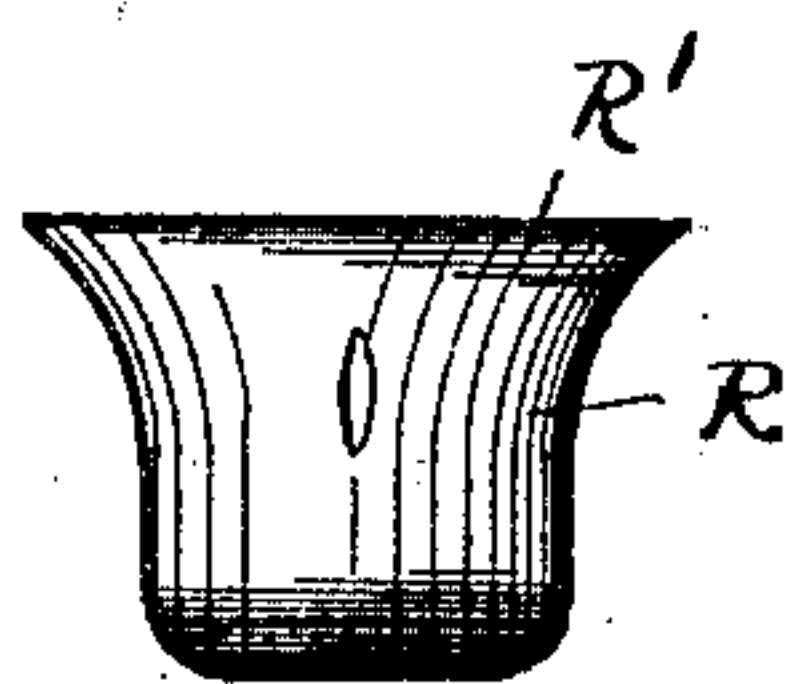
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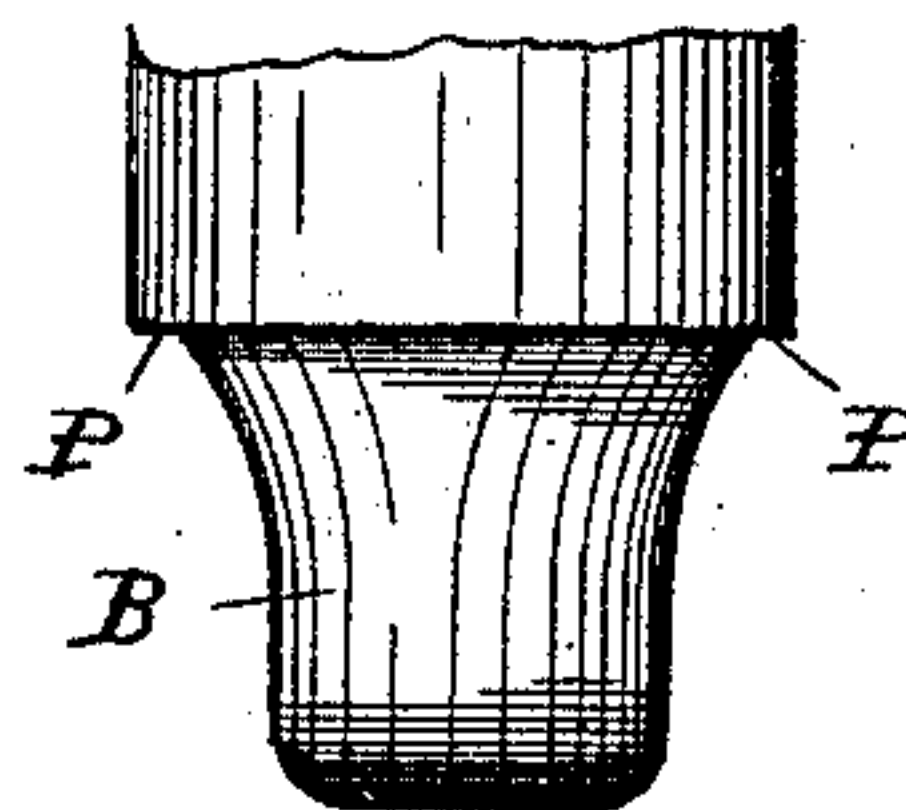
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*Fig. 2*



*Fig. 3.*



*Fig. 4*

Witnesses

Walter E. Bowen

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# UNITED STATES PATENT OFFICE.

WILLIAM A. TURNER, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO  
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## MACHINE FOR STAMPING AND PERFORATING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 445,603, dated February 3, 1891.

Application filed September 6, 1890. Serial No. 364,116. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. TURNER, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in a Machine for Stamping and Perforating Sheet Metal, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, and in which—

Figure 1 represents an elevation, partly shown in sectional view, of an apparatus embodying my invention. Fig. 2 is a top view of the die. Fig. 3 is a view of the sheet metal as formed by the dies, and Fig. 4 is a side elevation of the upper or movable die.

Similar letters refer to similar parts in the several figures.

The object of my invention is to provide an apparatus for stamping a sheet-metal blank into a desired shape by means of properly-shaped dies and perforating the same at one operation of the machine.

The accompanying drawings illustrate a machine for stamping the base or bottom portion of a sheet-metal knob, which is represented in Fig. 3 of the drawings, although it will be evident that the machine is adapted to other uses by a modification in the form of the dies.

A denotes a stationary or fixed die supported upon a bed A', held in the frame-work A<sup>2</sup> of the machine.

B denotes a movable die shaped to conform to the inner surface of the article to be formed and corresponding to the shape of the fixed die, the movable and fixed dies A and B representing the "male" and "female" dies of the machine. The movable die B is carried by the frame B', which receives a reciprocating motion in vertical ways by means of the cam C upon the rotating shaft D working against the surfaces a a'. The lower surface of the lower or stationary die A is recessed to receive the block E, which rests upon the bed A', and is provided upon its upper surface with the sharp spur G, held concentrically with the stationary die. Around the spur G is an annular ring H, resting upon the block E and attached to the sliding rods I I, which slide in ways in the block E and also in the

lower girt J. The rods I I carry the block K, which is acted upon by the cam L upon the rotating shaft N, by which a reciprocating motion is imparted to the annular ring H, the two shafts D and N being geared together by gears, (represented by the broken lines 1 2 3, Fig. 1,) so as to secure a corresponding movement of the cams C and L, by which the die B is carried down into the die A during the descent of the annular ring H, reaching its lowest position during the period of rest of the ring H upon the block E.

The operation of the dies is as follows: While the die B is at its highest position and entirely above the stationary die A, a circular blank is placed in the recess O, formed in the upper surface of the stationary die and concentrically therewith. During the downward motion of the movable die the blank is carried into the stationary or female die and shaped into the form determined by the shape of the dies. As the central portion of the blank approaches the annular ring H the sharp spur G is forced through the blank, the spur G entering the chamber G' in the die B, thereby puncturing the blank and turning up the edges b b within the chamber G', as shown in Fig. 1. The blank is then forced upon the annular ring H, which is provided with a "patent" mark, as represented in Fig. 2, or such other figures or letters as it may be desired to emboss upon the surface of the blank. The movable die B is smaller than the stationary die to allow space between the two for the sheet-metal blank, and the die B is provided with an overhanging surface at P, said overhanging surface extending outwardly from the side of the die B a distance equal to the space between the inner side of the die A and the outer side of the die B and forming an angle with the side of the die B and so as to be brought against the edge of the shaped blank and compress the same within the space between the two dies and bring the entire edge R' of the blank into the same horizontal plane. As the die B is moved upward, leaving the formed blank in the lower or stationary die, the annular ring H is carried up, pushing the blank out of the lower die. The throw of the upper cam is greater than that of the lower



cam, so that the die B is carried considerably above the lower or stationary die, while the ring H is carried only high enough to remove the blank from the die A.

5 The blank as formed by the action of the dies A and B and the spur-point G is represented at R, Fig. 1, the edges *b b* being turned into the interior of the blank to receive a screw-thread, by which the completed knob is  
10 attached to a stove-door.

I do not confine myself to the mechanism, as shown, by which the dies A and B are actuated, as other mechanism can be employed for the purpose, such, for example, as the  
15 mechanism now used in die-presses.

I am aware that the bases of sheet-metal knobs are now formed by dies in substantially the same manner as above described; but the formation of the central hole, which in my machine is punctured by the spur G, is formed  
20 by a separate and distinct operation, and the marking or embossing of the surface of the knob, when such is desired, is also performed by a separate operation.

25 The block E is detachable from the stationary die, and can be readily exchanged for another with a spur-point of larger or smaller size, as required, and the annular ring H can also be exchanged for others having a different device.  
30

What I claim as my invention, and desire to secure by Letters Patent, is—

35 1. In a machine for stamping sheet metal, the combination, with a pair of dies forming a male and female die, by which the sheet-metal blank is formed, of a spur-point placed within said female die, whereby the sheet metal is punctured as it is formed by the action of said dies, substantially as described.

2. In a machine for stamping sheet metal, 40 the combination of a male and female die by which the blank is formed, a spur-point placed within said female die, whereby the blank is punctured as it is formed, and an annular ring surrounding said spur-point and having 45 a reciprocating motion, by which the punctured blank is forced off said spur-point, substantially as described.

3. In a machine for stamping sheet metal, the combination, with a male and female die 50 by which the blank is formed, of a ring placed in said female die and provided with letters or figures, whereby the surface of the blank is embossed, said ring having a reciprocating motion by which the blank is carried out of 55 the female die, substantially as described.

4. In a machine for stamping sheet metal, the combination, with a female die in which the sheet-metal blank is shaped, of a male die 60 having its sides parallel with the sides of said female die, said male die being provided at its upper end with an overhanging surface forming an angle with the side of the die and extending outwardly the distance occupied by the blank between the two dies, said over- 65 hanging surface being arranged to enter within said female die and compress the edge of the blank within the space between the two dies, whereby said edge is brought into a horizontal plane, substantially as described. 70

Dated at Worcester, in the county of Worcester and State of Massachusetts, this 4th day of September, 1890.

WILLIAM A. TURNER.

Witnesses:

E. CONVERSE,  
RUFUS B. FOWLER.