

No. 610,024.

Patented Aug. 30, 1898.

A. J. BRADLEY.
BLANK FOR MAKING DIES.

(Application filed Dec. 18, 1894.)

(No Model.)

Fig. I.

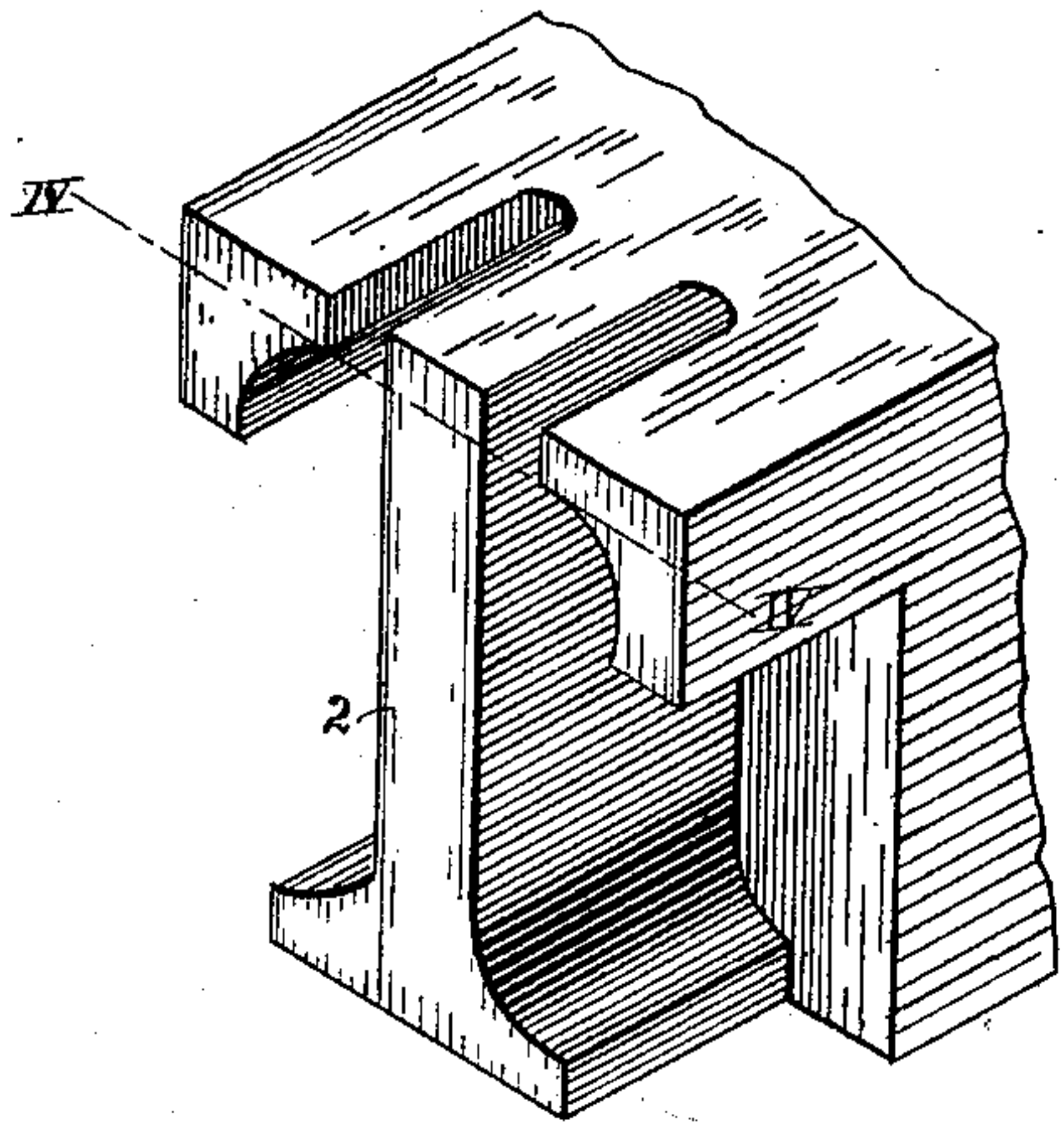


Fig. II.

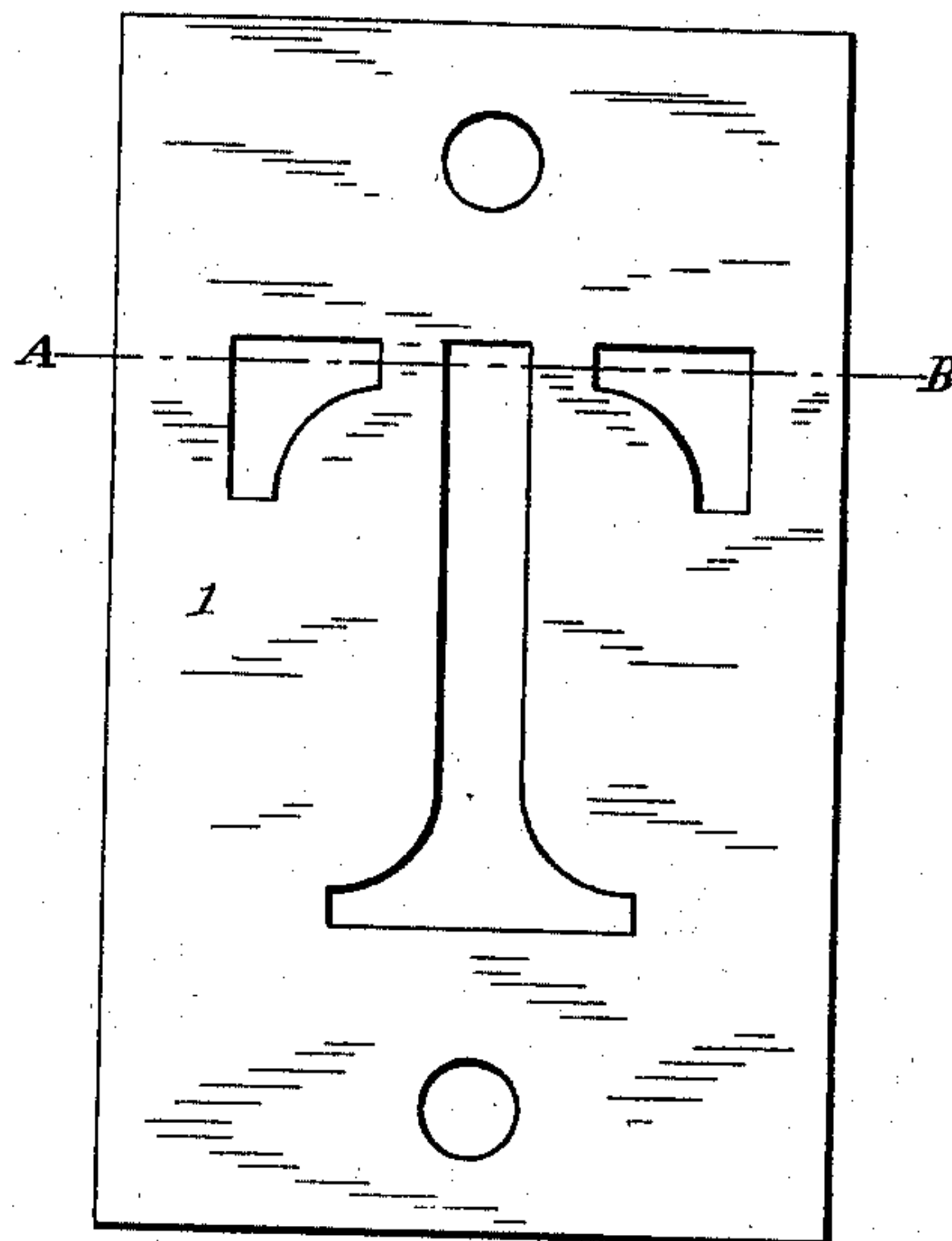


Fig. III.



Fig. IV.

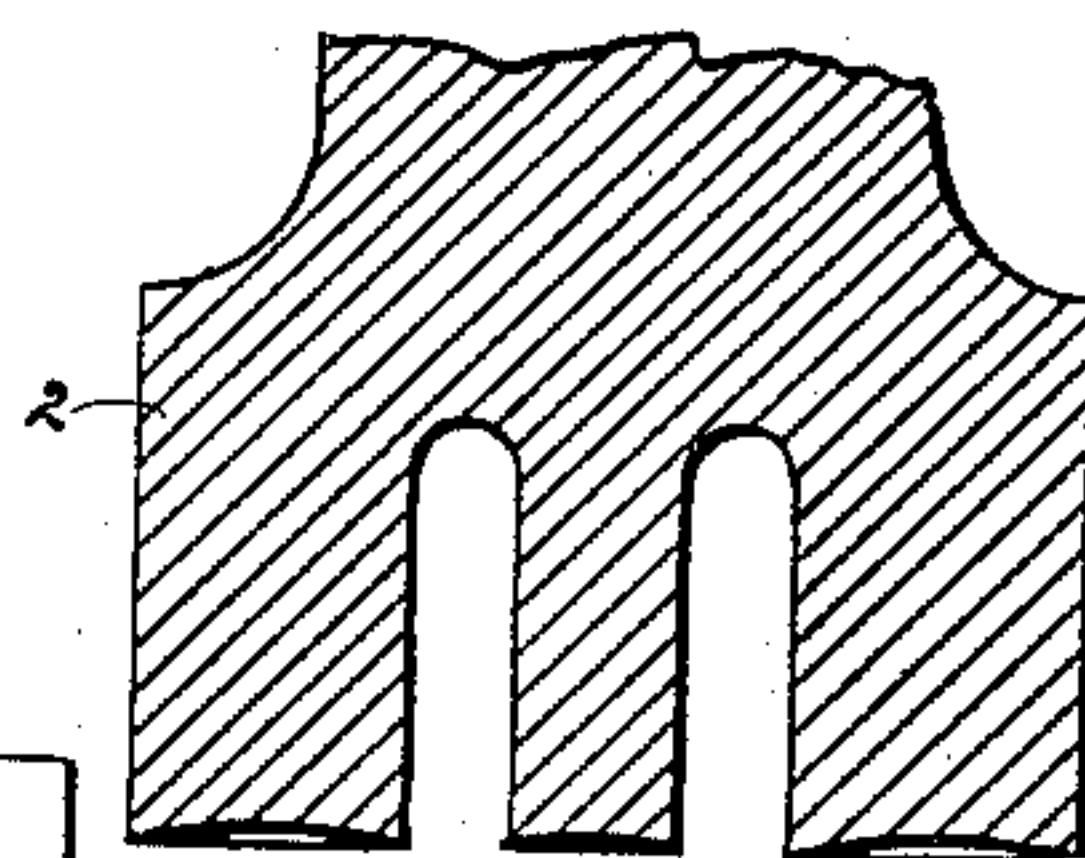


Fig. V.

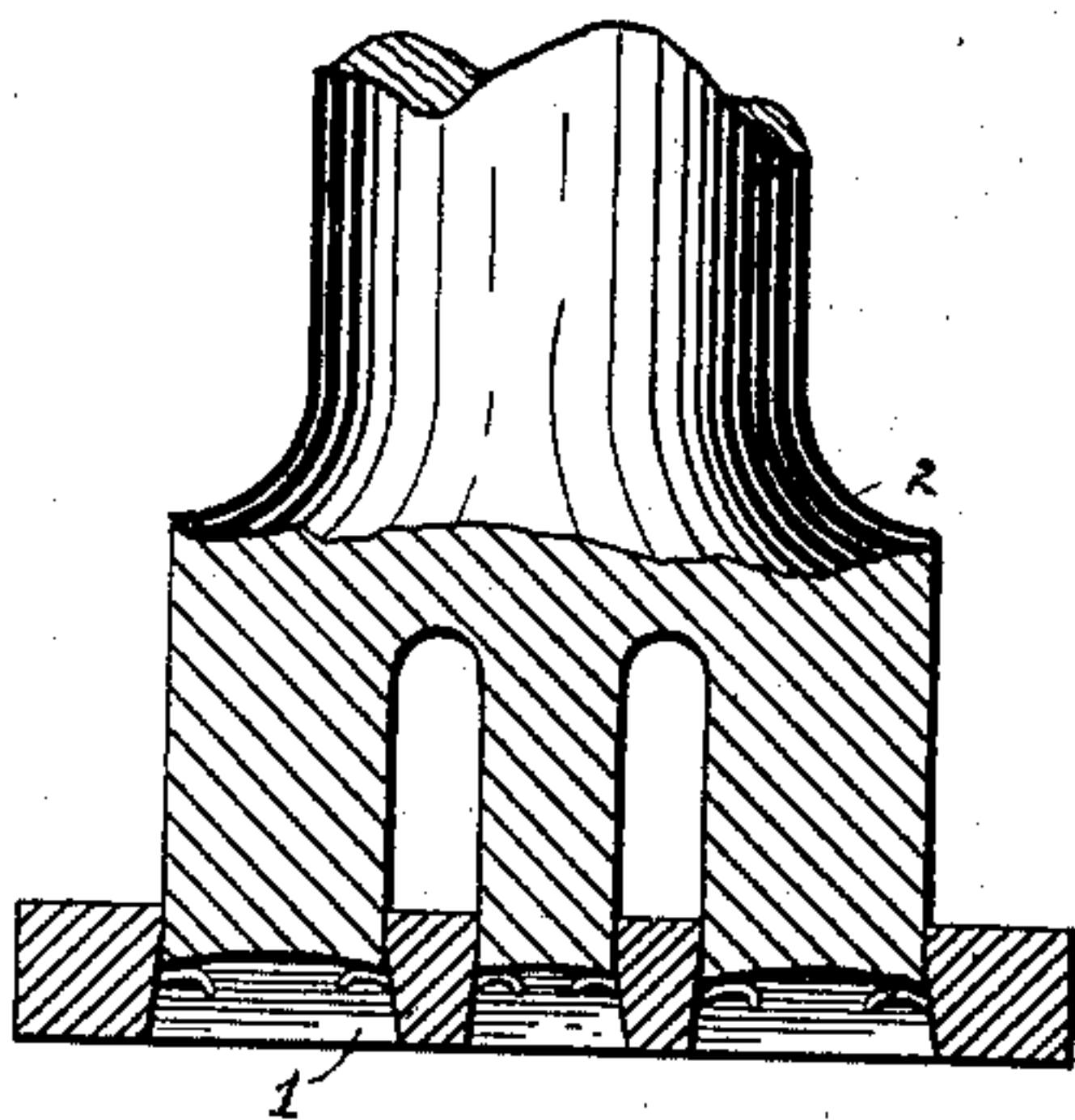


Fig. VI.

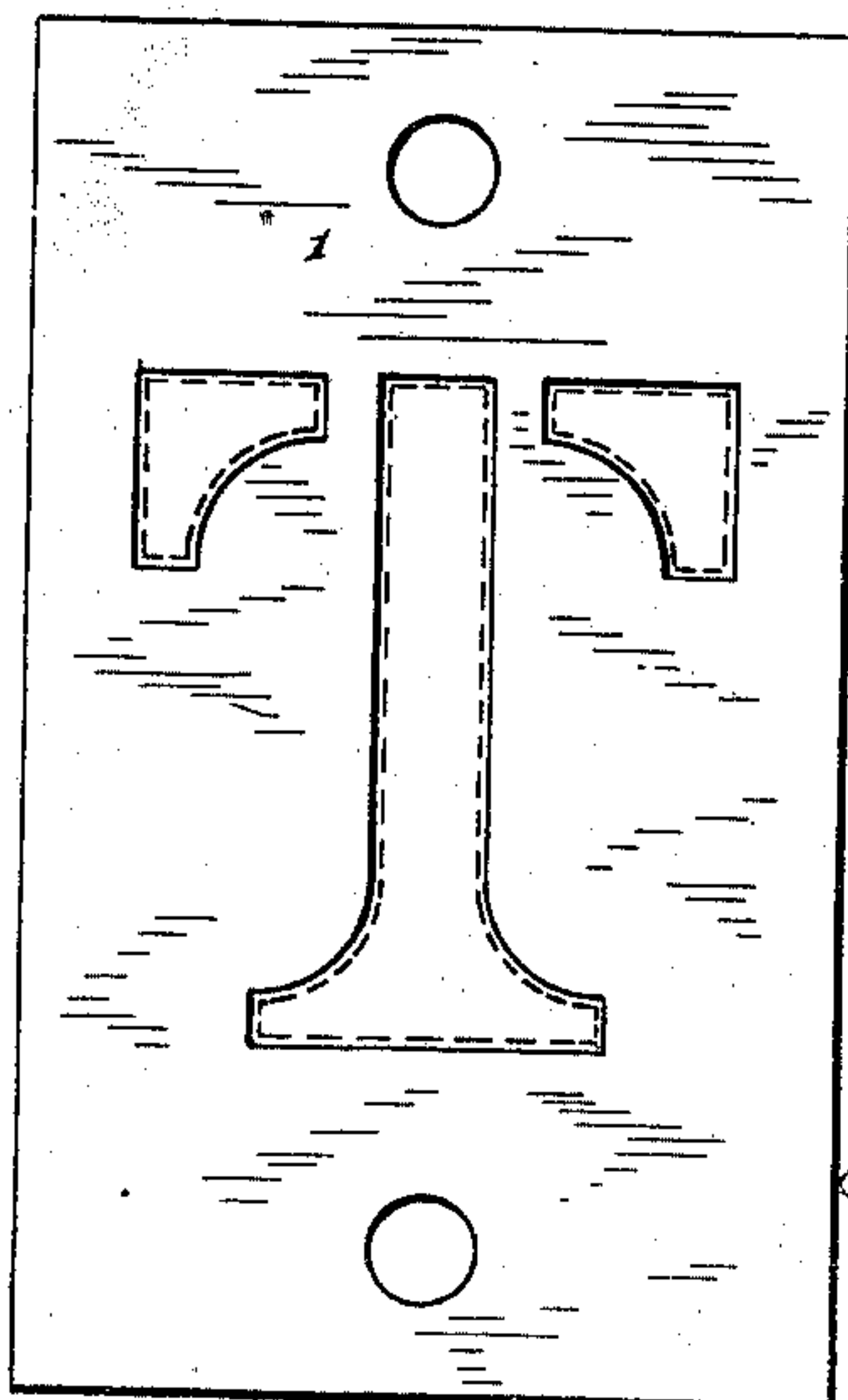


Fig. VII.



Attest:

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ANDREW J. BRADLEY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE BRADLEY
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BLANK FOR MAKING DIES.

SPECIFICATION forming part of Letters Patent No. 610,024, dated August 30, 1898.

Application filed December 18, 1894. Serial No. 532,240. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. BRADLEY, residing in the city of St. Louis, State of Missouri, have invented a new and useful Blank
5 for Making Dies, of which the following is a specification.

My invention relates to the art of making dies, and has for its principal object to
10 cheapen the cost of making dies, particularly when the material of the dies or their thickness or other reason makes impracticable the use of the process described in Letters Patent issued to me July 10, 1894.

The present process consists principally in
15 first forming the die of approximately the desired shape by any suitable method and then finishing the die by a punch adapted to "skin" or plane off the excess matter down to the desired outline or contour. Particulars of this
20 process are hereinafter stated.

In the accompanying drawings, which form part of this specification, Figure I is a perspective view of the face end of a punch adapted to carry out my process. Fig. II is
25 a face view of the finished die. Fig. III is a cross-section of a die-blank or roughly-made die. Fig. IV is a cross-section of the operating-punch on the line *lv lv* of Fig. I. Fig. V is a cross-section on the same plane as Figs.
30 III and IV, showing the punch operating on the die-blank. Fig. VI is a face view of the die, indicating in dotted lines the outline of the die-hole before being finished; and Fig. VII is a cross-section of the finished die on
35 the line A B of Fig. II.

In this process the die-body 1 may be cast with holes therein conforming as closely as practicable to the outline of the finished design, or such holes may be made by any other
40 suitable method. However made these holes should leave a very small margin between their edges and the finished contour, as indicated by dotted lines in Fig. VI. This margin or excess material is removed by a punch
45 2 of the exact form of the finished die. The rough or preparatory holes in the die-body are preferably made with their sides flaring or spreading apart inwardly from the face, so as to make the holes larger in cross-section at
50 their lower portions than the working edge of the finished die. This tapering form is

especially convenient for casting and advantageous in the process of "skinning" or finishing with the punch.

When the die is to be finished off, it is laid
55 on a bed or support, which may be solid, face uppermost, and the skinning-punch 2, properly centered with the die-holes, is forced into said holes. The punch being larger than the
60 holes planes off or skins the marginal excess, so as to make the die-holes conform exactly to the shape of the punch. As the rough or preparatory die-holes flare downwardly the marginal excess becomes less and less the
65 farther the punch enters, the lower portion of said holes being of larger section than the punch. The marginal excess at the sides of the holes is thus trimmed or "skinned" off
70 and falls as shavings to the bottom of the holes. The sides of the upper portion of the die-holes are therefore parallel, and as the cutting edge becomes dull the face of the die may be ground down to get a sharp edge.

An important advantage of making the
75 rough or preparatory holes of a tapering form is that the shavings become thinner and thinner and are finally severed evenly from the die-block without chipping off roughly. This advantage appears more plainly from the reversal of the direction of operation. When
80 the preparatory holes are made with parallel sides or the punch operates from the wider ends of the holes, the bed or support for the die-block must have a hole for the punch and the waste to enter. The under edges of the
85 die-holes will therefore be very liable to chip off more or less raggedly. To prevent such chipping, a die which is the counterpart of the skinning-punch may be used.

The punch 2 may be an ordinary flat-faced
90 punch, or preferably its face is hollow or concave, so as to make an acute angle at its edges. This acute angle gives a sharper cutting edge, and the inclined or curved portion of the face turns the shaving over somewhat like the or-
95 dinary plane.

The most important advantages of this process are that it accomplishes with uniform accuracy the delicate work of finishing dies
100 too thick to be directly punched or made of material not adapted to be punched, and especially dies requiring stays—that is, dies

having two or more holes separated by a part integral with the die-body—and that numerous dies may be made from the same punch, which may be used interchangeably.

5 What I claim as new, and desire to secure by Letters Patent, is—

As an article of manufacture, a die-body blank having holes therein of approximately the desired outline, the sides of said holes
10 being inclined so that at the face of the die-

body blank, the outlines of said holes are smaller than said desired outline and at the back, said holes are larger in outline than such desired outline, substantially as and for the purpose set forth.

ANDREW J. BRADLEY.

Witnesses:

CHAS. E. WISE,
JAMES A. CARR.