

(No Model.)

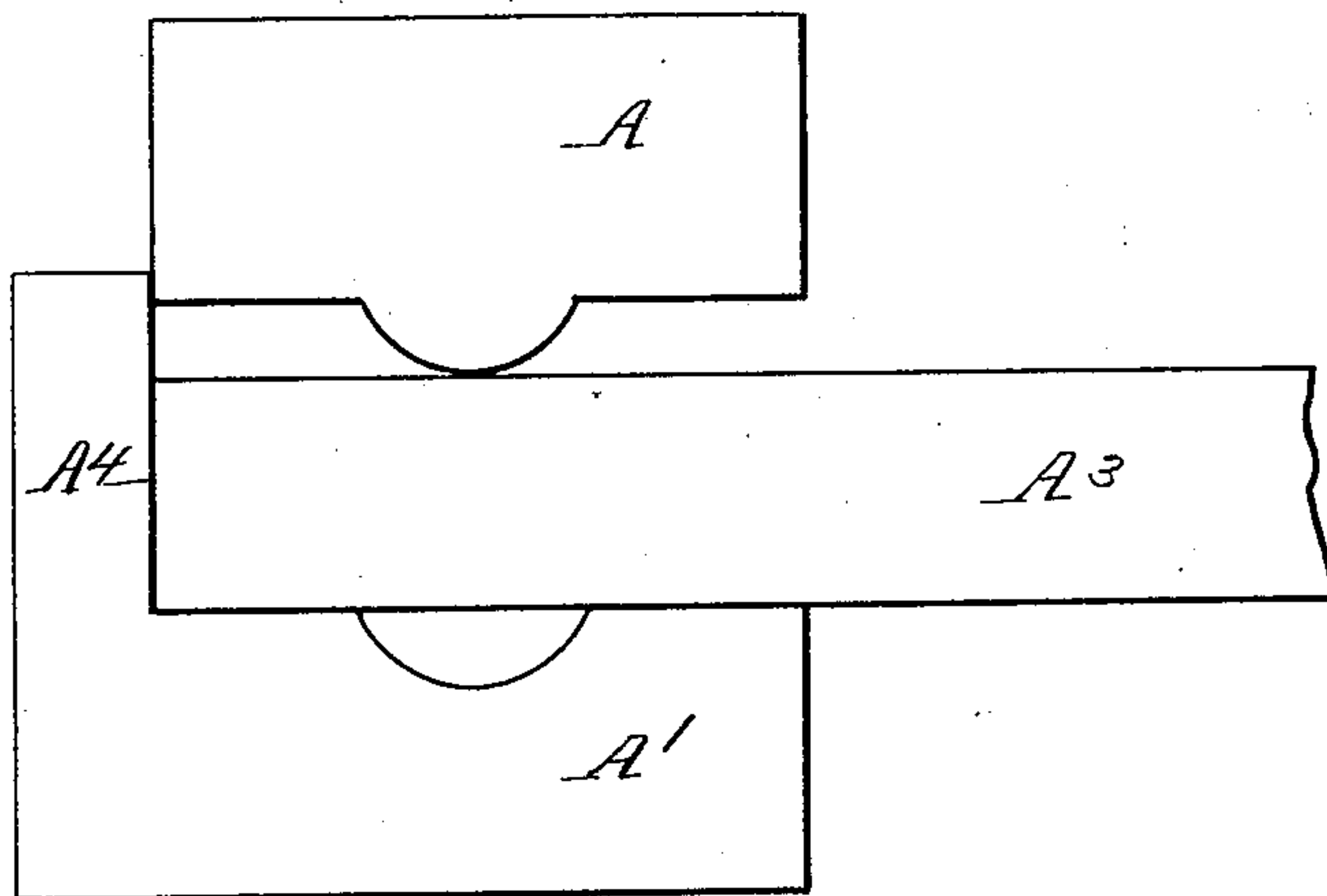
3 Sheets—Sheet 1.

E. ROGERS.  
METHOD OF MAKING TOOL BLANKS.

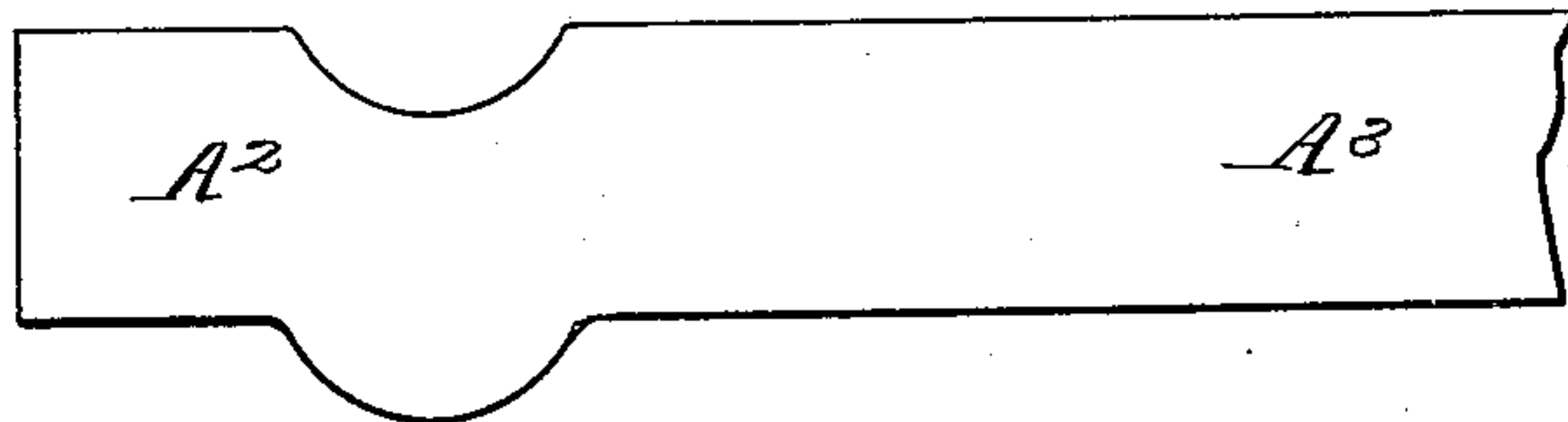
No. 566,937.

Patented Sept. 1, 1896.

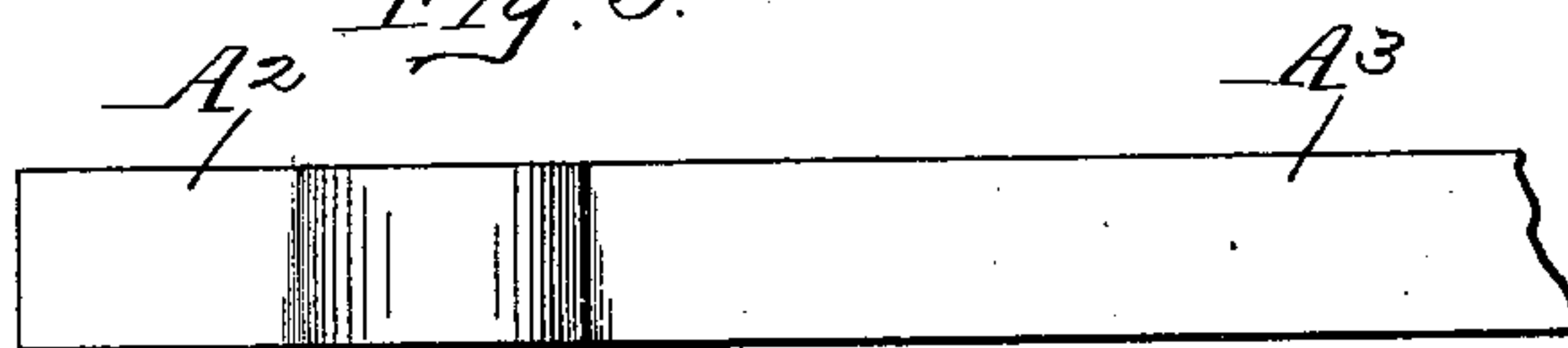
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:  
G. H. Curtis.  
C. H. Curtis.

Inventor:  
Ethan Rogers  
By Mosher & Curtis  
Atty

(No Model.)

3 Sheets—Sheet 2.

E. ROGERS.  
METHOD OF MAKING TOOL BLANKS.

No. 566,937.

Patented Sept. 1, 1896.

Fig. 4.

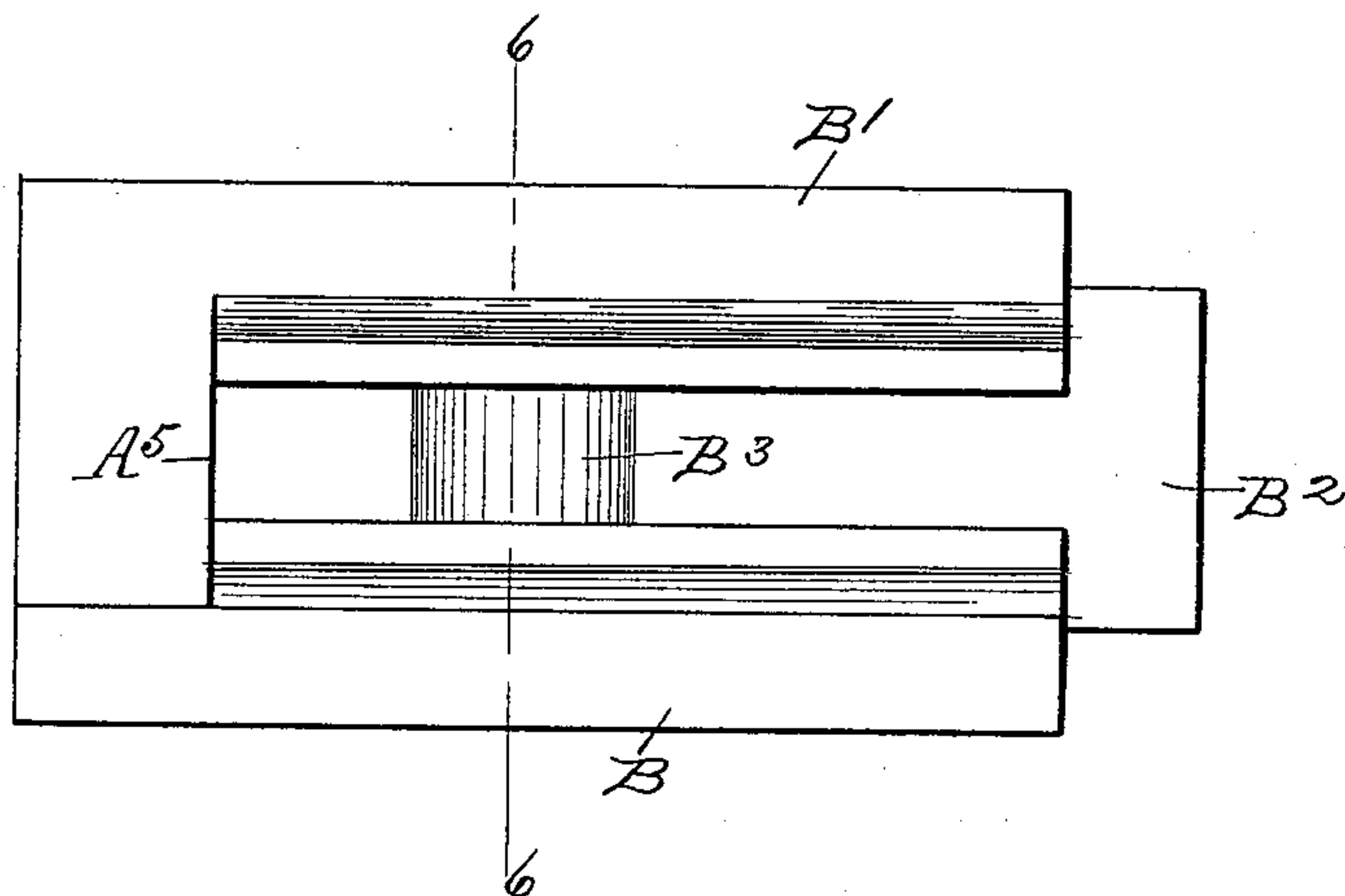


Fig. 5.

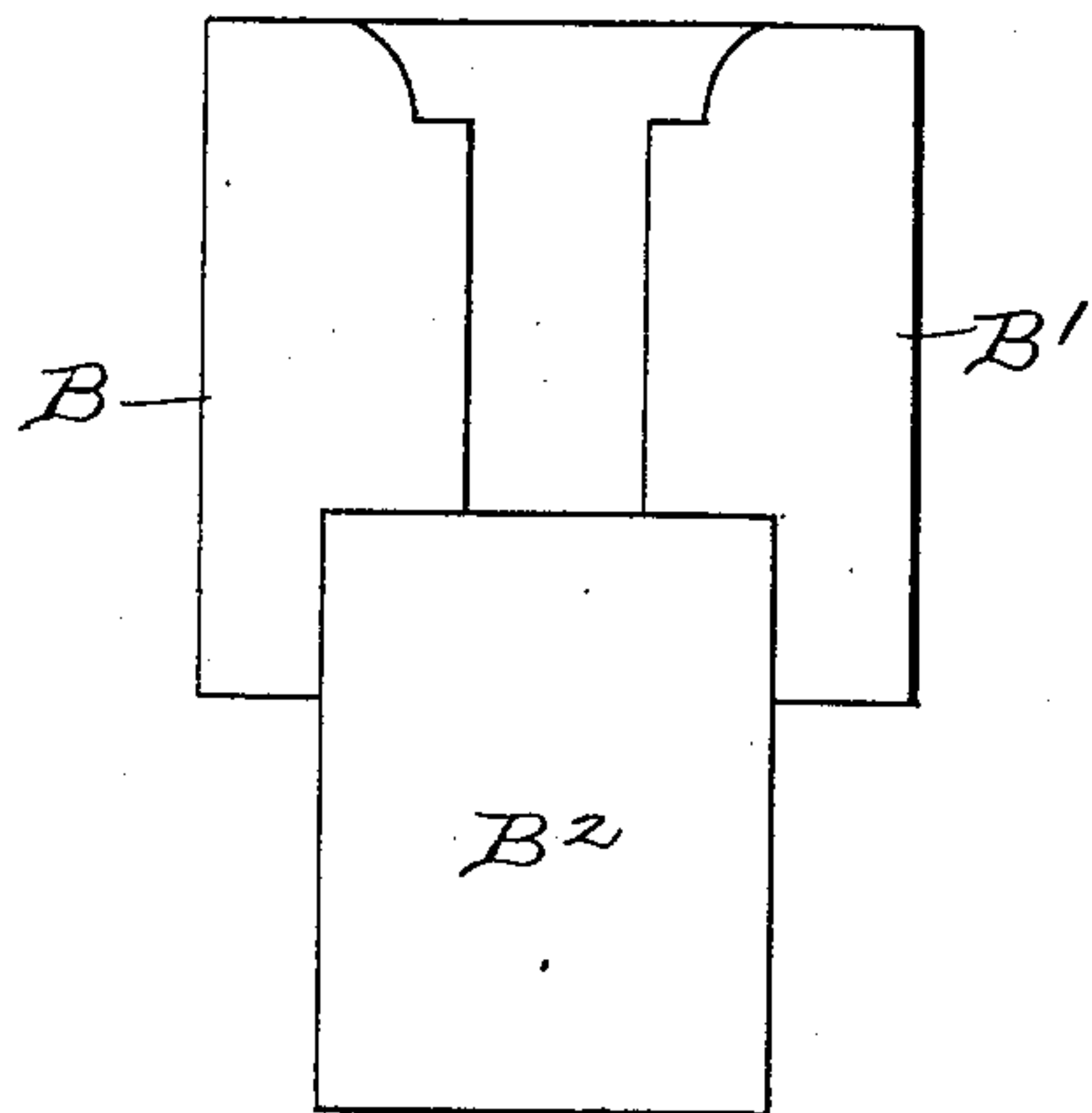
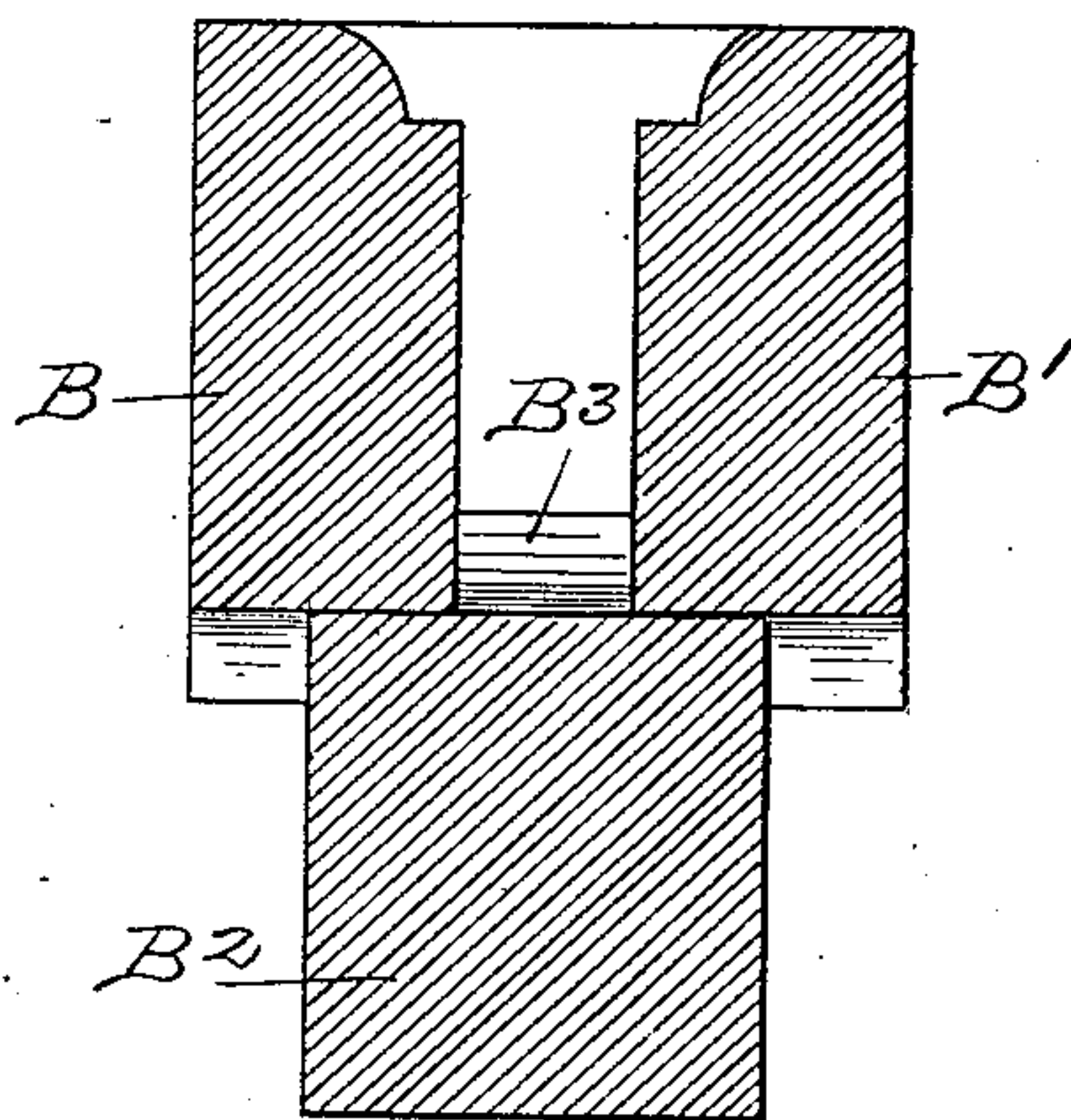


Fig. 6.



Witnesses:  
G. H. Curtis  
O. H. Curtis.

Inventor:  
Ethan Rogers  
By Mosher & Curtis  
Attys.

(No Model.)

3 Sheets—Sheet 3.

E. ROGERS.  
METHOD OF MAKING TOOL BLANKS.

No. 566,937

Patented Sept. 1, 1896.

Fig. 7.

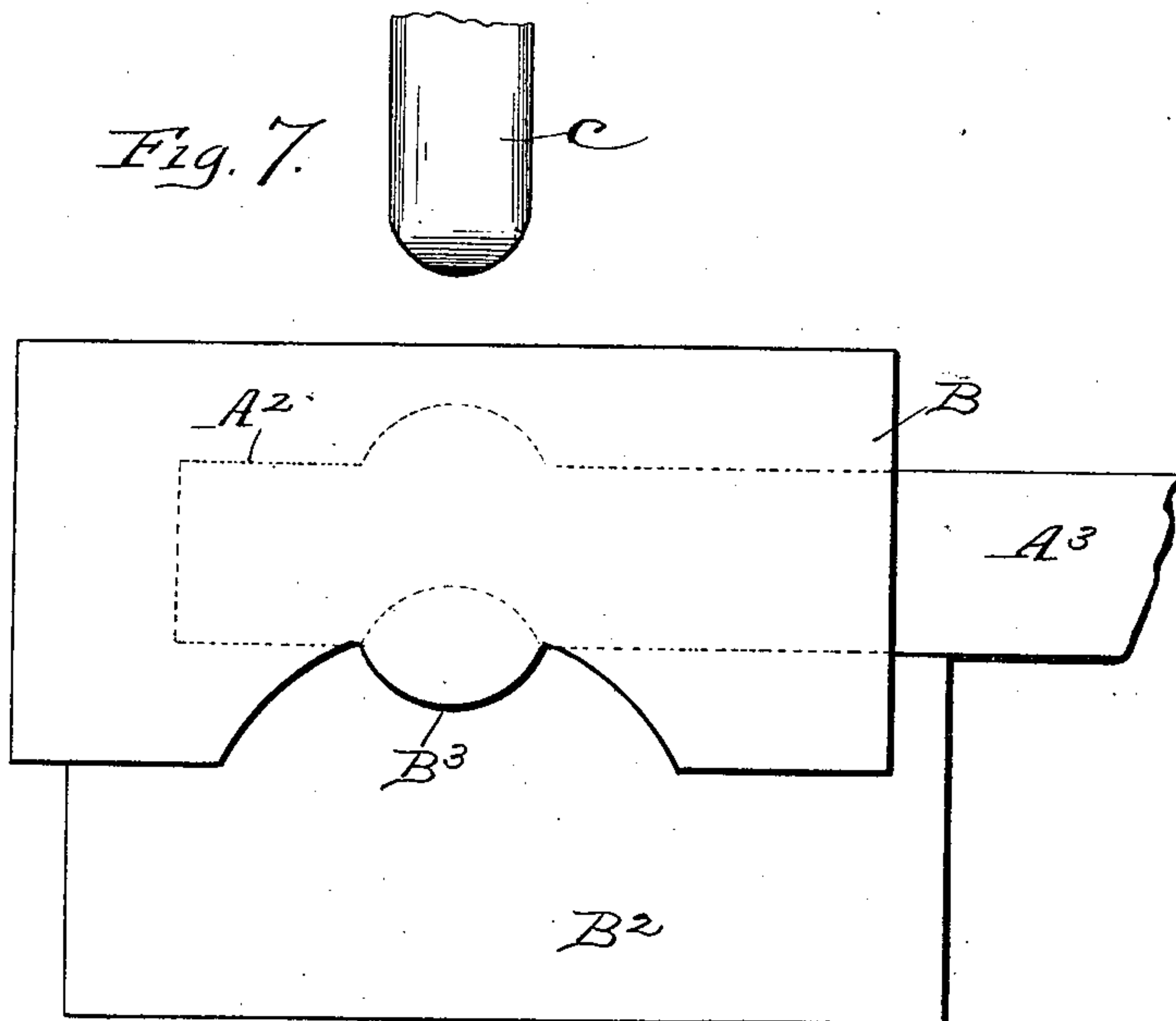


Fig. 8.

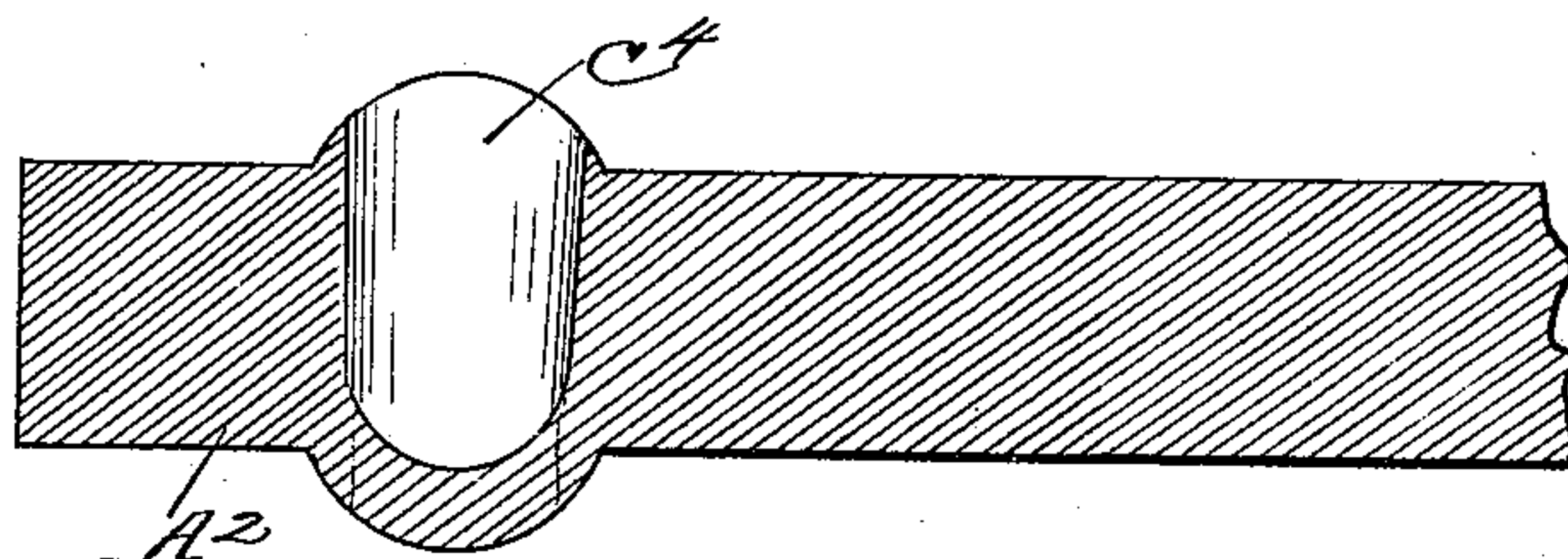


Fig. 9.

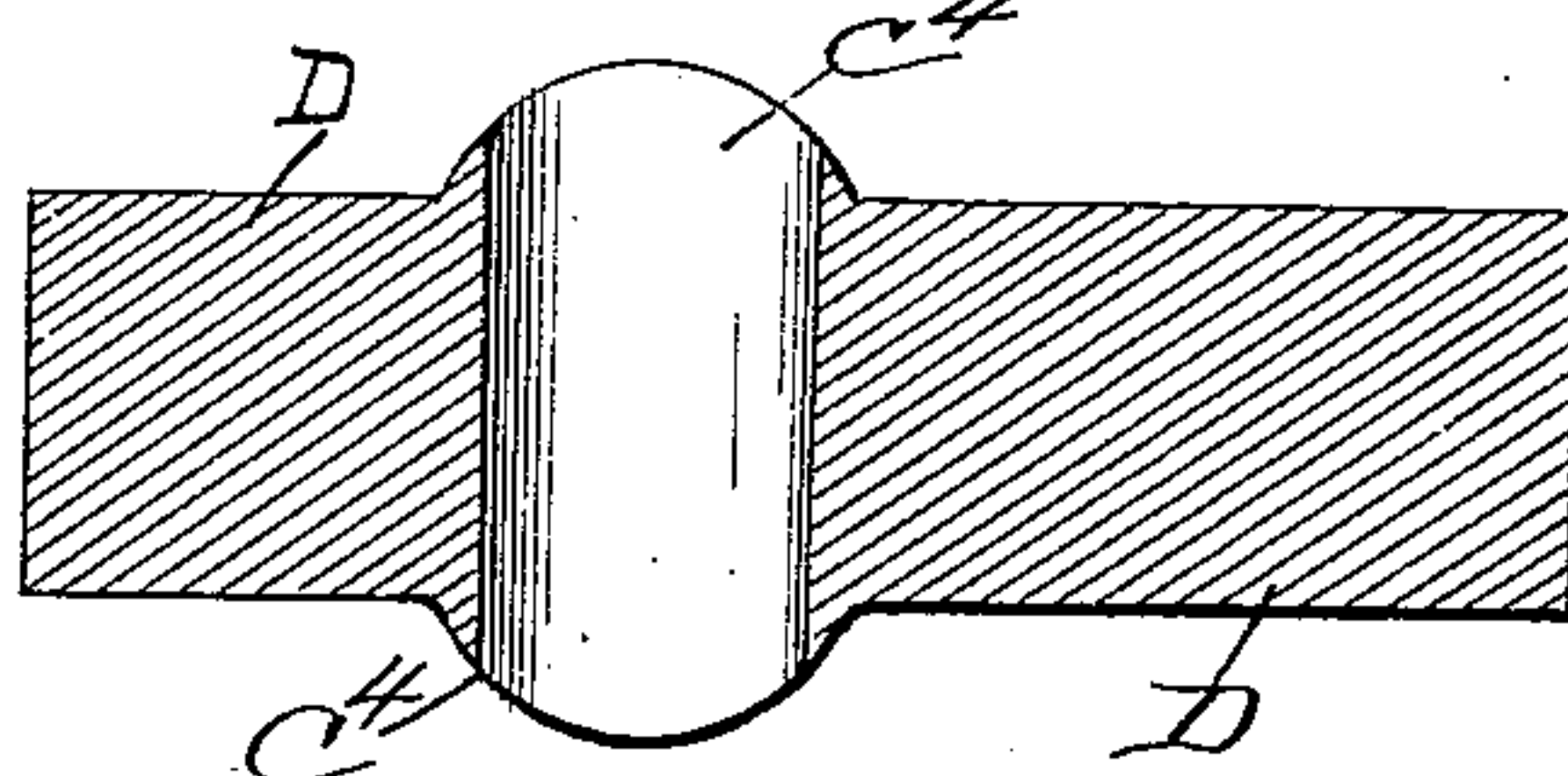
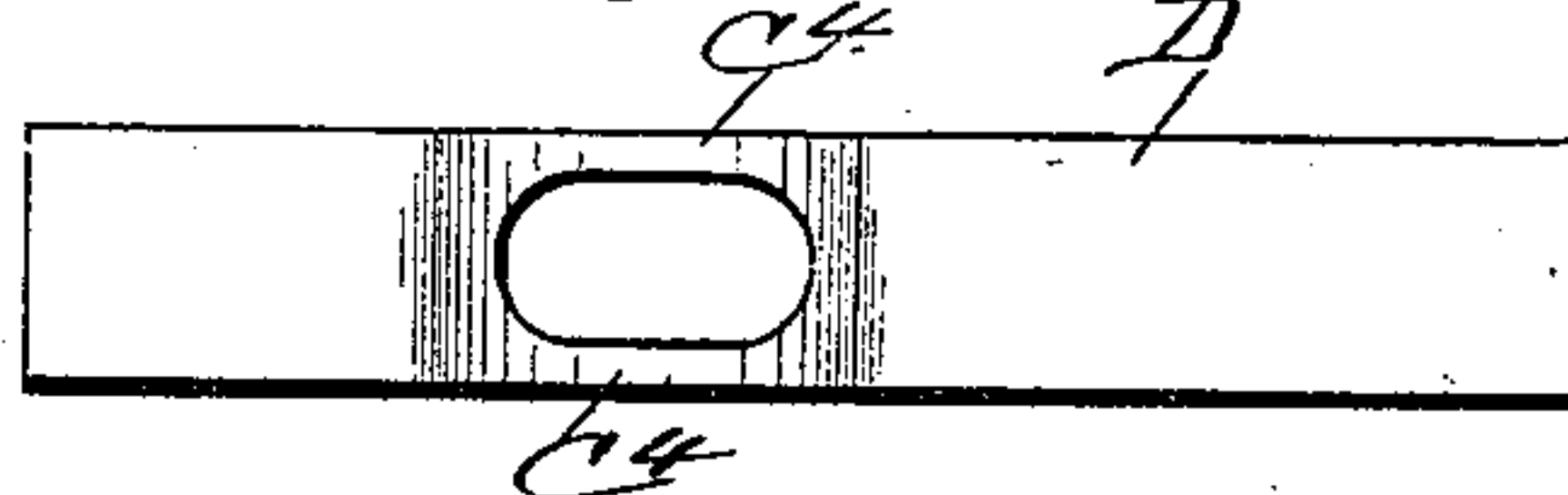


Fig. 10.



Witnesses:  
C. H. Curtis.  
C. H. Curtis.

Inventor:  
Ethan Rogers  
By  
Moses Curtis  
Atty



# UNITED STATES PATENT OFFICE.

ETHAN ROGERS, OF BALLSTON, NEW YORK.

## METHOD OF MAKING TOOL-BLANKS.

SPECIFICATION forming part of Letters Patent No. 566,937, dated September 1, 1896.

Application filed March 10, 1896. Serial No. 582,578. (No model.)

*To all whom it may concern:*

Be it known that I, ETHAN ROGERS, a citizen of the United States, residing at Ballston, county of Saratoga, and State of New York, have invented certain new and useful Improvements in the Method of Making Tool-Blanks, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in side elevation of a set of forming-dies, showing the relative positions of the two die-sections and metal bar required to partly form a hatchet-blank. Fig. 2 is a side view of the metal bar terminating in a partly-formed blank. Fig. 3 is a top plan view of the same. Fig. 4 is a top plan view of the supporting-dies for supporting the partly-formed blank while the eye is being punched. Fig. 5 is an end view of the same. Fig. 6 is a vertical cross-section of the same, taken on the broken line 6 6 in Fig. 4. Fig. 7 is a view in side elevation of the same, showing by dotted lines the partly-formed blank in position to be punched and showing the elevated punch. Fig. 8 is a central vertical longitudinal section of the blank with the eye partly formed. Fig. 9 is a similar view of the blank with the eye fully formed. Fig. 10 is a top plan view of the finished blank.

The dies and punch herein shown and described may be operated in a machine like that shown in United States Letters Patent No. 531,221, issued to me December 18, 1894, for improvements in machines for making ax-polls, to which patent reference may be had, and for that reason the mechanism for operating such dies and punch is not shown in this application.

A is the male and A' the female die employed for producing the partly-formed blank A<sup>2</sup> on one end of a straight metallic bar A<sup>3</sup>.

The operation to which the straight bar is

subjected in the dies A and A' results in forcing an intermediate portion of the bar out of line with its end portions, whereby one side of the bar is convexed and the opposite side concaved. The blank A<sup>2</sup>, having been thus partly formed, is inserted between the retaining-dies B and B', with the concaved side down and resting upon the forming-die B<sup>2</sup>, provided with the concavity or hollow B<sup>3</sup>, as shown in Fig. 5, the concavity of the blank being vertically above the concavity of the die.

A<sup>4</sup> and A<sup>5</sup> are stops on the dies against which one end of the bar is forced when it is acted upon by the dies. The punch C is then forced down through the center of the convexed portion of the blank into the blank sufficiently far to crowd the interior portion of the bar or blank down to the concaved side until the concavity of the forming-die is completely filled with the metal of the blank.

The concavity of the forming-die is preferably of such a shape as to thereby form on the concaved side of the blank and in the place of the concavity a convex portion of the same shape as the convexed portion first formed on the bar or blank.

The lateral retaining-dies serve to hold up and maintain the sides of the convexed portion first formed while the punch forces the interior portion of the bar toward the other side and to give proper shape to the sides of the convex portion formed on the concaved side of the bar.

The punch is not forced entirely through the bar, but is withdrawn after the forming-die is filled with metal, leaving the eye of the blank partly formed, as shown in Fig. 8. The bar or blank is then inverted and again inserted in the retaining and forming dies (shown in Fig. 4) and the punch forced down through the side of the bar which is now uppermost into the aperture first formed.

The operation of inverting the blank and inserting the punch may be repeated until a well-formed eye is produced and the four lips C<sup>4</sup> are made uniform in size and shape.

I am thus able to provide a tool-blank D with a well-formed eye and with four accurately-formed lips, two on each of the two opposite sides of the blank and two on each of the two opposite sides of the eye-aperture.

My improved method requires less time and



labor and insures a better product than previously-employed methods.

5 The two lips formed on the concaved side of the bar are fully developed while the eye-aperture is being formed, and the forming-die insures perfect accuracy and uniformity.

10 When the bar is inverted, the lips on the convex side are also made to conform to the shape of the forming-die, which insures accuracy and uniformity in all four lips.

The metallic bar is preferably heated to a high degree before it is treated with the punch and dies.

15 After the blank is fully formed it is cut off from the bar and may be finished up in the form of a tool in any known manner.

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

20 1. The method of making tool-blanks which consists in forcing an intermediate portion of a metal bar out of line with its end portions, whereby one side of the bar is provided with a projection extending beyond the surface lines of the ends of the bar, forcing the middle and interior parts of the projection to the  
25 opposite side of the bar by means of an eye-forming punch, thereby forming an eye-aper-

ture, with projecting lips, through the projection, and completing the eye-aperture by forcing the punch through the bar, substantially as described. 30

2. The method of making tool-blanks which consists in forcing an intermediate portion of a heated metal bar out of line with its end portions, whereby one side of the bar is convexed and the opposite side concaved, pushing the interior portion of the heated bar into and beyond the hollow of the concaved side while the bar is supported by forming-dies, by forcing an eye-forming punch through the convexed portion into the bar, then withdrawing the punch, inverting the bar, and forcing the punch from the opposite side of the bar into the opening first made by the punch, whereby an eye-aperture is formed in the poll of the tool-blank, and lips are formed on opposite sides of the eye and on opposite sides of the bar, substantially as described. 40 45

In testimony whereof I have hereunto set my hand this 3d day of March, 1896.

ETHAN ROGERS.

Witnesses:

GEO. A. MOSHER,

FRANK C. CURTIS.