

(No Model.)

H. M. BRINKMAN.  
DIE FOR FORMING BARS FOR CULTIVATOR TEETH.

No. 459,357.

Patented Sept. 8, 1891.

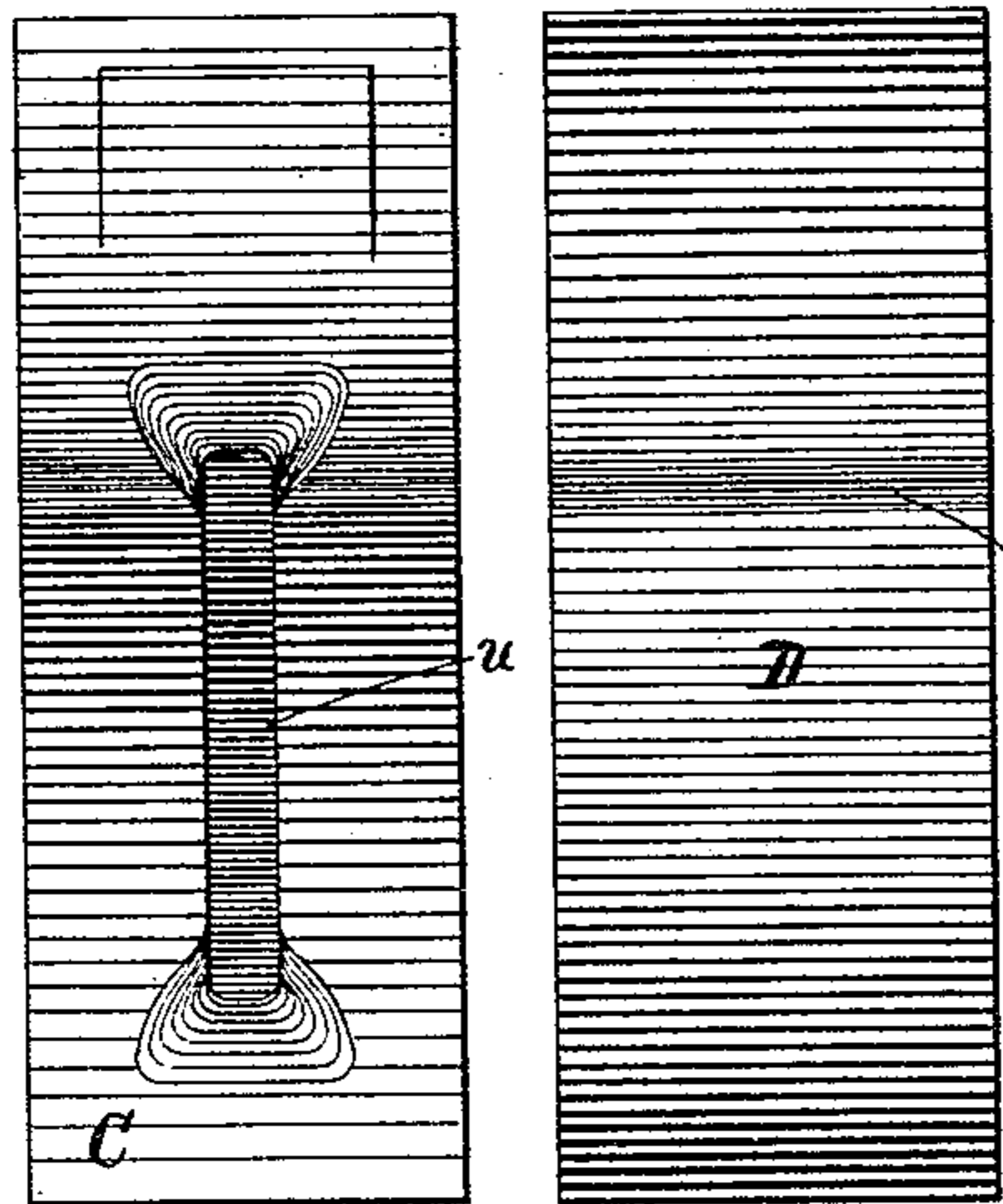


Fig. 6

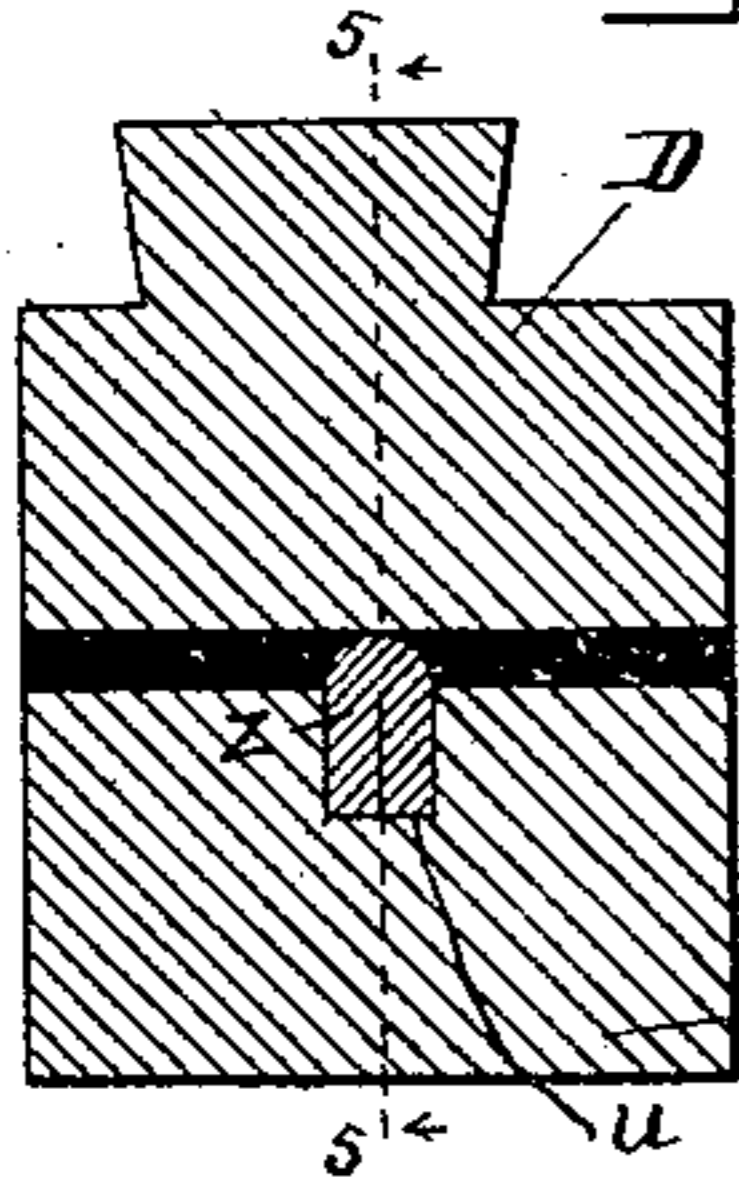


Fig. 7

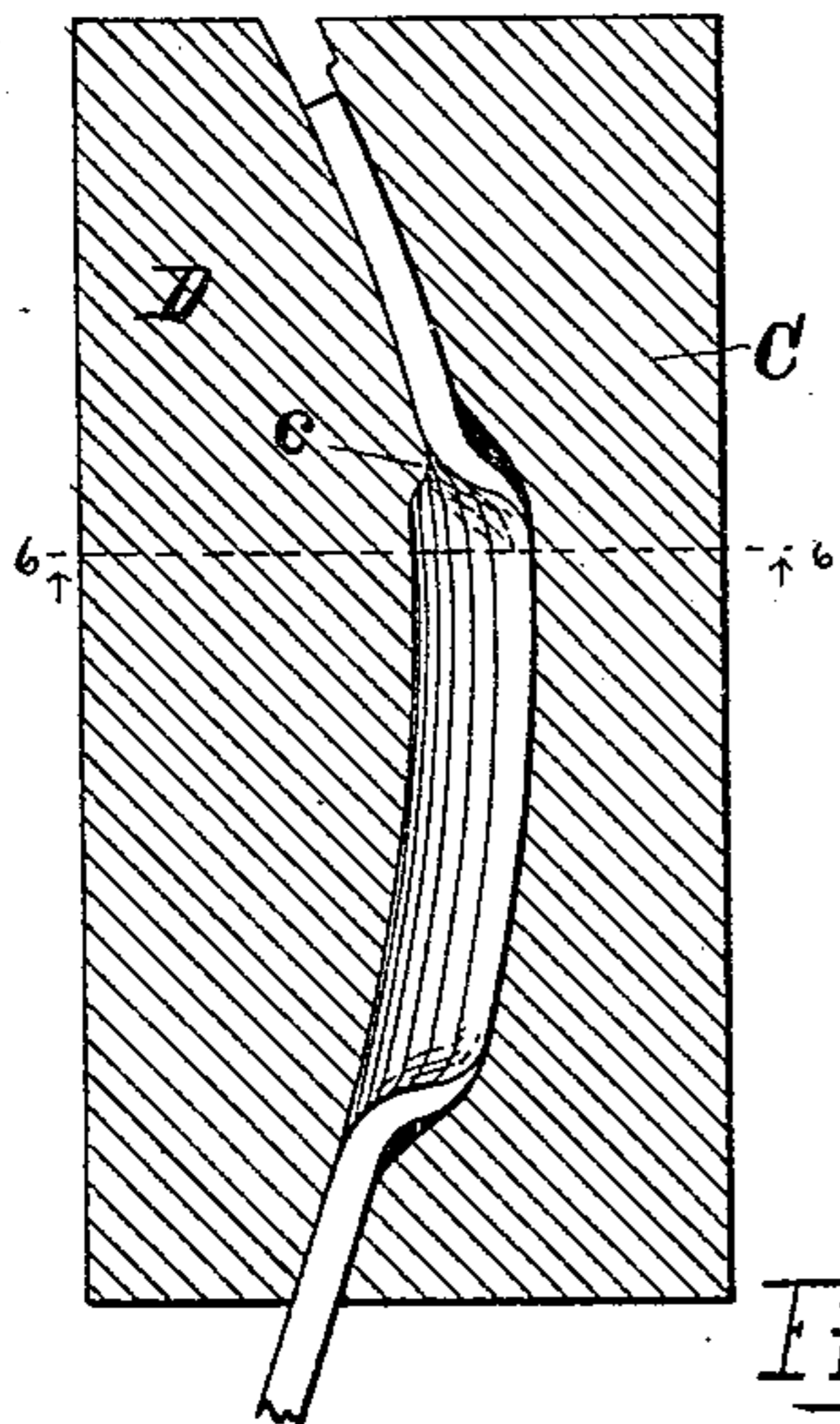


Fig. 8

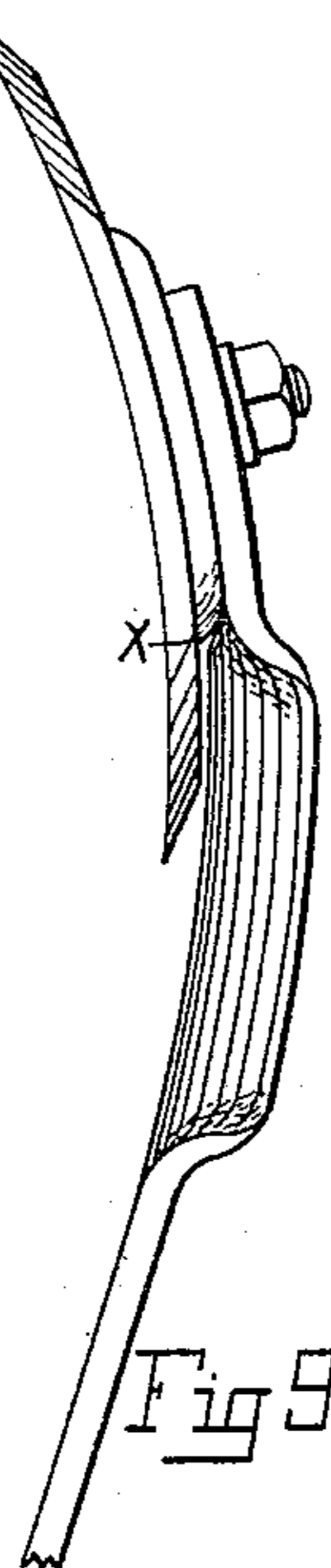


Fig. 9

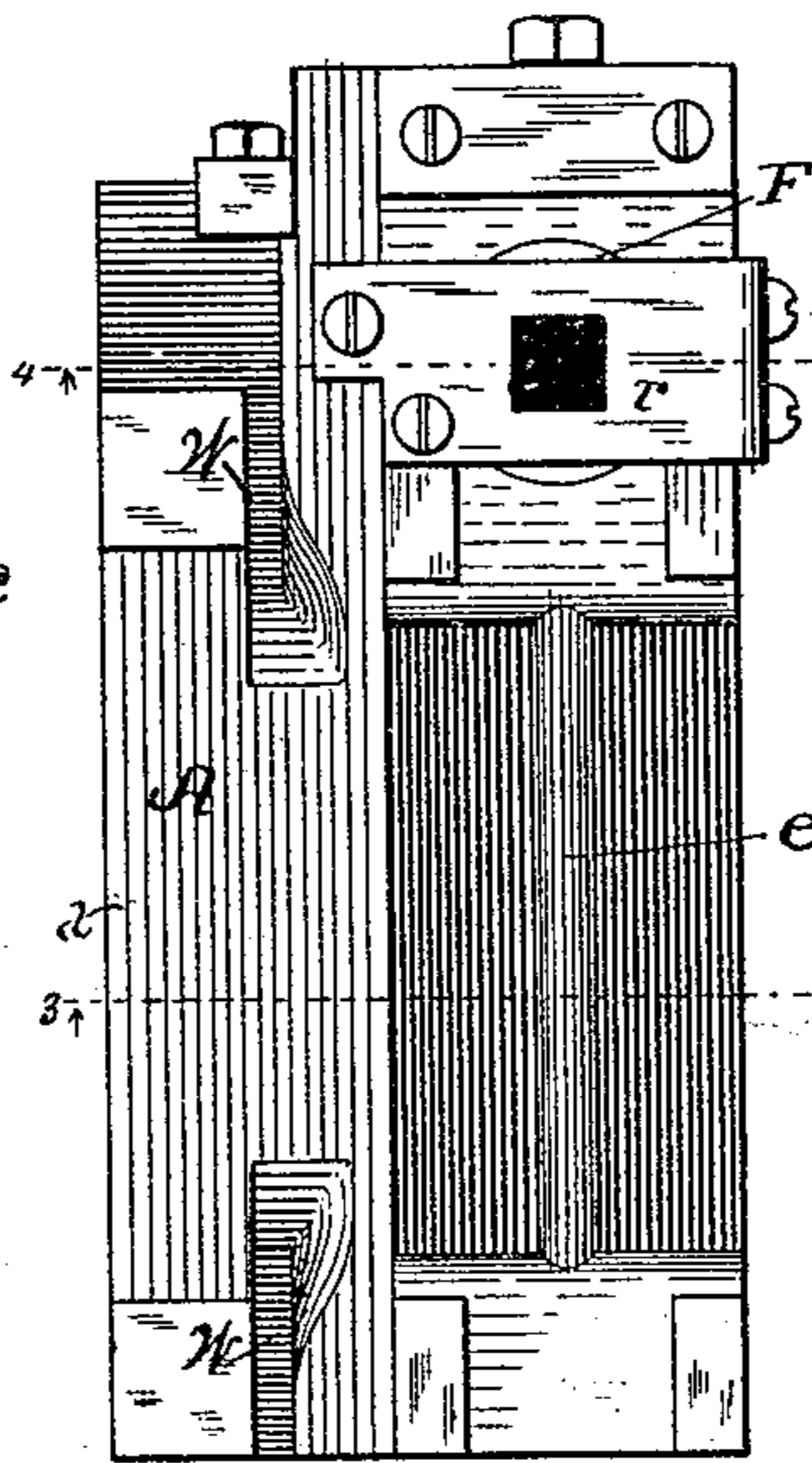


Fig. 1

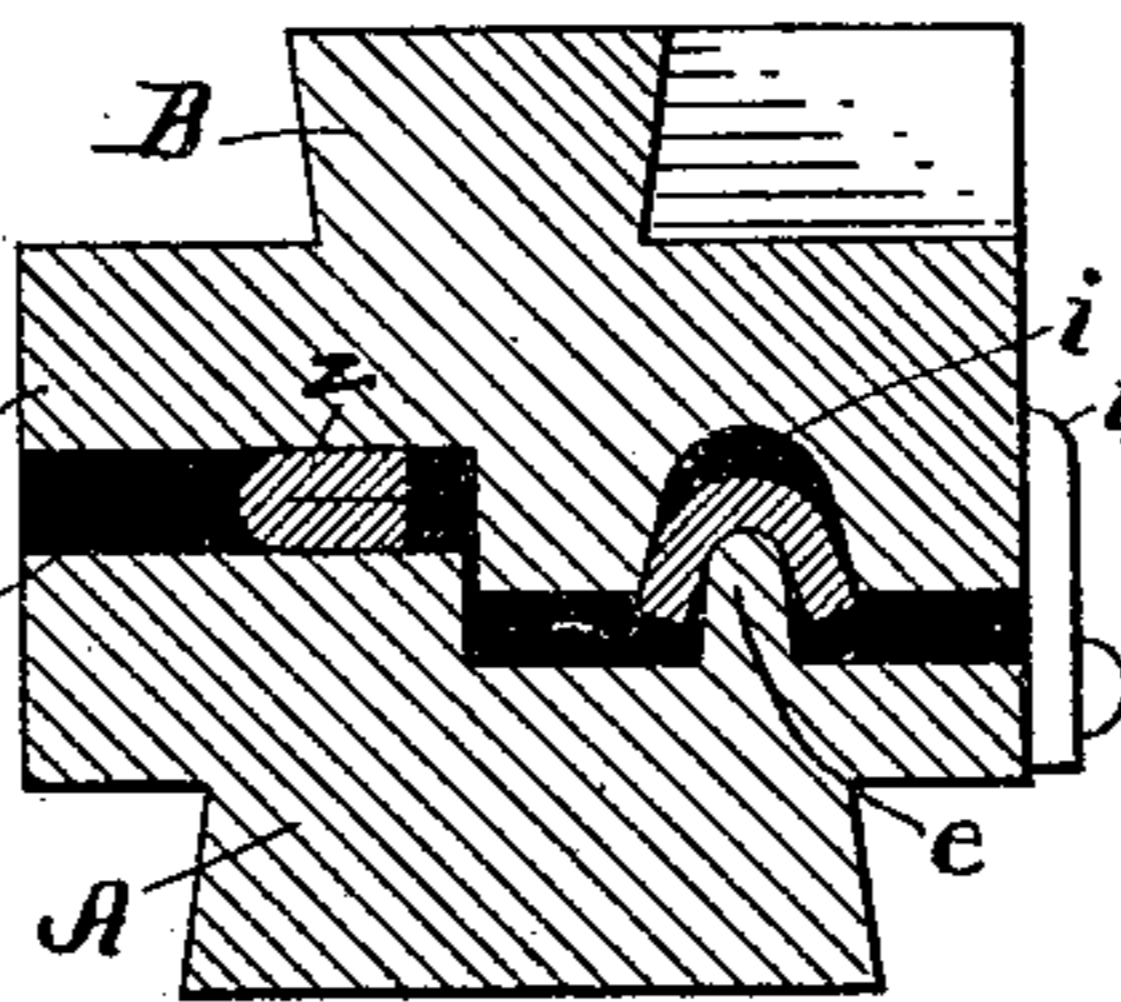


Fig. 2

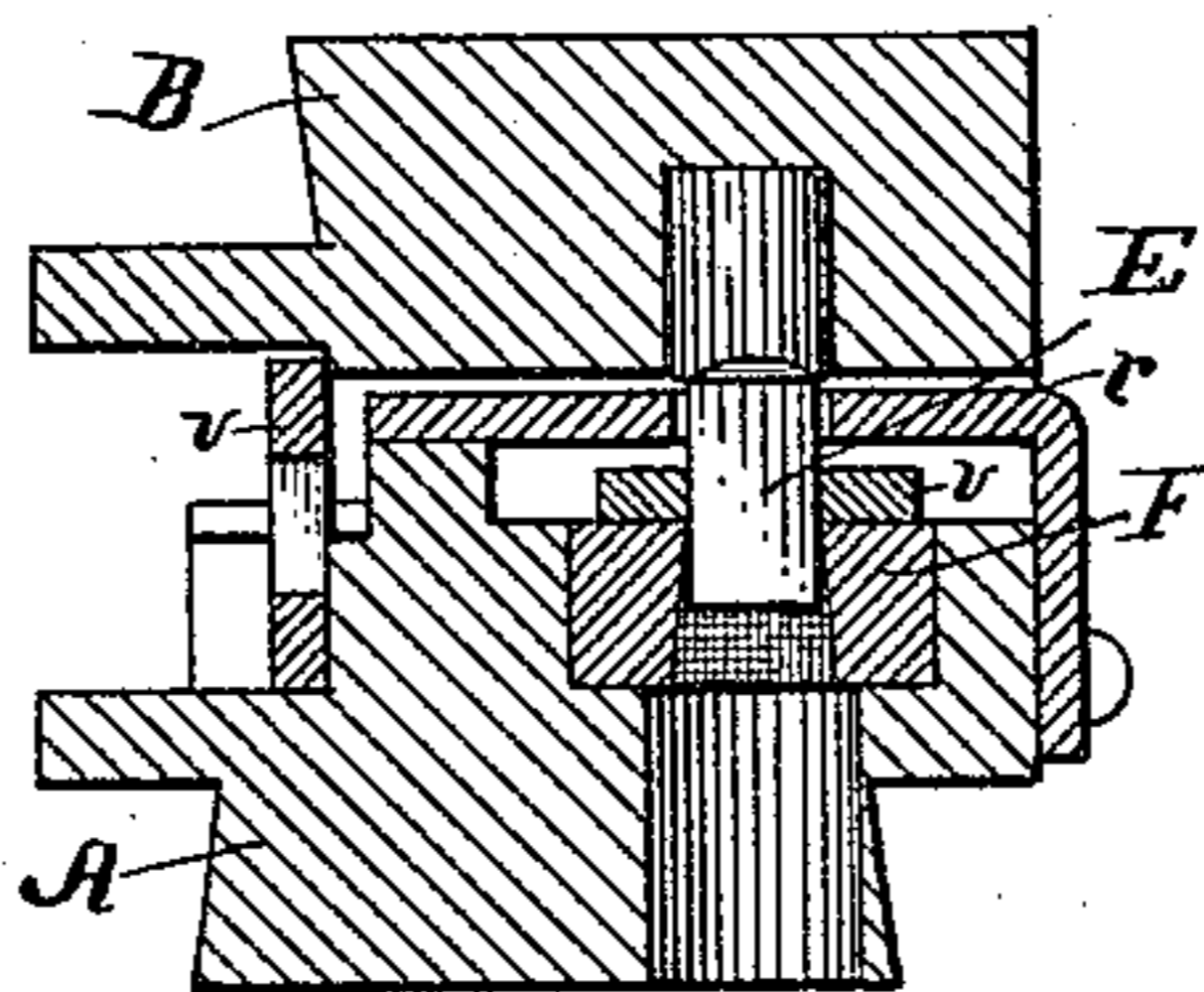


Fig. 3

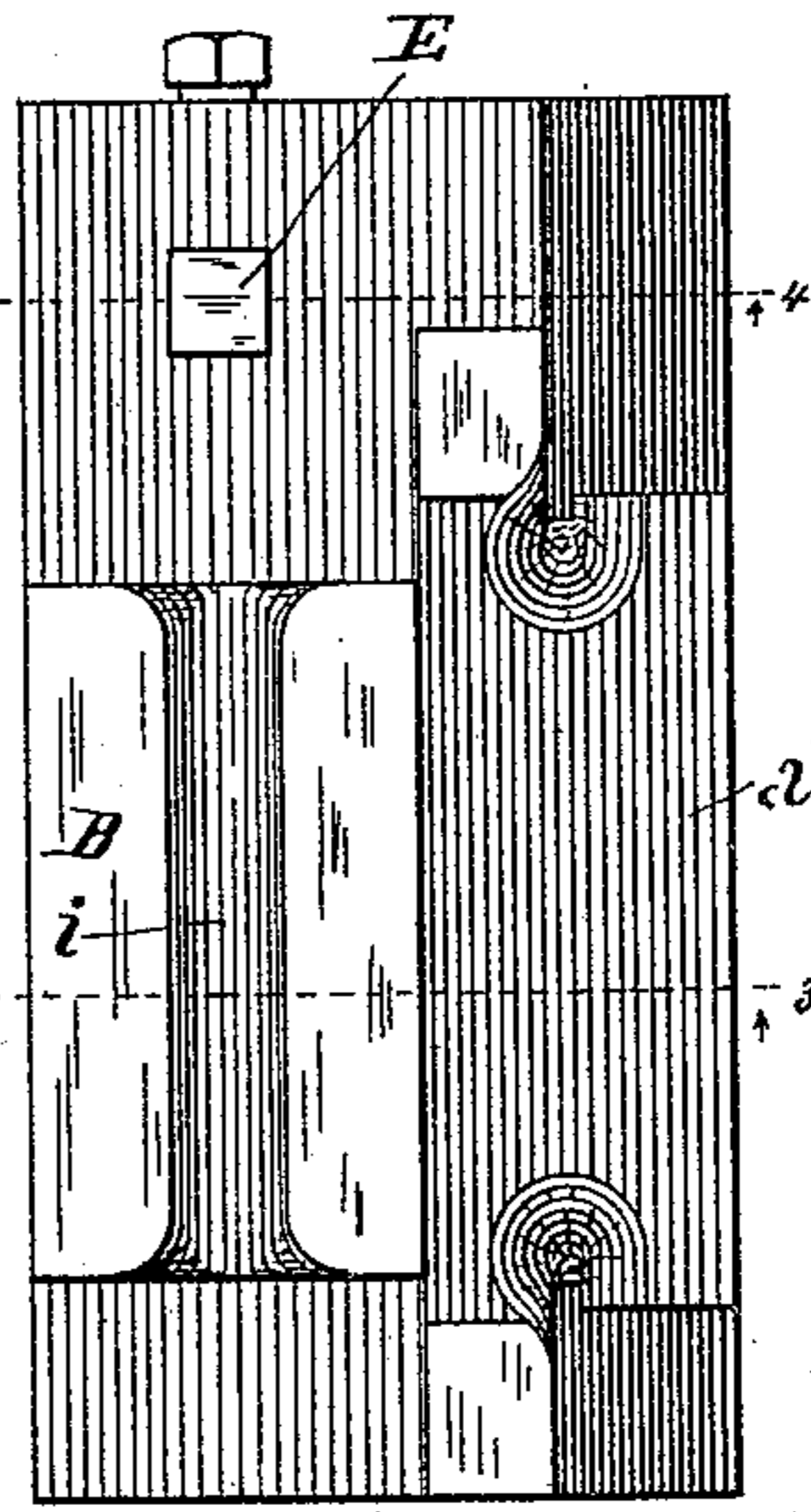


Fig. 4

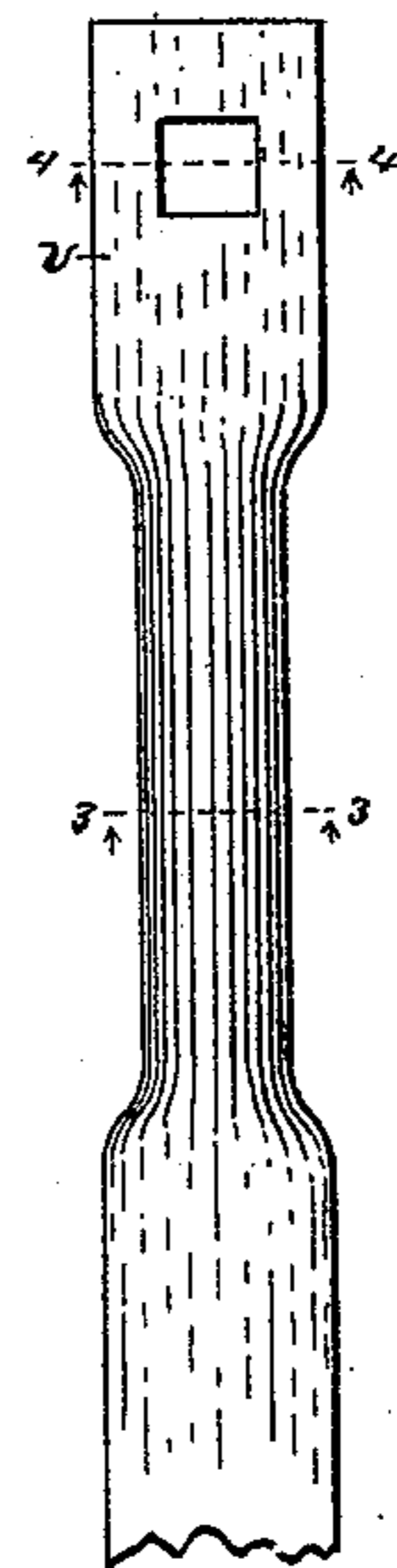


Fig. 5

Witnesses:

Walter S. Wood  
Edith L. Perkins.

Inventor.

Herman M. Brinkman  
By Lucius C. West  
Att'y.

# UNITED STATES PATENT OFFICE.

HERMAN M. BRINKMAN, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO THE  
HARROW SPRING COMPANY, OF SAME PLACE.

## DIE FOR FORMING BARS FOR CULTIVATOR-TEETH.

SPECIFICATION forming part of Letters Patent No. 459,357, dated September 8, 1891.

Application filed April 20, 1891. Serial No. 389,667. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN M. BRINKMAN, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Die for Forming Bars, of which the following is a specification.

This invention has for its object the below-described and claimed construction of dies, which are adapted to form peculiarly-shaped bars for harrow or cultivator teeth, to which bars said teeth are to be attached.

In the drawings forming part of this specification, Figure 1 is a plan view of an upper and lower die employed in two of the operations in forming said bars. Fig. 2 is a section on line 3 3 in Figs. 1, 4, and 5, showing the operation. Fig. 3 is a section on line 4 4 in said Figs. 1, 4, and 5, further illustrating the operation. Figs. 4 and 5 shows the bar in elevation, showing its different shapes. Fig. 6 shows a plan view of an upper and lower supplemental die employed in the operation, and which will be described below in connection with the rest of the description. Fig. 7 is a section of the dies in Fig. 6, taken on dotted line 6 6 in Fig. 8. Fig. 8 is a section taken on dotted line 5 5 in Fig. 7, and Fig. 9 shows the complete bar with a share attached.

Referring to the lettered parts of the drawings, A represents a die provided with a rib *e*, with a flat surface each side and at each end of said rib, said flat end surfaces being on a level with the top of the rib, and of course the side surfaces being below and a raised shelf *a* at one side.

At B is shown the upper die, having a concaved portion or groove *i*, which, when in use, fits over the rib *e* of the die A. The upper die B has a flat portion *a'*, which, when the dies are in use, is directly over the shelf or flat portion *a* of the die A. At one end of the lower die A is a plate *r*, having a hole therethrough adapted to receive the punch E, which punch is carried by die B, and passed down through said hole and enters the punch-die F in said end of the die A during the operation, in order to punch a hole through the end *v* of the cultivator-tooth bar, said bar be-

ing shown more particularly in Figs 4, 5, and 9, and the hole referred to being shown in Fig. 5.

By the use of the dies shown in Figs. 1, 2, and 3 the bars are formed in the shapes shown in Figs. 2, 4, and 5. To accomplish this the operation is as follows, supposing, of course, that the die B is to be brought to bear upon the die A in the relationship shown in Fig. 2: A flat bar of metal is placed on the die A directly over the rib *e* and extending beneath the punch-hole in plate *r* and over the hole in the punch-die F, said die F being in the end of the die A. Pressure is then brought to bear upon die B, which forces said die in contact with die A, forming a portion of the bar in U shape, as illustrated in Fig. 2. Ordinarily the die B is then raised and the bent portion of the bar is laid on the shelf *a*, the straight portions of said bar being inserted in grooves *w*, formed in each end of the shelf *a*, as shown in Fig. 1, Fig. 3 showing the end *v* of the bar in one of said grooves. Pressure of the dies is then brought to bear upon the bar, which flattens the U-shaped part of the bar and presses the sides together, as shown at *z* in Fig. 2. In Fig. 2 these two operations are shown as being performed at one time, which might be done in some instances; but ordinarily, as stated, the groove *i* and rib *e* first form the bar in U shape under one pressure, and then the same bar is laid upon the shelf *a* and pressed together under another pressure. After these two operations have taken place the bar is bent into a curved shape, as illustrated in Figs. 8 and 9, in order to adapt it to the special use in connection with cultivator-teeth. This latter operation of curving the bar is accomplished by means of the dies C D, one of them C being provided with a square groove longitudinally convex to receive the upset portion of the bar in an edge-wise manner, as shown in Fig. 7. At the end of this groove *u* the dies are made curving, the curvature of one of the dies running parallel with the other, as shown at Fig. 8. The upper die D is provided with a shoulder *c*, projecting downwardly toward the groove *u* at one end of said groove, in order to form an offset to conform to the shape of the culti-

vator-tooth at the point  $x$  in Fig. 9. Thus by means of the dies C D the bar is given a general curvature desired for its particular use.

In other uses in cultivators the bar might be left in the condition it is in when treated by the dies A B; but for the special use referred to, which need not be particularly described, the bar should be also treated by the dies C D.

While I have referred to the dies as "upper" and "lower," of course it will be understood that they may operate side by side and move laterally, or the order here shown reversed.

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

1. Dies for shaping cultivator-bars, consisting of one die having a longitudinal rib endwise between two flat surfaces on a plane with the upper edge of said rib, and a shelf at one side having grooves in each end parallel with said rib, and another die having a groove adapted to register with the rib of the other die, and a flat surface adapted to register with the shelf of the latter-named die, substantially as set forth.

2. Dies for shaping cultivator-bars, consisting of one die having a longitudinal rib endwise between two flat surfaces on a plane with the upper edge of said rib, and a shelf at one side having grooves in each end parallel with said rib, and another die having a groove adapted to register with the rib of the other die, and a flat surface adapted to register with the shelf of the latter-named die,

one of said dies being provided with a punch-hole at one end on a line with said rib, and the other die being provided with a punch in position to register with said hole, substantially as set forth.

3. The combination of dies for shaping cultivator-bars, consisting of one die having a longitudinal rib endwise between two flat surfaces on a plane with the upper edge of said rib, and a shelf at one side having grooves in each end parallel with said rib, and another die having a groove adapted to register with the rib of the other die, and a flat surface adapted to register with the shelf of the latter-named die, and two other dies having longitudinal registering-surfaces, one of which is convex and the other concave, the die having the concave surface also being provided with a square groove between its two ends, substantially as set forth.

4. Dies for curving a bar longitudinally, a portion of which bar has been folded edge-wise upon itself, consisting of a die having a longitudinal concave surface with a groove between its two ends and a die having a longitudinal convex surface provided with a shoulder or offset near one end of said groove, substantially as set forth.

In testimony to the foregoing I have hereunto subscribed my name in the presence of two witnesses.

HERMAN M. BRINKMAN.

Witnesses:

W. P. BURDICK,  
A. R. TROWBRIDGE.