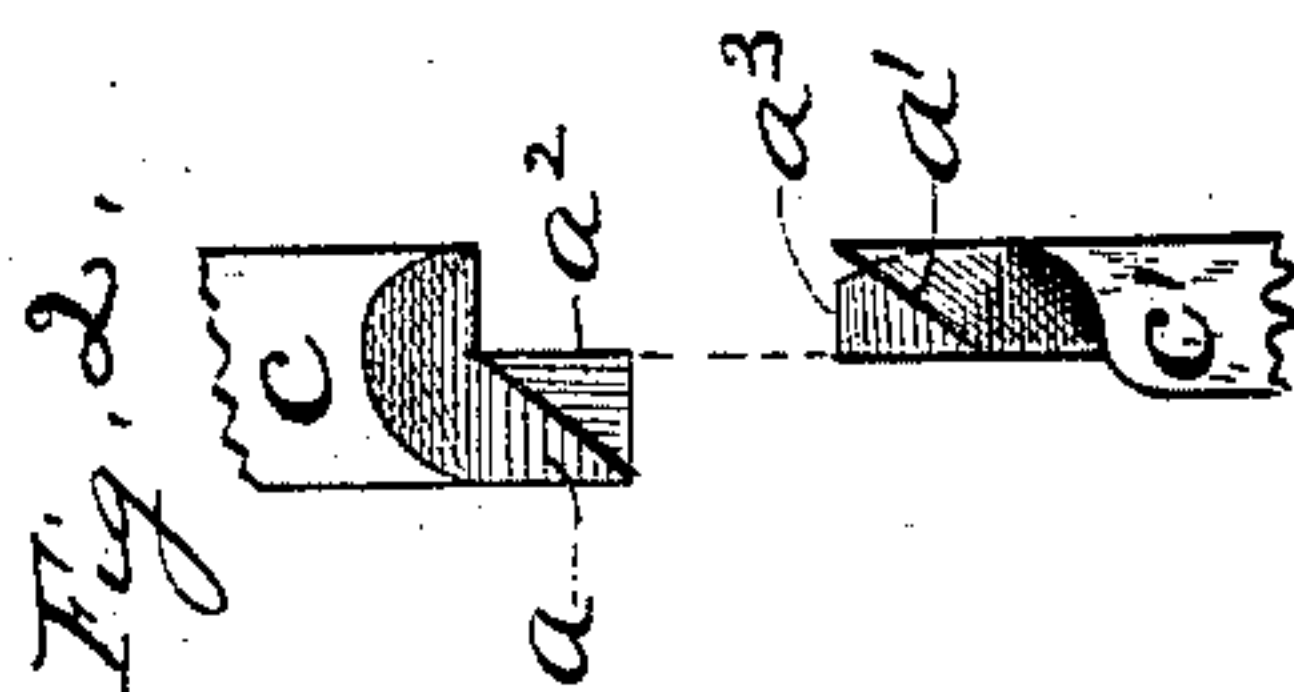
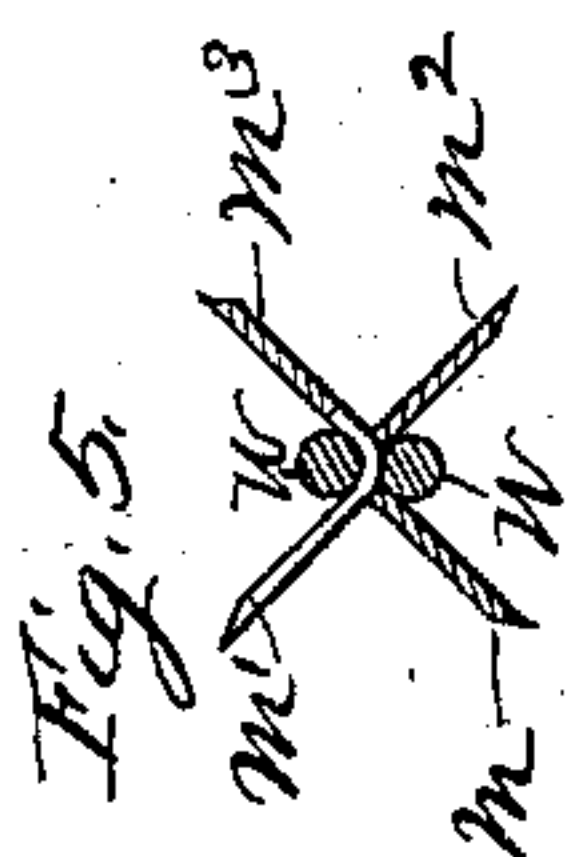
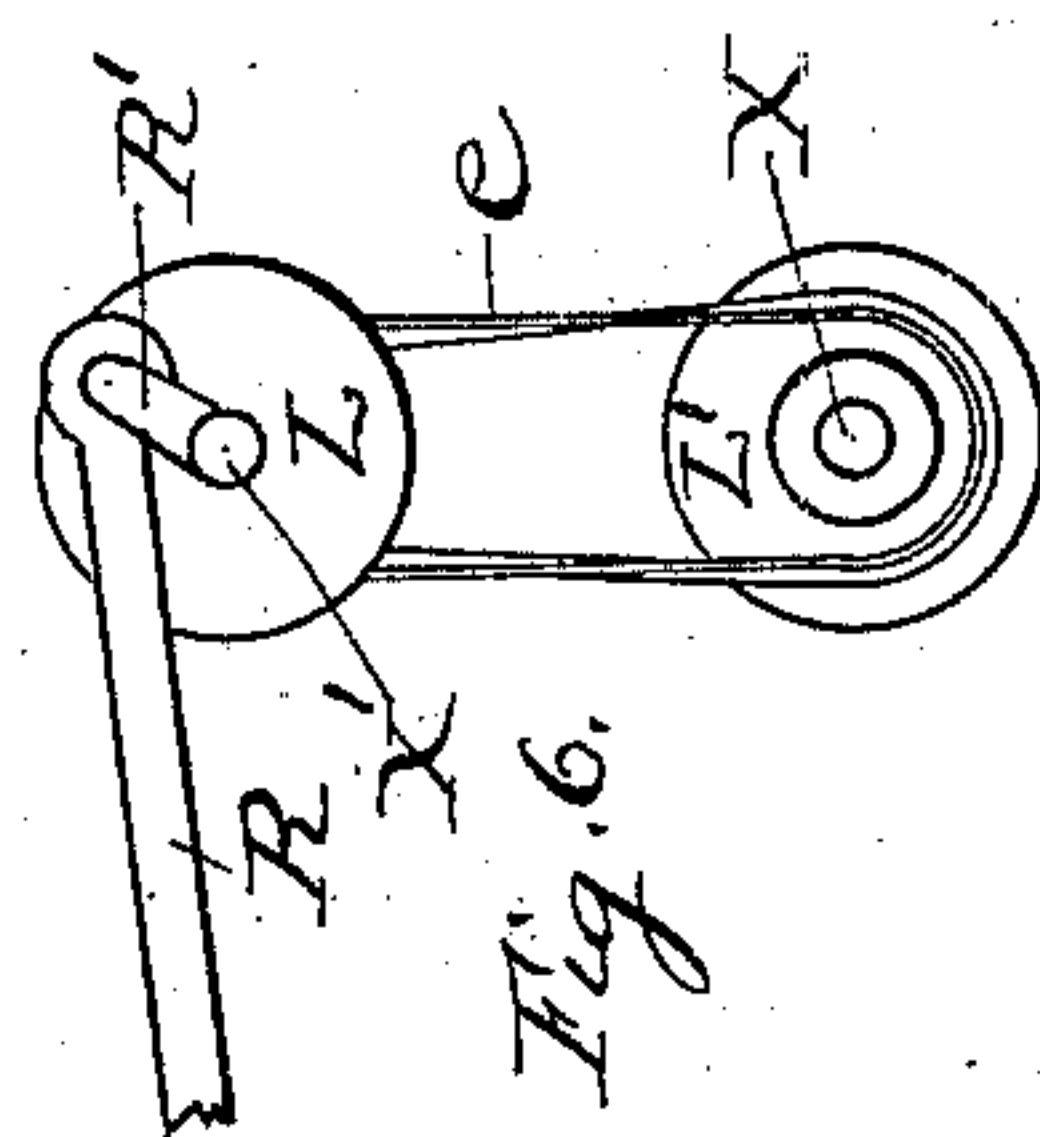
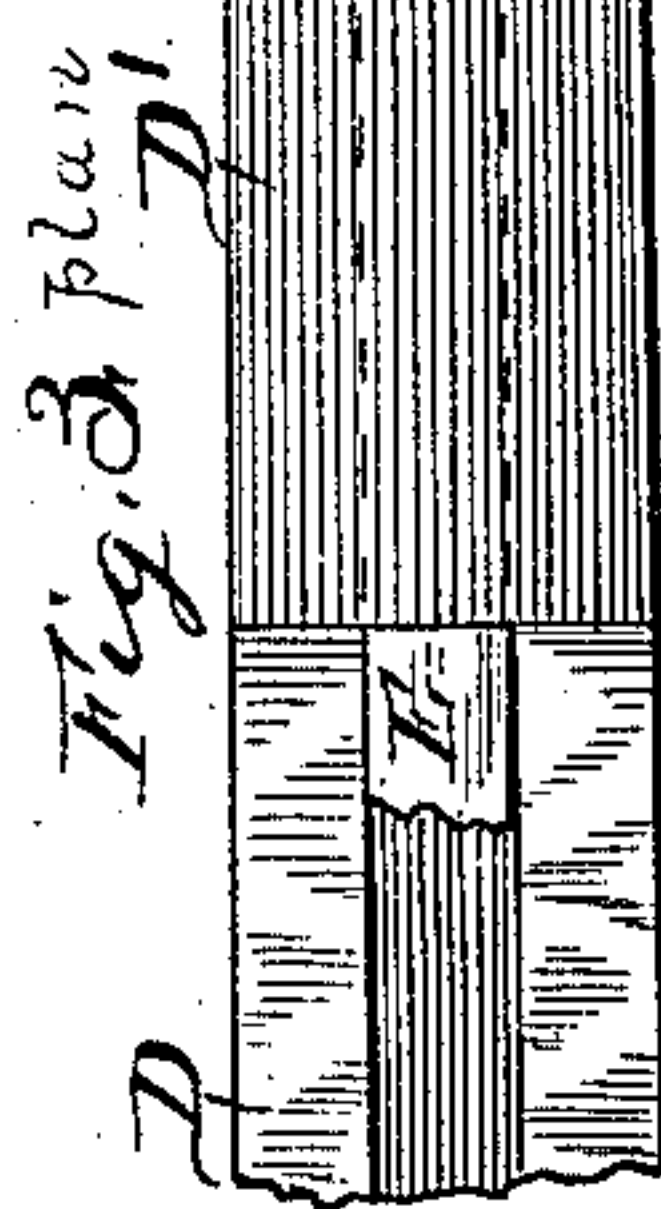
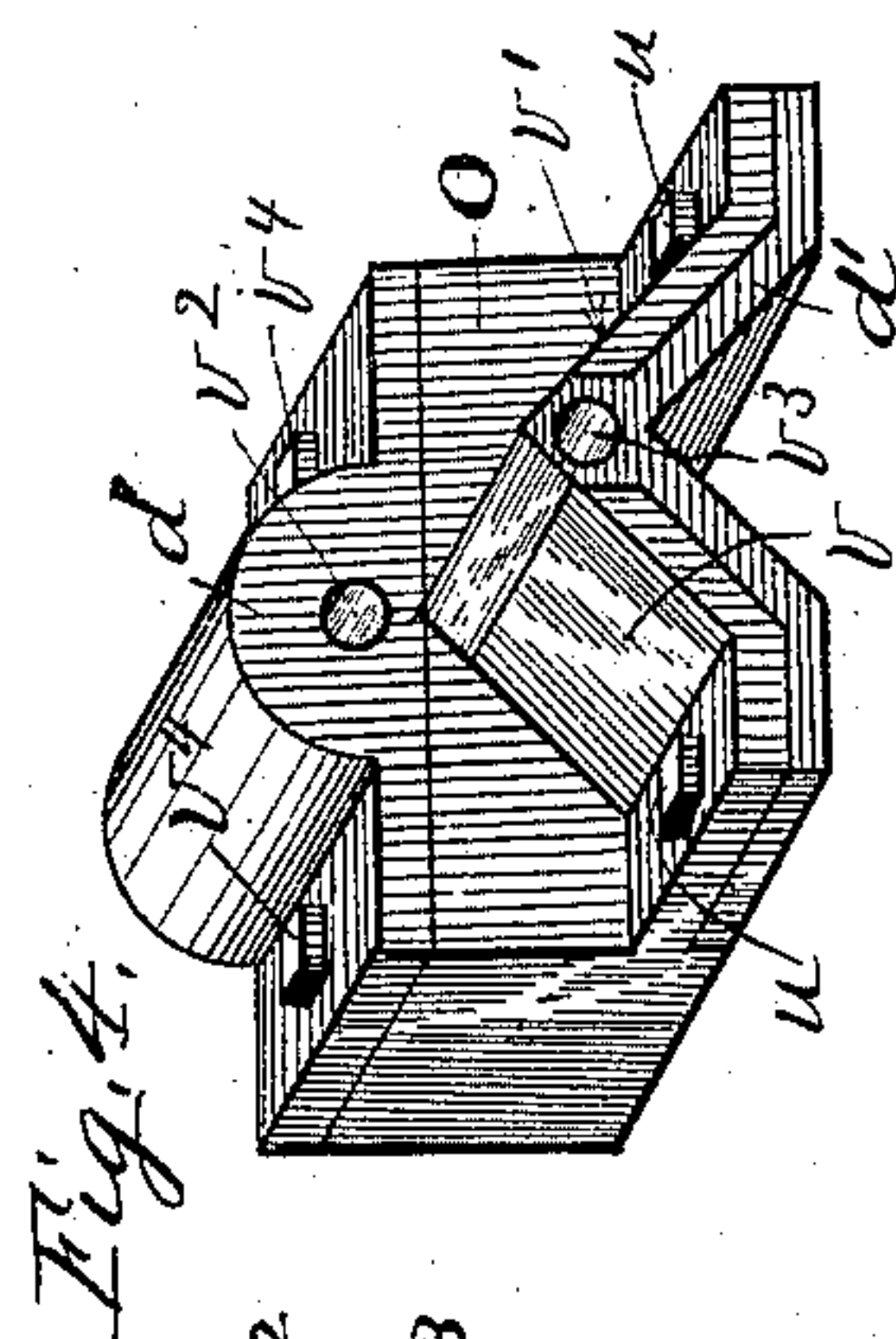


2 Sheets—Sheet 1.

No. 314,481.

Patented Mar. 24, 1885.



Witnesses, *Shos H. Hutchins,*  
*Wm J. Hutchins.*

Inventor,  
James C. Ross.

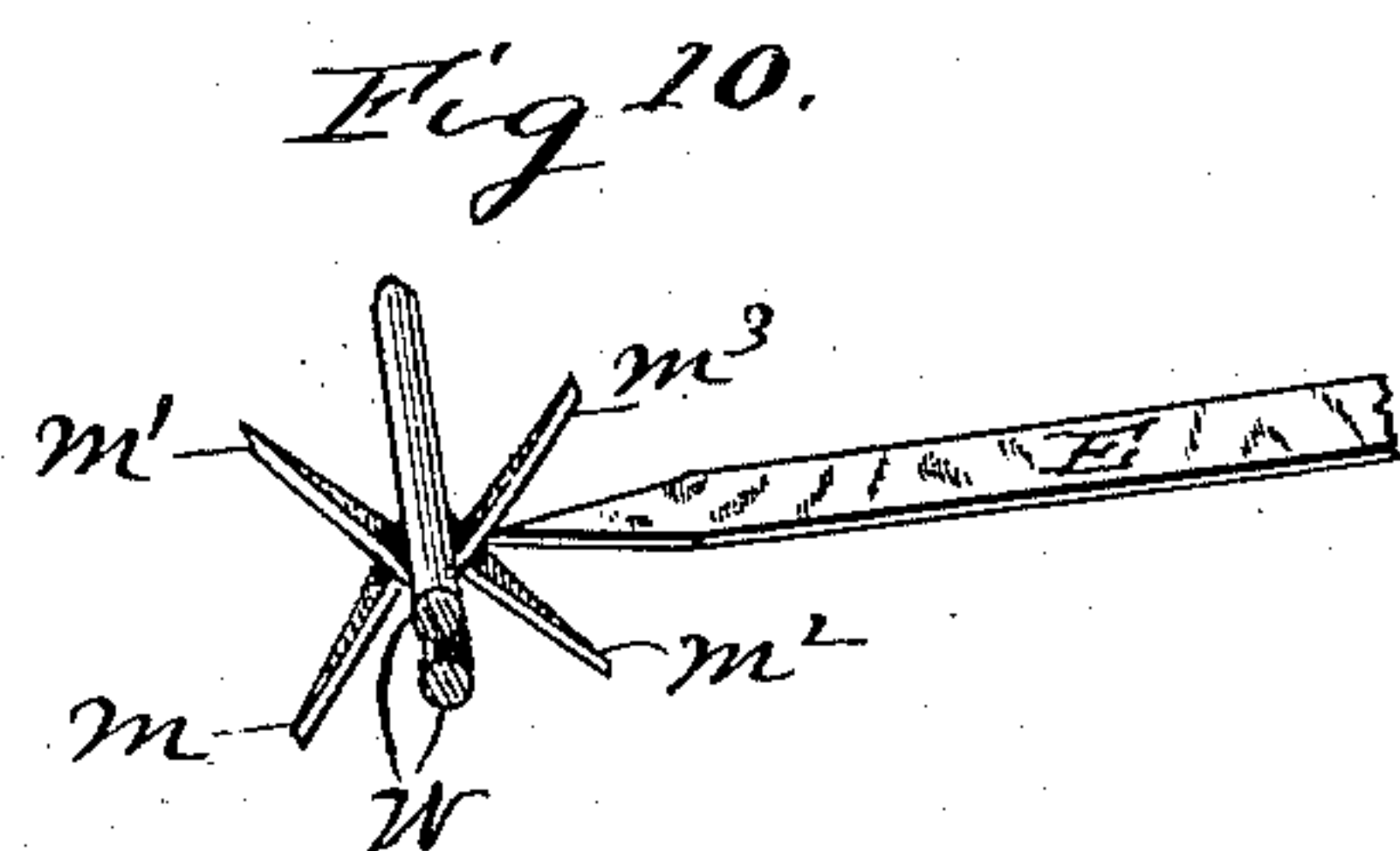
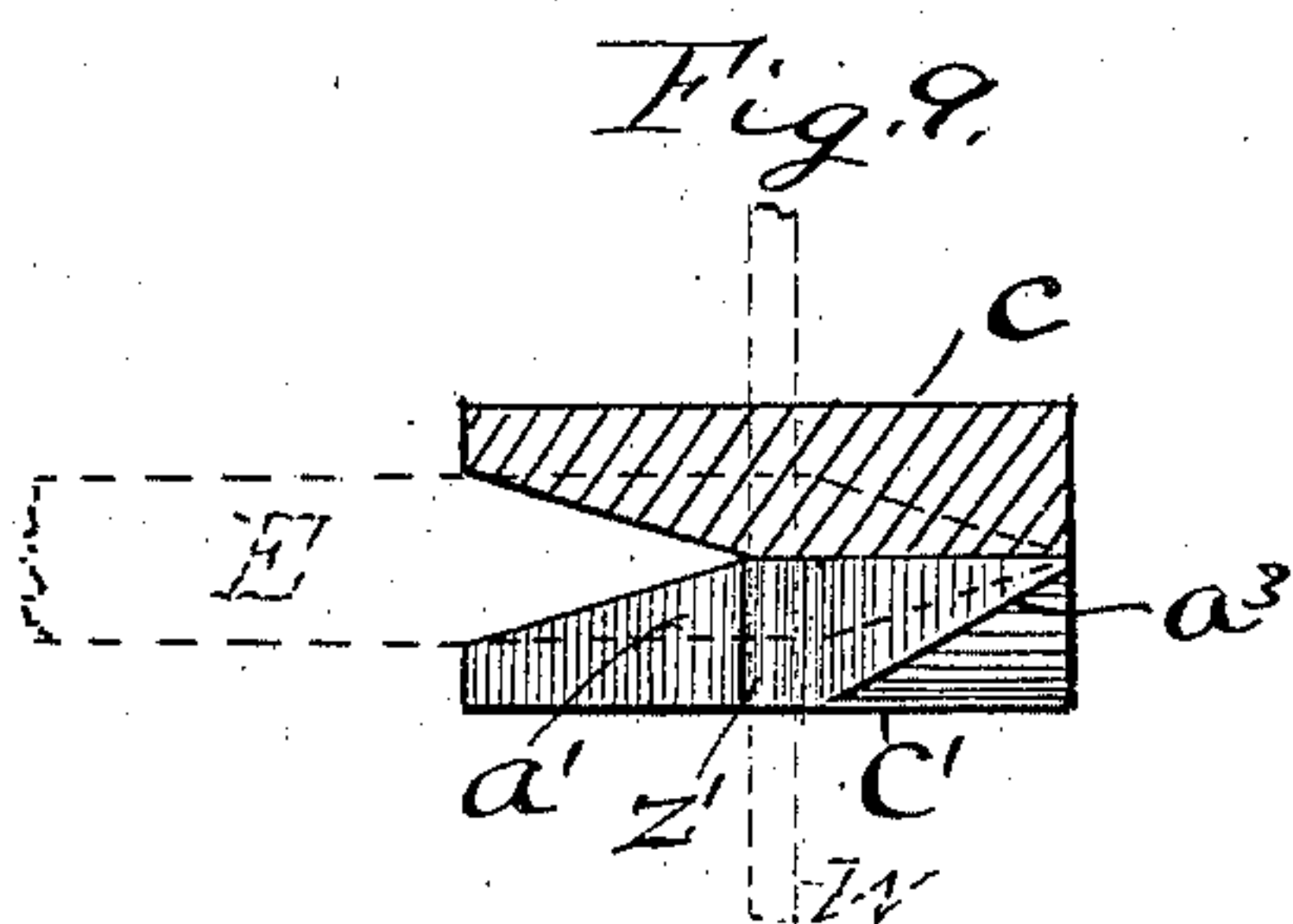
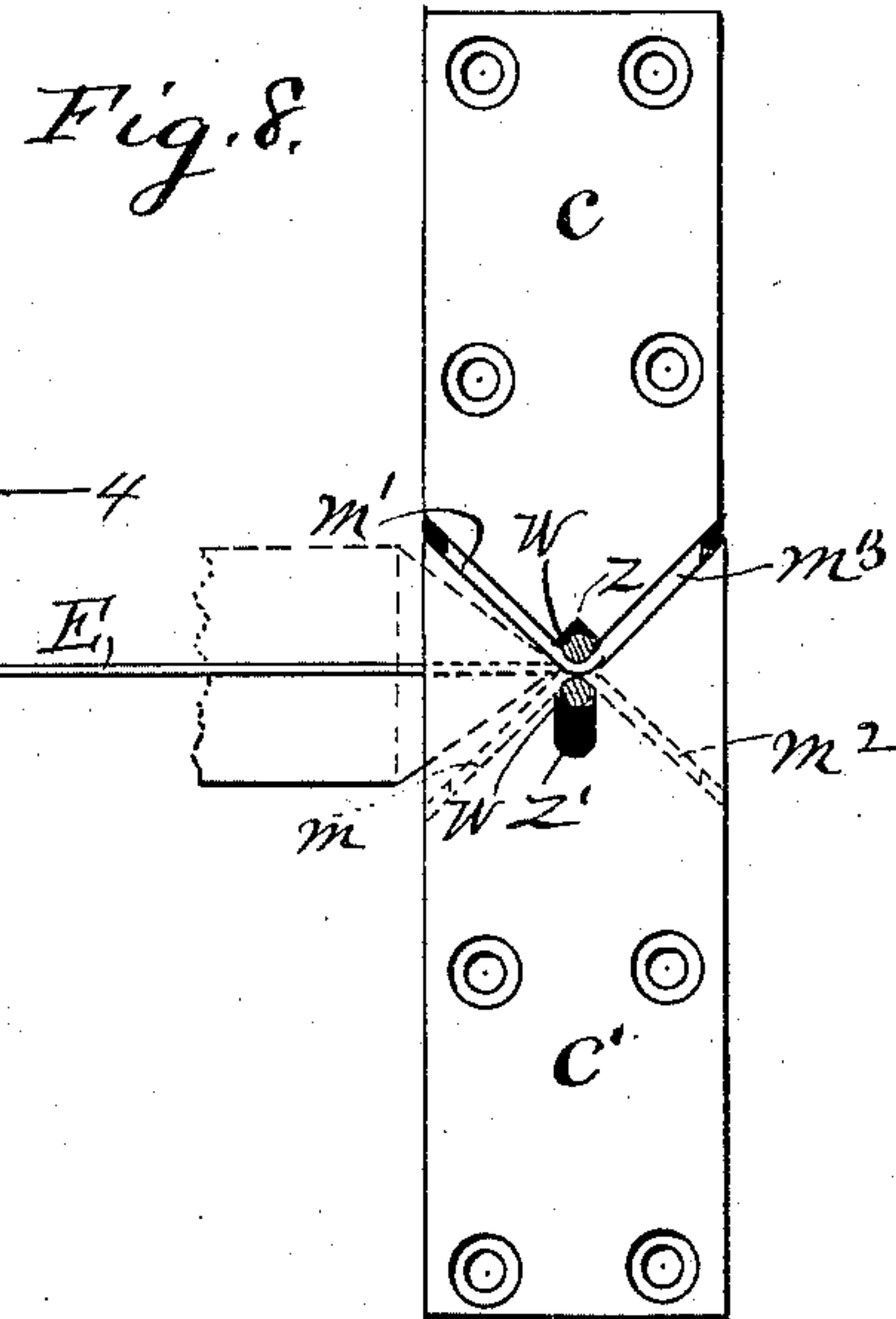
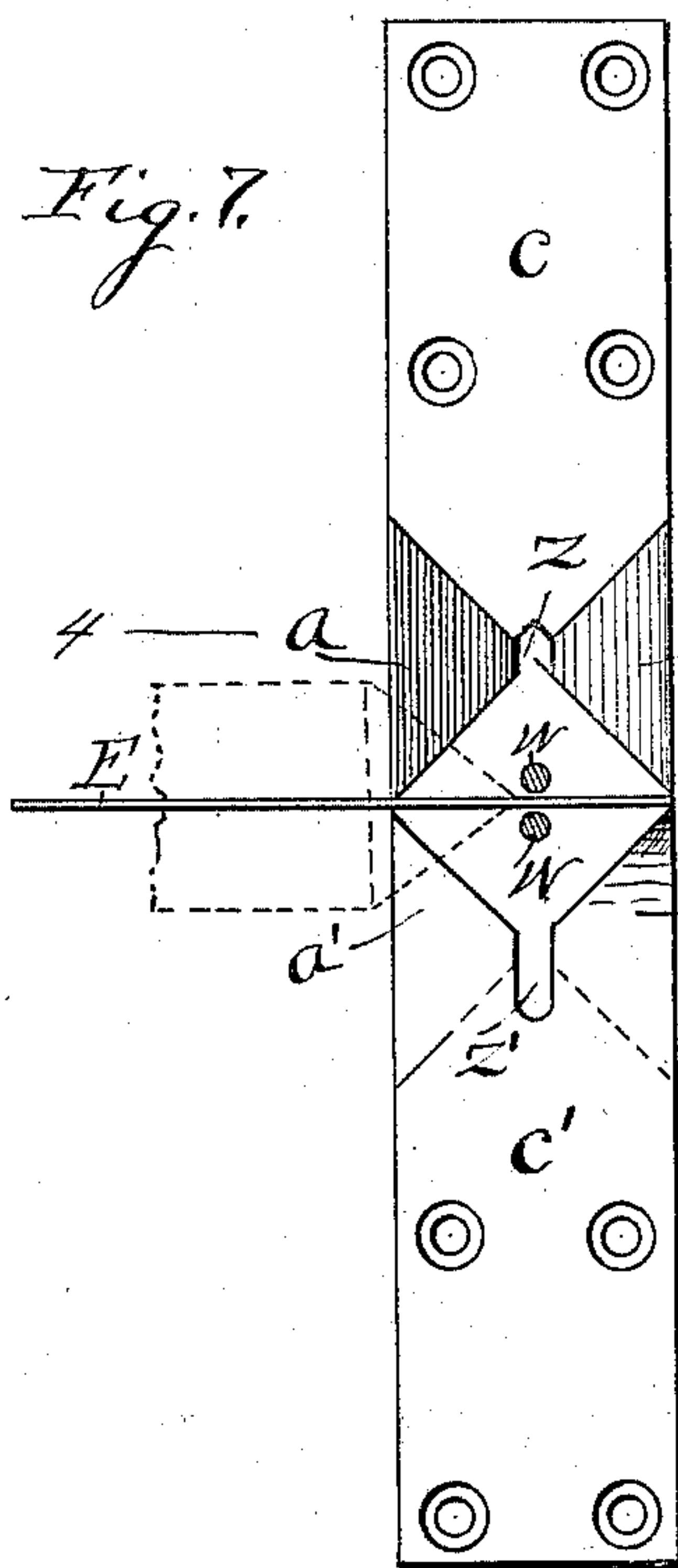
(No Model.)

2 Sheets—Sheet 2.

J. C. ROSS.  
WIRE BARBING MACHINE.

No. 314,481.

Patented Mar. 24, 1885.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JAMES C. ROSS, OF JOLIET, ILLINOIS, ASSIGNOR OF ONE-HALF TO JAMES B. SPEER, OF SAME PLACE.

## WIRE-BARBING MACHINE.

SPECIFICATION forming part of Letters Patent No. 314,481, dated March 24, 1885.

Application filed November 12, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES C. ROSS, a citizen of the United States of America, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Wire-Barbing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a perspective view of the machine set up ready for use. Fig. 2 is a side view of the barb cutting and forming shear-punches, looking at them on the side on which they are approached by the barb-strip. Fig. 3 is a top plan view of the shear-dies between which the barbing-strip is conducted to the shear-punches, and also shows the manner in which the barbing-strip enters between the strand-wires before it is sheared and formed into a barb. Fig. 4 is a perspective view of the head-block, which, in conjunction with the upper shear-punch, furnishes means for forming the two rear prods of the barb, and also shows the strand-wire guides adapted to be replaced by new ones when worn. Fig. 5 is a cross-sectional view of the two strand-wires in front of the barb after it has been cut, formed, and placed in between the strand-wires. Fig. 6 is a side view of the pair of cone-pulleys connected by a belt, the shaft of the upper one having a crank formed thereon to drive a pitman to operate the feed and the two parallel punches. Fig. 7 is a face view of the shear-punches, showing them apart and ready to advance toward each other to close on the barb-strip to cut and form a barb. Fig. 8 is a similar view of said shear-punches closed upon the barb-strip and having cut and formed a barb. Fig. 9 is a cross-sectional view on line 4 of Fig. 7, looking down, showing a cross-section of the two cutting portions of the upper punch and the upper end of the lower punch; and Fig. 10, a perspective view of a finished barb as it appears between the strand-wires at the instant of its formation.

This invention relates to certain improvements in a machine for automatically cutting or shearing, forming, and seating between a pair of cabled strand-wires a four-pointed flat

metal barb cut from a flat metal barbing-strip after the strip has been fed in between the strand-wires far enough to form a barb. The strand-wires are pulled across the machine between a pair of cutting and forming punches, and at right angles with the length of the barbing-strip, by means of a spooler in a twister-yoke, (not necessary to be shown,) in such manner that the barbing-strip may enter between the strands.

Referring to the drawings, Fig. 1 shows a general view of the machine as it appears when ready for operation, with the exception of a spooler and twister to take the barbed wire out of the machine, which parts are not necessary to be illustrated or described, as they form no part of this invention, and a great variety of devices may be used for said purposes.

The principal part of this invention relates to that portion of the machine that cuts and forms the barb and seats it in between the two strand-wires.

Heretofore the usual practice has been to cut and form the barbs by a separate machine, and then set them in between the strand-wires by hand, by which process the barbs cannot be set at any regular distance apart or with safety to the operator.

The means shown for operating the barb cutting and forming parts may be varied in many ways; but the means shown will accomplish the purpose well enough to make the machine successful.

In the drawings, A represents the bed of the machine, which supports the working parts. To the standard  $P^2$  are pivoted a pair of arms, B B', to the outer end of which are respectively secured the cutting and forming punches C C'. A pair of posts, P and P', are arranged, one on either side of the arms B B', near their outer ends, which posts form a guideway to properly guide the arms B B', so that the shear-punches C C' will be held in working position between them. The two arms B B' are operated to move the shear-punches C C' to and from each other by means of the working-beam D<sup>4</sup>, pivoted at its center to stud-post P<sup>3</sup>. Each end of said working-beam has pivoted to its



side a slide (shown at H H') to slide in the rectangular boxes G G' on the inner edges of said arms. Said working-beam D<sup>4</sup> is caused to oscillate by means of the pitman R, pivoted at one end to said working-beam and attached at its opposite end to the crank R' of cone-pulley L. (Shown in Figs. 1 and 6.) A belt, e, connects cone-pulleys L L', and by shifting the belt e on said cone-pulleys greater or less speed can be given to the operating parts of the machine. When working-beam D<sup>4</sup> oscillates, it reciprocates the cutting-punches C C' on the outer ends of arms B B' to and from each other to cut and form a barb. The flat metal barbing-strip E is fed into the machine between the rollers S S' and between the dies D D', to emerge from between their cutting ends, and enters between the two strand-wires W, as shown in Figs. 1, 3, and 7. This barbing-strip is fed in intermittently far enough each time to form a barb by means of a dog-feed (shown at F, Fig. 1) operated by pitman R through the medium of lever F<sup>2</sup>. This lever F<sup>2</sup> is pivoted at f and integral with crank F', to which dog F is attached, and when said crank is oscillated it feeds forward the barbing-strip E far enough each time for a barb, as shown in Fig. 3. The rollers S S' may be rotated intermittently to feed forward the barbing-strip, if desired, and thus dispense with dog F.

At one side of the machine, and next to the shear-punches C C', is attached a block, O, (shown in Fig. 1 and in perspective in Fig. 4,) having strand-wire guides  $\bar{d}$  and  $\bar{d}'$ , which are detachably connected thereto, to be replaced by new ones when worn. The strand-wires pass through these guides through the holes  $v^2$  and  $v^3$ , respectively, from the side of the machine opposite to that shown in Fig. 1, between the two shear-punches C C', and far enough apart so that the barb-strip is fed in between them, as shown in Figs. 1, 3, and 7. The said shear-punches are provided with the grooves or recesses Z and Z', respectively, for the reception of the strand-wires when the punches close together to prevent their severing the strand-wires. When the barb-strip E has been fed in far enough to emerge from between the dies D and D' far enough to make a barb, and between the two strand-wires in the position shown in Figs. 3 and 7, the shear-punches move toward each other until they close upon the barb, as shown in Fig. 8. When they so close, the shear-point  $a$ , in conjunction with die D, shears the prod  $m$  of the barb and carries it downward on the former-bed  $v$  of block O and bends it in the form shown in Figs. 5 and 10. Shear-point  $a'$  in like manner, in conjunction with die D', shears the prod  $m'$  of the barb, and carries it upward against the inclined face of punch C and bends it in the form shown in Figs. 5 and 10, so the two points are spread apart, as shown in said figure, and the barb severed entirely loose from the barb-strip. When the two punches so close on the barb to cut and form the prods  $m$  and  $m'$ , as stated,

their shear-points  $a^2$  and  $a^3$  slit the opposite pointed end of the barb to form the other two prods,  $m^2$  and  $m^3$ . Shear-point  $a^3$  carries prod  $m^3$  upward against the inclined face of punch C and bends it in the form shown in Figs. 5 and 10, and shear-point  $a^2$  carries prod  $m^2$  downward on the former-bed  $v'$ , Fig. 4, and bends it in the form shown in Figs. 5 and 10, so that by one movement of said shear-punches, as stated, a complete four-pointed flat metal barb is formed and set between the two strand-wires in the form shown in Fig. 5. As soon as a barb is thus formed and set between the two strand-wires, the two strand-wires, by means of their frictional contact with the barb, on account of their being continually twisting together toward and on the barb, carry the finished barb, after it has been released from the shear-punches, along out of the way of the next succeeding barb. The strand-wires travel continuously through the machine, and are thus supplied with barbs as they travel and as they are being twisted together. Their twisting together at the time and after the barb is thus applied causes them to grasp the barb and prevent it from falling out. The distance the barbs are to be placed apart depends upon the velocity or speed at which the shear-punches are driven. Their speed is regulated by means of the cone-pulleys L and L' and belt e. By moving the belt from one side to the other the speed of the shear-punches may be either increased or diminished, and thus set the barbs nearer or farther apart. The dog shown in Fig. 1 at S<sup>4</sup> is for the purpose of preventing the backward movement of the barb-strip when dog F is moving back for a new grip. Dog S<sup>4</sup> is hinged at its upper end between the standards S<sup>2</sup> S<sup>2</sup>, which also support the rollers S S'. The distance the barb-strip is fed in at each feed is regulated by means of the arm F<sup>2</sup>. The upper end of said arm passes up between the pitman R and a strap on its side. (Shown by the dotted lines in Fig. 1.) The length of said strap determines the stroke of said arm. The finished product of the machine is shown in Figs. 5 and 10.

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

1. In a wire-barbing machine, the combination of the shear-punches C C', dies D D', block O, having the inclined forming-sides  $v$   $v'$ , and the means, substantially as shown and described, for operating said parts, as and for the purpose set forth.

2. In the wire-barbing machine described, the head-block O, having the removable strand-wire guides  $\bar{d}$  and  $\bar{d}'$  and inclined forming-sides  $v$   $v'$ , for the purpose set forth.

3. The combination of the bed A, arms B B', having the boxes G G', working-beam D<sup>4</sup>, pitman R, shear-punches C C', dies D D', head-block O, and the means, substantially as described, for operating said parts, as and for the purpose set forth.



4. In the machine described for cutting and forming flat metal barbs, the combination of the shear-punches C C' and the means described for operating them, head-block O, having the inclined forming-sides *v v'* and removable strand-wire guides *d* and *d'*, dies D and D', and the means described for feeding forward the barb-strip, as and for the purpose set forth.
5. In the machine described for forming flat metal four-pointed barbs, the combination of the shear-punches C C', head-block O, having the detachable strand-wire guides *d d'*, and dies D D', and the means described for operating said parts, substantially as and for the purpose set forth.

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