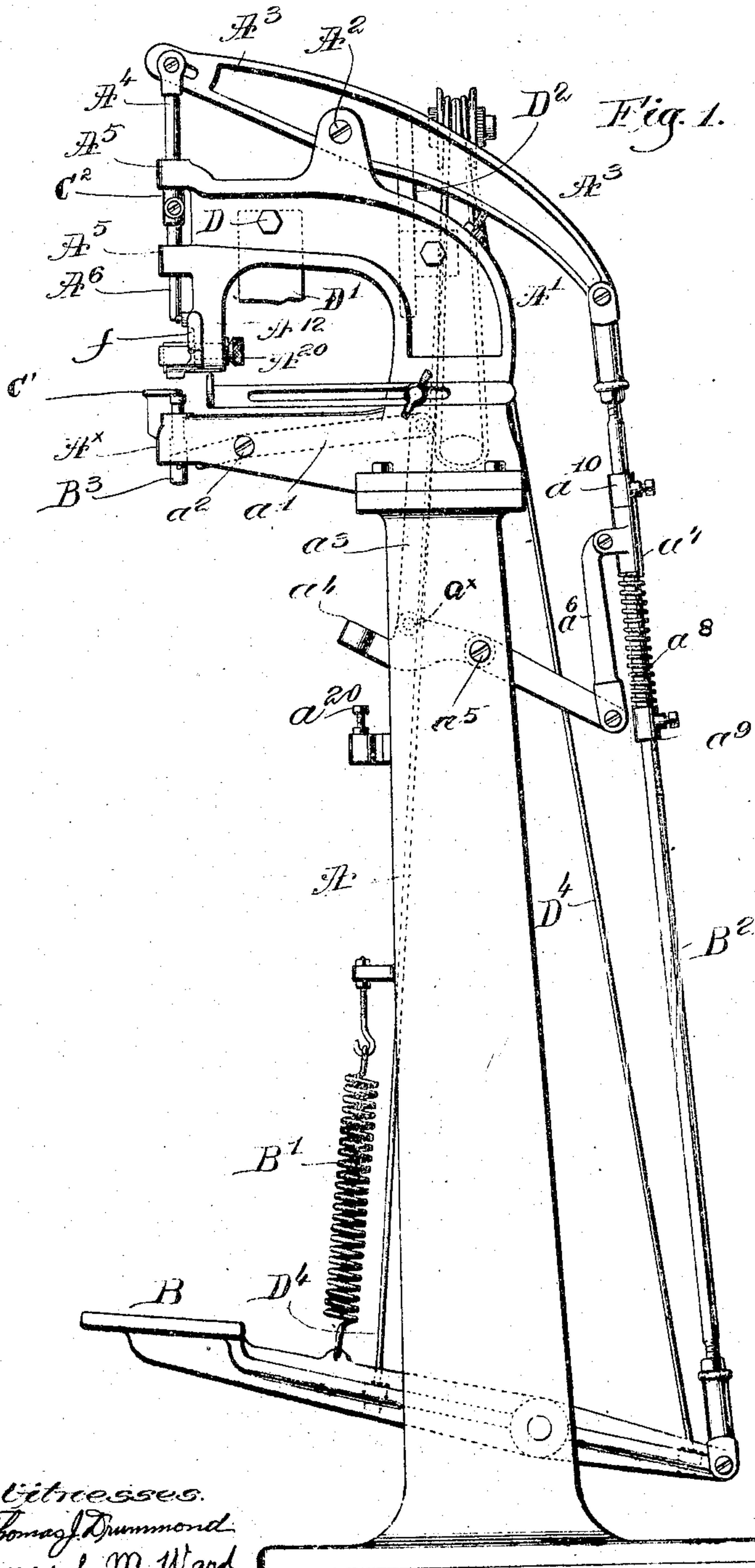


E. A. BARBER.  
SPOT SETTING MACHINE.  
APPLICATION FILED FEB. 21, 1907.

900,694.

Patented Oct. 13, 1908.

4 SHEETS—SHEET 1



Witnesses.  
Thomas J. Drummond.  
Joseph M. Ward.

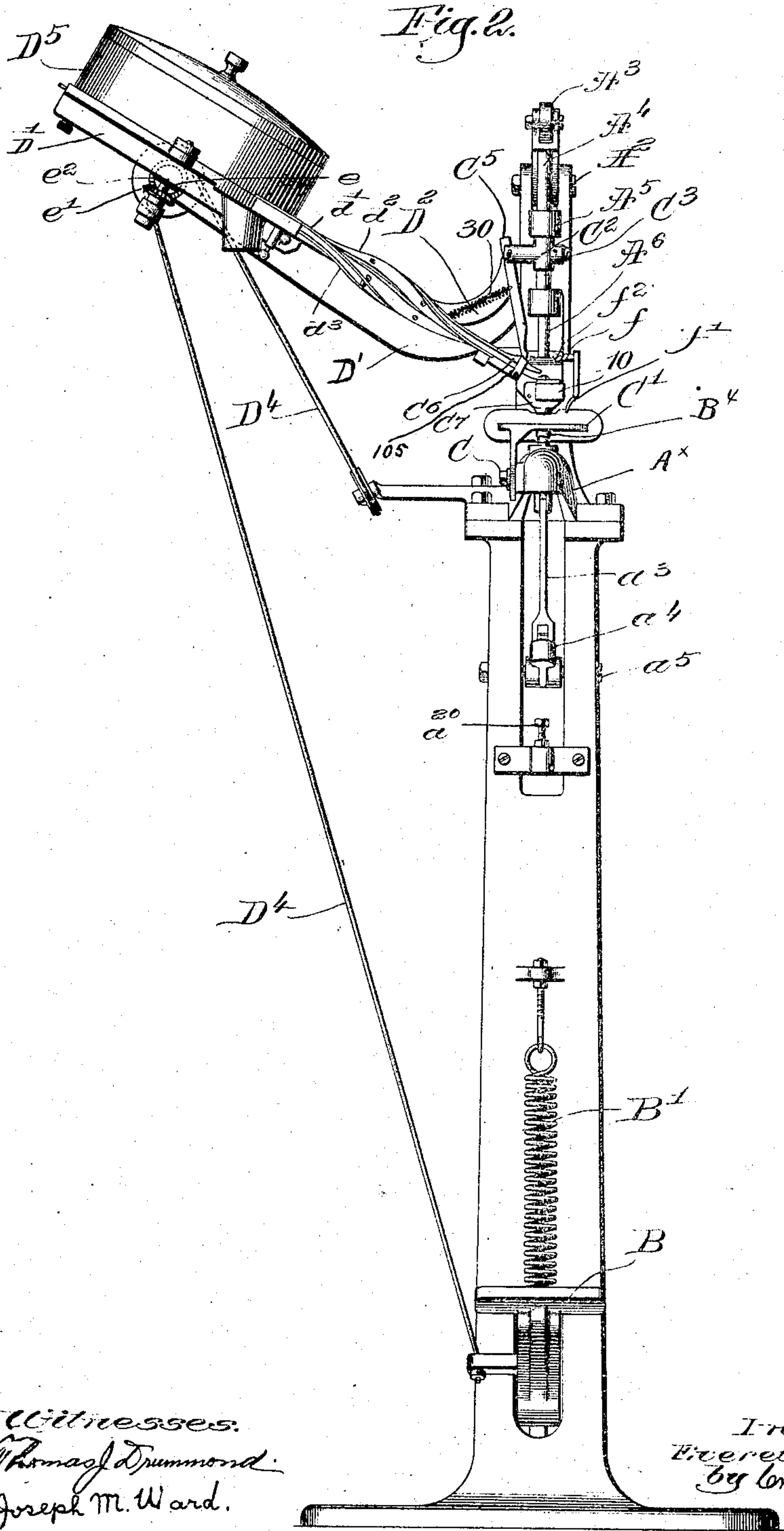
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4 SHEETS—SHEET 2



Witnesses:  
Thomas Drummond.  
Joseph M. Ward.

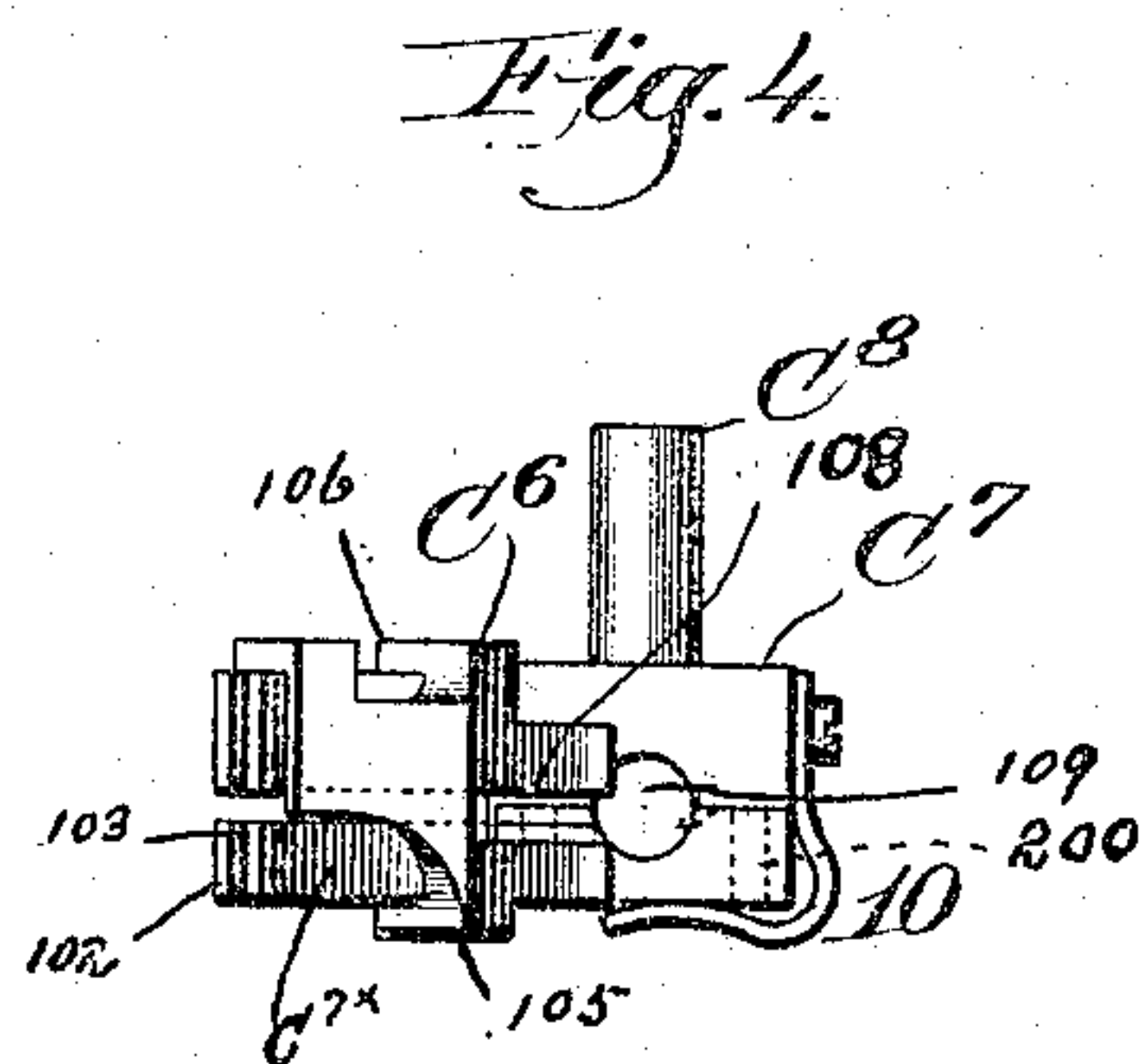
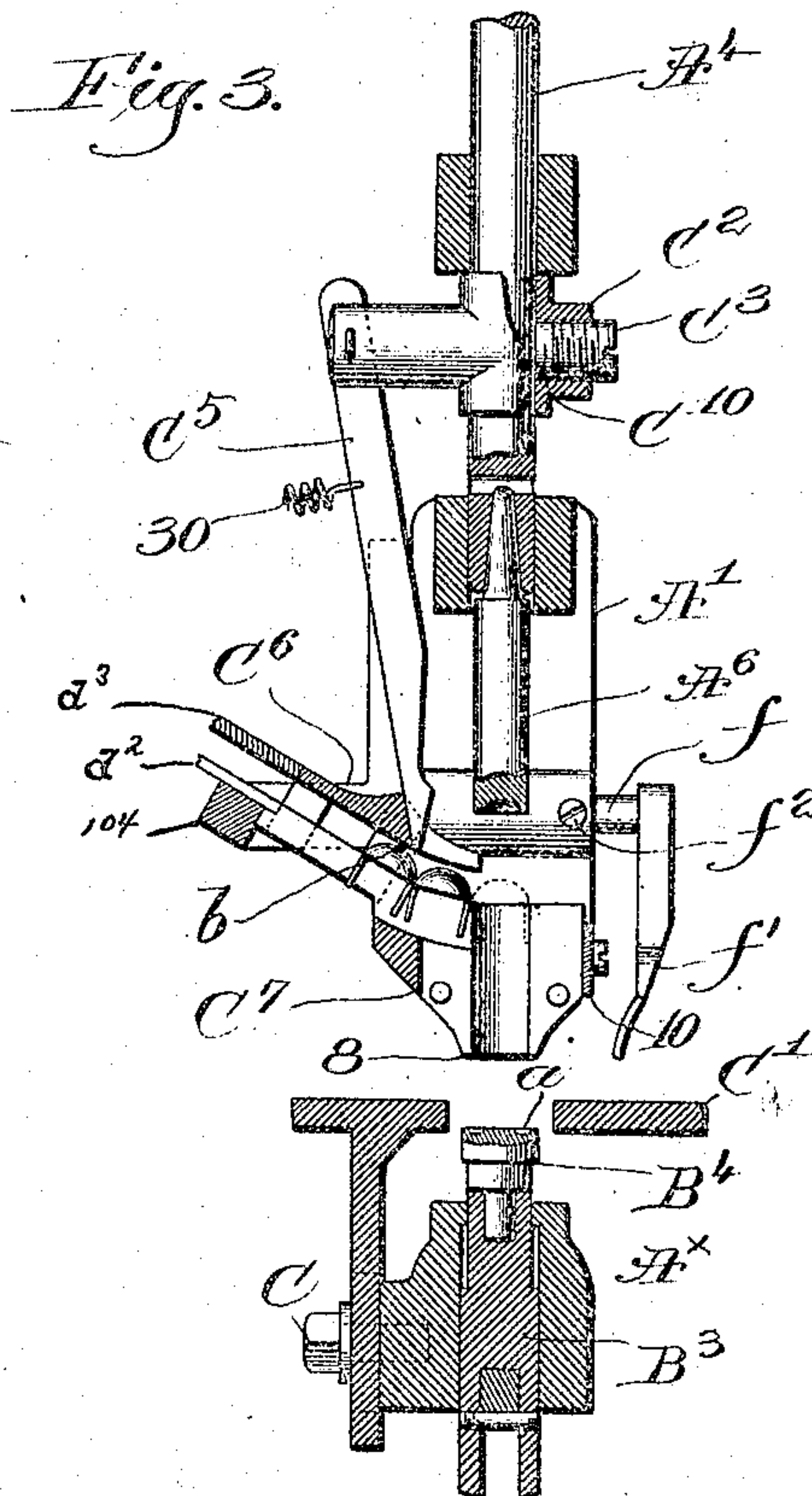
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4 SHEETS—SHEET 3.



Witnesses:  
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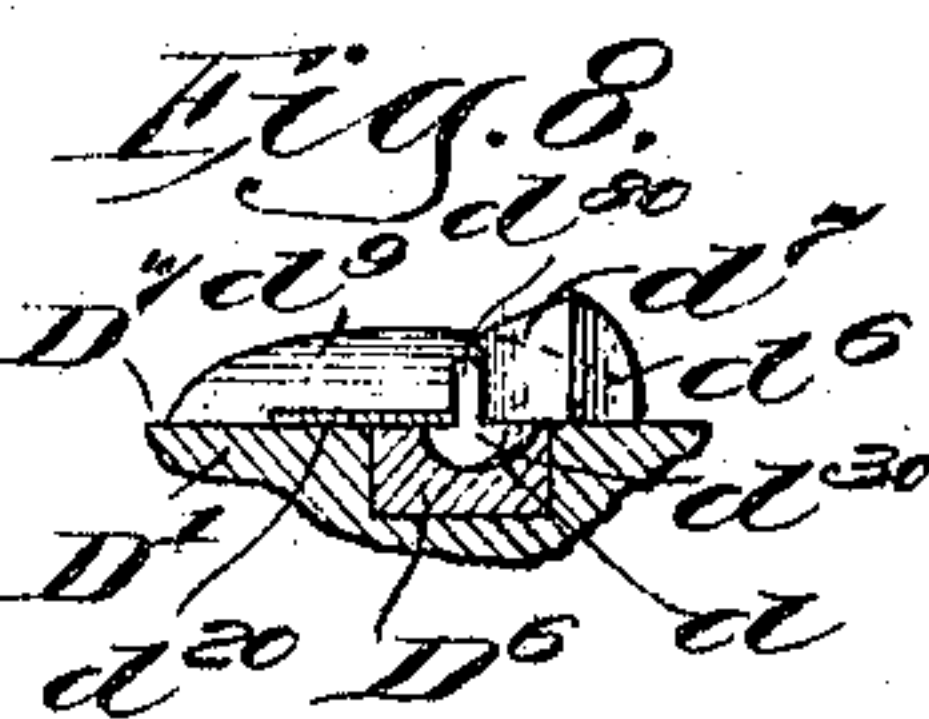
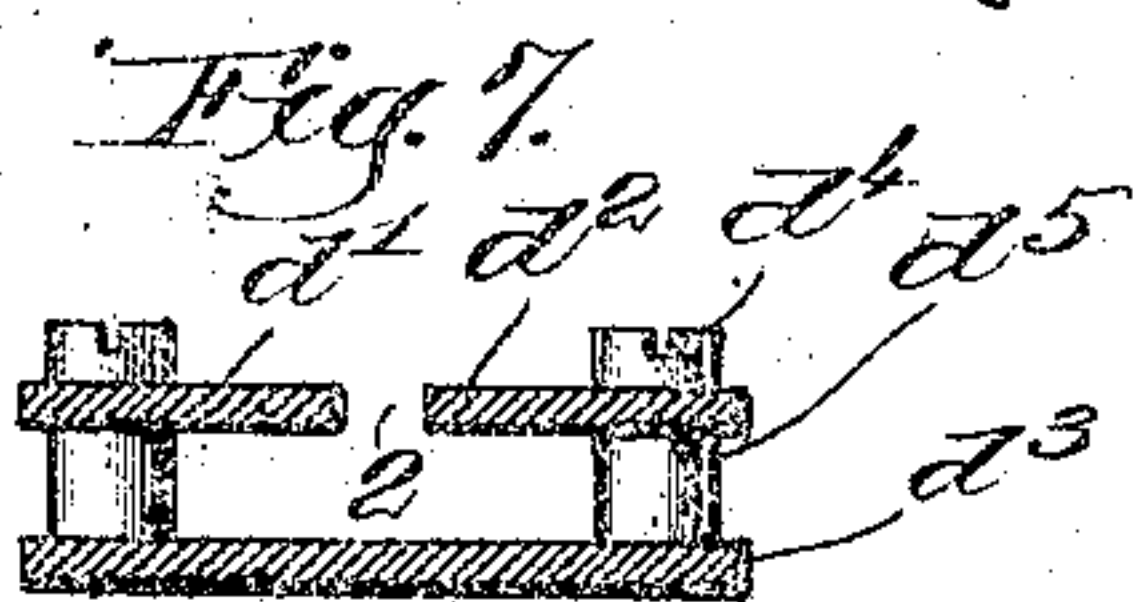
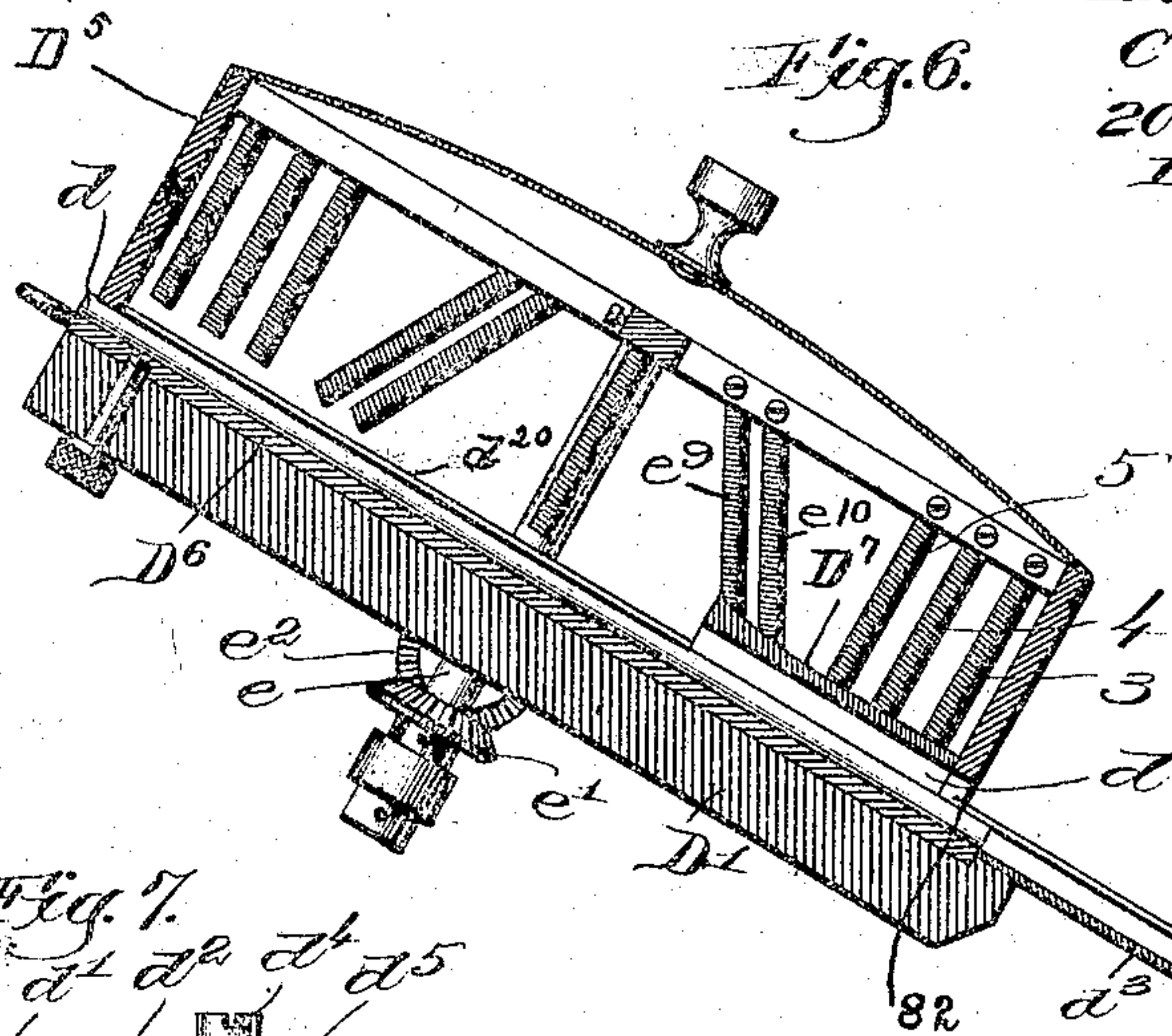
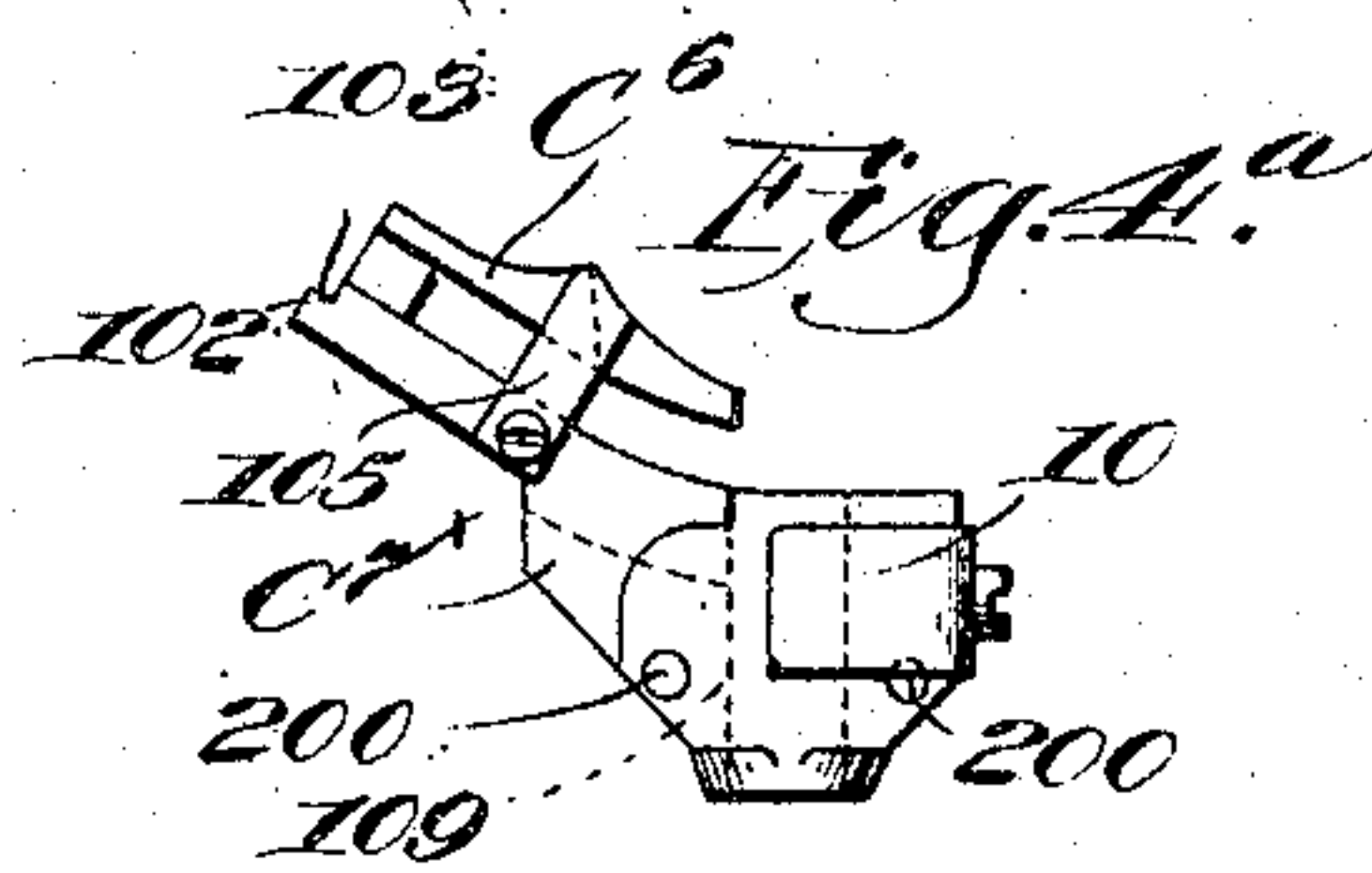
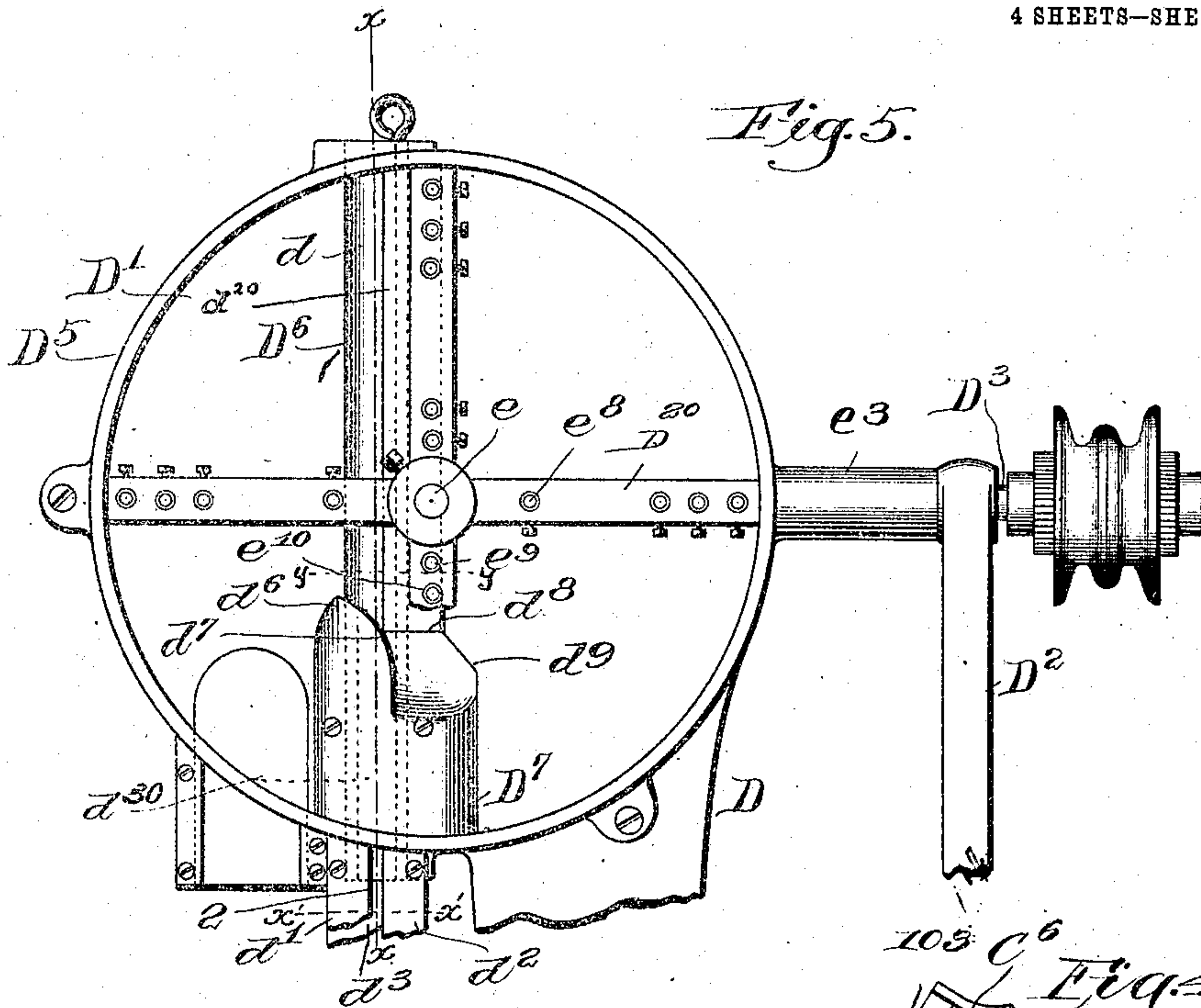


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Patented Oct. 13, 1908.

4 SHEETS—SHEET 4.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

EVERETT A. BARBER, OF QUINCY, MASSACHUSETTS, ASSIGNOR TO STANDARD RIVET COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF NEW HAMPSHIRE.

**BEST AVAILABLE COPY** SPOT-SETTING MACHINE.

No. 900,694.

Specification of Letters Patent.

Patented Oct. 13, 1908.

Application filed February 21, 1907. Serial No. 358,558.

*To all whom it may concern:*

Be it known that I, EVERETT A. BARBER, a citizen of the United States, and resident of Quincy, county of Norfolk, State of Massachusetts, have invented an Improvement in Spot-Setting Machines, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object the production of an improved machine for setting metallic spots, comprising a head and two legs, into stock, such as leather, the spots when made of brass being used chiefly as ornaments in connection with the manufacture of dog collars, harness and the like.

The spots to be driven are supplied to a hopper containing an agitator having spring arms, the spots leaving the hopper pass under a bridge, the spring arms throwing back away from the bridge any spots not correctly placed to pass thereunder. The spots then pass down a raceway presenting two flanges that act on the opposite edges of the legs of the spots and also on the underside of the heads of the spots, and a head-guiding plate that acts on the outer side of the heads of the spots, said flanges and plate being twisted to overturn the fastenings and place them with their legs down on their arrival under the driver. The spots leaving the lower end of the raceway pass under a cover or cap-plate connected with and sustained by a nose independently of the raceway, the nose having a grooved top on which rests the undersides of the heads of the spots after they leave the raceway, and a hole of a diameter a little larger than that of the spot to be driven. The machine has a series of these noses, one for each diameter of spot, and the driver bar is adapted to receive and carry one of a series of drivers concaved at its lower end to fit the convexity of the head of the spot.

The stock in which the spot is to be set is laid on a stock support the position of which with relation to the under side of the nose is adjustable according to the thickness of the stock, the driver having co-acting with it an anvil which is thrust upwardly through a hole in the stock support, the extent of the upward movement of the anvil being regulated by an adjusting device to provide for different thickness of stock.

Figure 1 in side elevation illustrates a spot setting machine including my present invention; Fig. 2 a front elevation thereof; Fig. 3 an enlarged detail in vertical section showing the driver, nose, work support and anvil; Fig. 4 a plan view of the nose detached; Fig. 4<sup>a</sup> is a front elevation of the nose and its extension; Fig. 5 a plan view enlarged of the hopper; Fig. 6 a section through the hopper on the line  $x-x$ , Fig. 5; Fig. 7 is a section of the raceway on the line  $x'-x'$ , Fig. 5; Fig. 8 is a cross section of the raceway on the line  $y-y$ , Fig. 5, looking toward the horn.

The column A sustains a head A' that sustains a fulcrum A<sup>2</sup> on which is mounted a lever A<sup>3</sup> forming part of the actuating mechanism for the driver bar A<sup>4</sup> fitted to be moved up and down in guides A<sup>5</sup> of the head and provided with a detachable driver A<sup>6</sup>. The lever is moved to depress the driver bar by placing the foot on a treadle B normally held up by a spring B', thus moving upwardly a rod B<sup>2</sup> attached adjustably to the rear end of lever A<sup>3</sup>. The arm A<sup>x</sup> extended forwardly from the head is bored for the reception of an anvil-carrier B<sup>3</sup> carrying at its upper end an anvil B<sup>4</sup> having a clenching pit  $a$ , see Fig. 3, the lower end of the carrier being connected with the lever  $a'$  having its fulcrum at  $a^2$  and connected at  $a^x$  by a link  $a^3$  at a short distance from the free or left hand end of a lever  $a^4$ , it constituting the main or first lever of the anvil actuating means, said lever having its fulcrum at  $a^5$  and connected at its opposite end by a link  $a^6$  with a collar  $a^7$  surrounding loosely the rod B<sup>2</sup>, the lower end of the collar being sustained by a spring  $a^8$  resting on a collar  $a^9$ , while the upward end of said collar  $a^7$  normally abuts a collar  $a^{10}$  adjustably connected with the rod B<sup>2</sup>. The arm A<sup>x</sup> has secured to it by a set screw C a stock support C' having an opening into which rises the anvil B<sup>4</sup> during the operation of clenching the legs of a spot to be described. The driver bar has a collar C<sup>2</sup> fitted thereto frictionally by a pressure device comprising a set screw C<sup>3</sup> and a leather washer C<sup>10</sup> interposed between the screw and the driver bar, see Fig. 2, and to one end of this collar I have loosely connected the upper end of a spot feeding device C<sup>5</sup> to be described, the lower end of which occupies a position above a nose. The nose comprises a block of metal C' having at its rear side a stud C<sup>8</sup> that is extended through a hole in the depending por-



tion A<sup>12</sup> of the head A'. The stud is provided with a hole which is tapped to present a screw-thread that is entered by the shank of a threaded bolt A<sup>20</sup> inserted in the head of the machine. The block C<sup>7</sup> has an extension C<sup>7x</sup> directed upwardly and provided with a slot in which may hang the legs of the spots and the upper end of the extension is cut to present a lip 102 and above the lip a shoulder 103, the lip and shoulder abutting loosely the lower end of the raceway plate d<sup>2</sup> to be described, which raceway is sustained by a bar or arm 104 extended from the machine arm. The extension C<sup>7x</sup> has mounted on it a cover plate C<sup>8</sup>, the latter having legs 105 and 106, each of which are attached to said extension by a suitable set screw to thus mount the cover plate above said extension for a distance sufficient to enable a spot having a head of a certain depth to pass under said cover plate. The top of the cover plate is slotted at 108 and in this slot stands the spot feeder. These noses are made of different sizes, a different one for each size of spot to be handled in the machine, and a hole 109 in the nose is of the diameter of the head of the spot, and by taking out the bolt A<sup>20</sup>, a nose of any desired size may readily be substituted without disturbing the raceway, which is a matter of considerable importance, for where the nose is attached by a screw or screws to the lower end of the raceway, the screws have to be removed and the raceway pushed back into the hopper.

The nose has a separable front part held in place by a spring 10 the front part fitting over two pins 200 carried by the back part of the nose. The machine will be provided with a series of noses having throats of different diameter according to the diameter of the spot and of the driver to drive the spot through said throat.

The spot feeder C<sup>5</sup> is beveled from its lower end upwards and toward the driver, as at b, so that when the feeder is depressed from its position Fig. 3, such beveled portion can move to the right only far enough to come into contact with the side of the driver next thereto at a point above the lower end of the driver, thereby preventing any possibility of the feeder extending into the driver path. The spots feed down the raceway by gravity, and ordinarily the weight of the spots behind it will be sufficient to feed the leading or first spot into dotted line position, Fig. 3, in readiness to be pushed through the hole in the nose by the descent of the driver A<sup>9</sup>. Supposing that the parts are in such position, then as the driver descends the spot feeder C<sup>5</sup> will descend with it until it engages with the second spot, whereupon the feeder will be stopped, as the resistance to its downward movement, presented by the second spot abutting against the first spot, is sufficient to overcome the friction connection be-

tween the collar C<sup>2</sup> and the driver bar. Thus there is no tendency to force two spots into the driving or setting position.

The main function of the feeder C<sup>5</sup> is to insure the presence of a spot in proper position under the driver in case the spots in the raceway should be too few in number to feed the leading one beyond the full line position shown in Fig. 3, or in case the leading spot should be held by dirt or oil on the end of the raceway. In such case the descent of the spot feeder with the driver acts to push forward into setting position the leading spot. But for these accidental stoppages in the natural feed of the spots the feeder C<sup>5</sup> could be omitted, as will be apparent from the foregoing explanation. Should all of the spots but one have been fed from the raceway, for instance, that last one might not move into the driver path, or it might move part way thereinto, and in the latter case would be smashed by the descent of the driver, but the feeder C<sup>5</sup> prevents such an accident by pushing the spot forward into the proper position under the driver.

Prior to my invention the lower end of a feeder has been turned to leave a lip toward the driver and under some conditions the lip is caught by the driver in its descent and the feeder is broken.

The head A<sup>2</sup> has bolted to its rear side by a bolt D a hopper sustaining arm D' and at a short distance therefrom an arm D<sup>2</sup> for the reception of the hopper-actuating shaft D<sup>3</sup> provided at one end with ratchet pulleys of usual construction moved intermittently by a belt D<sup>4</sup> connected at one end with the treadle, all as usual, said shaft being rotated each time the treadle is moved by the workman.

The outer end of the arm D' is enlarged and has secured to its upper side by suitable set screws a circular curb D<sup>5</sup> forming the side wall of the hopper, part of the arm D' constituting the bottom of the hopper. The arm D' is slotted diametrically of the hopper as shown in Fig. 6 to receive any one of several spot troughs or spot-introducing guide-ways D<sup>6</sup> having each a longitudinal groove of a suitable width to receive the outer spherical side of the head of the spot being used, it being understood that the heads of the spots differ in diameter and that each sized spot must have its own trough, one trough being substituted for the other as required.

In working with rivets or small-sized spots there is no particular difficulty in getting them to leave the hopper with the legs down, but with larger spots the normal tendency is to turn with their legs upturned, the head of the spot being so heavy that over eighty per cent. of a quantity of spots, when allowed to position themselves, will lie with their legs up. When such spots are placed in bulk in



the hopper they will turn naturally into such position, and I have utilized this tendency, in my present invention, to facilitate the discharge of the spots from the hopper. That

5 is, I have provided means for discharging them from the hopper legs up, and in such position they are introduced to the end of the raceway adjacent an outlet in the stationary wall of the hopper, and as the spots travel  
10 down the raceway into position to be set they are turned with their legs down, as will be explained. The raceway is herein shown as comprising two leg-guiding plates  $d'$ ,  $d^2$  and a head-covering plate  $d^3$ , and the spots leave  
15 the hopper with their legs up, one behind the other, to enter the space 2 between the plates  $d'$ ,  $d^2$ , Fig. 7, the spot heads traveling along the plate  $d^3$  at such time.

I found in practice that the raceway, (the  
20 plates of which are connected by screws  $d^4$ , the plates  $d'$ ,  $d^2$  being separated from the plate  $d^3$  by hollow posts  $d^5$ ), could not be kept properly filled with spots by the employment of an agitator comprising a revol-  
25 ble cross head having fingers 3, 4, 5, at its ends that sweep close to the inner wall of the curb and lift the spots so that they may in sliding down over the bottom  $D'$  of the hopper enter the groove  $d$  of the guideway lead-  
30 ing to the raceway. Consequently I have provided a bridge  $D^7$  covering the lower end of the guideway  $D^6$ , the bridge being shaped at its upper end to present a horn  $d^6$  having a convexed or curved side  $d^7$ , the upper end  
35 of the bridge at the right of the side  $d^7$ , viewing Fig. 5, having a beveled or inclined top  $d^8$ , presenting an edge  $d^8$  that meets practically at a right angle the guiding edge of the plate  $d^{20}$  which partly covers the groove  $d$  in  
40 the guideway  $D^6$ . The under side of the bridge has a longitudinal groove  $d^{80}$ , Figs. 6 and 8, starting as shown at the base of the convexed side  $d^7$  of the horn, and leading through the bridge above the lower end of  
45 the groove  $d$  and communicating, as will be described, with the space 2 in the raceway, so that when the spots are properly presented with their heads in the groove  $d$  and their up-  
50 turned legs against the edge of the plate  $d^{20}$ , the said legs will enter and travel along in the groove  $d^{80}$  while the heads of the spots will travel through the lower end of the groove  $d$ , the legs finally passing out from the hopper through a slot or outlet 82 in the curb  $D^5$ , to  
55 properly enter the space 2 at the receiving end of the raceway. The lower end of the groove abuts against the curb, see Fig. 6, and the raceway comes up to the lower end of the grooved guideway  $D^6$ , as shown, and in align-  
60 ment therewith.

Referring to Figs. 5 and 8, it will be seen that the guiding edge of the plate  $d^{20}$  projects over the adjacent edge of the groove  $d$ , the end of said plate butting squarely against the  
65 transverse lower end of the beveled part  $d^9$

of the bridge, and the exposed or open part of the groove  $d$ , which is clearly visible in Fig. 5, is slightly wider than the head of the particular size of spot for which the trough  
70 is intended, but as the groove passes under the bridge its width narrows, as shown at  $d^{30}$ , in Fig. 8. Supposing a spot within the hopper to be deposited in the groove  $d$ , head down and with its legs upturned, as the spot travels downward its legs will bring up  
75 against the curved side  $d^7$  of the bridge and the spot will be turned gradually so that when it reaches the entrance of the groove  $d^{80}$  in the bridge the legs will be directed into such entrance, one behind the other, the edge  
80 of the plate  $d^{20}$  being alined with the adjacent side wall of the groove  $d^{80}$ , as shown in Fig. 8. The spot can now pass through said groove in the bridge, its head sliding along the narrower part  $d^{30}$  of the trough groove, and pass-  
85 ing out at its lower end, while the legs leave the groove  $d^{80}$  and pass out through the curb  $D^5$  by the notch or outlet 82. Thus the function of the curved side  $d^7$  of the bridge is to turn the spots and position the legs to enter  
90 the groove  $d^{80}$ , so that the spots will be correctly positioned to enter the raceway. The plates forming the raceway are twisted longitudinally for  $180^\circ$  as shown from the position  
95 Figs. 5, 6 and 7, next the hopper to their position Fig. 3 which shows the delivery end of the hopper when the plate  $d^3$  lies uppermost.

The cross-bars  $D^{20}$  of the agitator are carried at the upper end of a shaft  $e$  provided  
100 at its lower end with a bevel gear  $e'$  that is engaged and driven by a bevel gear  $e^2$  fast on the end of shaft  $D^3$ , the inner end of said shaft being sustained in an auxiliary bearing  $e^3$  secured to or forming part of the underside  
105 of the arm  $D'$ , said cross-bars having auxiliary arms  $e^8$ ,  $e^9$ ,  $e^{10}$ , of coiled wire, crossing the trough, while the arms  $e^9$ ,  $e^{10}$  are so inclined as to sweep over the beveled or concaved top  
110  $d^9$  of the bridge and up the convexed edge  $d^7$  and being deflected meet any spots improperly placed or clogged in a bunch at the end of the horn, and as the ends of the deflected arms cross the spot trough they assume their  
115 normal position and kick the bunched spots, scattering the same away from the groove  $d^{80}$  at the upper end of the bridge, letting the legs of such spots as ride properly in the trough enter said groove and the raceway.

The head of the machine has a hole to receive the shank  $f$  of a spot positioning gage  $f'$   
120 which may be adjusted more or less away from the line of the driver and be held in its adjusted position by a set screw  $f^2$ ; the head of each spot after the same has been set in  
125 stock lying on the stock support may be made to contact with the lower end of the positioning device as the stock is moved by hand over the stock plate from left to right, Fig. 3. In practice the top of the stock support is ad-  
130



justed to occupy a position to accommodate for the thickest stock plus the depth of the head of the spot, so that the stock with the spot driven therein may be moved between the lower end of the nose and the top of the stock support. Normally the driver, anvil and spot feeder occupy the position shown in Fig. 3 and to set a spot, the workman actuates the treadle or foot lever, moving upwardly the anvil so that it rises through the anvil opening in the stock support, meeting the underside of the stock and lifting and clamping the same between the anvil and the circular under end of the nose. As the anvil arrives in position to clamp the stock, as stated, on the lower end of the nose, the driver descends, meets the head of the spot having its legs in the hole of the nose, and drives said spot before it so that its legs penetrate the stock and are clenched by entering the groove *a* of the anvil. After this the anvil is lowered, the stock is permitted to descend on the stock support, and the stock is fed for the proper distance. As the anvil meets and clamps the stock, the left hand end of the lever *a*<sup>1</sup> meets the adjustable stop *a*<sup>20</sup> made as a screw presenting a head, the upward movement of the anvil due to the adjustment of the stop being arrested sooner or later according to the thickness of the stock.

The spot feeder *C*<sup>5</sup> has a spring 30, Fig. 2, connecting it with the raceway.

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

1. In a machine of the class described, a stationary hopper having an outlet opening in its side wall, a raceway in communication with the outlet in said hopper, and a bridge in said hopper adjacent the outlet and grooved at its under side to receive the upturned legs of the spots, when said legs are positioned one behind the other, combined with a detachable spot introducing guideway located in the hopper and longitudinally grooved to receive the head of a spot with its legs upturned, and means to position the legs of a spot to enter the groove in said bridge.

2. In a machine of the class described, a hopper having a bridge grooved at its under side and provided at its upper end with a horn presenting a shoulder, a detachable

spot-introducing guideway crossing the bottom of the hopper and extended under the bridge beneath the groove therein, and a raceway to receive the spots from said hopper, combined with an agitator having spiral spring fingers adapted in their movement to sweep up over the shoulder of said horn and scatter any spots that may be clogged in the guideway at the upper end of said bridge.

3. In a machine of the class described, a hopper grooved transversely in its bottom, a raceway in communication with said hopper in line with such groove, combined with a detachable spot-introducing guideway adapted to be seated in said groove and having a longitudinal channel of a size to receive the heads of the particular sized spots to be introduced into the raceway.

4. In a machine of the class described, a hopper, having a slot in its side wall and grooved transversely in its bottom, and a raceway in communication with said hopper in line with said groove, combined with a detachable spot-introducing guideway adapted to be seated in the transverse groove and having a longitudinal channel of a size to receive the heads of the particular sized spots to be introduced into the raceway, and a bridge grooved at its under side to receive the legs of the spots passing thereunder on their way into said raceway, the groove in the bridge maintaining the legs one behind the other during such passage.

5. In a machine of the class described, a stationary hopper having an outlet in its side wall, and a detachable spot-introducing guideway at the bottom of the hopper having a channel of a size to receive the heads of the particular sized spot to be introduced into the raceway, combined with a raceway external to the hopper adjacent the outlet thereof, said raceway being in line and communicating with the channel of the guideway.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EVERETT A. BARBER.

Witnesses:

GEO. W. GREGORY,  
M. A. DUNN.