

(Model.)

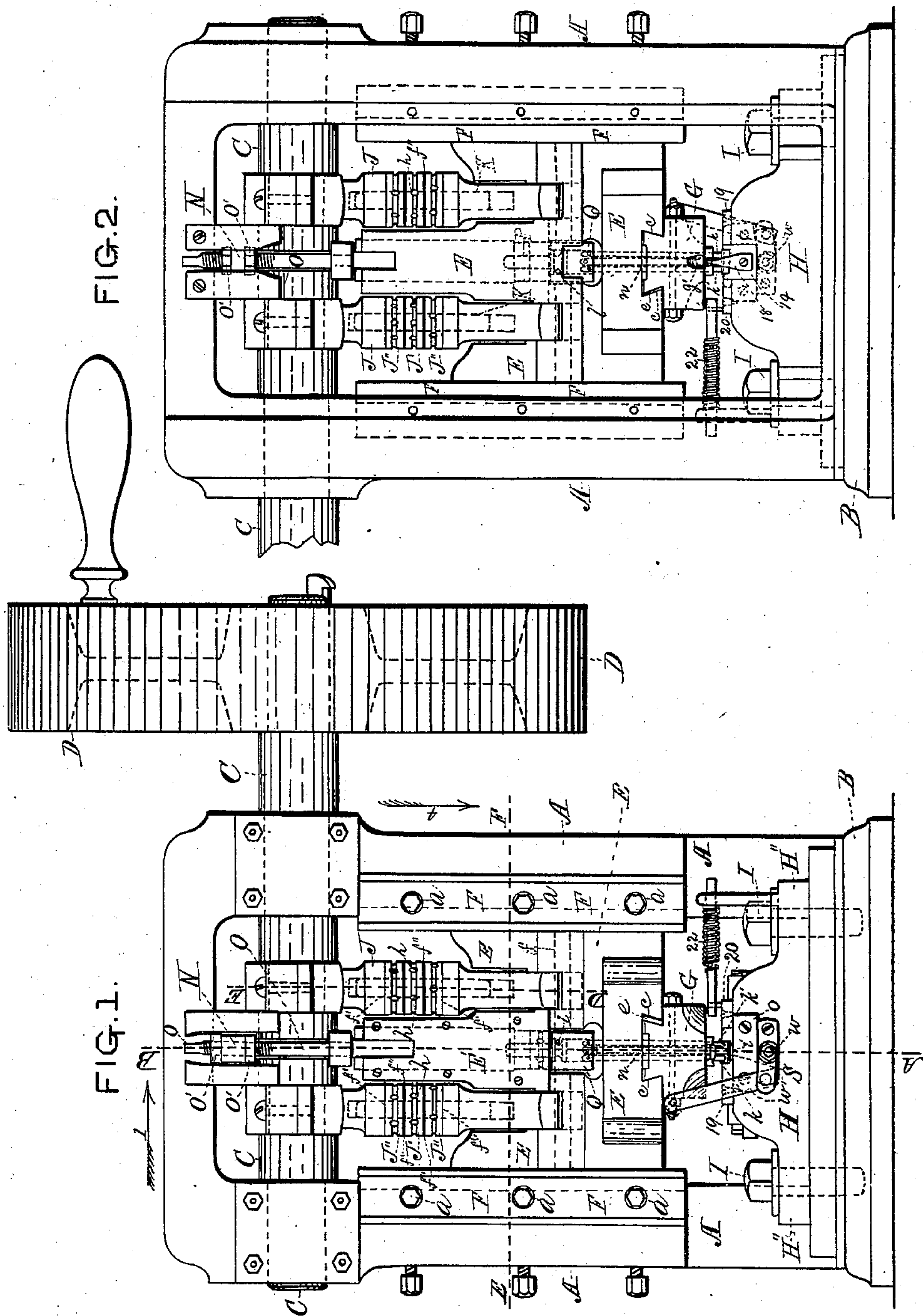
4 Sheets—Sheet 1.

T. B. DOOLITTLE.

MACHINE FOR MAKING METAL FENCE BARBS.

No. 255,423.

Patented Mar. 28, 1882.



Witnesses:
Oscar T. Earle
E. H. Robinson

Inventor:
Thomas B. Doolittle

(Model.)

4 Sheets—Sheet 2.

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FIG. 4.

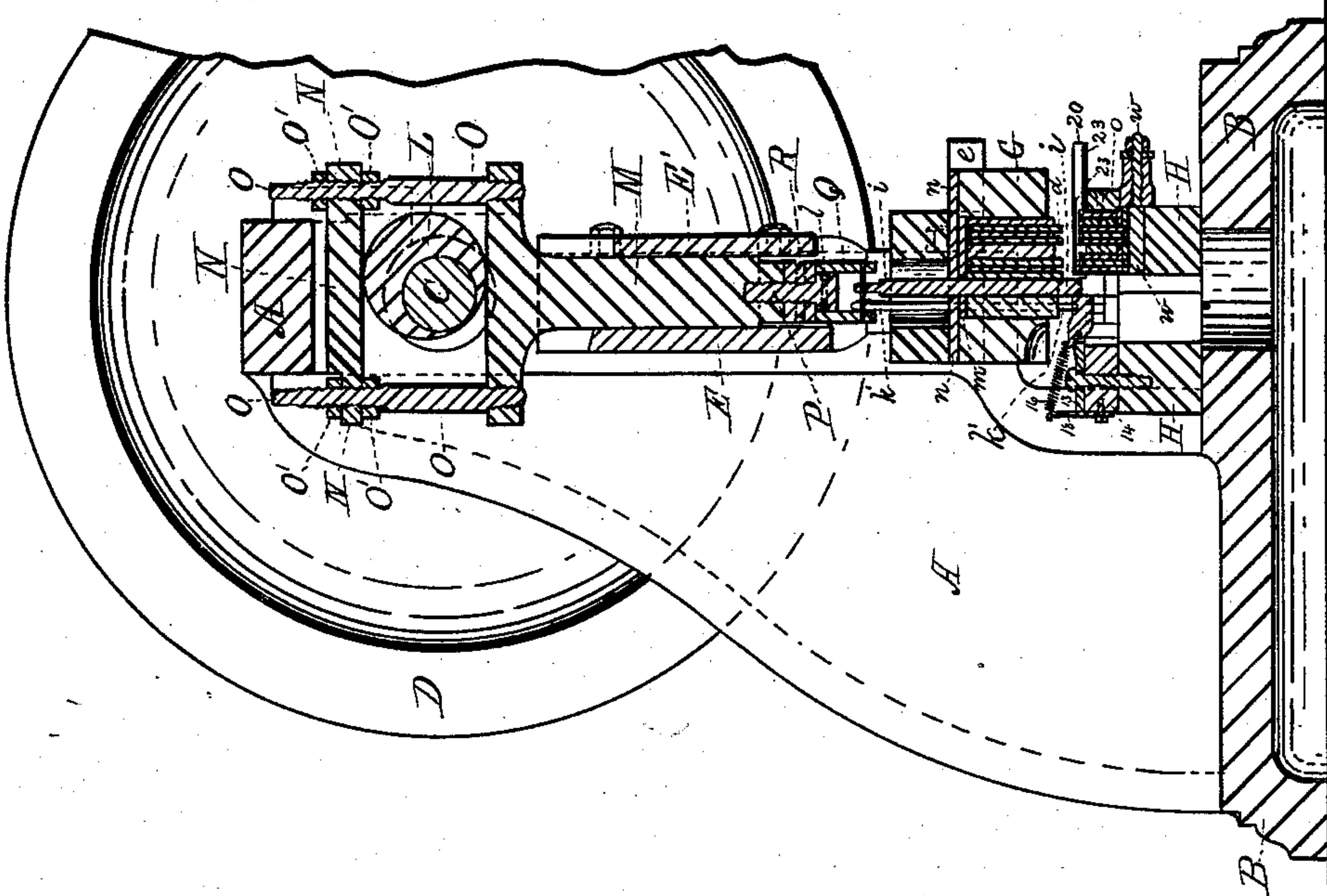
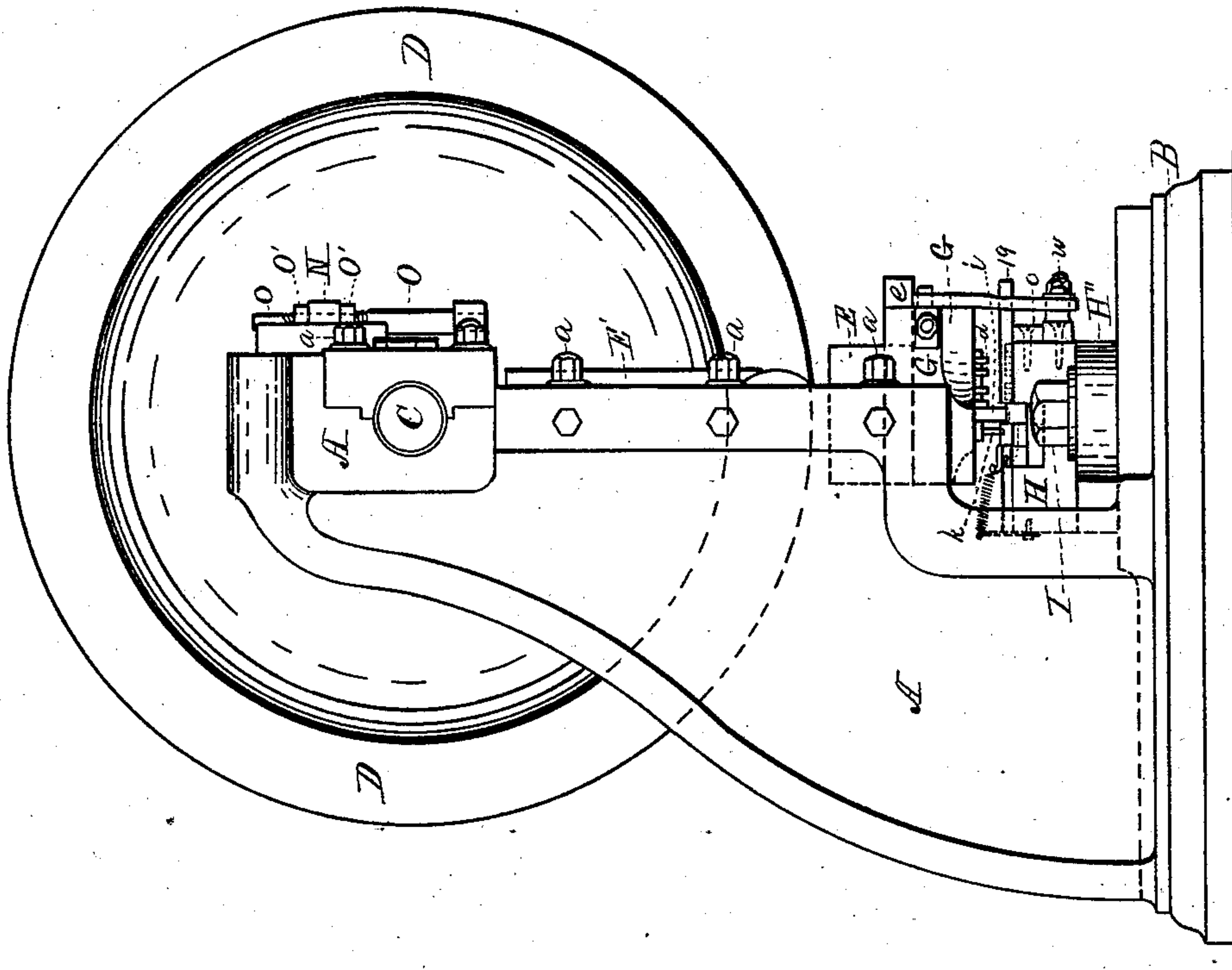


FIG. 3.



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FIG. 5.

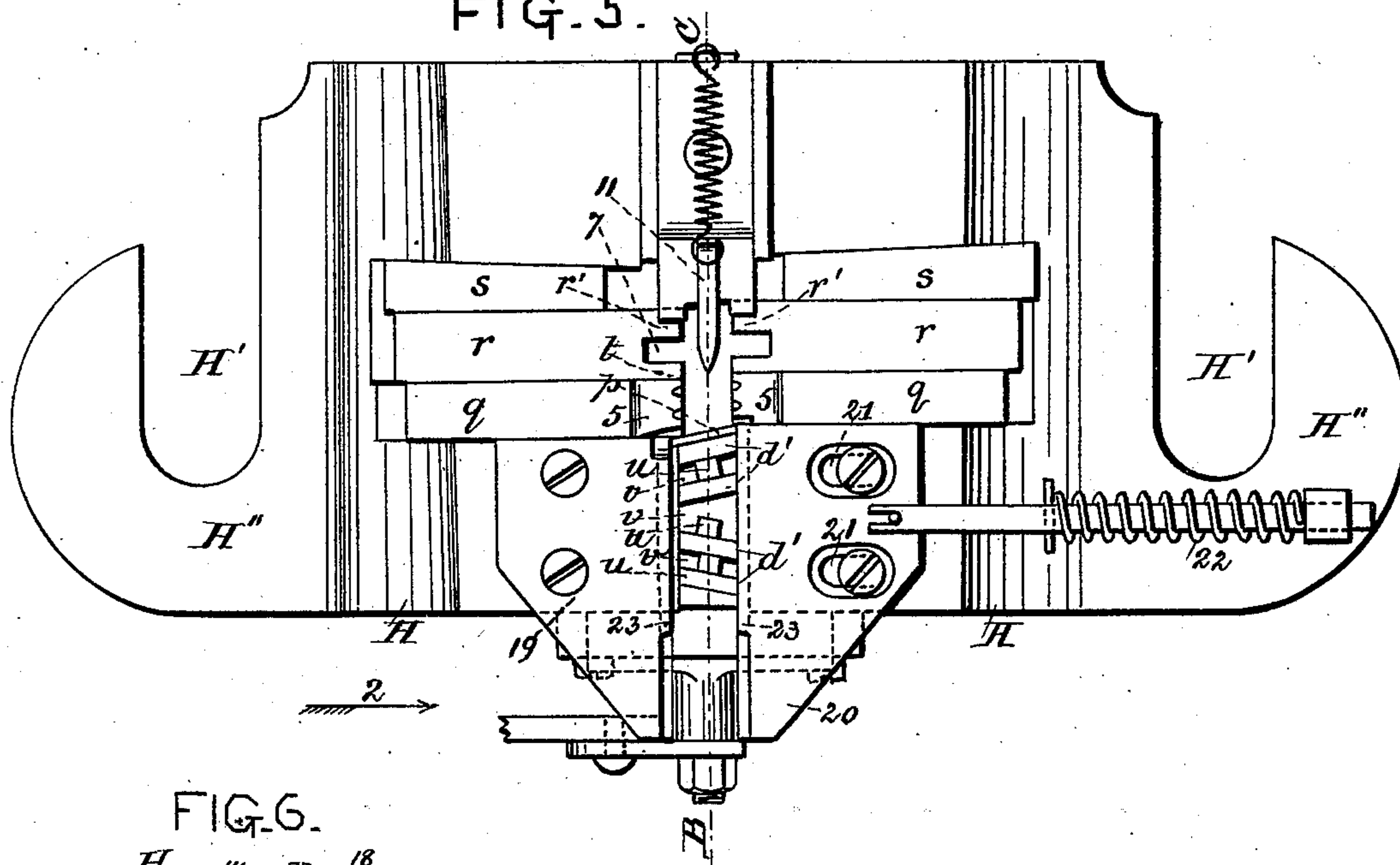


FIG. 6.

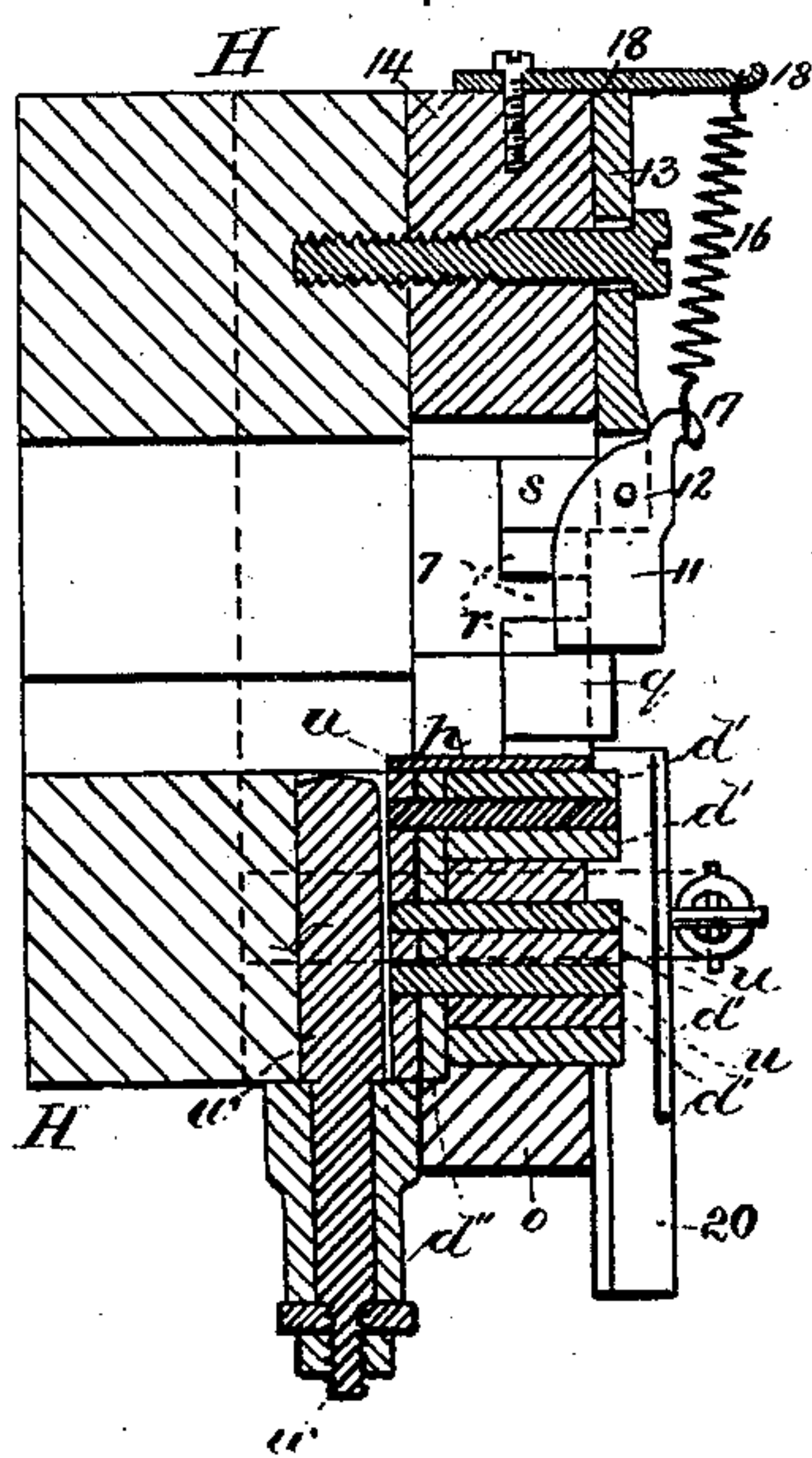


FIG 8

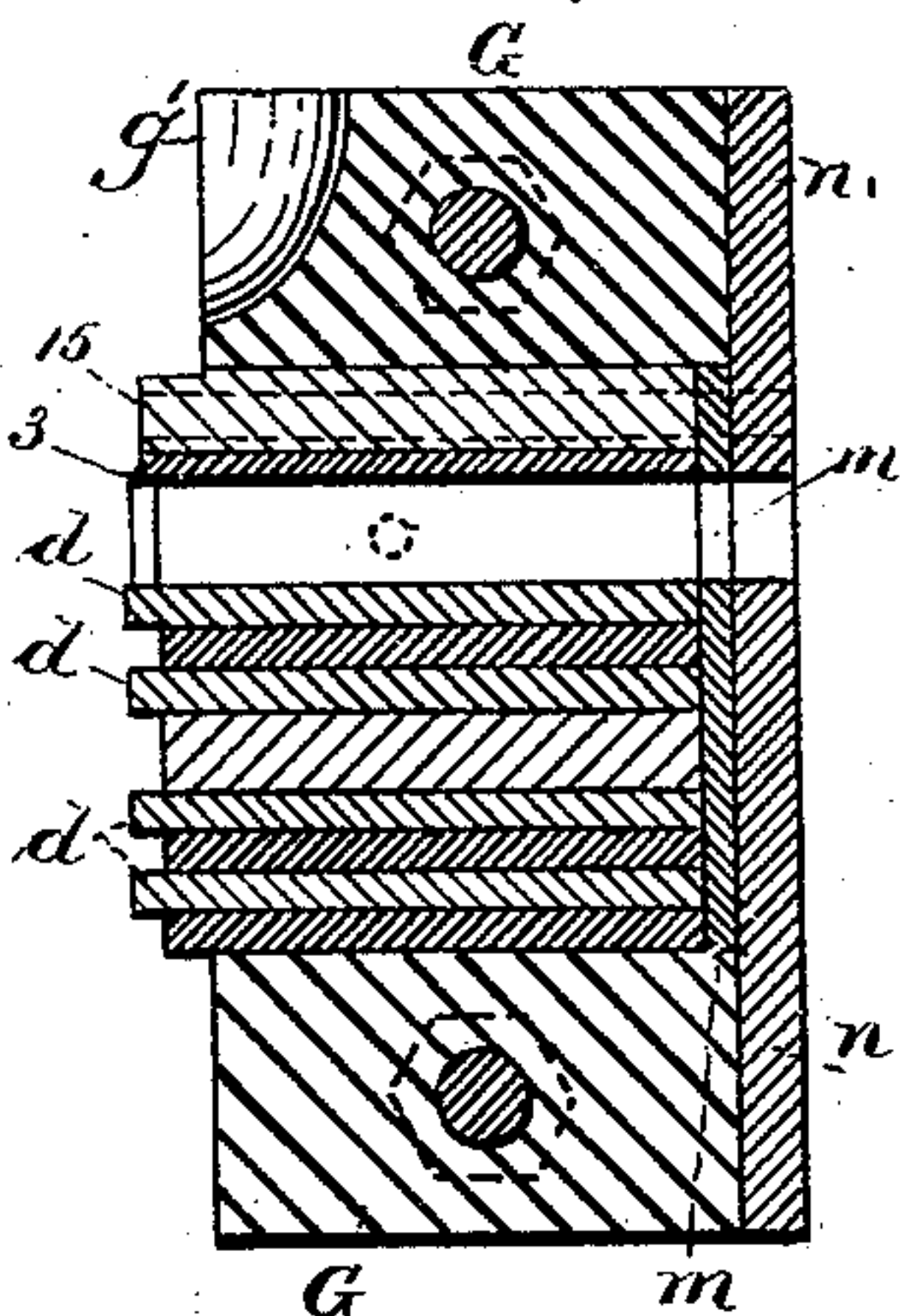
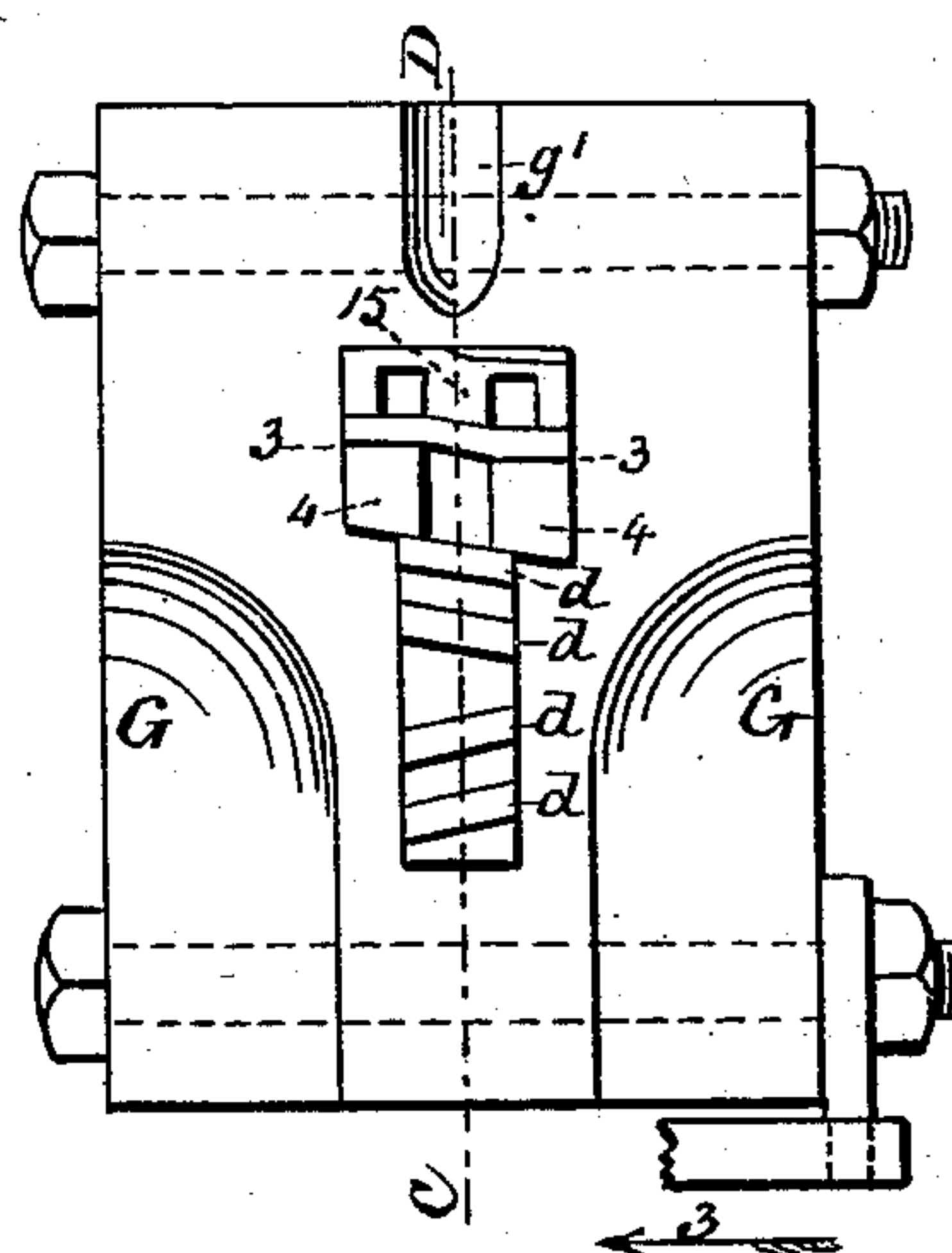


FIG-7-



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4 Sheets—Sheet 4.

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FIG. 10.

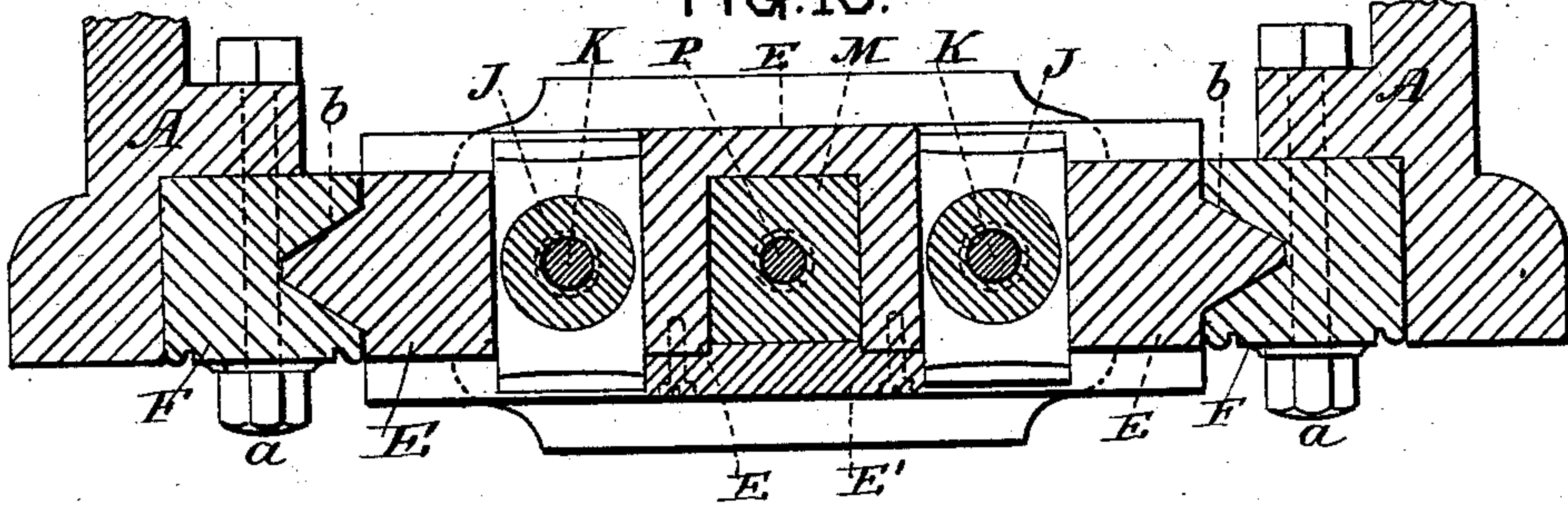


FIG. 9.

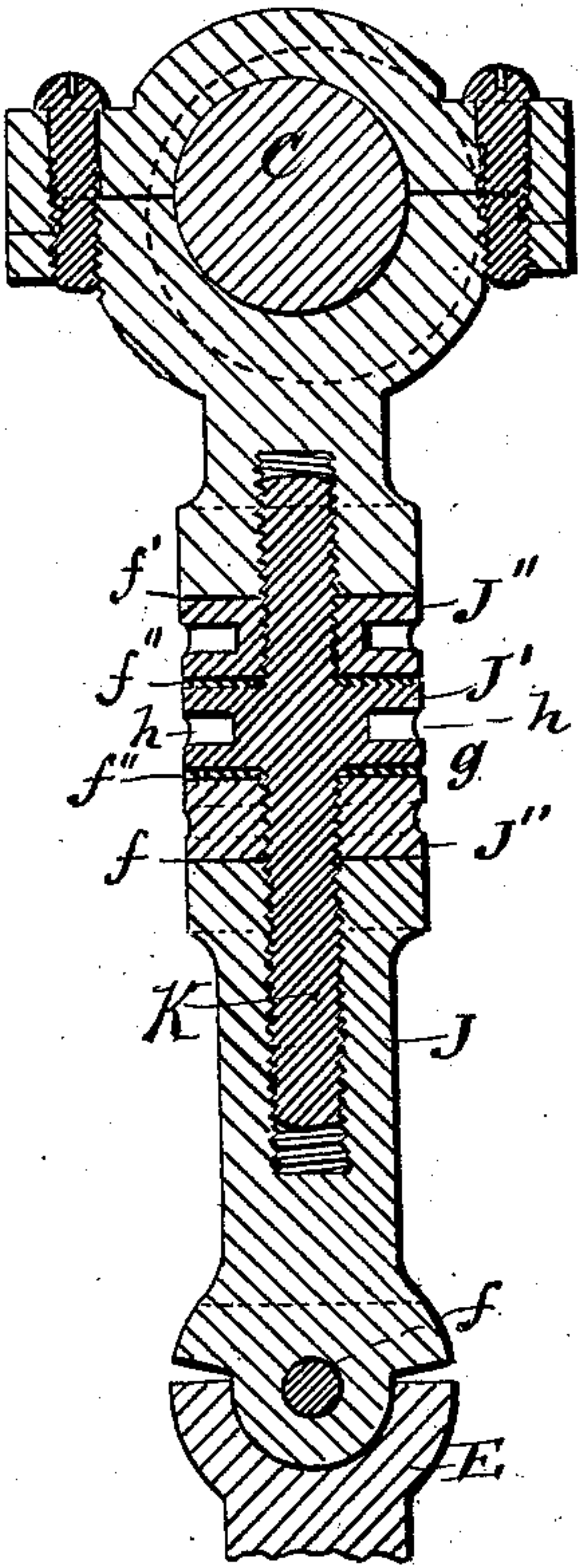


FIG. 13.

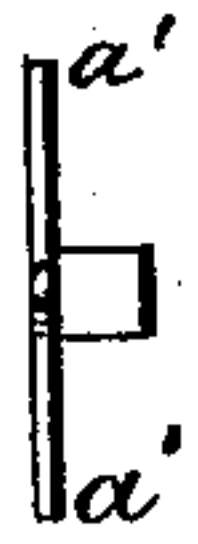


FIG. 12.

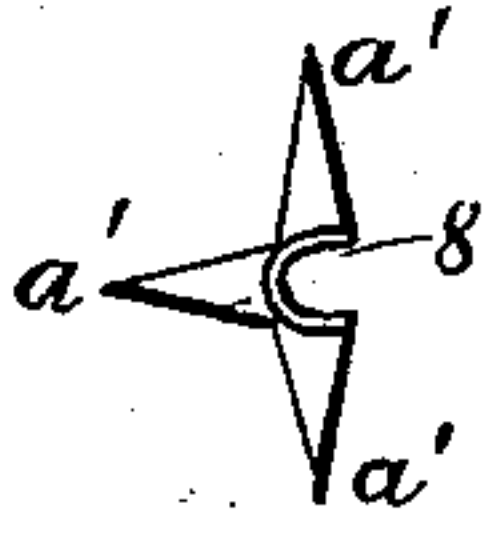


FIG. 11.

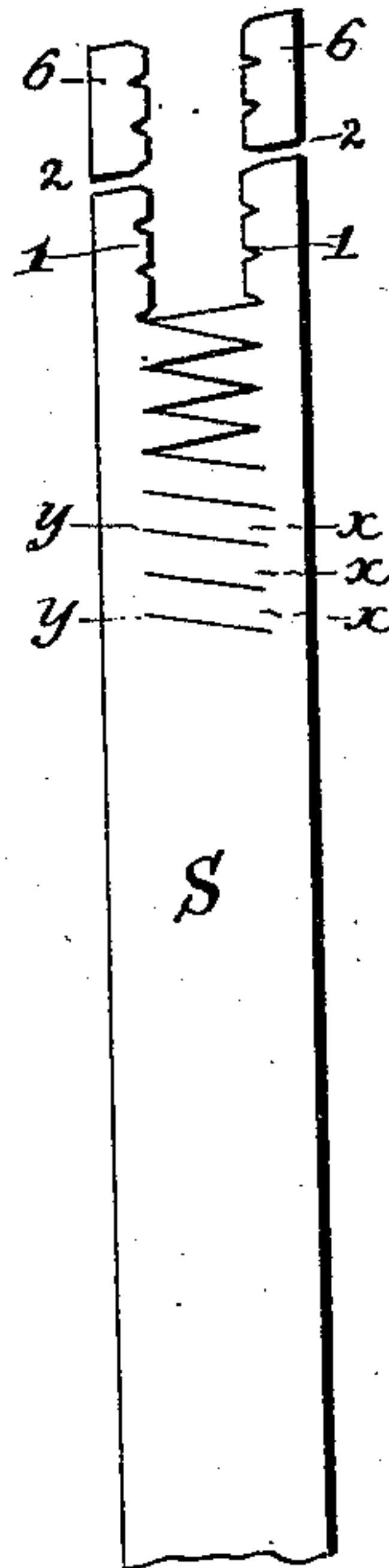
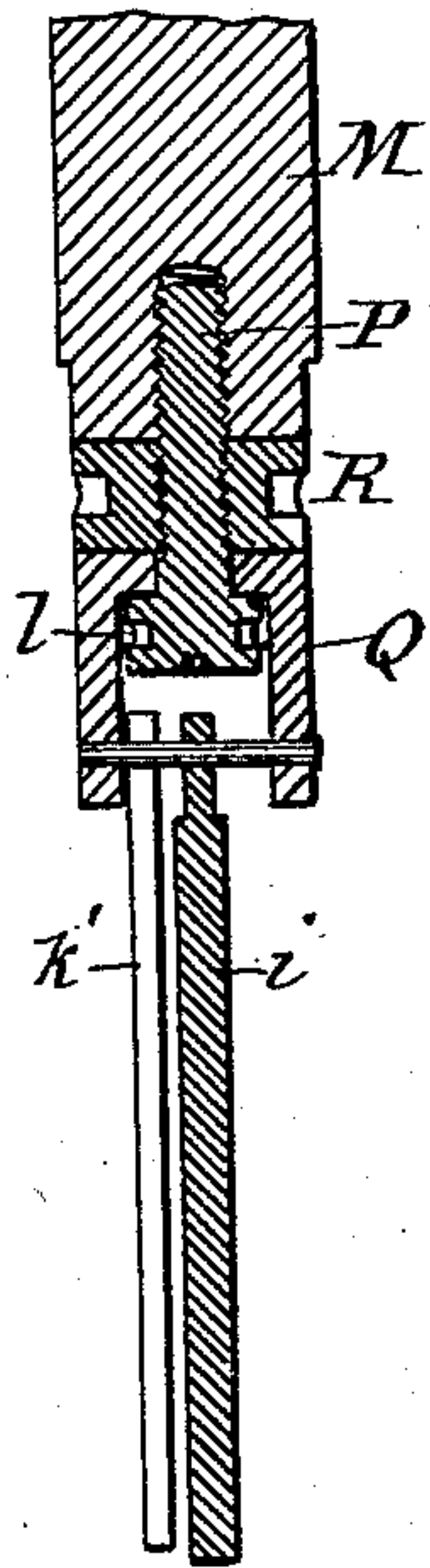


FIG. 14.



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UNITED STATES PATENT OFFICE.

THOMAS B. DOOLITTLE, OF BRIDGEPORT, CONN., ASSIGNOR TO THE WASH-
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MACHINE FOR MAKING METAL FENCE-BARBS.

SPECIFICATION forming part of Letters Patent No. 255,423, dated March 28, 1882.

Application filed June 22, 1880. (Model.)

To all whom it may concern:

Be it known that I, THOMAS B. DOOLITTLE, of Bridgeport, county of Fairfield, and State of Connecticut, have invented certain new and
5 useful Improvements in Loose-Barb Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying draw-
ings, forming a part of this specification, in
10 which—

Figure 1 represents a front view of my improved loose-barb machine. Fig. 2 represents a back or rear view of the same. Fig. 3 represents a side view of the machine, looking in
15 the direction indicated by arrow 1, Fig. 1. Fig. 4 represents a vertical central section of my said machine, taken on line A B, Fig. 1, looking in the direction indicated by arrow 1 of the same figure. Fig. 5 represents, upon an
20 enlarged scale, a top or plan view of a portion of the machine, as will be hereinafter more fully explained. Fig. 6 represents, also upon an enlarged scale, a vertical central section on line
B C of the parts shown in Fig. 5, looking in
25 the direction indicated by arrow 2 of the same figure. Fig. 7 represents, also upon an enlarged scale, the lower or under side of a portion of the machine, as will be hereinafter more fully explained. Fig. 8 represents, also
30 upon an enlarged scale, a vertical central section on line C D of the parts shown in Fig. 7, looking in the direction indicated by arrow 3 of the same figure. Fig. 9 represents, also upon an enlarged scale, a vertical central section
35 of one of the eccentric-rods on line D E, Fig. 1. Fig. 10 represents, also upon an enlarged scale, a horizontal section on line E F, Fig. 1, looking in the direction indicated by arrow 4 of the same figure. Fig. 11 represents
40 a plan view of a thin flat piece of metal from which the barbs are manufactured by the machine described in this invention, showing the manner in which it is cut after having passed through the machine, the first two barbs
45 being cut off preparatory to being bent and formed into shape, as hereinafter described. Fig. 12 represents an end view of a finished barb manufactured by my said improved machine, and Fig. 13 represents a side or edge view
50 of the same. Fig. 14 represents a vertical section of the central plunger carrying punches, hereinafter described.

To enable those skilled in the art to which

my invention belongs to make and use the same, I will proceed to describe it more in de- 55
tail.

In the drawings, the part marked A represents the main frame of the machine, and B the bed-piece or table of the same.

C represents a shaft, upon one end of which 60
is secured a pulley, D, by means of which, through said shaft C, driving-power is imparted to the machine.

E is a movable frame fitted to slide up and down in guide-pieces F, secured by means of 65
screws *a* to the main frame A, said guide-pieces being cut or grooved out, as shown at *b*, Fig. 10, to receive a projection corresponding in shape upon the sides of the frame E. The under side of frame E is provided with a slot, *c*, 70
in which is arranged an adjustable block, G, in which the upper dies or cutters, *d*, are secured. Block G, having been adjusted, is locked in that position by the insertion of a wedge, *e*, at the right-hand side of said block, where it is 75
passed into slot *c*.

The lower dies, *d'*, are secured in an adjustable block, H, which is adjusted in this case by means of slots H', cut out in flanges H'' of block H, and secured after adjustment by 80
means of set-screws I.

Frame E is made so as to slide up and down in guide-pieces F, and is operated by composite eccentric-rods J, arranged upon each side of the machine, the lower ends being secured to 85
frame E by means of rods or bolts *f f*, the eccentrics operating said parts J having just sufficient throw to raise and lower the dies or cutters *d* the desired distance to operate properly with the other parts of the machine here- 90
inafter described. The lower ends of eccentric-rods J are made in the form of a half-cylinder, as shown in Fig. 9, frame E being cut out to receive them. Thus the bearing in the downward motion of the eccentrics comes di- 95
rectly upon frame E instead of upon bolts *f f*.

In order to vary the distance below the face of the lower cutters to which the reciprocating cutters shall descend, an adjusting device is arranged upon each of the parts J in the 100
following manner: A screw, K, is provided, to which, at the point *g*, is keyed a wheel, J', provided with holes *h*, into which a pin or spanner may be inserted and the screw be turned. As one end of screw K is made right- 105
handed and the other end left-handed, by turn-

ing said screw the frame E, carrying dies d , may be raised or lowered any desired distance. This adjustment becomes necessary, as the dies or cutters become dulled by usage and are shortened by sharpening the same. The adjustment having been made, the parts are secured in that position by turning locking-wheels J'' so that they will bear against the faces f' , washers f'' having been inserted between wheels J' and locking-wheels J'' , this construction thus relieving the threads of screws K of all strain.

Upon shaft C is arranged and secured a cam, L, which operates a plunger, M, which gives motion to punches i , k , and k' . Said plunger slides up and down in a box or slot formed to receive it in frame E, the front part, E', being made in a separate piece and screwed on, that it may be removed, if necessary, for repairs. The upper end of plunger M is level and formed in the shape of a T, the upper side of which bears against cam L, while a cross-piece, N, with its under side laid parallel with the top of plunger M, bears upon the top of said cam L, and is secured to the plunger by means of rods O. The lower ends of rods O are secured to plunger M, while the upper ends, which are provided with threads, pass through the ends of piece N, and by means of locking-nuts O'—one on each side of said piece N—the distance between the top of plunger M and the bottom of cross-piece N may be regulated to conform to the diameter of cam L and locked in that position after being so regulated.

In order that the plunge of punches i , k , and k' may be properly adjusted, a device is arranged upon the lower end of plunger M. (Shown in section in Fig. 14 of the drawings.) A screw, P, is extended up into the end of plunger M, upon the head of which is secured a hollow piece, Q, by means of a pin, l , and punches i , k , and k' are also secured by means of pins to the lower end of piece Q. In regulating the plunge of the punches screw P is turned from the under side, and, having been regulated as desired, it is then secured in that position by means of a lock nut or wheel, R, in the same manner as the regulating devices upon the parts J J.

The upper dies or cutters, d , are secured in block G, as represented in Figs. 4, 7, and 8 of the drawings, the upper ends bearing against a thin plate, m , which is made to fit into the opening cut through block G, having sufficient thickness to fill the space between the upper ends of dies d and the bottom of plate n . Said plate n , extending entirely across the block G, forms a substantial bearing for the thin plate or plates m .

The lower dies or cutters, d' , are secured in block H, as represented in Figs. 4, 5, and 6, the openings in the block being just sufficiently wide to receive them, and they are held in position in the opposite direction by means of a block, o , secured at one end to the front of block H and at the other end by a thin plate, p , and blocks q , r , and s , resting in a slot cut

in block H. The lower ends of cutters d' rest upon a plate, d'' , which in turn rests upon a plate in the block H.

The first blocks, q , also serve the purpose of dies or cutters, the sides t being formed with a sharp edge. These two blocks, as well as the next two adjoining, r r , with slots 7 cut in their ends, must necessarily be of just such a form and width and be set and secured in a particular position, in order that they may work perfectly in connection with the other parts of the machine.

Blocks s are simply wedges, their use being to secure the parts q and r in position.

The parts u u u are small square bars of steel which slide up and down in correspondingly-shaped holes in the angular pieces v , which are inserted between the dies to retain them in their proper relative positions. As pieces u drop down their lower ends rest upon a rod, w , which operates them, in connection with the operation of the machine, in the following manner: One side of rod w is cut away the entire distance that it extends into block H, so that pieces u are allowed to drop or be pushed down out of the way by the cutters or dies d in their downward motion. As soon as the cutters have performed their office and are raised with frame E rod w is turned by means of a joint-lever, w' , secured one end to the end of rod w and the other end to the side of block G, when rod w , which acts as a cam, pushes up pieces u , so that their upper ends will come on a level with the tops of cutters or dies d' , the latter being raised above the level of block H, as represented in Fig. 6 of the drawings. Thus by pushing up pieces u , as above explained, the parts x of the thin flat piece of metal S (from which the barbs are cut and pressed into form) are pushed back so as to be relieved from the dies, thereby permitting the metal piece S to be fed forward again.

As will be observed by Figs. 5 and 7 of the drawings, cutters d and d' are set at an angle instead of parallel with the fronts of blocks G and H, the first set being placed left-handed and the others right-handed. This is for the purpose of cutting the flat piece of metal S, as represented in Fig. 11 of the drawings. In the operation of cutting the piece S to form the barbs it is first fed forward over the cutters d' a sufficient distance to be acted upon by the first set of cutters, which make the cuts y shown in Fig. 11. It is then fed forward under the next set of cutters the proper distance, when both sets of cutters then act upon it, the first set cutting it as before mentioned, while the second set, being set at an opposite angle, cut across the parts previously cut by the first set, as represented at z , Fig. 11, thereby completing the cut for the points of the barbs. The metal piece S is then fed forward, and the barb-points last formed are pushed down between the ends of blocks q by punch i , as shown at 1 in the same figure. When it is again fed forward the first two barbs are cut

off, as shown at 2, Fig. 11, by the cutter 3 and edge *t* of block *q*. At nearly the same time that the barbs are cut off surfaces 4 press the piece *S* firmly down upon the surfaces 5, holding the said piece securely, while the points of the succeeding barbs are bent downward by the descending punch *i*. As soon as the two barbs 6 are cut off they drop down upon the blocks *r*, the necks of the barbs resting upon the projections *r'*, while the center of the necks comes directly over the center of the slots 7. Punches *k* and *k'*, which are formed with slightly-rounded ends, then descend upon the respective necks of the barbs and press them down through the slots 7, which operation curves the necks, as shown at 8, Fig. 12, thereby finishing the barbs, as represented in the latter figure and Fig. 13. As the necks of the barbs are pushed down through slots 7 the barbed points *a'* pass down through the longitudinal opening *a''*, the barbs dropping into a receptacle underneath the machine.

To guard against the blank barbs 6 moving toward each other and dropping through after they have been separated from metal piece *S* before they have been pressed into shape, as shown in Fig. 12, a tongue-piece, 11, is provided, which extends in between the two blank barbs 6, being pivoted at 12 upon a piece, 13, secured to block 14. As block *G*, with the parts connected therewith, descends to do its work, as before explained, the part 15 strikes the top of tongue-piece 11, carrying it down with it; but as soon as the motion of the block is reversed and the pressure is removed it is sprung back by a spiral spring, 16, secured one end to part 17 of tongue-piece 11 and the other end to a piece, 18, secured to block 14. A recess, *g'*, is formed in the lower side of block *G*, into which the rear part of tongue-piece 11 enters when said block descends, and part 15 strikes upon and depresses tongue 11.

The parts 19 and 20 are guides which hold the piece *S* in place as it is fed forward between the cutters, the part 20 being made adjustable and fitted to slide back and forth in slots 21, and is operated by a spiral spring, 22, which presses the edge of guide 20 against the side of piece *S*, thereby securing it against a lateral motion. Flanges 23 are also provided upon the edges of both guides 19 and 20, by means of which piece *S* is kept in position upon block *H*.

Those skilled in the art to which my invention belongs will readily perceive the great practical value and importance of my said invention, in view of the fact that the metal strip *S* is formed into barbs by one continuous operation, and that, too, without the least waste of material, the barbs being delivered from the machine in perfect order and condition and ready to be applied to the fence-wire.

Having described my improvements in machines for making loose barbs for barbing fence-wire, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with sliding frame *E* and eccentric-shaft *C*, of the adjustable composite eccentric-rods and nuts *J*, *K*, *J'*, and *J''*, said nuts having their top and bottom surfaces parallel, substantially as and for the purposes set forth. 70

2. The combination, with sliding frame *E* and adjustable block *G*, of the two sets of dies or cutters *d d* thereon, and block *H*, having cutters *d' d'*, the sets arranged to cut at different angles, substantially as and for the purposes set forth. 75

3. The combination, with sliding frame *E*, provided with block *G* and dies or cutters *d*, of plunger *M* and punches *i*, *k*, and *k'*, with block *H*, having cutters and openings relatively arranged substantially as and for the purposes set forth. 80

4. The combination, with plunger *M* and punches *i*, *k*, and *k'*, of the hollow piece *Q*, screw *P*, and lock nut or wheel *R*, substantially as and for the purposes set forth. 85

5. The combination of the block *H*, provided with cutters and openings, as described, with the slotted block *G*, having openings for the passage of punches *i*, *k*, and *k'*, and the plates *m* and *n*, substantially as and for the purposes set forth. 90

6. The combination of the block *G* and piece *Q*, provided with punches *i*, *k*, and *k'*, with the slotted or grooved block *H*, the blocks *o*, *q*, *r*, and *s*, and plates *d''* and *p*, substantially as and for the purposes set forth. 95

7. The combination of the cutters *d*, arranged as described, with the cutters *d'*, the bars *u*, and angular pieces *v*, substantially as and for the purposes set forth. 100

8. The combination of a series of cutters, *d'*, arranged in two sets and inclined to each other at an acute angle, with blocks *u* and the cam-rod *w*, substantially as and for the purposes set forth. 105

9. The combination, with cam-rod *w* and block *G*, of the joint-lever *w'*, substantially as and for the purposes set forth. 110

10. The combination, with blocks or holding-surfaces 4 4 and 5 5, of punch *i*, substantially as and for the purposes set forth. 115

11. The combination of punches *k k'* with the blocks *r r*, having flanges *r'* and slots 7, substantially as and for the purposes set forth. 120

12. The combination of blocks *r r*, having flanges *r'* and slots 7, with the hinged barb guard or tongue 11, substantially as and for the purposes set forth. 125

13. The combination, with blocks *G* and *H*, of the barb-guard 11, spring 16, and tongue-depressing part 15, for the purposes stated. 130

14. The combination, with block *H*, guides 19 and 20, and cutters *d'* between them, of the adjusting-spring and its rod 22, substantially as and for the purposes set forth. 135

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