

(No Model.)

2 Sheets—Sheet 1.

T. A. PERRINS.  
EYELET PUNCHING MACHINE.

No. 600,020.

Patented Mar. 1, 1898.

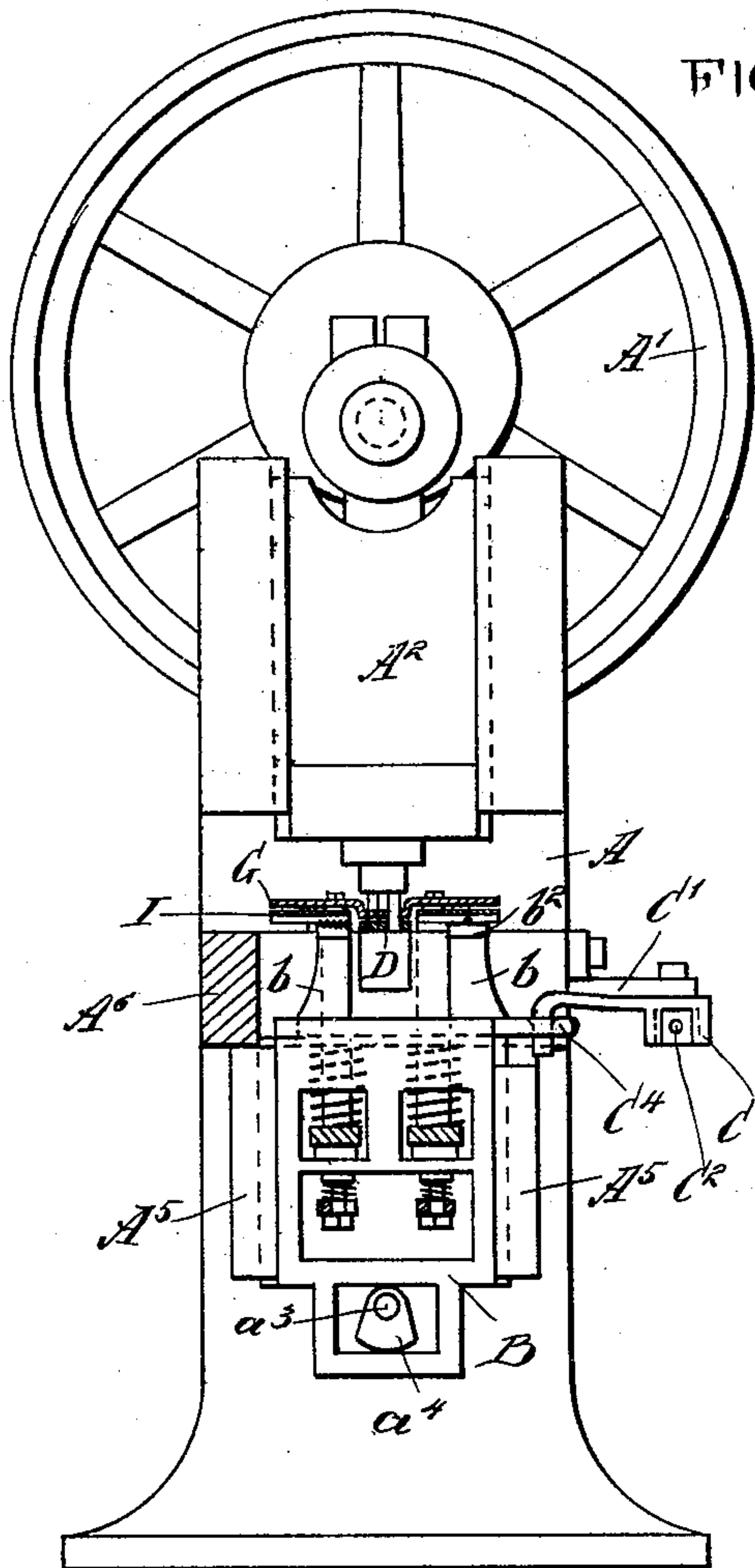


FIG. 1.

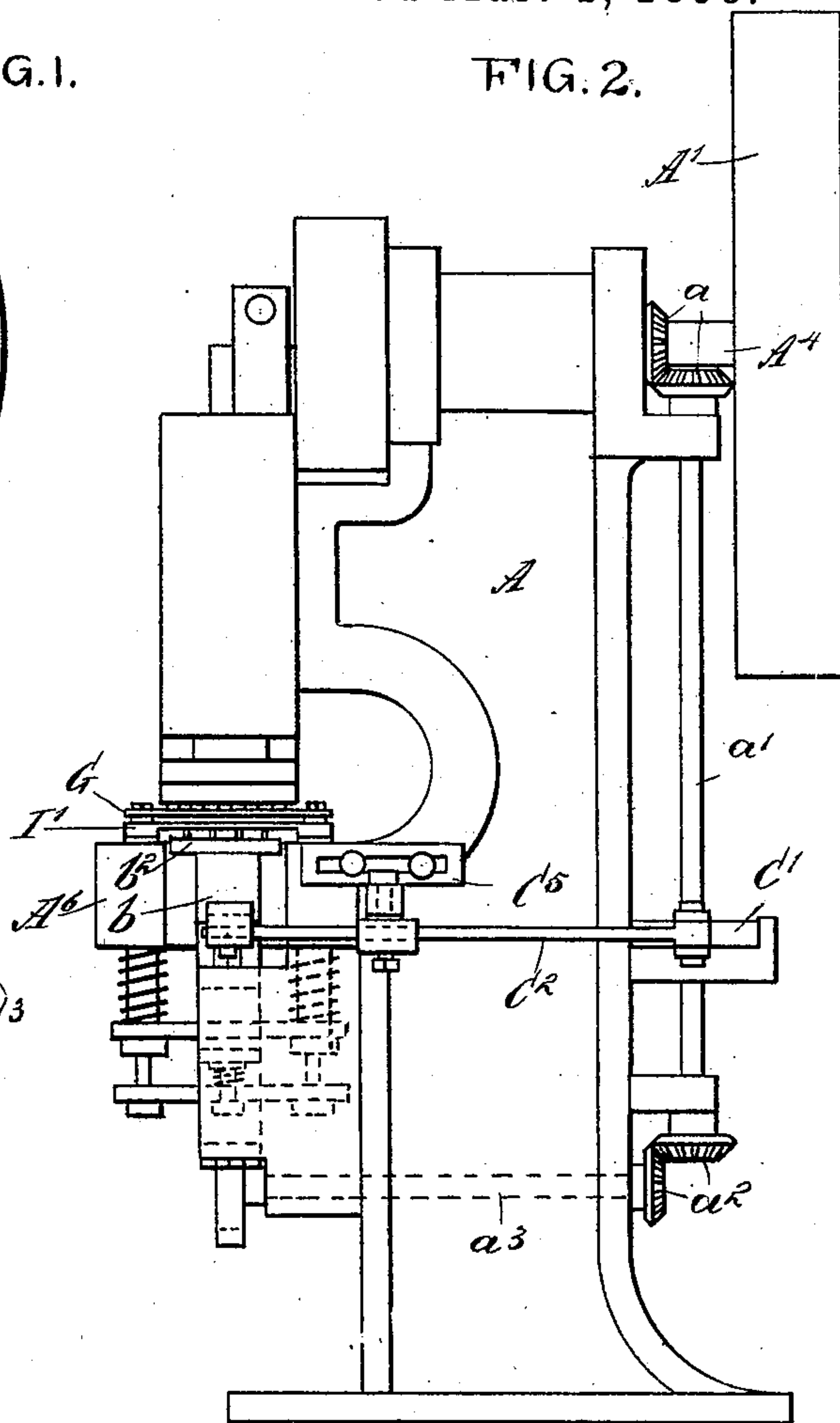
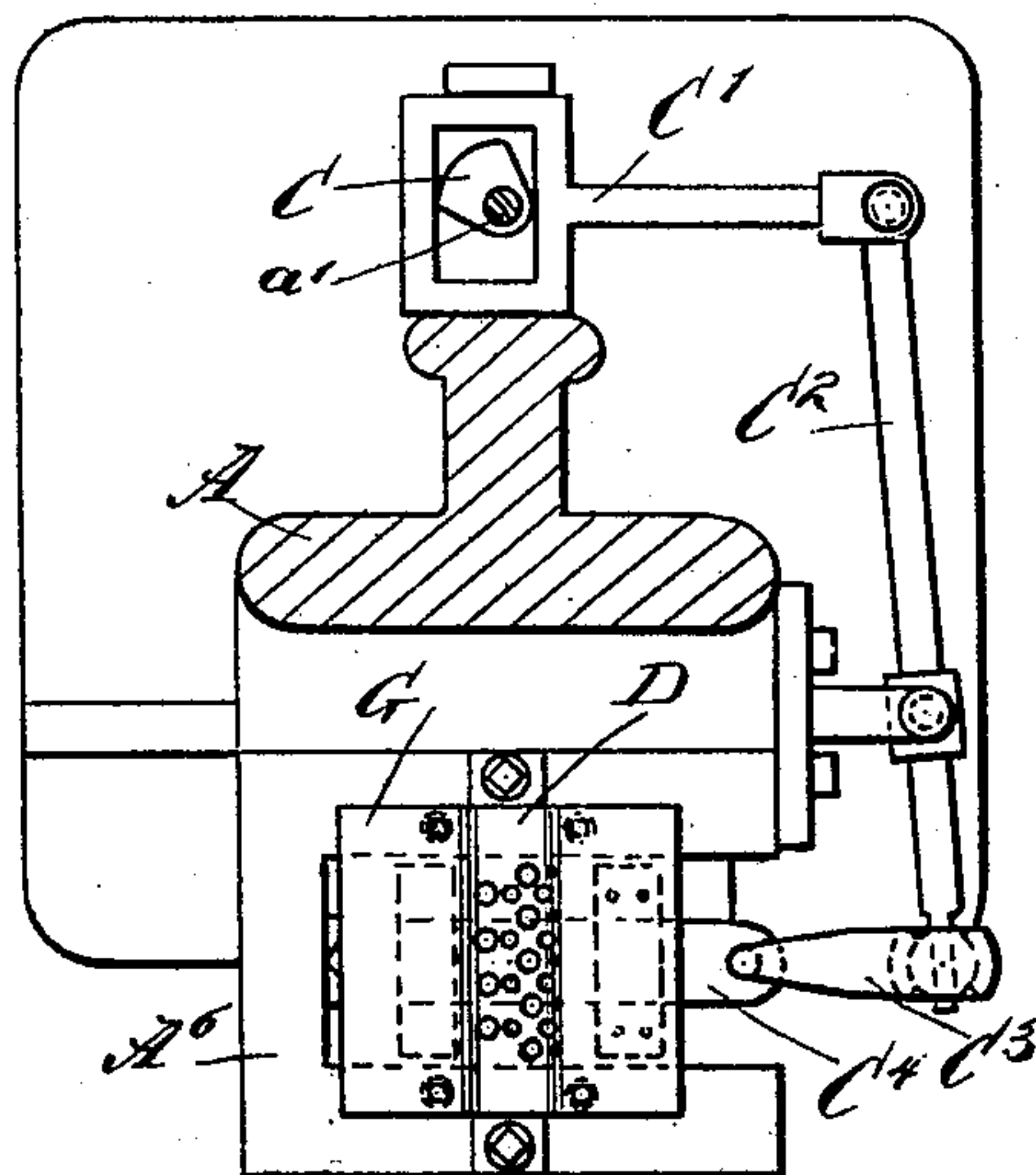


FIG. 2.

FIG. 3.



WITNESSES:

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*H. L. Reynolds.*

INVENTOR

*T. A. Perrins.*

BY

*Wm. J. ...*  
ATTORNEYS.

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FIG. 4.

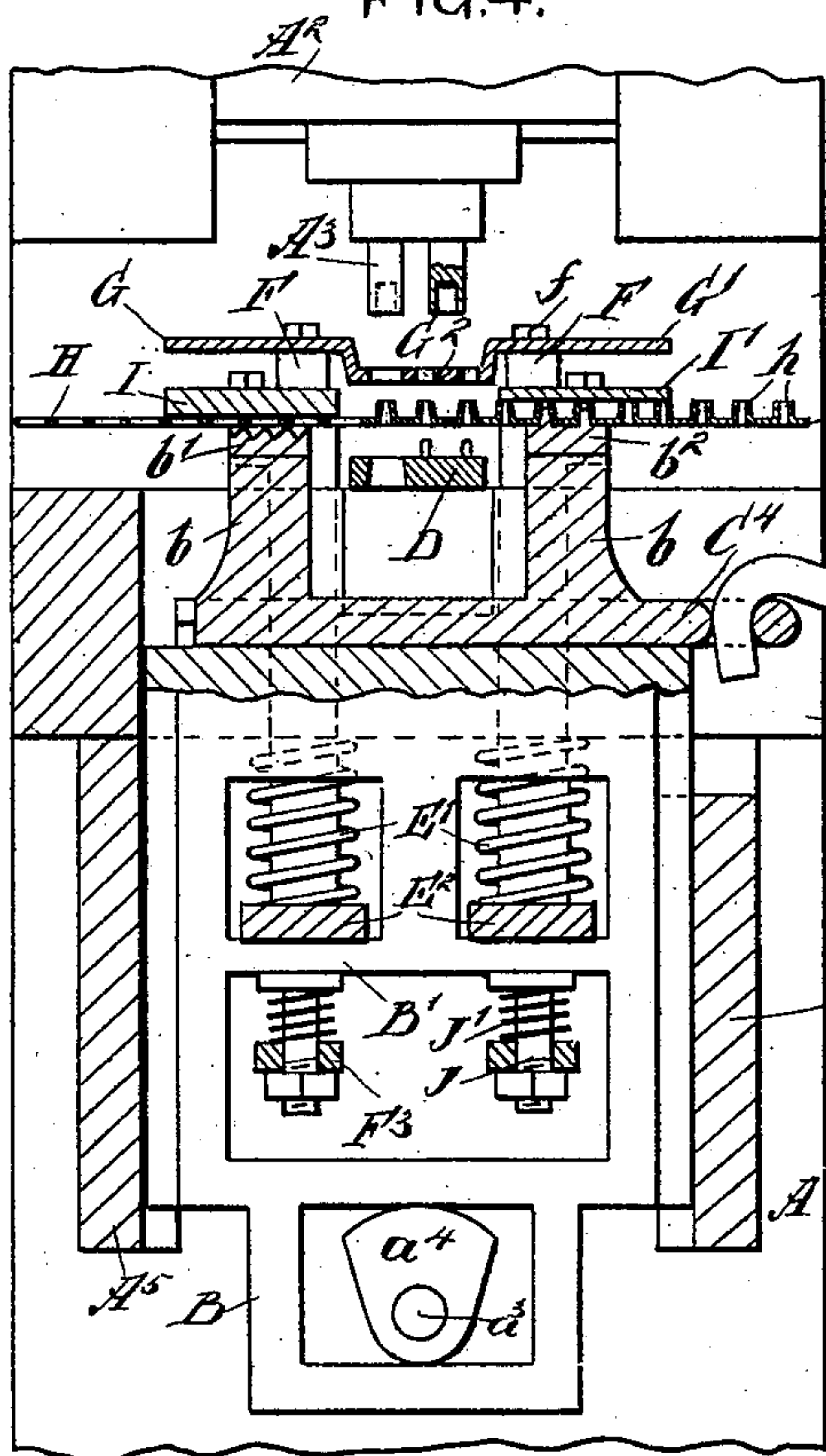


FIG. 5.

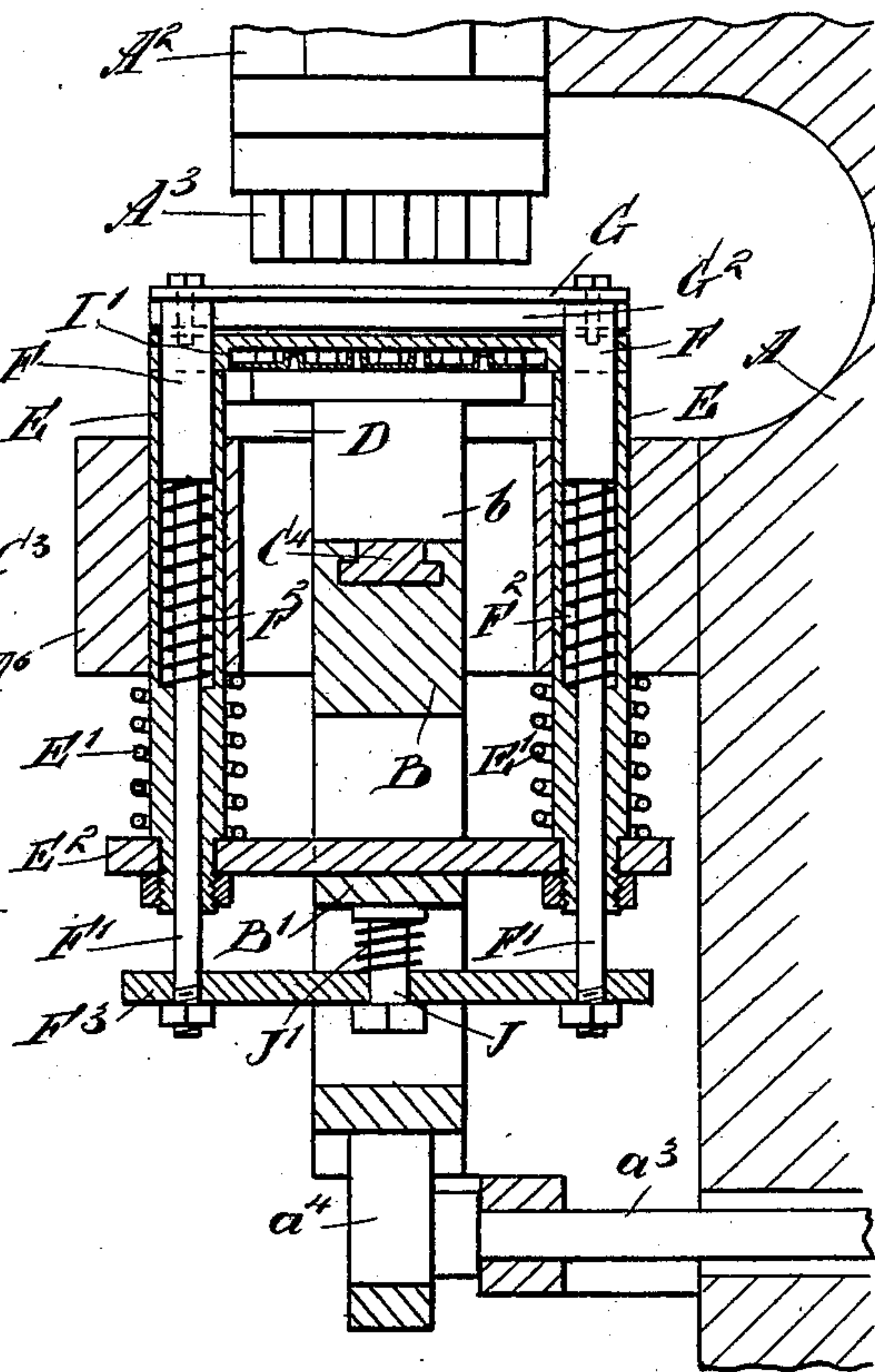
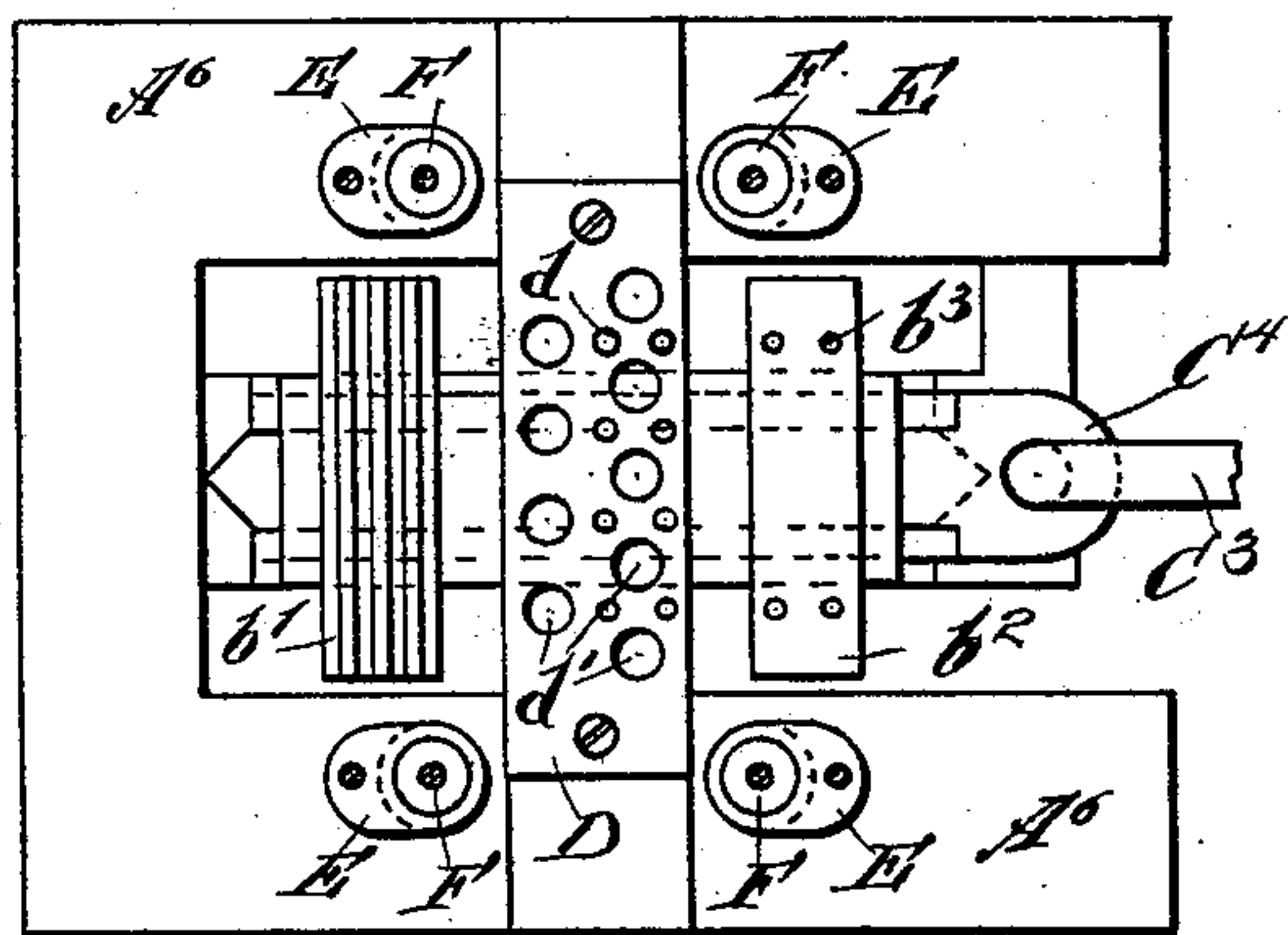


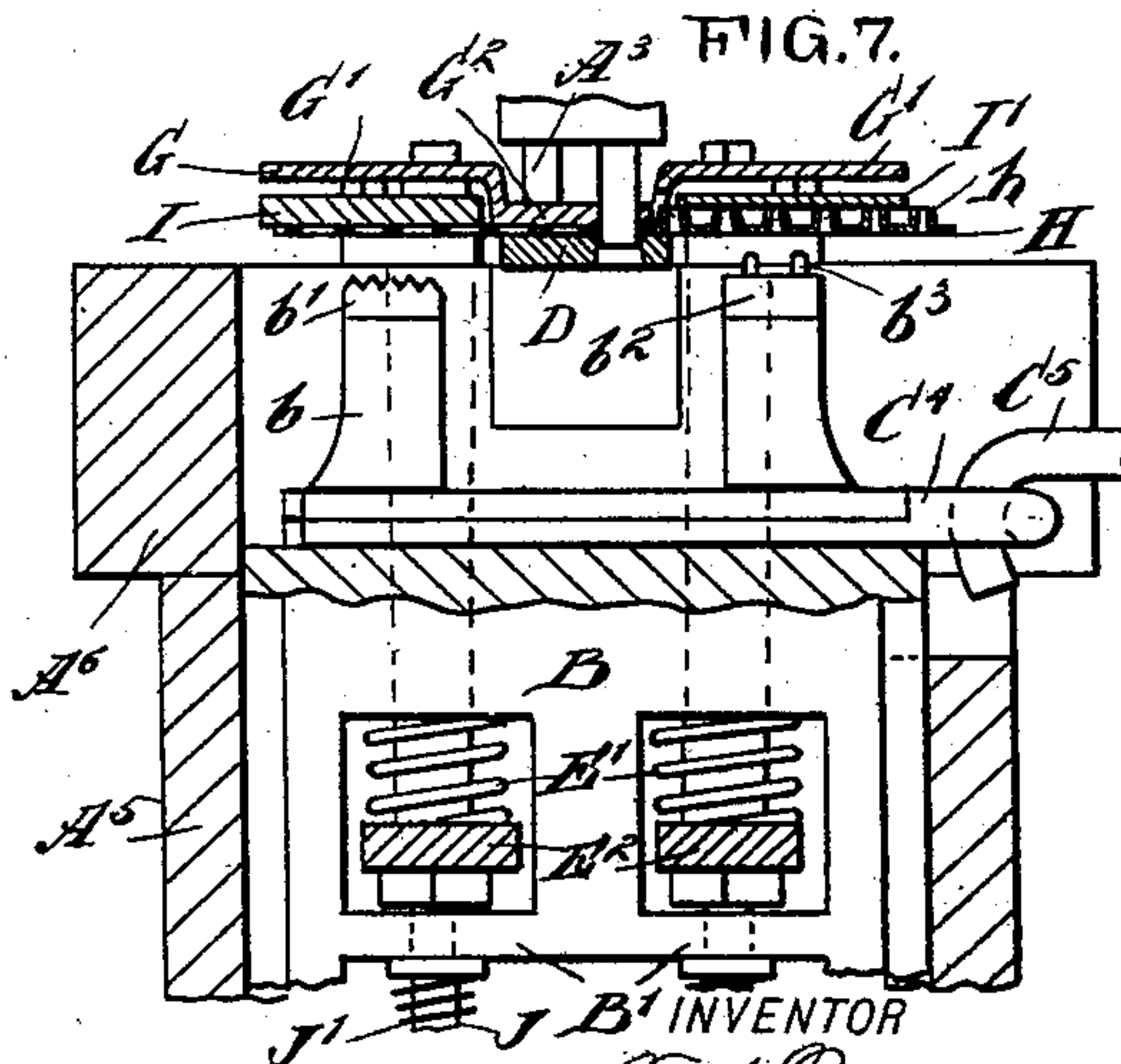
FIG. 6.



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FIG. 7.



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# UNITED STATES PATENT OFFICE.

THOMAS A. PERRINS, OF ANSONIA, CONNECTICUT.

## EYELET-PUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 600,020, dated March 1, 1898.

Application filed March 27, 1897. Serial No. 629,546. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS A. PERRINS, of Ansonia, in the county of New Haven and State of Connecticut, have invented a new and Improved Eyelet-Punching Machine, of which the following is a full, clear, and exact description.

My invention relates to punching-machines used for making eyelets and similar articles; and it consists of certain details of improvements, which will be pointed out in the following specification and claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of a punch with my improvement attached thereto. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the bed of the punch, the frame being in section. Figs. 4 and 5 are sectional front and side elevations through the bed of the machine and my particular mechanism. Fig. 6 is an enlarged plan view of the bed, showing the punching-die and feed-dies; and Fig. 7 is a detail sectional elevation through the dies and the mechanism immediately connected therewith.

My device, as herein shown, is applied to punching eyelets such as used for shoes.

It has heretofore been customary to feed the sheet of brass (which has previously had the eyelet-barrels formed therein) to a stamping or punching press (which punches out or detaches the eyelet from the sheet) in a position so that the barrel of the eyelet is down. In my device the sheet is fed to the punching-press in the opposite position—with the barrels of the eyelets up. The press used for this work may be of any suitable form. The form shown consists of a frame A, having a shaft A<sup>1</sup> mounted in its upper part and carrying the band or fly wheel A'. The forward end of this shaft has a crank attached to the slide A<sup>2</sup>, to the lower end of which are secured the punches. The feeding motion for moving the stock is obtained from this shaft by means of a pair of beveled gears a, shaft a', beveled gears a<sup>2</sup>, lower horizontal shaft a<sup>3</sup>, and a cam a<sup>4</sup>, mounted upon the forward end of said shaft and acting upon a slide B, which is mounted to slide vertically in ways A<sup>5</sup> upon

the face of the machine. This gives the vertical feed for the feed-dies. The horizontal feed is obtained from a cam C, mounted upon the shaft a' and connected, through the link C', lever C<sup>2</sup>, and link C<sup>3</sup>, to a slide C<sup>4</sup>, mounted upon the upper end of the slide B. This mechanism, as described, is the mechanism ordinarily used for such purposes. Any mechanism which secures the same movement may be used instead of the mechanism shown.

The feed-dies b, which consist of lugs formed as a part of and attached to the upper surface of the slide C<sup>4</sup>, are the usual feed-dies. The upper faces of these dies are formed by two plates b' and b<sup>2</sup>, the former having simply a roughened upper surface adapted to engage the under surface of the sheet after the eyelets have been punched out, the latter, b<sup>2</sup>, having the pins b<sup>3</sup>, adapted to enter the barrel or shank of the eyelet, so as to produce a positive and regular feeding of the material. The die D is formed of a small plate of steel in the usual manner and is provided with holes d' and with upwardly-extending pins d, which are adapted to enter the barrels of the eyelets, so as to exactly register the sheet upon the die.

Two presser-plates are provided, one acting upon the stock before reaching the die and the other upon the refuse after the eyelets are punched out. The presser-plate I, which engages the material after the eyelets have been punched, is of the ordinary rectangular form and above the stock. The presser-plate I', which engages the upper surface of the material before the eyelets have been punched, has its under surface hollowed out of sufficient width to receive the stock. This is clearly shown in Figs. 4 and 5.

The stripper consists of a plate G, which extends over both of the presser-plates and the die. The center portion G<sup>2</sup> of this plate, which is over the die, is depressed or bent down. This center portion is also provided with holes adapted to receive the barrels of the eyelets and the punches. The presser-plates I and I' are attached to the upper ends of the pins or bolts E, which are provided with a side-extending lug or head at their upper ends in order to provide room for the attaching screw or bolt. These bolts E are bored throughout their length, forming tubes, within



which are placed the bolts F, to which the stripper is attached. The bore of the bolt E is of two diameters, the larger being the upper one. The bolt or pin F, carrying the stripper, is also of two diameters, corresponding to the size of the bore in the pin E.

Surrounding the smaller part of the pin F and within the bore in the pin E are springs F<sup>2</sup>, which act to separate the two pins—that is, to raise the stripper above the presser-plates. The position of the two pins when the springs F<sup>2</sup> are free to act is shown in Figs. 4 and 5. In this view the stripper has been raised sufficiently to entirely clear the barrels of the eyelets. Surrounding the lower end of the pins E are springs E', which press against the lower side of the bed A<sup>6</sup> and the upper side of the bars E<sup>2</sup>, which connect the lower ends of each pair of the pins. These springs have a tendency to hold the presser-plates down upon the material. Bars F<sup>3</sup> similarly connect the lower ends F' of each pair of pins F, attached to the stripper. The slide B, which carries the feed-dies, has openings in its lower portion, receiving the cross-bars E<sup>2</sup> and E<sup>3</sup>. It is also provided with bars B', adapted to engage the bars E<sup>2</sup> to raise the same. A bolt J is also connected to the cross-bar B' and passes down through the bar F<sup>3</sup> and has a head upon its lower end, engaging the under surface of said bar F<sup>3</sup>. The shank of the bolt of the cross-bar F<sup>3</sup> has a spiral spring J' surrounding it and acting to depress the bar F<sup>3</sup> and hold the same in contact with the head of the bolt. This spring is designed to be stronger than the two springs F<sup>2</sup>, against which it acts. It will therefore, when free to act, compress both of the springs F<sup>2</sup>, so as to hold the stripper down upon the stock and the upper surface of the presser-plates. The length of the pins E and the travel of the slide B are so proportioned that the slide will have some overtravel at its lower end—that is, will drop lower than the pins E will permit the cross-bars E<sup>2</sup> to go. This position of parts is shown in Fig. 7. In this position the spring J' is sufficiently strong to draw down the stripper and hold it in contact with the upper surface of the stock. When the slide starts up, it moves a short distance before the cross-bar B' comes in contact with the bar B<sup>2</sup>. The bar F<sup>3</sup>, being in contact with the head of the bolt J, will be raised immediately upon the beginning of the upward motion, so that the stripper G will be raised before the presser-plates start. The bar B', coming later in contact with the bar E<sup>2</sup>, starts the presser-plates also. These movements are so timed as to follow the moving punches A<sup>3</sup>—that is, the punches A<sup>3</sup> start to rise before the stripper rises. It is, however, similar to the motion usually given the same parts in similar machines. The punches A<sup>3</sup> for this work are made with recessed ends—that is, they are bored out, so as to receive the barrels of the eyelets, leaving their lower ends in the form of a narrow annulus or ring. The feeding movement, which is the ordinary feed-

ing movement of such machines, gives the feed-dies first an upward movement, which engages the pins b<sup>3</sup> with the eyelets of the stock, then a forward feeding movement, and then a downward drop and a return horizontal movement. This is the ordinary feeding device. Feeding the material in this way with the barrels of the eyelets upward results in certain advantages, among which is the ability to make the die D with less holes than when the material is fed the other side up. This results in a stronger die and one which is less liable to break. The punch-holes in the die must be of the same size; but instead of the holes which in the other method are necessary to receive the barrels of the eyelets small registering pins are used. It is not necessary to have any great number of these pins, two being sufficient, although in the drawings I have shown more. As can be seen, this leaves the die more nearly a solid plate, and consequently much stronger. It also necessitates a stripper shaped somewhat different from the usual stripper. It must be provided with holes to receive the barrels of the eyelets as well as the punches. One of the presser-plates must also be made with a hollowed under surface, so as to accommodate the thickness of the material and the barrels of the eyelets.

This method of punching the eyelets with the shank or barrel up produces a smoother and handsomer eyelet than when they are punched the usual way with the shanks down. The quality of the product is also not affected by the size of the eyelet, a small eyelet being as readily and perfectly produced as a larger one, which cannot be done by the usual method.

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

1. A stripper-plate for eyelet-punching machines having two sets of holes of different diameters, one receiving and fitting the punches and the other receiving and fitting the unpunched eyelets, substantially as described.

2. A stripper-plate having holes for the cutting-punches and other openings having the form of and fitting the eyelets to be cut and having sections of its under surface before and after the section containing the punch-holes raised or offset from the perforated sections, substantially as described.

3. A stripper-plate having holes for the cutting-punches and other openings having the form of and fitting the eyelets to be cut and having sections of its under surface before and after the section containing the punch-holes raised or offset from the perforated sections and presser-plates beneath said raised parts of the stripper, substantially as described.

4. In an eyelet-punching machine, a stripper-plate having holes for the cutting-punches and other holes having the form of and fitting the eyelets to be cut and having sections of



its under surface before and after the section containing the punch-holes raised or offset from the perforated section and presser-plates beneath said raised parts of the stripper one of said plates being hollowed on its under side to accommodate the raised barrels of the eyelets.

5. In an eyelet-punching machine, the combination of a die having registering pins projecting from its upper surface, a feed-die having similar pins for engaging the eyelet-sheet, with a punch, a stripper having upwardly-offset sections on each side of the punching-line, and a presser-plate beneath one of the said sections, having its under side grooved to accommodate the eyelet-barrels, substantially as described.

6. A punching-machine having presser-plates, hollow bolts and pins carrying the same, a stripper above said presser-plates and pins carrying the same, the pins carrying the presser-plate being hollow and receiving therein the pins which carry the stripper, substantially as described.

7. A punching-machine having presser-plates, hollow bolts and pins carrying the same, a stripper above said presser-plates and pins carrying the same, the pins carrying the presser-plate being hollow and receiving therein the pins which carry the stripper, and springs acting upon said pins to normally hold the stripper raised above the presser-plates, substantially as described.

8. A punching-machine having presser-plates and a stripper, the latter supported from the former and having a spring interposed acting to normally hold the stripper away from the presser-plates, substantially as described.

9. A punching-machine having presser-plates, hollow bolts and pins carrying the same, springs acting to depress the plates upon the material, connections therefrom to the feed-die raising and lowering mechanism

for lifting the same, pins passing through the presser-plate pins, a stripper attached to the upper ends of said latter pins, springs interposed between the presser-plate and stripper pins to hold the latter slightly away from the former, and a feed-die raising and lowering mechanism which at its lower end overtravels the presser-plate pins, substantially as described.

10. A punching-machine having presser-plates, hollow supporting-pins therefor, having side-projecting heads to which the plates are attached, the body of the pins extending below the plates, springs connected to the pins to depress them, a stripper above the presser-plates, and pins connected thereto and extending through the holes in the presser-plate pins, substantially as described.

11. A punching-machine having presser-plates, hollow supporting-pins therefor, having side-projecting heads to which the plates are attached, the body of the pins extending below the plates, a stripper-plate and pins connected thereto and extending through the holes in the presser-plate pins, and springs interposed between the presser-plate and stripper to normally hold the latter slightly raised, substantially as described.

12. A punching-machine having presser-plates, hollow supporting-pins therefor, the body of the pins extending below the plates, springs for depressing the pins, a stripper-plate, pins connected thereto and passing through the said hollow pins, a slide having means for raising and lowering it, connections therefrom to the presser-plate pins for raising the same, and spring connections to the stripper-plate, for depressing them, said slide overtraveling the presser-plate pins at the bottom of its stroke, substantially as described.

THOMAS A. PERRINS.

Witnesses:

W. H. FOSTER,  
MINERVA E. BASSETT.