

No. 671,761.

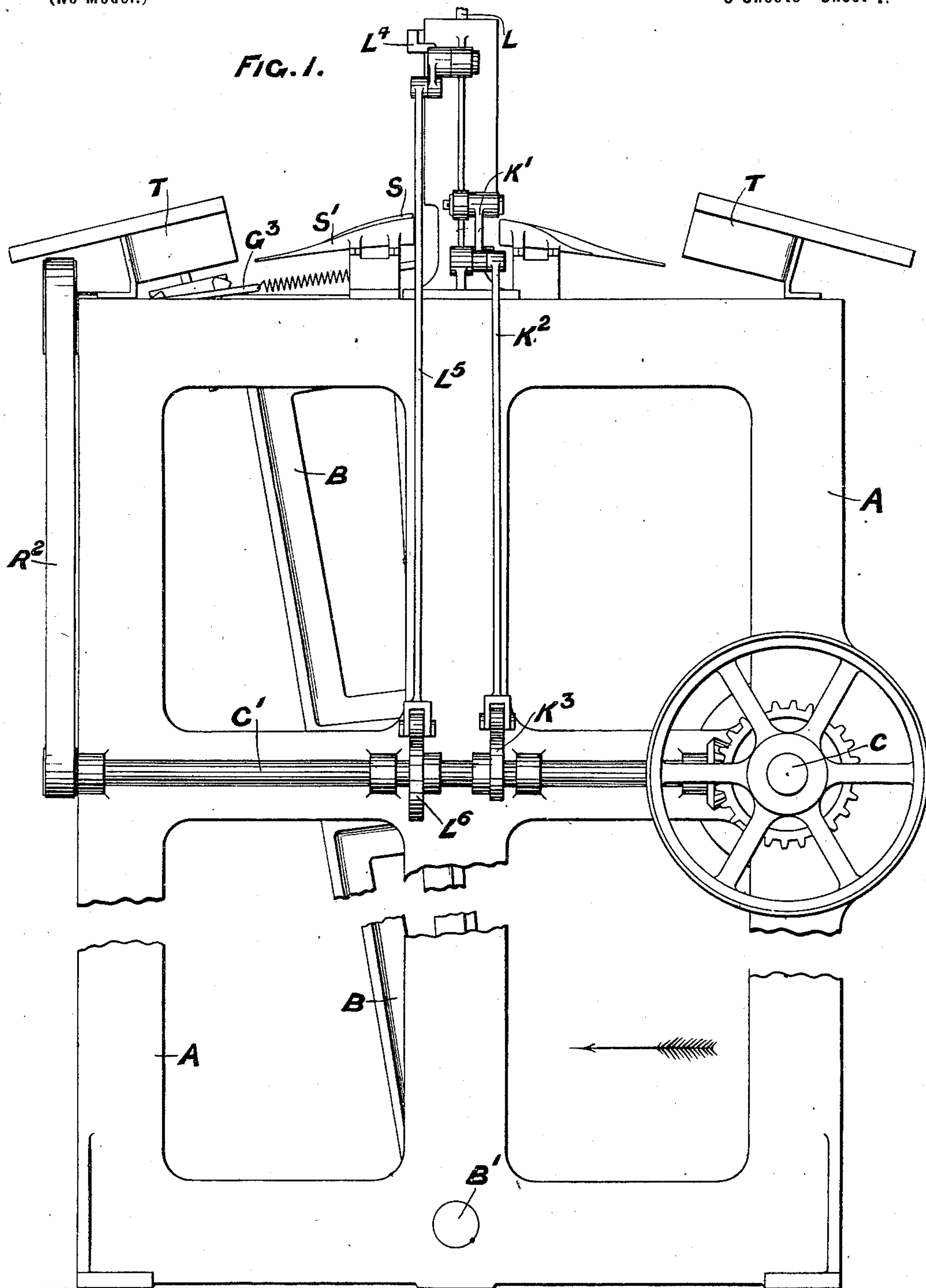
Patented Apr. 9, 1901.

A. FORBES & F. GROVER.
WRAPPING MACHINE.

(Application filed Aug. 11, 1900.)

(No Model.)

6 Sheets—Sheet 1.



Witness
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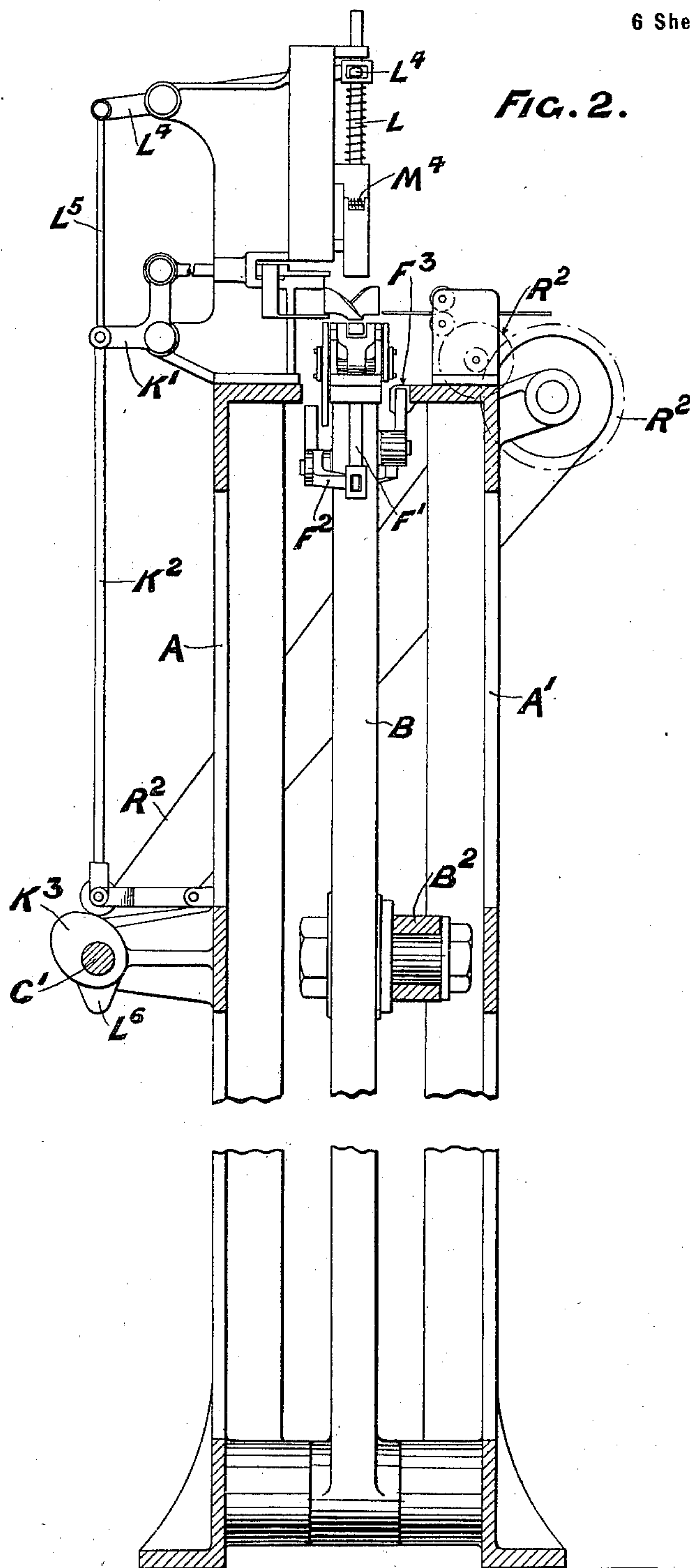
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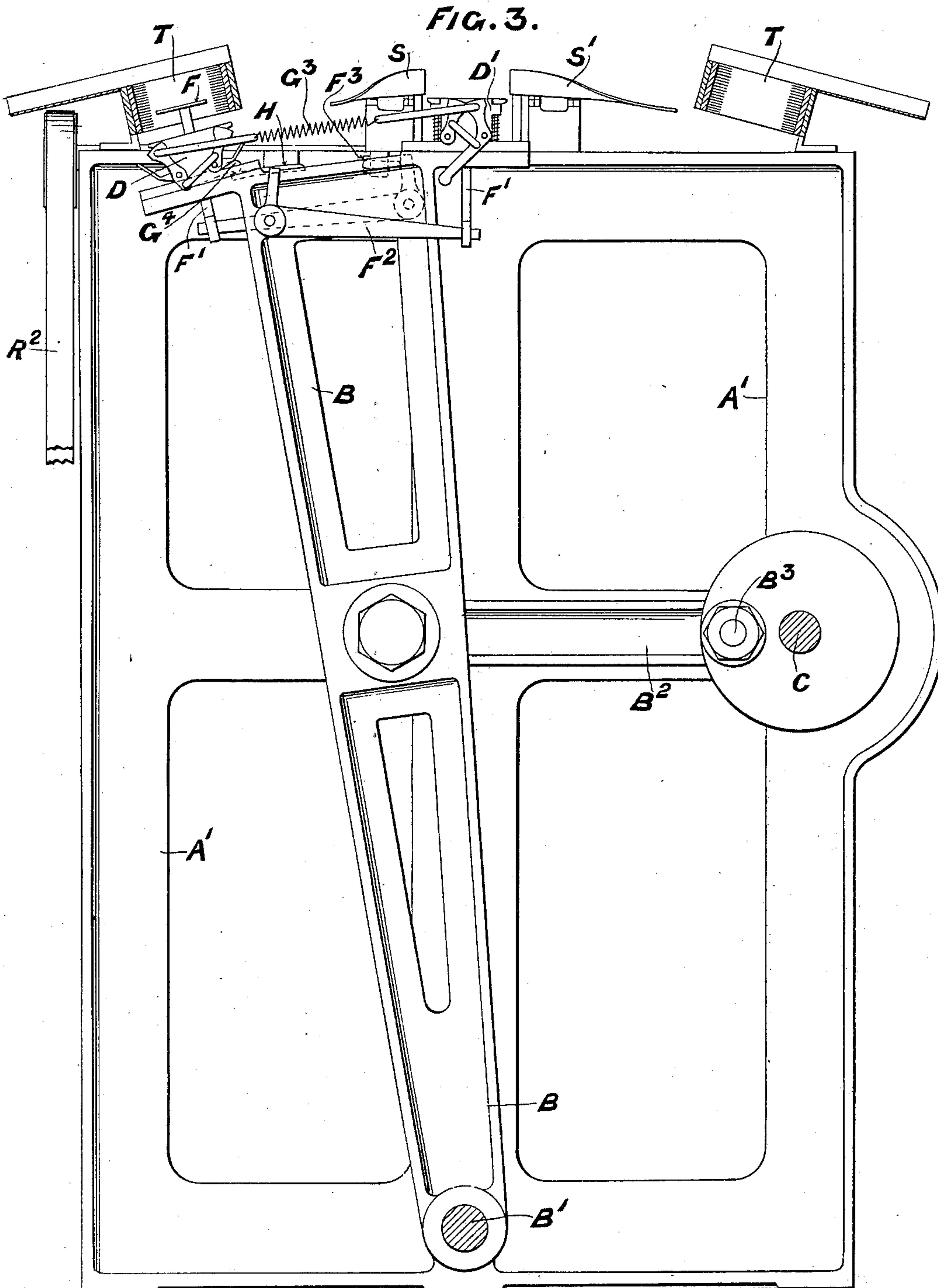
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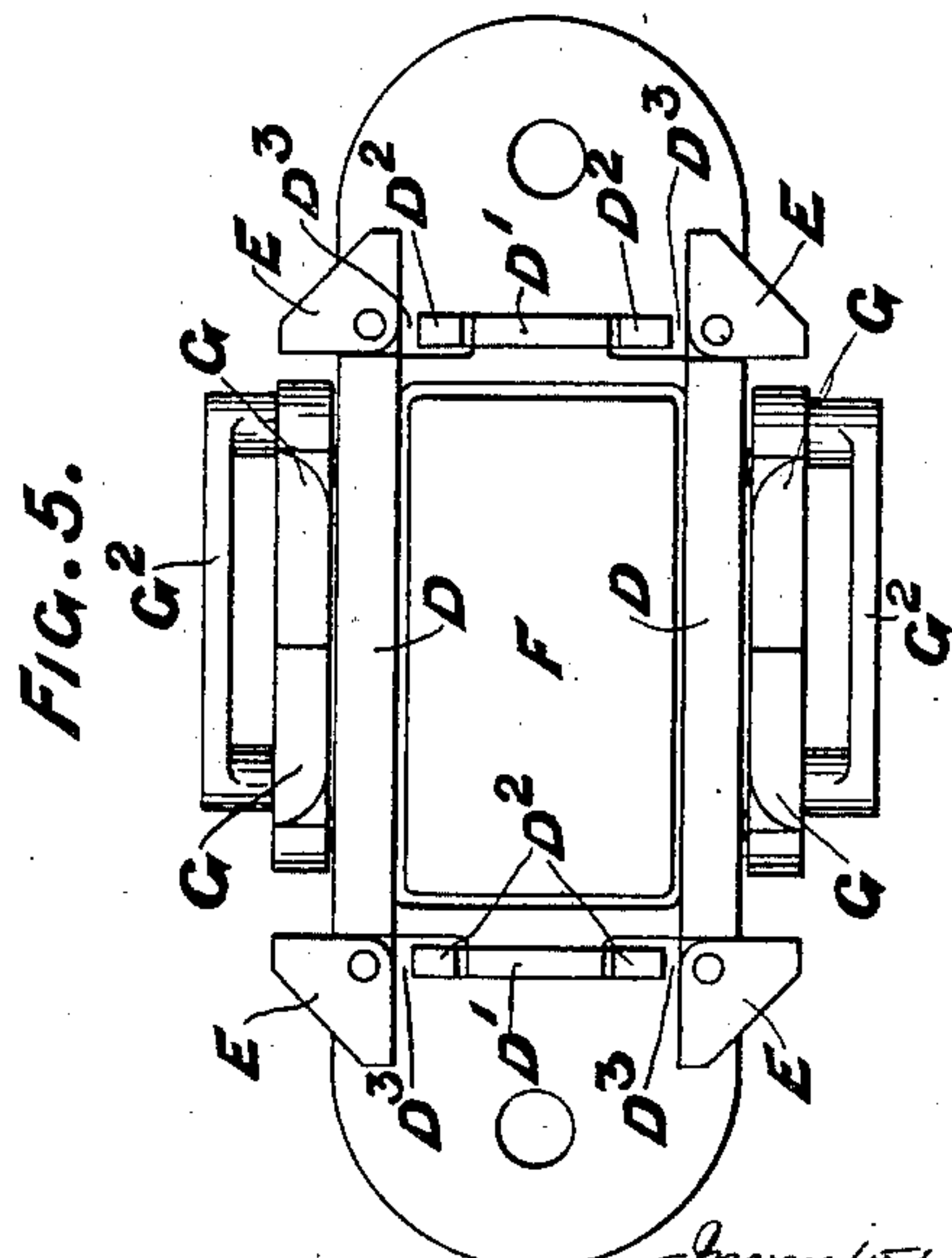
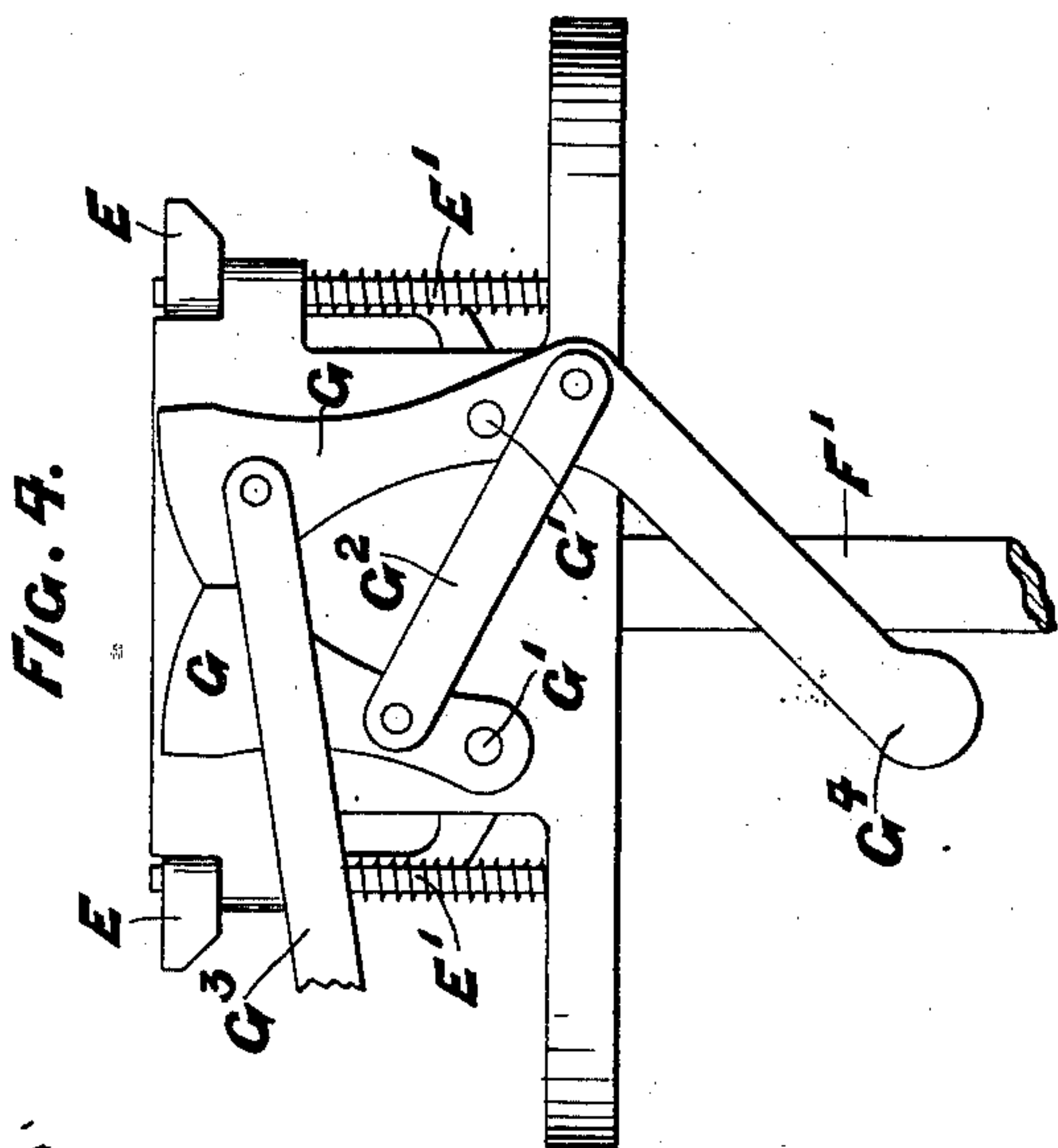
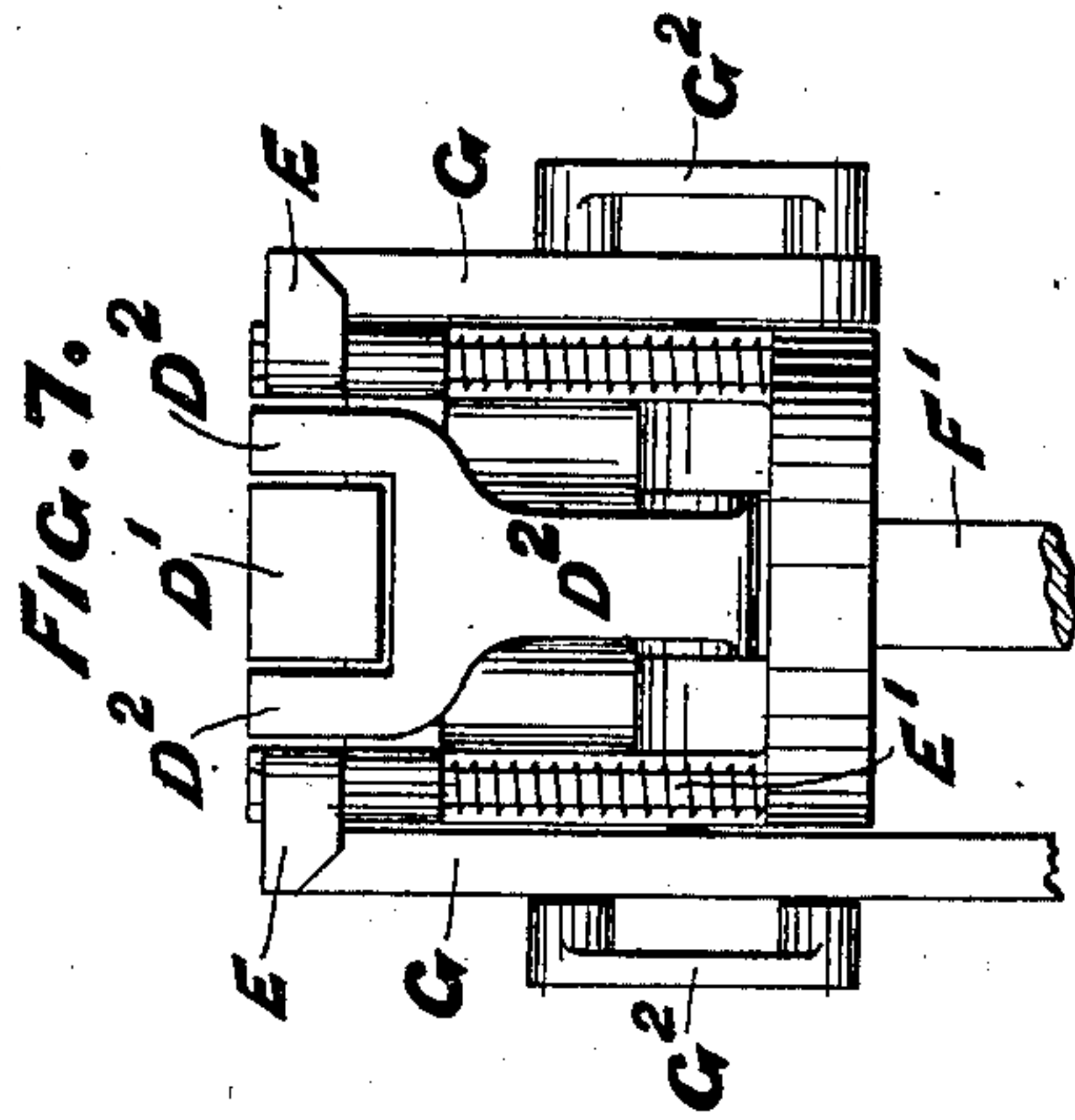
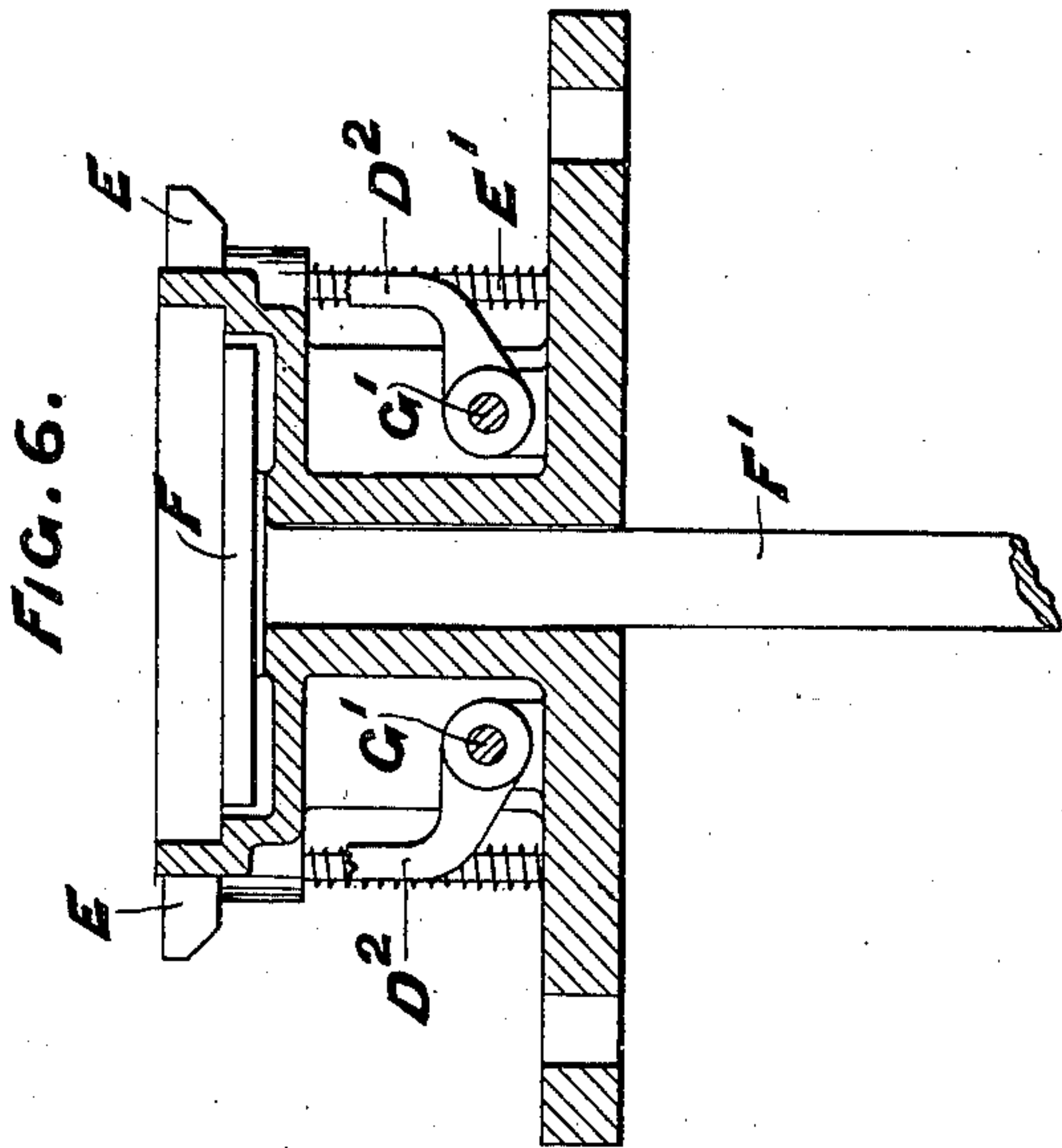
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6 Sheets—Sheet 5.

FIG. 9.

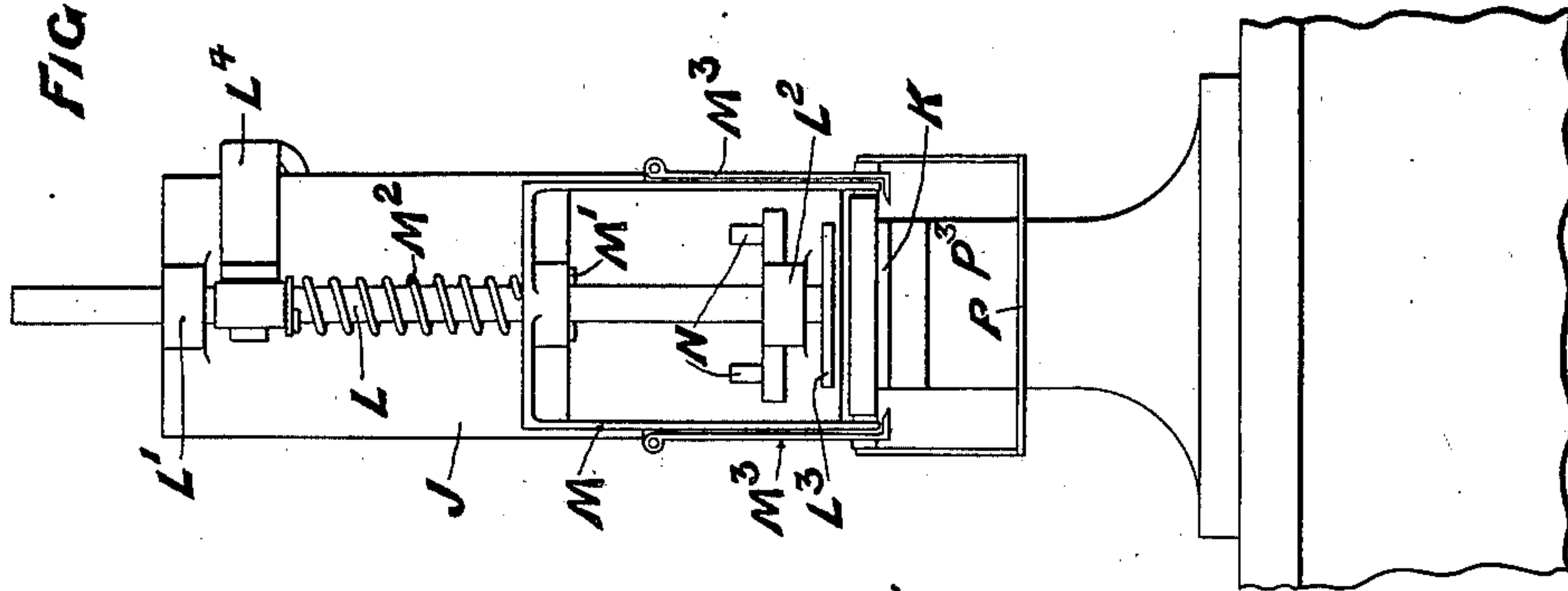
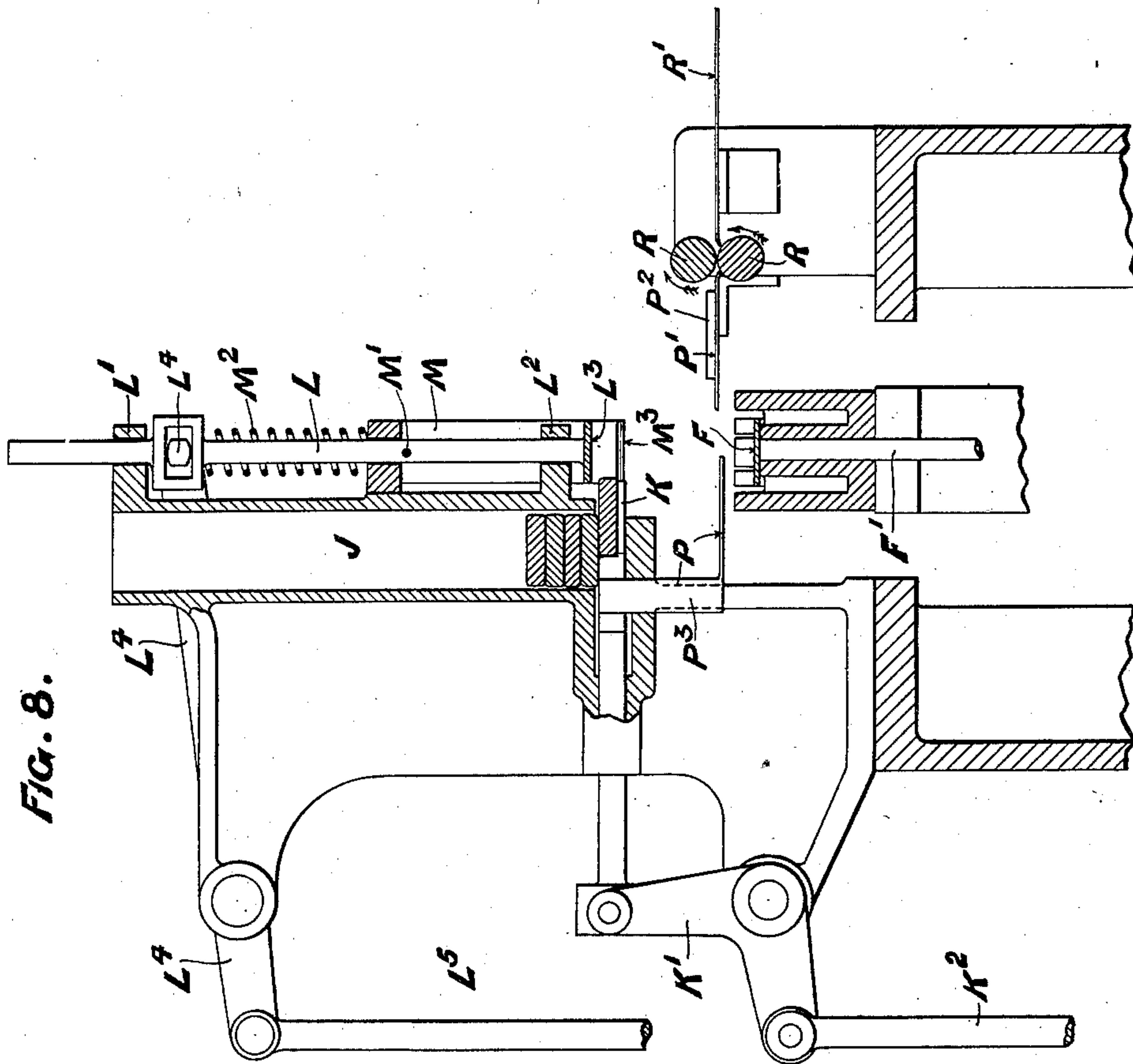


FIG. 8.



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FIG. 10.

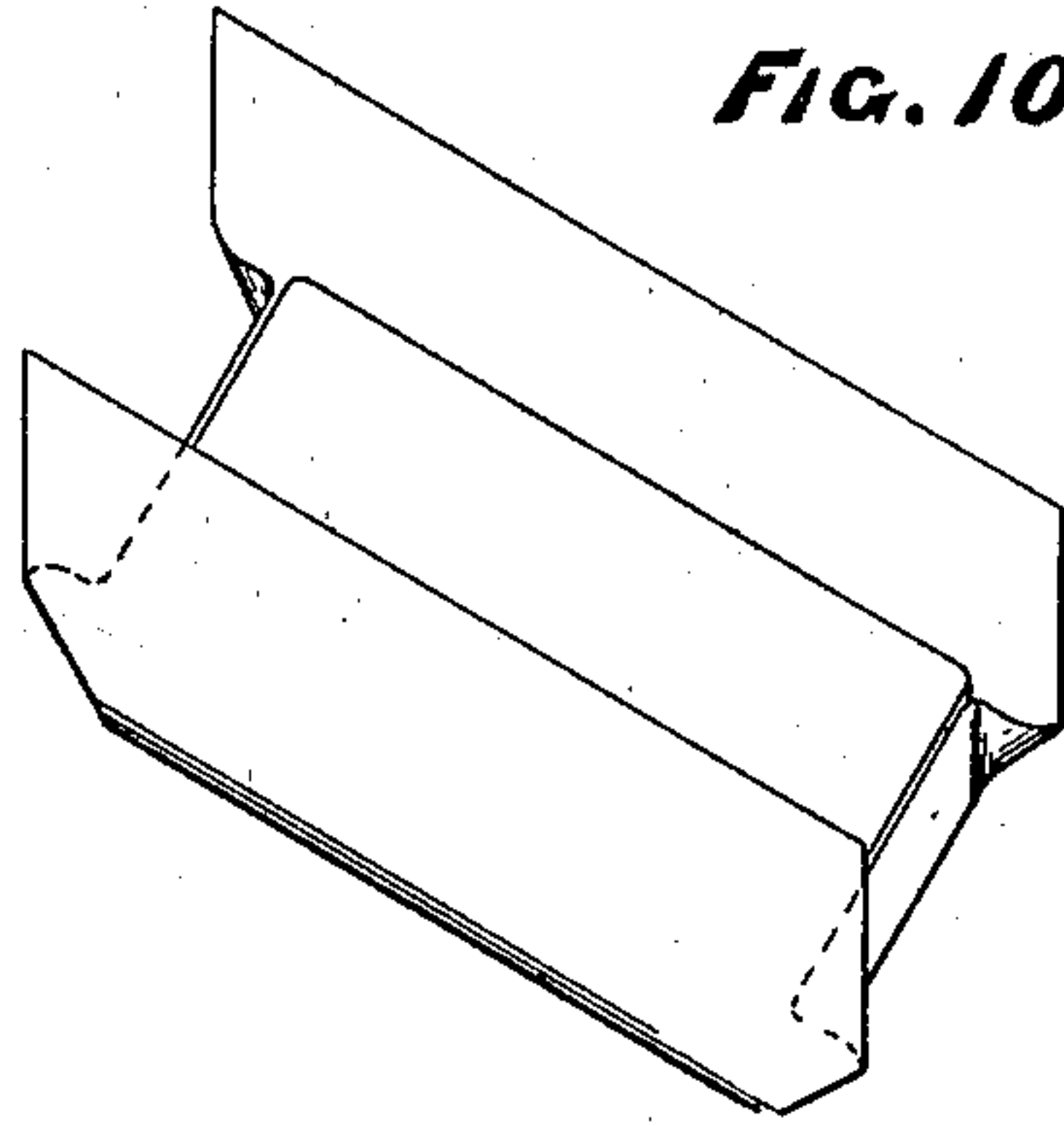


FIG. 11.

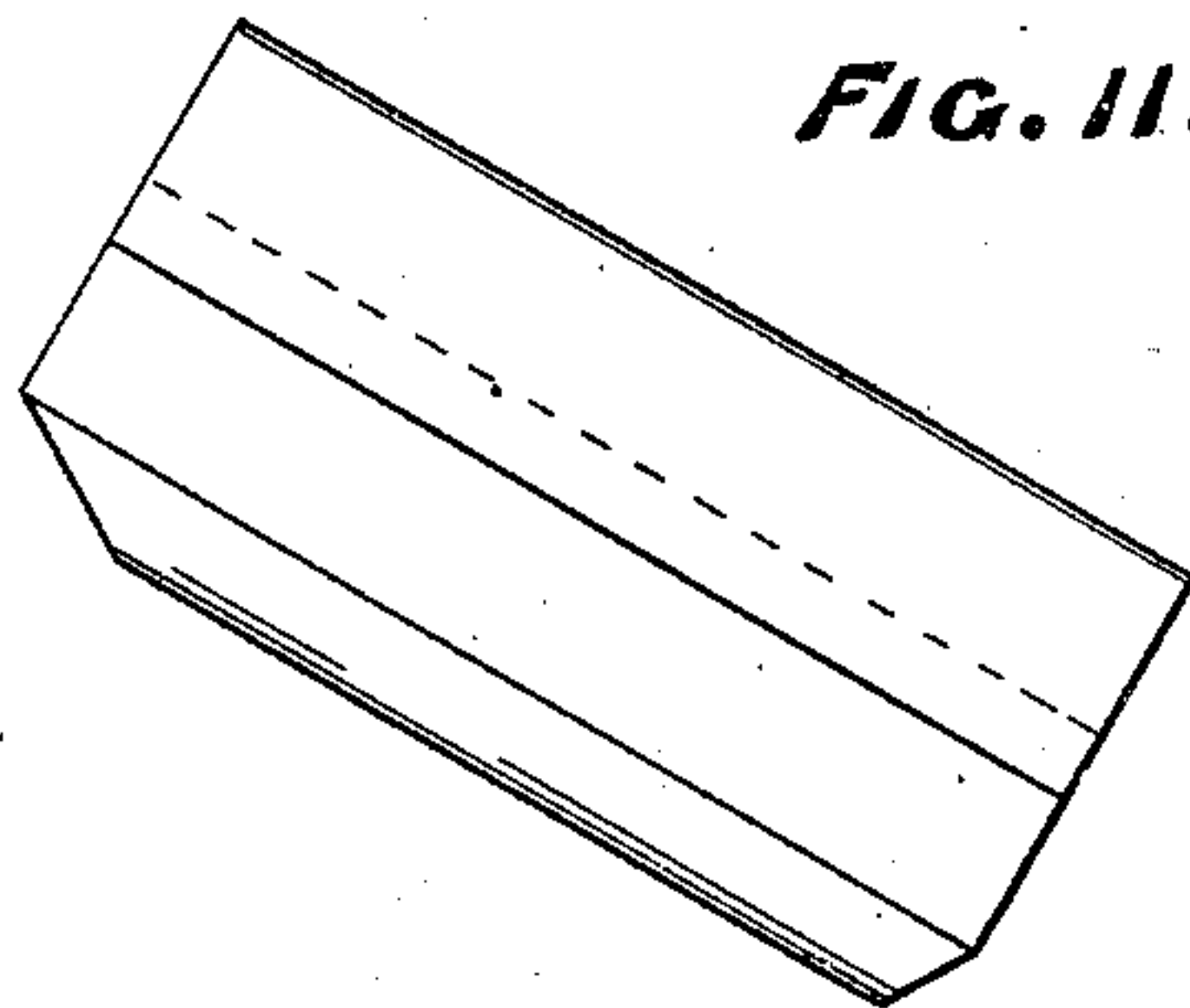


FIG. 12.

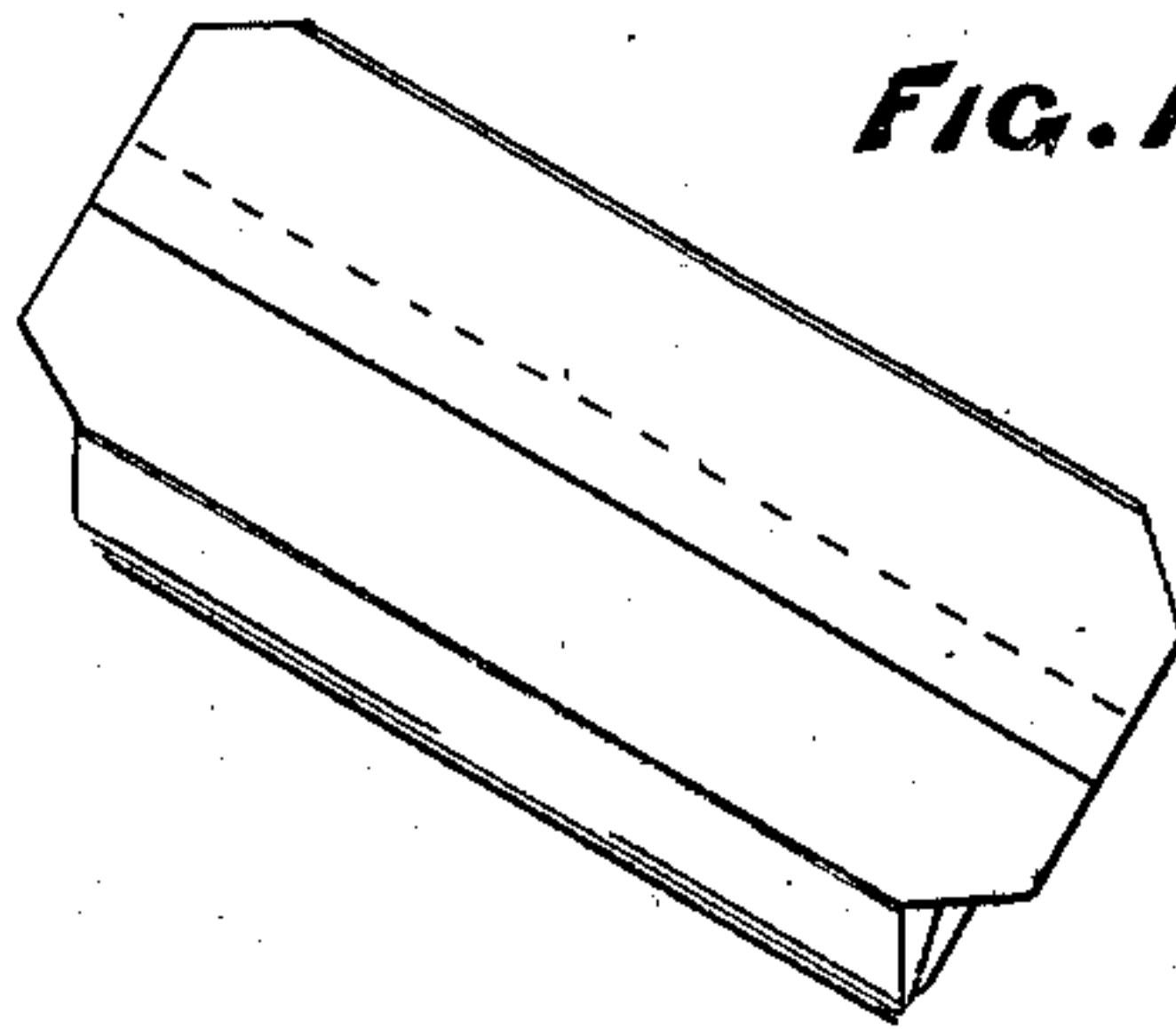
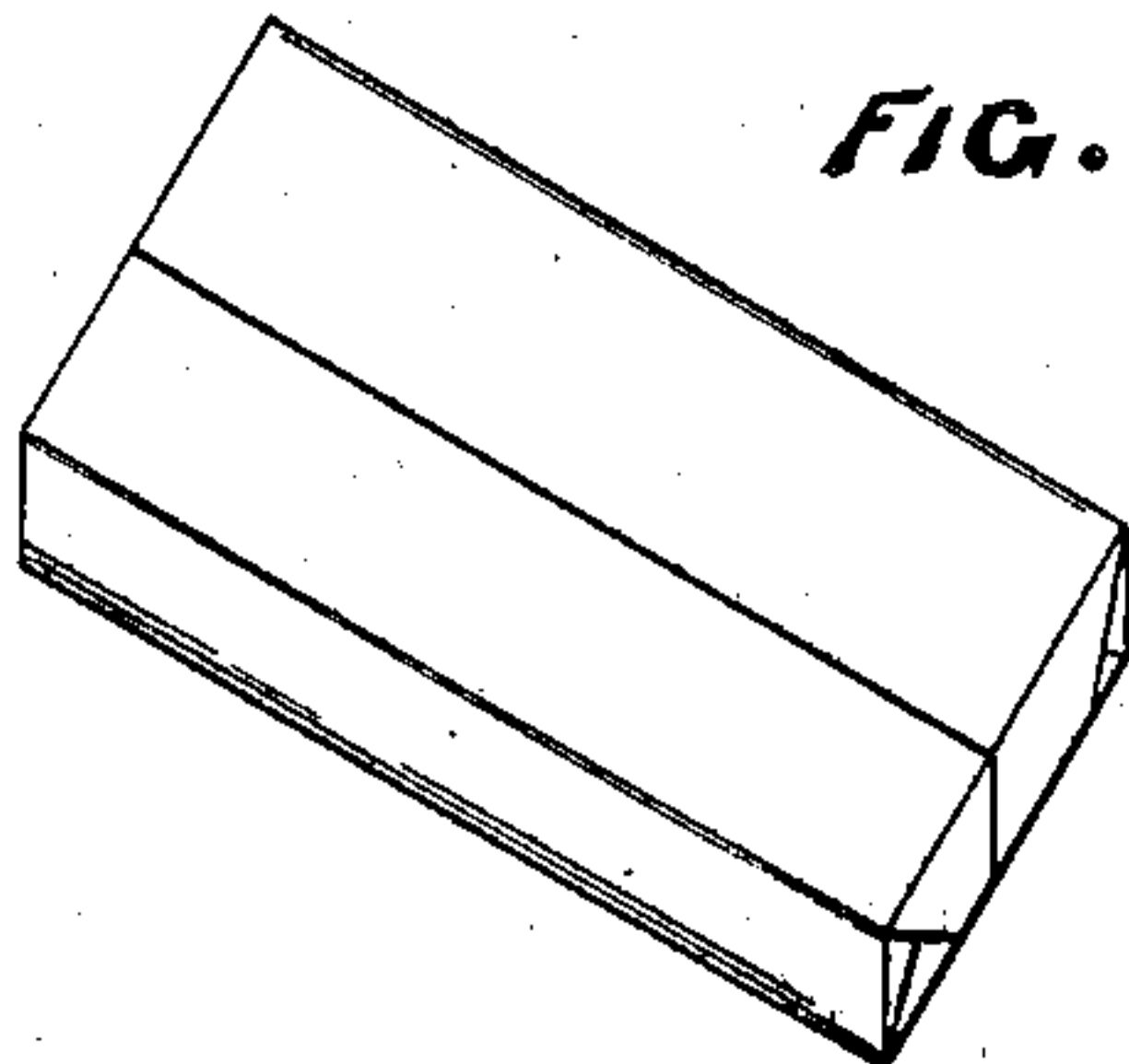


FIG. 13.



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UNITED STATES PATENT OFFICE.

ANDREW FORBES AND FREDERICK GROVER, OF LEEDS, ENGLAND.

WRAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 671,761, dated April 9, 1901.

Application filed August 11, 1900. Serial No. 26,551. (No model.)

To all whom it may concern:

Be it known that we, ANDREW FORBES and FREDERICK GROVER, subjects of the Queen of Great Britain and Ireland, residing at Greek Street Chambers, Leeds, in the county of York, England, have invented certain new and useful Improvements in Wrapping-Machines, (for which we have made application for a patent in Great Britain, No. 6,685, bearing date April 10, 1900,) of which the following is a specification.

This invention refers to machines for wrapping rectangular tablets in materials such as tin-foil, paper, or the like; and our object is to construct a machine capable of working at a high speed. This we accomplish by the employment of a rocking frame carrying wrapping-receptacles upon opposite ends thereof, a central feeding apparatus for supplying tablets and wrapping-sheets to both receptacles, and two delivery-chutes, one for each wrapping-receptacle, each receptacle being alternately carried by the rocking frame to and from the central feeding apparatus and its respective delivery-chute, the wrapping being completed between the feeding and discharge operations.

In the drawings, Figure 1 is a back elevation, and Fig. 2 is an end view looking in the direction indicated by the arrow in Fig. 1, with part of the framework in section, of a wrapping-machine constructed according to our invention. Fig. 3 is a back elevation similar to Fig. 1, but having the back frame and gearing removed. Fig. 4 is a side elevation, Fig. 5 is a plan, Fig. 6 is a longitudinal sectional elevation, and Fig. 7 is an end elevation, illustrating the construction and arrangement of a wrapping-receptacle. Fig. 8 is an end sectional view, and Fig. 9 is a front elevation, illustrating the central feeding apparatus. Figs. 10, 11, 12, and 13 are perspective views illustrating the different stages in the process of folding the wrapping material around the tablet.

Referring particularly to Figs. 1, 2, and 3, A A' represent the two main parts of the framework by which the mechanism is supported. B is a rocking frame horizontally pivoted at its base upon a shaft B' and is adapted to be oscillated through the medium of a connecting-rod B² and crank-pin B³, car-

ried by a disk on a main driving-shaft C. Carried upon the upper surface of the rocking frame B, at opposite ends thereof, are two wrapping-receptacles, and as the construction and arrangement of both are practically similar we will only describe one.

Referring particularly to Figs. 4, 5, 6, and 7, the wrapping-receptacle proper, which is adapted to receive the wrapping-sheet and tablet, is formed having two fixed vertical side parts D D and compound end walls, each end wall consisting of a central rigid portion D' and a bifurcated completing end piece D², spaces D³ being left between the sides of the completing-pieces D² and the faces of adjacent folding-segments E for the purpose of receiving projecting end folds of the wrapper, hereinafter referred to. The folding-segments E are carried upon spindles E', which are pivotally mounted at the four corners of the wrapping-receptacle. Each spindle E' is provided with a helical spring, which, acting torsionally, tends to retain the segments E in the position shown in Fig. 5—viz., with their projecting side parts in contact with the end surface of the side parts D D. The base of the wrapping-receptacle (best seen at Figs. 5 and 6) is provided with a false bottom F, carried upon a rod F', which, as clearly shown in Figs. 2 and 3, is coupled to a bell-cranked lever F², pivoted upon the rocking frame B. The upwardly-extending arm of the lever F² is adapted to engage with a stationary stop F³, Fig. 2, and shown dotted in Fig. 3, by which vertical displacement is imparted to the false bottom F when the wrapping-receptacle is below its delivery-chute, as shown at Fig. 3.

Upon each side of the wrapping-receptacle levers G are provided, which are fixed and carried upon shafts G', passing through the body of the receptacle. The completing end pieces D² are also fixed upon the said shafts G', and consequently move synchronously with the levers G. The levers G, which are thus mounted in pairs, are coupled together by means of connecting-rods G², and, further, the levers G of one wrapping-receptacle are coupled to those of the other receptacle by means of a spring connection G³, Fig. 3, under the influence of which the levers tend to assume the position illustrated at Figs. 4, 5, 6, and 7. One of the levers G upon each wrap-

ping-receptacle is provided with an extending or tappet arm G^4 , adapted to engage with a cam-surface H , (see Fig. 3,) which is located in the path of travel of the tappet-arm G^4 , incident to the oscillations of its supporting rocking frame B . The engagement of the arm G^4 with the surface H as the receptacle is rocked from the center toward its delivery-chute causes the levers G to turn away from one another, the completing end pieces D^2 are simultaneously rocking outward, and when the latter are removed from the path of the folding-segments E the upper ends of the levers G , coming into contact with the side projecting parts of the folding-segments E , cause the latter to turn upon their axes and assume the position vacated by the end pieces D^2 and are retained in this position until the arm G^4 leaves the surface H in its return oscillation.

Referring particularly to Figs. 8 and 9, we will now proceed to describe the apparatus for feeding the tablets and wrapping-sheets to the machine. The feeding apparatus, which is centrally located, consists of a vertical hopper J to receive the tablets piled one upon another and supplied to the hopper in any convenient manner. At the base of the hopper is a reciprocating slide K , the forward portion of which is recessed, so as to receive the bottom tablet in the hopper J when the slide K is in its extreme rearward position, the tablet being so supported that its upper surface is level with the rear upper surface of the slide K . Reciprocating motion is imparted to the slide K through the medium of a bell-cranked lever K' , a connecting-rod K^2 , carrying at its lower end a roller which engages with a cam K^3 , mounted upon a shaft C' , which is driven from the main driving-shaft C , Figs. 1 and 2. Adjacent to the hopper K a vertically-reciprocating rod L is provided, carried in stationary upper and lower guides L' L^2 and formed at its lower end with a rectangular plunger-head L^3 . Reciprocating motion is imparted to the rod L through the medium of a lever L^4 , connecting-rod L^5 , carrying at its lower end a roller which engages with a cam L^6 , mounted upon the shaft C' . (Best seen at Fig. 1.) An open frame M is carried upon the rod L , being supported by means of a pin M' and acted upon from above by a spring M^2 . Depending retaining-blades M^3 are pivoted at each side of the frame M , and their receiving ends tend to move toward each other under the influence of springs M^4 . (Indicated at Fig. 2.) Stops N are provided upon the guide L^2 , which are adapted to engage and arrest the downward movement of the frame M . Carried by the slide K is a supporting-table P , which is adapted to move outward and pass under a stationary table P' , in front of which two horizontally-arranged rollers R R and a feed-table R' are located. The rollers are driven by any suitable means, such as the gearing R^2 , as shown at Figs. 1 and 2, in the directions indicated by the arrows, Fig. 8. The

sheets of wrapping material are fed along the table R' to the rollers R R , which receive same and project them onto the tables P and P' , the portion marked P^3 of the stationary framework acting as a stop to arrest their travel. Lateral guides P^2 are provided on the table P' to assist in guiding the sheets of wrapping material after they leave the rollers R R . Upon the outward reciprocation of the slide K a tablet is carried forward and received by the blades M^3 , which latter are then slightly raised through the medium of the cam L^6 . The slide K then recedes, carrying with it the plate P , away from the plate P' , just about the width of one of the articles to be wrapped, so that the article and its wrapper may be thrust between them. The rod L descends, carrying with it the frame M , until the latter engages the stops N , whereupon the continued downward descent of the head L^3 , which bears upon the top of the tablet, forces the tablet past the blades M^3 and delivers it, with the wrapper, into one of the wrapping-receptacles, which at that time would be in position below the feeding apparatus.

Upon each side of the feeding apparatus a pair of stationary plow-blades S S' are carried by supporting-brackets from the framework A A' . The blades S S' are hinged horizontally, the axes of the hinges being parallel with the side frames to enable the blades to be turned on one side in order to give access to the wrapping-receptacles. The blade S is shorter than the blade S' , and is set in advance of the latter, the two blades acting upon the wrapping material to effect the top folds, the blade S' subsequently acting to maintain the folds in position, as hereinafter more fully described.

Delivery-chutes T T are provided upon each side of the machine, one for each wrapping-receptacle, and consist of plain rectangular conduits fitted at their two interior ends with flexible brush-surfaces for the purposes hereinafter described.

In action the machine works as follows: A sheet of wrapping material having been delivered into position upon the tables P P' , and the frame M having descended into contact with the stops N , the descending plunger L^3 forces the tablet past the blades M^3 and onto the surface of the sheet of wrapping material, carrying the sheet and tablet into the wrapping-receptacle immediately below it, which, as illustrated at Figs. 1 and 3 in the drawings, would be the right-hand receptacle. This results in the sides of the sheet being completely folded up and the end parts partly folded up, as illustrated at Fig. 10, and producing projecting folds, which are formed and enter the spaces D^3 , previously referred to. The rocking frame B then carries the charged receptacle toward its delivery-chute T , and in its travel in passing the stationary plow-blades S S' the upstanding edges of the sheet of wrapping material are folded over the up-

persurface of the tablet, as illustrated at Fig. 11, and after this fold has been produced the long plow-blade S' continues to press upon the upper surface of the tablet, while the folding-segments E, which are now brought into action by the engagement of the tappet-arm G⁴ coming into contact with the cam-surface H, thus rocking the pivots G' and causing the bifurcated end walls D² to leave the ends of the partly-folded wrapper, and the following movement of the levers G actuate the folders E and complete the turning in of the end portions of the side folds of the sheet, the wrapping material at this stage being folded around the tablet in the manner as illustrated at Fig. 12. The two upper ends of the sheet are now left projecting beyond the tablet, and these ends are folded by the false bottom F, forcing the tablet into its delivery-chute T, the folding being effected when passing the flexible brush-surfaces of the rectangular conduit, the tablets being discharged therefrom completely wrapped in the manner as illustrated at Fig. 13.

It will be readily seen that in the employment of a rocking frame carrying wrapping-receptacles mounted at opposite ends thereof as a charged wrapping-receptacle moves away from the central feeding apparatus the opposite and empty wrapping-receptacle is brought into the central position ready to receive its charge and subsequently pass through the same cycle of operations as above described.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A wrapping-machine having a rocking frame carrying wrapping-receptacles upon opposite ends thereof, a central feeding apparatus for supplying tablets and wrapping-sheets to both receptacles, and two delivery-chutes, one for each wrapping-receptacle, each receptacle being alternately carried, by the rocking frame, to and from the central feeding apparatus and its delivery-chute, stationary plow-blades arranged upon each side of the feeding apparatus and above the paths of travel of the receptacles, together with means for completing the wrapping between the feeding and delivery operations, substantially as set forth.

2. A wrapping-machine having a rocking frame carrying wrapping-receptacles upon opposite ends thereof, each of such receptacles consisting of two fixed side parts, compound end walls consisting of a central rigid portion and completing end pieces, folding-segments arranged at the corners of the receptacles forming spaces between the segments and adjacent completing end pieces, a false bottom in the base of the receptacle, and means for actuating the completing end pieces, the folding-segments and the false bottom, in combination with means for effecting the folding down of the upper edges of the sheet of wrapping material, and delivery-chutes to receive the wrapped tablets, provided with means for

effecting the completing fold of the sheet around the tablet, together with a central feeding apparatus and actuating mechanism, substantially as set forth.

3. A wrapping-machine having a rocking frame carrying wrapping-receptacles upon opposite ends thereof, each of such receptacles consisting of two fixed side parts, compound end walls consisting of a central rigid portion and completing end pieces, folding-segments arranged at the corners of the receptacles forming spaces between the segments and adjacent completing end pieces, a false bottom in the base of the receptacle, and means for actuating the completing end pieces, the folding-segments and the false bottom, in combination with pairs of stationary plow-blades arranged above the path of travel of the receptacles, and delivery-chutes to receive the wrapped tablets, provided with means for effecting the completing fold of the sheet around the tablet, together with a central feeding apparatus and actuating mechanism, substantially as set forth.

4. A wrapping-machine having a rocking frame carrying wrapping-receptacles upon opposite ends thereof, each receptacle consisting of two fixed side parts D, D, central rigid portion D' and completing end pieces D², having folding-segments E arranged at the corners thereof, false bottom F sliding in the receptacle and being carried upon a rod F', levers G carried on shafts G' actuated by connecting-rods G² spring connection G³ and tappet-arm G⁴, and means for actuating the rod F' and tappet-arm G⁴ in combination with a central feeding apparatus together with driving means, means for folding over the upstanding edges of the sheet of wrapping material, and means for receiving and delivering the wrapped tablet, substantially as set forth.

5. In a wrapping-machine having a rocking frame carrying wrapping-receptacles upon opposite ends thereof and provided with two delivery-chutes, one for each receptacle, a central tablet-feeding apparatus consisting of a hopper J provided at its base with a horizontally-reciprocating slide K, and having a vertically-reciprocating rod L carrying a plunger-head L³, open frame M carrying depending retaining-blades M³, together with means for actuating and arresting the parts, substantially as set forth.

6. In a wrapping-machine having a rocking frame carrying wrapping-receptacles upon opposite ends thereof and provided with two delivery-chutes, one for each wrapping-receptacle, a central tablet-feeding apparatus, in combination with a reciprocating table P, fixed tables P' and R', and intermediate rollers R, R for delivering the sheets of wrapping material to the machine, together with means for actuating the parts, substantially as set forth.

7. In a wrapping-machine having a rocking frame carrying wrapping-receptacles upon op-

posite ends thereof and provided with two delivery-chutes, one for each wrapping-receptacle, a central tablet-feeding apparatus consisting of a hopper J provided at its base with
5 a horizontally-reciprocating slide K, and having a vertically-reciprocating rod L carrying a plunger-head L³, open frame M carrying depending retaining-blades M³, in combination with reciprocating table P, fixed tables P' and
10 R', and intermediate rollers R, R for delivering the sheets of wrapping material to the machine, together with means for actuating the parts, substantially as set forth.

8. The wrapping-receptacles consisting of
15 two fixed side parts, compound end walls con-

sisting of a central rigid portion and completing end pieces, folding-segments arranged at the corners of the receptacles forming spaces between the segments and completing end pieces, a false bottom in the base of the receptacle, and means for actuating the parts, substantially as and for the purposes specified. 20

In witness whereof we have hereunto set our hands in presence of two witnesses.

ANDREW FORBES.
FREDCK. GROVER.

Witnesses:

JOHN JOWETT,
W. H. McELLROY.