

No. 726,507.

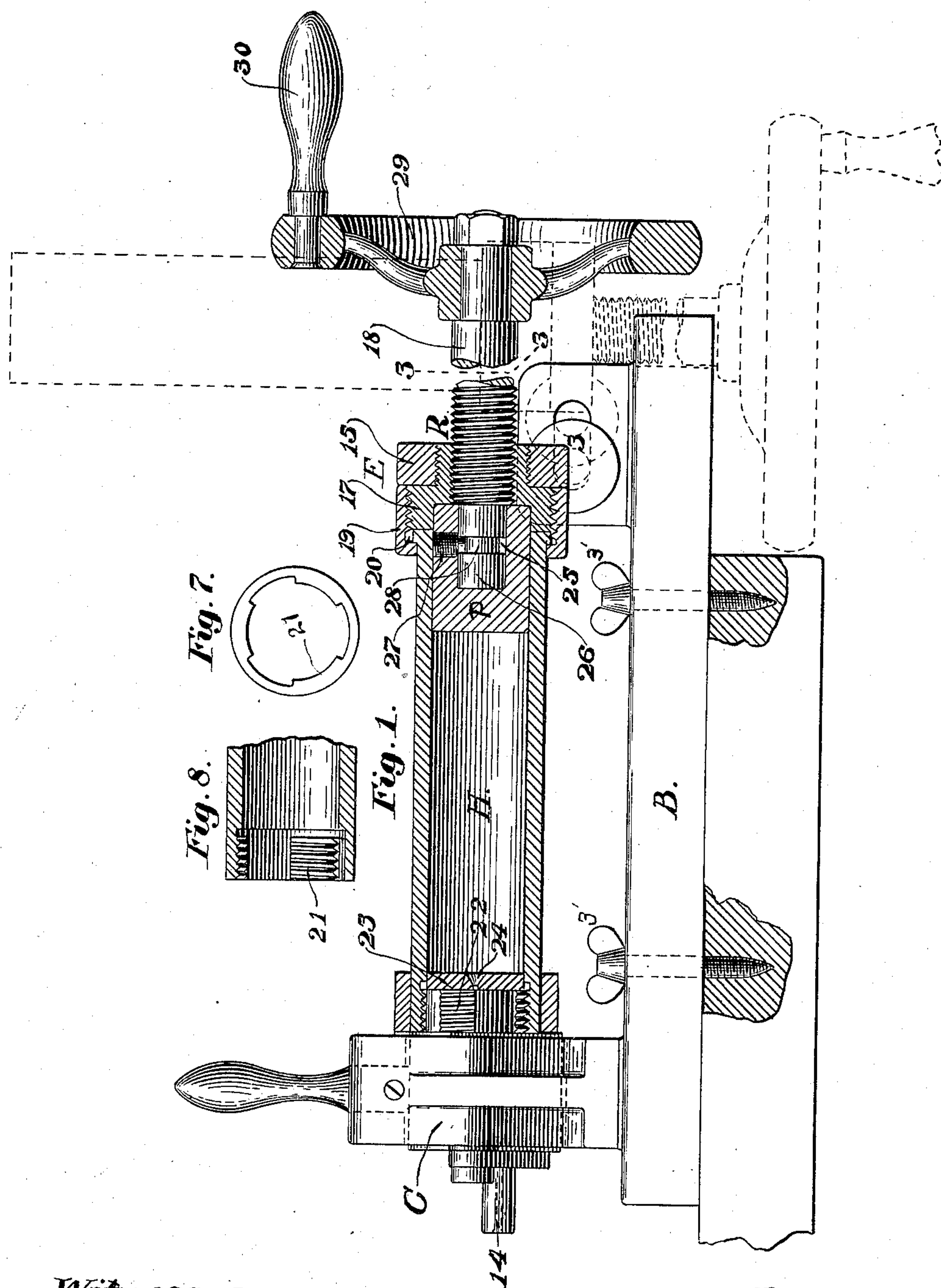
PATENTED APR. 28, 1903.

F. S. CHESTER.
SUPPOSITORY MOLDING MACHINE.

APPLICATION FILED APR. 20, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
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Clayton E. Hotchkiss

Inventor:
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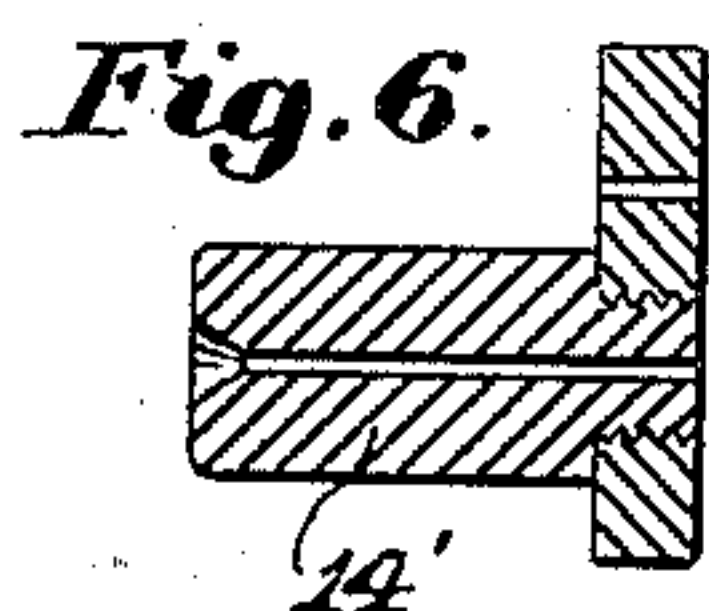
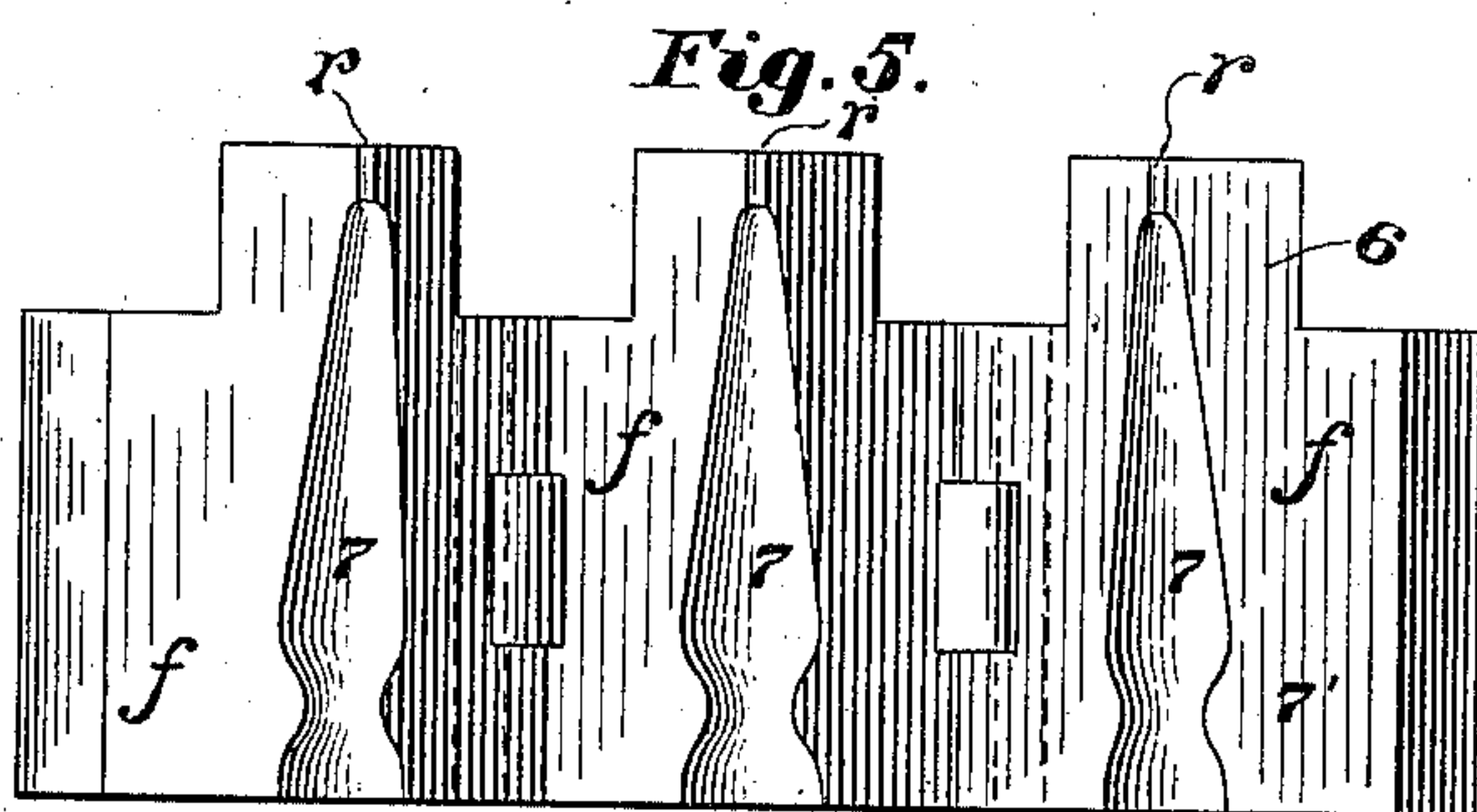
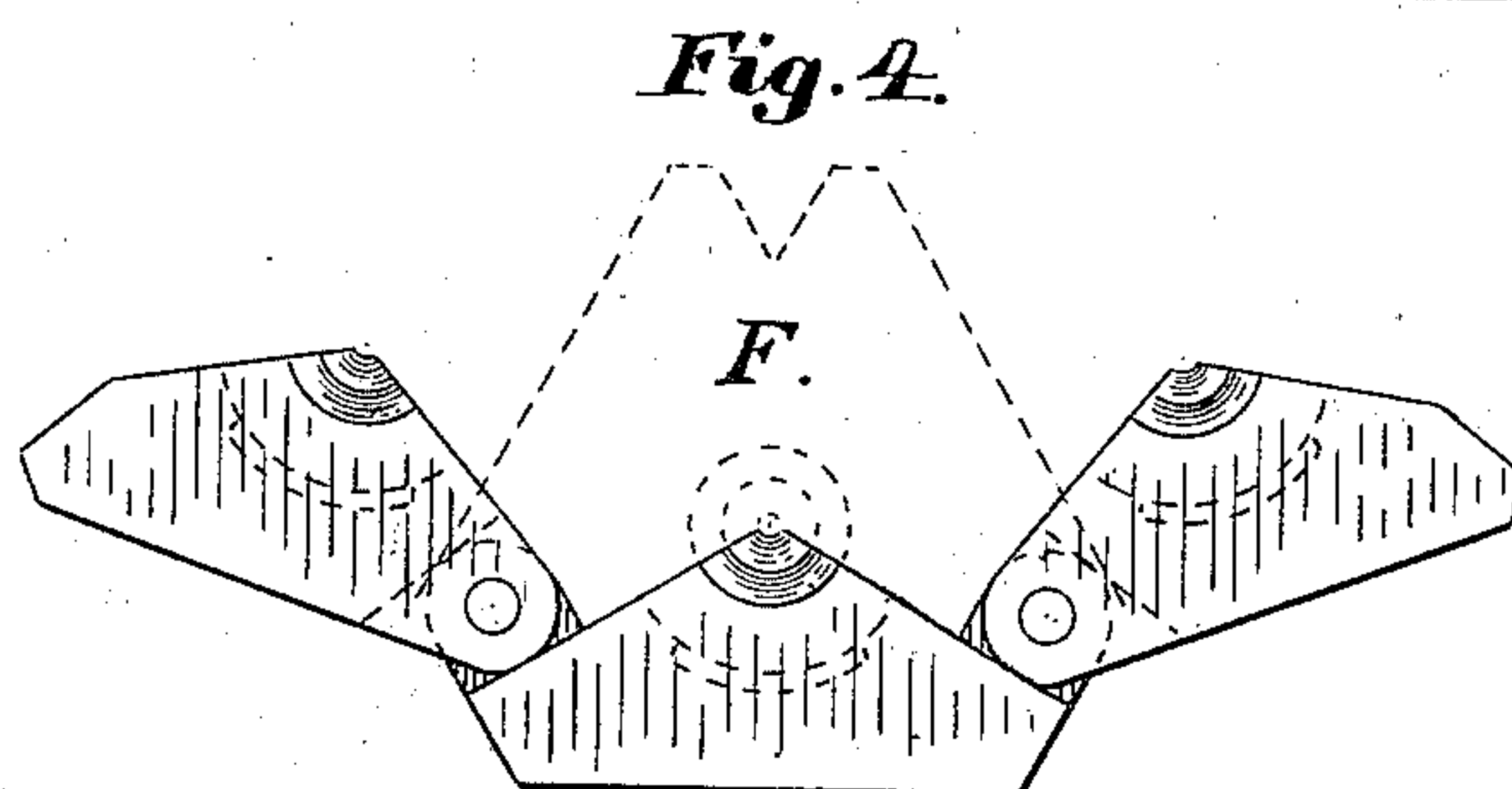
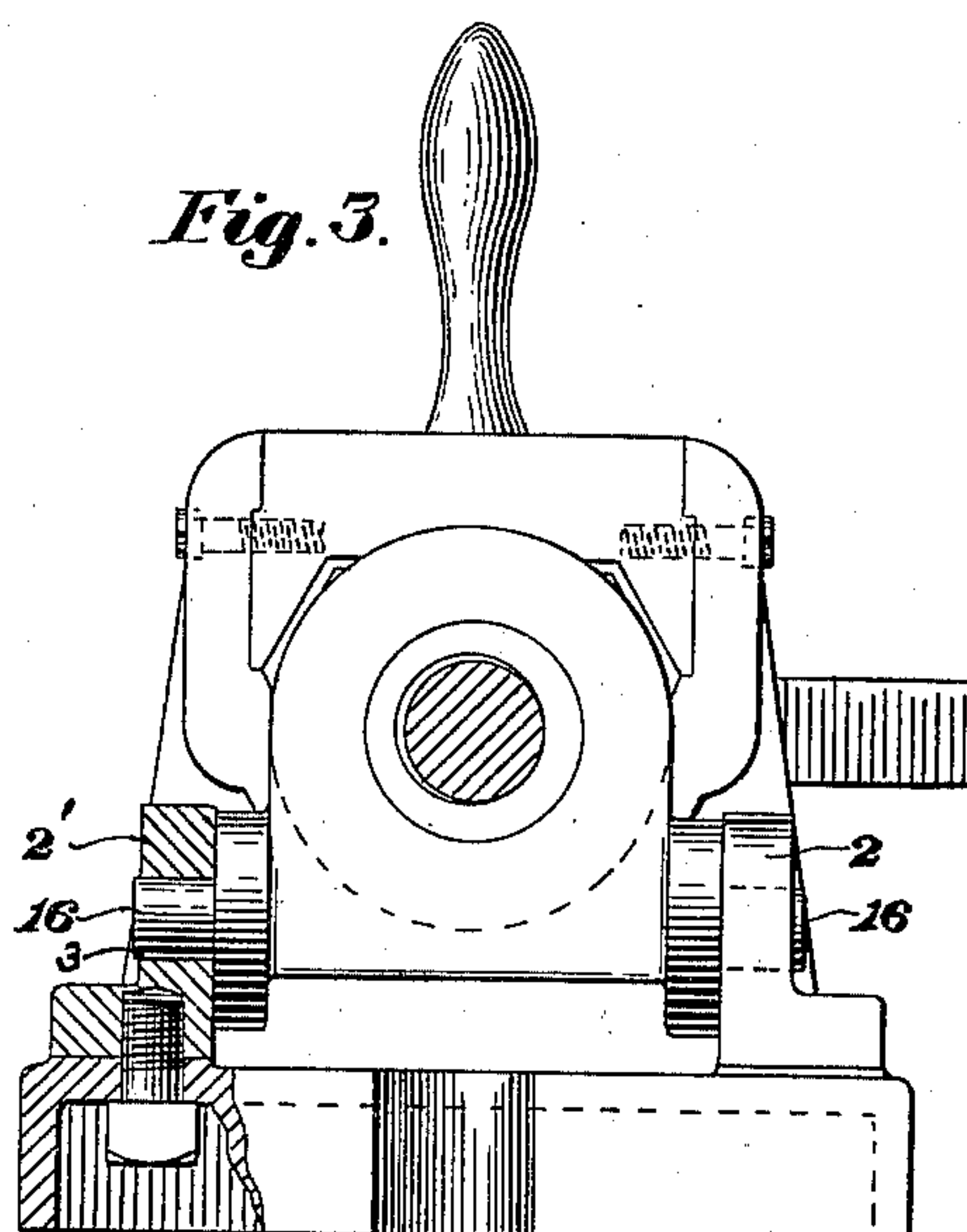
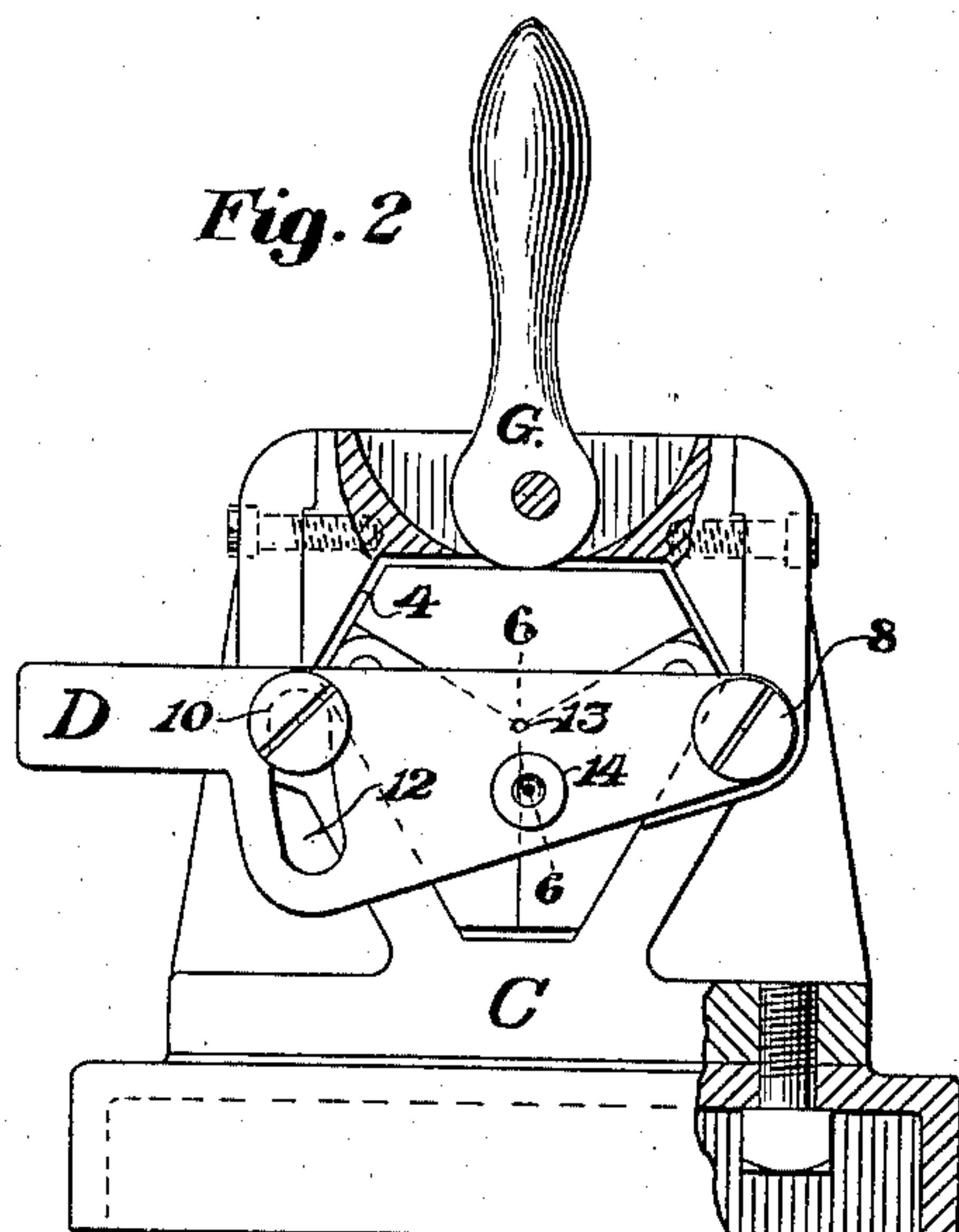
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UNITED STATES PATENT OFFICE.

FRANK S. CHESTER, OF HARTFORD, CONNECTICUT.

SUPPOSITORY-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 726,507, dated April 28, 1903.

Application filed April 20, 1901. Serial No. 56,796. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. CHESTER, a citizen of the United States of America, and a resident of the city and county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Suppository-Molding Machines, of which the following is a specification.

This invention relates to suppository-molding machines, and has for its object to so construct such a machine that it can be readily operated, easily recharged with the material to be molded, and that it will mold the suppository in an efficient manner.

In the drawings accompanying and forming part of this specification, Figure 1 is a central vertical longitudinal section, partly in side elevation, of a suppository-molding machine embodying my present invention.

Fig. 2 is an end view, partly in section, of the molding-machine as seen from the left in Fig. 1.

Fig. 3 is a vertical cross-section taken on the dotted line 3 3 in Fig. 1 as seen from the right in said figure and showing a portion of the base in elevation. Fig. 4 is an end view of the sectional die or mold with the wings or parts thereof in their open positions. Fig. 5

is a plan view of the die or mold as seen from above in Fig. 4. Fig. 6 is a cross-sectional view of the guard or cut-off plate, taken on a line corresponding with the line 6 6 in Fig. 2; and Figs. 7 and 8 are end and sectional details, respectively, of the discharge end of the cylinder.

Similar characters represent like parts in all the figures of the drawings.

In the preferred construction and organization thereof shown in the accompanying drawings the suppository-molding machine or apparatus for forming soluble or plastic articles from medicated or other compositions comprises a suitable base B, adapted to be attached to a table or counter and having at the rear end thereof two cylinder-supporting up- rights 2 and 2', each having an elongated horizontal bearing-opening 3 registering with one another; a fixed die support or holder C, vertically disposed at the front end of the base B and having a transverse polygonal die-re- ceiving opening 4 therethrough; a cut-off plate or guard D, pivotally mounted on the die-sup- port; a cylinder-carrier (designated in a gen-

eral way by E) supported for horizontal re- ciprocatory and for vertical oscillatory move- ments on the uprights 2 and 2'; a sectional 55 externally-polygonal die or mold (designated in a general way by F) supported in the po- lygonal opening in the die-holder and having a central cylindrical extension projecting be- yond the rear face of said holder in position 60 to engage in the discharge end of the cylin- der; a die-clamping device G, shown as a cam, pivotally mounted in a recess in the upper end of the die-support, with its work- ing face in position to engage the upper face 65 of the die and having a handle whereby the same may be operated; an injecting-cylinder H, mounted for rotation on the cylinder-car- rier, with its longitudinal axis normally in a horizontal plane and having its discharge end 70 in normal locked engagement with the exten- sion of the die or mold; a plunger P, support- ed for reciprocatory movements in the cylin- der, and means (designated in a general way by R) for actuating said plunger. 75

The bed B is shown in the nature of a plate having depending side and end flanges and having vertical perforations (shown in dotted lines in Fig. 1) to receive thumb- screws 3', whereby the same may be attached 80 to a table-top or counter, as represented in said figure. The two cylinder-supporting uprights 2 and 2' are shown as L-plates, se- cured by screw-bolts to the upper face of the rear end of the bed B, one near each side 85 edge thereof, and each has formed there- through an elongated horizontal bearing or opening 3 of a length corresponding to the requisite length of horizontal movement of the cylinder. It will be obvious, however, 90 that these uprights may constitute an inte- gral part of the said beam.

The die-support or die-holder C, which is preferably made of cast metal and is remov- ably secured to the upper face of the forward 95 end of the bed B by screw-bolts, (one of which is shown in Fig. 2,) has a polygonal transverse opening 4 therethrough and is shown constructed in two parts, the lower part of which constitutes the die-support 100 proper and the upper part of which consti- tutes a support for the die-clamping device G and has a recess in the upper face thereof which communicates with the polygonal

opening. This die-clamping device G is shown as a cam pivotally supported in the recess of the upper portion of the die-holder in position to bear against the upper face of the die and lock the same against movement, said cam having a handle, as before stated, whereby it may be thrown into position for engaging or releasing said die.

The die or mold F, (shown having a polygonal portion adapted to fit the polygonal recess on the die holder or support and is also shown having a cylindrical extension 6, projecting when the die is secured in the holder beyond the rear face of said holder,) comprises in the preferred construction and organization thereof (shown most clearly in Figs. 4 and 5) a plurality of pivotally-connected or hinged sections *f*, divided on radial planes having a common point of intersection coincident with the longitudinal axis of the die, as will be understood by reference to Fig. 2. In the apex or inner edge of each section is formed a depression 7, coinciding to a segment of the article to be formed in said mold, and the die-section being of the construction illustrated in Figs. 4 and 5 that when the sections are in their closed positions a cross-sectionally circular recess *r* will be formed intermediate the inner faces of the said sections of a construction corresponding to the article to be formed in the die.

It is desired to state that the mold may be of a single piece or of two or more sections as long as the general contour of the depression shown in Fig. 5 is not departed from.

In the construction shown the article-forming recess *r* in the die F is in the form of a cone open at opposite ends to the outer end faces of the die and has a contracted portion 7' near the larger end thereof, this die being especially designed for molding suppositories, such as described in the Letters Patent of the United States No. 638,258, dated December 5, 1899.

As a convenient means for closing the outer end of the die-recess I have provided a guard or cut-off plate D, which is pivotally supported at one end, as at 8, on the front face of the die-holder near the side edge thereof and which is shiftable in a vertical direction between two extreme positions, means, such as a stud 10, extending through a recess 12 in the plate concentric with the pivot, being provided for limiting the vertical movement of said plate. This cut-off plate or guard is shown having two transverse perforations 13 and 14, one of which constitutes an indicating-perforation and is disposed to register with the die-recess when the cut-off plate is in one extreme position, (its normal position,) and the other of which constitutes a perforator-receiving recess and is adapted to register with the die-recess when the plate is in the other extreme position. Said plate D is shown having at the free end thereof a han-

dle whereby the same may be raised and lowered. For convenience the perforator-recess extends through a pin 14', which has a reduced screw-threaded end fitting a screw-threaded opening in the plate D, (see Figs. 1 and 6,) said pin forming a guide for a needle or perforator, (not shown,) which may be extended through the perforation 14 and through the completed suppository to form a string-receiving opening through said suppository before the same is removed from the die.

The perforation 13 will in practice be of small diameter and will normally or during the molding of the suppository register with the die-recess, so that when said recess is filled and the material has attained a proper pressure and density a fine thread of the material will be projected through the perforation 13, thus warning the operator that the suppository is of proper density and is completed and should be removed.

The provision of means for indicating the proper completion of the molded article and the provision of means whereby the article may be perforated before removal is of material advantage in machines of this character, as the former enables the operator to determine the exact density of the article being molded and leaves nothing to guesswork.

The cylinder-carrier, which is designated in a general way by E, is shown comprising an axially-recessed internally-screw-threaded plate 15, having a trunnion 16 on each side edge near the lower portion thereof, which enters the horizontally-slotted bearing-opening 3, in which said trunnion may slide when not otherwise prevented from longitudinal movement, one in the upright 2 and the other in the upright 2', a cylindrical bearing member 17, disposed in advance of the plate 15 and having a reduced screw-threaded portion fitting the screw-threaded central opening of the plate 15 and having a screw-threaded central opening adapted to receive the screw 18 of the plunger-actuator, and an internally-flanged collar 19 in screw-threaded engagement with the enlarged portion of the bearing member 17, as will be readily understood by reference to Figs. 1 and 3.

The injecting-cylinder H is shown as a tube having at the rear end thereof an external peripheral flange 20, fitting between the front end of the driving member 17 and the internal flange of the collar 19, whereby said cylinder is held in rotative connection with the carrier. The outer end of the cylinder is shown having interrupted or mutilated screw-threads 21, adapted for engagement with similar screw-threads 22 on the extension of the die or mold, this construction enabling the operator to quickly disengage the cylinder from the die and retract the same in a horizontal plane for the purpose of removing the die or for the purpose of filling the cylinder, the cylinder being tilted in a vertical di-

recession to the positions shown in dotted lines in Fig. 1 when it is desired to fill the same. For the purpose of directing the material to the central portion of the die-recess and also to prevent the escape of the material between the periphery of the die extension and the inner face of the discharge end of the cylinder I have provided a circular plate 23, which is of a diameter equal to the inside diameter of the injecting-cylinder H and when filled with material is contiguous with the inner end of the die, said plate having a central conical perforation 24, registering with the inner end of the die-recess *r*. To fill the injecting-cylinder, it is brought to the dotted-line position shown in Fig. 1, the plate removed and then filled, after which the plate is then placed on top of the material.

The plunger P is constructed to fit the interior of the cylinder and is shown having a circular recess 25 in the rear end thereof, in which is fitted for rotation the circular end 26 of the actuating-screw 18, said screw being held as against longitudinal movement with respect to the plunger by means of a pin 27, extending through a transverse opening in the plunger and entering a circumferential groove 28 in said inner end of the screw. This screw, which is shown having a screw-threaded bearing, as before stated, in the bearing member 17 of the carrier, is provided at the outer end thereof with a hand-wheel 29, having a handle 30, whereby the screw may be rotated to advance or retract the plunger P.

In operation the cylinder is slid back on its trunnions 16, the handle 32 being first revolved to bring the plunger P to the rear of the cylinder, as shown in Fig. 1, and then the cylinder is rotated on its trunnions to occupy a vertical position, in which position it may be filled. The die is then inserted in the die-holder and secured in place by the cam G. The cylinder is then brought into horizontal position again, with its internally-screwed end adjacent to the externally-threaded end of the die. The cylinder is then screwed onto the die, and as the cylinder is screwed up toward the die the trunnions will be drawn along the slots 3 until the apparatus is in the position shown in Fig. 1. The handle D is then forced down with the opening 13 opposite the die-opening, and then the handle 32 is rotated to press the plunger inward to force the material in the cylinder into the die-chamber. When this has been forced in sufficiently and the proper density has been secured, which is shown by the material being forced through the opening 13, then the operator ceases to manipulate the handle 32 and moves the handle D upward till the opening 14 is opposite the die-opening. He then thrusts a needle or the like through the suppository to leave a central opening through it. The cylinder is then rotated to disengage it

from the die, the cam is released, the die removed and opened, and the formed suppository is removed.

I claim—

1. A suppository-molding machine, having a cylinder to contain the material, trunnions for the cylinder adapted to permit it to be moved from a horizontal toward a vertical position, said cylinder being adapted to be rotated axially, substantially as described. 75

2. In a suppository-molding machine, the combination with the base, of a cylinder-carrier pivotally supported on said base, an axially-rotatable cylinder mounted on the carrier and having a discharge-opening at one end thereof, a plunger working in said cylinder, and a die in operative relation with the discharge end of the cylinder. 80

3. A suppository-molding machine provided with a die and with a charging-cylinder free to be rotated on its axis and also to be moved longitudinally toward or from the die and when drawn back from the latter to be tilted in a plane passing through its axis, for filling purposes, all substantially as described. 85

4. A suppository-molding machine comprising a base, a die, a carrier having a trunion-and-slot connection with the base, and a charging-cylinder connected with the carrier at its rear end, whereby the charging-cylinder may be moved toward and from the die, and when drawn back from the die may be tilted to bring its open end up for filling purposes, substantially as described. 90

5. A suppository-molding machine, having a cylinder-carrier, a cylinder in rotative connection with said carrier, and a die at the discharge end of said cylinder, made up of a plurality of hinged sections, each section of which has formed in the inner face thereof a segment of a suppository-forming recess coinciding in contour with the contour of the corresponding segmental part of the suppository to be formed in said die. 100

6. A suppository-molding machine, comprising a base, a cylinder-carrier having trunnions rotatably supported in a horizontal elongated bearing on said base, a cylinder rotatably mounted on the carrier, a screw-actuated plunger working in said cylinder, a die supported in advance of the discharge end of the cylinder and having a suppository-forming recess communicating with opposite outer end faces of said die, and also having a cylindrical extension projecting into the discharge end of the cylinder, a cut-off or guard plate pivotally supported on the die-holding portion of the base and having a perforation adapted to register with the recess in said die, and a die-locking device in shiftable operative relation with said die. 110 115 120 125

7. In a suppository-molding machine, the combination with the cylinder and its plunger, and with a die supported in advance of said cylinder and having a suppository-form- 130

ing recess open at both ends, of a cut-off plate pivotally supported in advance of the die and having two perforations independently registerable with the die-recess on oscillatory movements of said plate.

8. In a suppository-molding machine, the combination with the cylinder and its plunger, and with a die supported in advance of said cylinder and having a suppository-forming recess opening at both ends, of a cut-off or guard plate pivotally supported in advance of the die and having two perforations independently registerable with the die-recess on oscillatory movements of said plate, and a cam for locking the die with its outer face in contact with the inner face of the cut-off plate.

9. A suppository-molding machine comprising a base, a die, a cylinder-carrier mounted to be free to have a limited horizontal movement on the base and to be tilted vertically thereon, a cylinder connected to the carrier and a plunger passing through the carrier into the cylinder and adapted to remain in the cylinder in all positions of the latter.

10. A suppository-machine, comprising a base, a die, and a cylinder having a pivotal connection with the base at its rear end and also adapted to be moved toward and from the die along the base, with a plunger adapted to remain in the cylinder in all positions of the latter, substantially as described.

11. A suppository-molding machine comprising a base, a die, and a cylinder in operative relation to the die, said cylinder having a pivotal connection to the base and adapted to be turned on said pivotal connection in a plane through the axis of the cylinder to

bring the open end of the cylinder upward and away from the die for filling purposes.

12. A suppository-molding machine, comprising a base, a die, and a cylinder in operative relation to said die, a plunger in said cylinder adapted to remain therein in all positions of operation, and a pivotal connection between the cylinder and base to permit it to be turned away from the die to a position with its open end upward, substantially as described.

13. A suppository-molding machine comprising a base, a die, a cylinder, a plunger in the cylinder, a spindle to operate the plunger, passing out of the cylinder at one end, and a pivotal connection between the cylinder and base to permit the cylinder together with its plunger to be tilted on said connections to occupy an upright position with its open end upward, substantially as described.

14. A suppository-molding machine, comprising a base, a die, a cylinder with a threaded opening at one end and pivotally connected to the base, a plunger within the cylinder and a threaded spindle to operate it, said spindle passing through the threaded opening at the end of the cylinder, said cylinder-plunger and spindle being adapted to be tilted together on the pivotal connection to occupy an upright position with the open end of the cylinder upward, substantially as described.

Signed by me at Hartford, Connecticut, this 5th day of March, A. D. 1901.

FRANK S. CHESTER.

Witnesses:

CLAYTON E. HOTCHKISS,
LESLIE C. WOOD.