

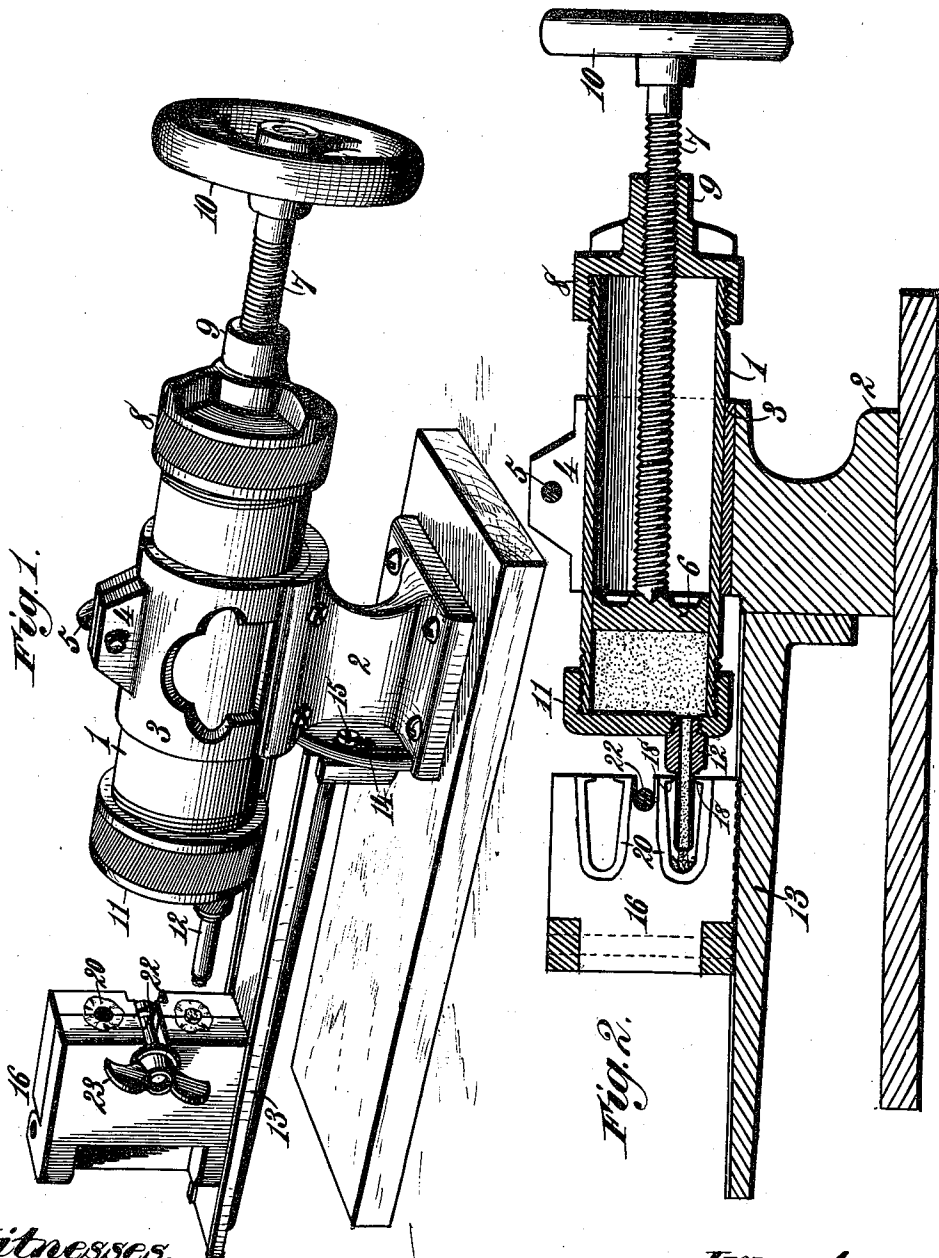
(No Model.)

2 Sheets—Sheet 1.

D. GENESE.
SUPPOSITORY MOLD.

No. 541,529.

Patented June 25, 1895.



Witnesses,
Robert Emmett,
A. H. Norris.

Inventor,
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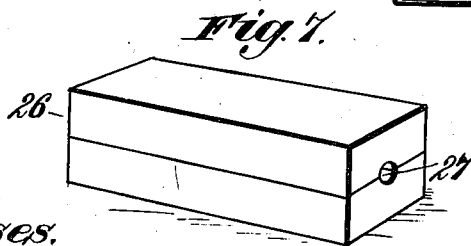
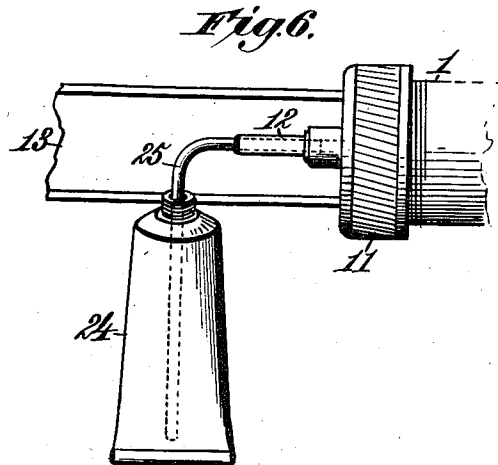
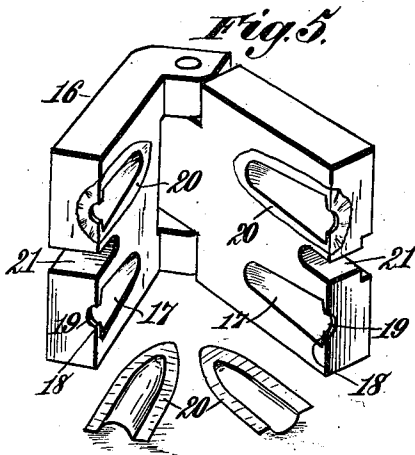
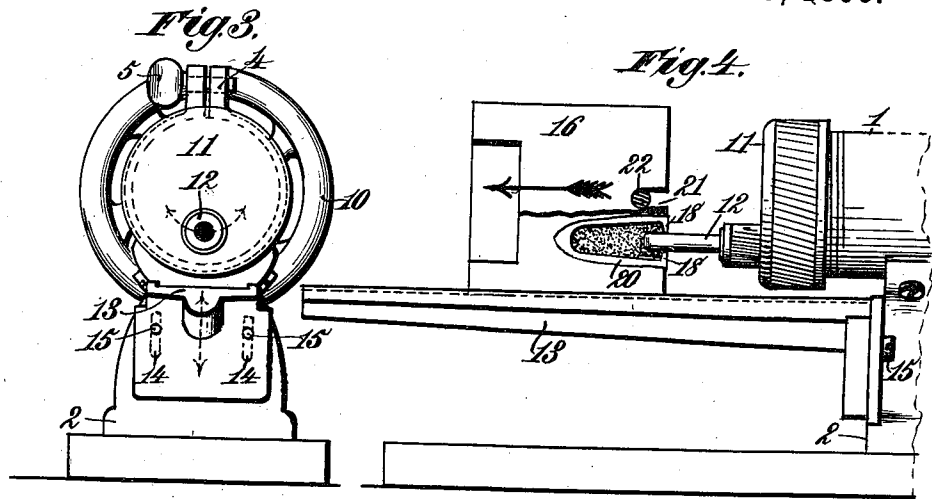
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2 Sheets—Sheet 2.

D. GENESE.
SUPPOSITORY MOLD.

No. 541,529.

Patented June 25, 1895.



Witnesses.
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UNITED STATES PATENT OFFICE.

DAVID GENESE, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-THIRD TO
LEWIS J. COHEN AND SYLVAN DREY, OF SAME PLACE.

SUPPOSITORY-MOLD.

SPECIFICATION forming part of Letters Patent No. 541,529, dated June 25, 1895.

Application filed August 23, 1894. Serial No. 521,113. (No model.)

To all whom it may concern:

Be it known that I, DAVID GENESE, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented new and
5 useful Improvements in Methods of and Apparatus for Making Suppositories, &c., of which the following is a specification.

My invention relates to the molding of suppositories and similar plastic bodies and the
10 filling of capsules, globules, tubes, vials and other like receptacles with plastic or semi-solid materials or compounds of a medicinal or other character.

It is the principal object of my invention
15 to devise a simple method of and apparatus for filling a mold, capsule, vial or other receptacle compactly and uniformly with semi-solid material and in such manner that the pressure in the mold or receptacle will be
20 regulated automatically to effect and maintain a uniform density throughout the mass under compression and prevent the separation of elements or ingredients of differing specific gravity. This purpose may be accom-
25 plished readily and with advantage by filling or charging the mold or receptacle from its closed end or base outward to its open end and from its periphery to its center or axis and controlling the pressure in the mold, vial
30 or receptacle by providing for its gradually receding movement under the force exerted by the material pressed or injected into it. Suppositories and other like bodies may in
35 this way be molded with great ease and rapidity and will present a neat and evenly finished appearance, with uniform density of substance, equal distribution of ingredients, and be perfectly smooth and homogeneous, without crack, break or fault and with no liability
40 to deteriorate in form or efficacy. In the same manner and with corresponding advantages may be completely and compactly filled such receptacles as the well known collapsible tubes in which dental pastes, toilet preparations,
45 medicines, semi-liquid paints or colors and other commodities are commonly put up and sold. The filling of capsules or globules with medical compounds or food extracts and the charging of vials and other receptacles with
50 semi-solid contents in a neat, expeditious and

economical manner are also among the purposes for which the invention is designed. The apparatus comprised in my invention is also adapted to the forming of plastic material into sticks or rods of suitable length for
55 use as bougies, urethral suppositories or other purposes.

Another object of my invention is to provide a cheap and effective mold lining or shield that will protect the metal mold from
60 corrosion by contact with any metallic oxide or acids that may be contained in the suppository material, thereby obviating, also, any chemical reaction that might impair the usefulness of the suppository from the mingling
65 therewith of undesirable metallic oxides or salts. Such lining is designed also to prevent any part of the suppository from adhering to the mold whereby the surface of the finished
70 article might become broken or marred, and being removable with the suppository and forming a covering therefor it will preserve the suppository from contamination until it reaches the patient and is applied to its intended use.

My invention also has for its objects to provide an apparatus in which the cylinder or casing, from which the suppository material or other plastic substance is forced, may be
80 adjustably clamped in any required position to correspond with variations in the form and position of the mold or molds, thereby readily adapting the said cylinder to use with molds of varying size, character and location; to provide, also, means for adjusting the elevation
85 of the mold support and guide way with relation to the discharge nozzle of the cylinder thereby facilitating the employment of differently sized molds; to provide, further, a
90 plunger that shall be separate or detached from its actuating screw shaft and accurately fitted into the cylinder so as to prevent any backward oozing of liquid or moisture from the suppository mass or plastic substance in front of the plunger and yet obviate any
95 grinding or wearing action between the plunger and cylinder; and the invention is designed generally to improve the construction and mode of operation of apparatus for making
100 suppositories and similar molded articles

and for compactly filling capsules and other receptacles with semi-solid material and in a neat, rapid and thoroughly efficient manner.

To these various ends and for other purposes to be explained the invention consists in the method and apparatus hereinafter more particularly described and claimed.

In the annexed drawings, illustrating the invention, Figure 1 is a perspective of my improved molding apparatus arranged for making suppositories or articles of somewhat similar form by filling the mold from its closed end or base outward to its open end and from periphery to central axis, and in which the pressure is distributed between the material in the cylinder and that in the mold and automatically regulated or controlled by the mold during the operation of pressing or molding. Fig. 2 is a vertical longitudinal section of the same with the plunger and mold in operation. Fig. 3 is an elevation of the discharge end of the cylinder with vertically-adjustable mold-support and guideway. Fig. 4 is a partial side elevation of the apparatus, showing one of the molds or mold-cavities broken away and nearly filled. Fig. 5 is a perspective of a suppository-mold opened and showing, also, the linings for the mold-cavities. Fig. 6 is a partial plan of the apparatus, illustrating a mode of using it in the filling of collapsible tubes and other receptacles. Fig. 7 is a view of a mold for forming straight sticks or rods.

Referring to the drawings, the numeral 1 designates a cylinder or casing in which is contained the suppository material or other substance to be molded or filled into capsules, tubes, vials or other receptacles. As shown, the cylinder 1 is preferably held in a horizontal position on a stand or pedestal 2 that may be firmly secured to a bench, table, counter or other support. I have provided the top of the pedestal 2 with a cylindrical spring clamp 3 divided at the top and having perforated lugs 4 to receive a clamping bolt 5 by which the cylinder can be secured in any adjusted position. The spring clamp may be bolted or otherwise secured to the pedestal.

In the cylinder 1 is placed an accurately fitted plunger head 6, Fig. 2, arranged to be actuated in a forward direction by a screw shaft 7 from which the plunger is, however, separate or detached. The rear face of the plunger may be provided with a conical recess for reception of the conical bearing end of the screw shaft which is centered therewith. On the rear externally screw threaded end of the cylinder 1 is engaged a cylinder head 8 formed externally with an elongated central boss or nut 9 in which the screw shaft 7 is centered and supported. A hand wheel 10 on the outer end of the screw shaft 7 affords a convenient means for rotating said shaft to carry it toward and from the plunger head.

With the forward externally screw threaded end of the cylinder 1 is engaged a detachable

cylinder head 11 that is removed when it becomes necessary to supply the cylinder with material. This forward cylinder head 11 is screw tapped near its periphery for engagement with a nozzle 12 through which the material in the cylinder is discharged. Now, it is my purpose to make the nozzle 12 of such length that it may extend nearly to the bottom, base or closed end of the mold, vial, capsule or other receptacle to be filled or charged. Nozzles of varying length and bore will, therefore, be employed according to variations in the dimensions or capacity of the mold or other receptacle. It is preferable to locate the nozzle 12 near the periphery of the cylinder head 11, as shown. This enables the cylinder 1 to be so turned or adjusted in its supporting clamp that the nozzle 12 will be below the axis of the cylinder so that as the material in the cylinder becomes diminished in quantity its feed to the nozzle will be aided by gravity. The manner of adjustably supporting the cylinder 1 and attaching the nozzle 12 to the head 11 eccentric to the horizontal cylinder axis will also permit the cylinder to be turned or partially rotated so as to swing the nozzle 12 laterally in either direction, as indicated by the curved arrows in Fig. 3, to bring the nozzle into alignment with a mold cavity to which the nozzle may not otherwise have convenient or proper access.

To the front portion of the stand or pedestal 2 is attached a forward extended mold support and guide way 13 that should be adjustable up and down as indicated by the vertical arrows in Fig. 3. This vertical adjustment may be conveniently accomplished by means of slots 14 and set screws 15, Figs. 1, 3 and 4, through which a flanged portion of the mold support and guide way 13 is connected with the cylinder pedestal. The vertical adjustment of the mold support and guide way greatly facilitates a proper centering of the nozzle 12 with a mold cavity that it is to enter and permits the ready employment of differently sized molds. A great variety of molds and nozzles may thus be utilized according to the character of work to be done.

The mold that I prefer to use in making suppositories is illustrated in Figs. 1, 2, 4 and 5. This mold 16 is formed in two parts or blocks suitably hinged together at one edge. In the inner face of each mold part may be formed one or more cavities 17, Fig. 5, corresponding with a similar cavity or cavities in the other half of the mold. As shown each half of the mold is provided with two of these cavities so that the mold can be conveniently used in reversed positions, but it is obvious that only one cavity may be provided or any desired number, and in varying sizes, as preferred. For making suppositories the mold cavities may have any usual or desired form. The outer or open end of each mold cavity is provided with an inwardly projecting lip or flange 18 forming the edge of a contracted central opening 19 through which the nozzle 12 enters

and which closely embraces the said nozzle when the mold is in an operative position.

Before closing the mold the mold cavity is provided with a removable non-adhering protective lining or shield 20, composed of two sections Figs. 1, 2, 4 and 5. These mold linings may be made of paper of such strength and fiber as to be capable of receiving an impression without tearing. The paper is damped with starch water and molded to the form desired, under heat, so that the linings will not lose their shape when placed in the suppository molds. It is the purpose of the linings 20 to protect the molds from corrosion, preserve the suppository material from direct contact with the molds, and also to serve as coverings for the finished suppositories, to be removable therewith from the molds and to act as a preventive against contaminating influences until the suppository is about to be applied to its intended use. Each mold lining is of such form and dimensions that its edges will lap beyond the sides and ends of the mold cavity, as shown, and permit being readily folded about the suppository when discharged from the mold. These folded over edges of the mold linings or suppository coverings will enable them to be readily stripped from the suppository, when required for use, without exposing its surface to break or injury. Instead of starched paper, tin foil or other suitable material may be employed for the mold lining and suppository covering.

The mold 16 may be recessed at 21 for engagement of a clamping bolt 22 having a thumb nut 23 by which the two halves of the mold may be securely fastened together in condition for use.

As shown in Figs. 1, 2, and 4, the mold 16, when prepared and locked, is placed on the mold support and guide way 13 with one of the mold cavities in proper alignment with the discharge nozzle 12 of the cylinder. Any required adjustment of the cylinder 1 to center its nozzle 12 with a mold cavity may be readily effected by loosening the screw bolt 5 of the spring clamp 3 and turning the cylinder to the right or left and also, if necessary, by changing the vertical adjustment of the mold support and guide way. The mold and nozzle having been properly centered and the cylinder firmly secured, the mold will be moved rearward along the support and guide way 13 until the nozzle 12 enters fully into the mold cavity. It will be understood, of course, that the cylinder 1 has been previously charged with a suitable quantity of the material to be conveyed into the mold. The screw shaft 7 will be rotated in the required direction to move it into bearing contact with the rear face of the separate and detached plunger head 6 and under the pressure thus exerted by continuous rotation of the screw shaft the plunger will be forced steadily forward. The suppository material, or other semi-solid or plastic substance or compound in front of the plunger 6 will thus

be forced out from the cylinder and through the nozzle 12 into the mold cavity or other receptacle. By having the plunger head 6 accurately fitted to the cylinder it will be impossible for any moisture or liquid ingredients of the compound or mass to ooze or escape to the rear of the plunger. As the plunger head 6 and its actuating screw shaft 7 are separate or detached from each other, though capable of being brought into bearing contact, it is obvious that the plunger head will not rotate with the shaft. Any grinding or wearing of the plunger head and cylinder that might otherwise occur, to such extent as to lessen the accuracy of fit and impair the efficiency of the machine, will thus be entirely avoided.

According to my method of molding suppositories and filling or charging capsules, vials, collapsible tubes or other receptacles, the mold or receptacle is charged from its closed end, bottom or base outward to its open end and from its periphery or sides to its center. In this way ample opportunity is afforded for expansion and escape of air from the mold or receptacle during the operation of filling it. The pressure is distributed between the material in the cylinder or supply vessel and that in the mold or other receptacle being charged; and the mold or receptacle may be so arranged and supported as to be capable of moving outward under the force exerted by the pressure of accumulating material in the mold cavity, or in the vial or other receptacle, thus effecting an automatic regulation of the pressure in the mold or receptacle and an automatic gaging of the density or compactness of the charge. By thus effecting and maintaining a uniform density throughout the mass of material under compression in the mold or receptacle the separation of elements or ingredients of different specific gravities is prevented and the molded article will be of uniform quality and condition throughout.

It will be observed that the mold 16 rests loosely on the mold support or guide-way 13 between the flanged or slightly raised edges thereof and that it will thus be free to move horizontally outward in the direction of the arrow. Shown in Fig. 4. The weight of the mold maintains it on the guide-way and is so gaged with relation to the pressure exerted by the plunger 6 that the mold will be caused to slide off and away from the nozzle under the pressure of the accumulating material in the mold cavity.

By reference to Figs. 2 and 4 it will be seen that the material delivered by the nozzle 12 is discharged directly against or in contact with the base or closed end of the mold or receptacle and passes thence outward and surrounds the nozzle. As the mold becomes filled from its base outward the flanges or lips 18 at its open end and closely surrounding the nozzle will prevent any escape of material and the filling or charging will proceed from

periphery to center while the mold is gradually moved off from the nozzle. When the mold and nozzle thus become disengaged the forward movement of the plunger should be arrested, the stream of material issuing from the nozzle will be severed by a knife, or otherwise, and the double mold may then be reversed or be replaced by another and the process repeated.

In Fig. 6 I have shown the application of my method to the uniform and compact filling of a collapsible tube 24 such as is commonly employed for inclosing dental pastes and other toilet preparations, liquid paints or colors and other plastic or semi-solid goods. For this purpose a bent tube 25 may be connected at one end with the discharge nozzle 12 of a cylinder containing the material to be packed or put up and the other end of said tube will then be inserted into the collapsible tube and close to its bottom. On operating the plunger of the cylinder the collapsible tube will be filled first from its closed end or base outward and from its sides or periphery toward its center in the same manner as already described with reference to the charging of a suppository mold and with corresponding advantages. The laterally bent tube 25 shown in Fig. 6 enables the operator to conveniently hold the collapsible tube 24, vial or other receptacle in one hand while he rotates the screw shaft of the cylinder plunger with the other. The collapsible tube 24, or a vial or other receptacle to be filled, may, however, be laid or supported on the guide way either in direct connection with the nozzle 12 or be connected therewith through a straight tube, if preferred. In like manner may be filled capsules or globules of medicinal compounds or food extracts.

For making bougies or urethral suppositories and for other like purposes I may place on the mold support and guide way 13 a two part mold 26, Fig. 7, having formed in its opposite and separable parts a straight cylindrical mold cavity 27 capable of molding the suppository material, or similar substances, into sticks or rods, as it issues from the nozzle of the cylinder.

With molds of a suitable character the apparatus is adapted to the rapid and economical manufacture of rectal, urethral, vaginal and nasal suppositories, with great ease and neatness, in either hot or cold weather and with perfect control of the ingredients whether semi-fluid or somewhat solid. In suppository machines having molds into one end of which the material is delivered through a fine aperture or duct the excess of compression at this point is liable to result in the loss or unequal distribution of essential oils or other liquid ingredients and the separation of elements that differ in density or specific gravity. This difficulty is obviated by providing between the cylinder and the mold a nozzle or channel of communication large enough to permit free exit of the mass under compression. By

extending this nozzle through the mold to a point very near its base or closed end and discharging the material against a closed and perfectly tight surface it will distribute itself with equal density throughout the mold; and the filling or charging of the mold being thus effected evenly from the base outward all the air will be expelled during the progress of the operation and the finished suppository will present a perfectly homogeneous mass of uniform quality throughout. The automatic action of the mold in moving off from the discharge nozzle of the cylinder enables the operator to know exactly when a mold is full and results in the uniformity as to weight and quality of a number of suppositories made at one time from the same batch of material.

To permit refilling of the cylinder the screw shaft 7 will be retracted, the cylinder head 11 taken off and the plunger 6 pushed back. The cylinder may be removed from its supporting stand or pedestal for convenience in filling or refilling it. Both cylinder heads may be readily removed when the cylinder requires cleaning.

The manner of making suppositories by charging the mold from its base or closed end outward is particularly useful and convenient in molding that class of suppositories that are of a bulbous form and which cannot be economically and quickly made by appliances and machinery now in use. The paper mold linings that I have described will also assist greatly in the molding and preservation of suppositories having the form of bulbs.

What I claim as my invention is—

1. The combination with a cylinder having a discharge nozzle, a plunger movable in the cylinder for forcing plastic material contained in the cylinder out through the nozzle, and means for moving the plunger in the cylinder, of an automatically yielding mold into which the nozzle projects to deliver the plastic material thereinto, said mold yielding along said nozzle in a direction away from the cylinder during the operation of filling the mold cavity, substantially as and for the purpose described.

2. The combination with a cylinder having a discharge nozzle, a plunger movable in the cylinder to force plastic material contained therein out through the discharge nozzle, and means for moving the plunger in the cylinder, of a support arranged in juxtaposition to the cylinder and its nozzle, and a mold into which said nozzle projects to deliver the plastic material thereinto, said mold sliding on said support along the said nozzle in a direction away from the cylinder during the operation of filling the mold cavity with the plastic material ejected through the nozzle, substantially as described.

3. The combination with a cylinder having a discharge nozzle, a plunger movable in the cylinder for ejecting plastic material contained therein out through the nozzle, and a screw engaging a part of the cylinder and acting upon the plunger, of a support arranged

in juxtaposition to the cylinder and its nozzle and provided with a guide-way, and a slidable mold engaging the guide-way and moved thereupon in a direction away from the cylinder during the operation of filling the mold cavity, substantially as described.

4. The combination with a cylinder, of a discharge nozzle, and means for ejecting plastic material contained in the cylinder out through said nozzle, of a mold which recedes from the cylinder during the operation of filling the mold cavity with the plastic material, substantially as described.

5. In a machine for filling suppository molds, capsules, vials, collapsible tubes and other receptacles, the combination with a cylinder having a plunger and provided in one head with a discharge nozzle located eccentric to the cylinder axis, of means for securely supporting the cylinder in a horizontal position and for adjusting it on its axis to swing the said discharge nozzle laterally, substantially as described.

6. The combination of a cylinder having a discharge-nozzle, a support arranged in juxtaposition to the cylinder and nozzle and provided with a guide-way, a mold engaging the guide-way and slidable thereupon in a direction away from the cylinder during the operation of filling the mold cavity, a plunger ar-

ranged in the cylinder, and a screw engaging a part of the cylinder and having its inner extremity disconnected from the plunger but adapted to operate against the same to eject the plastic material out through the nozzle, substantially as and for the purposes described.

7. In a machine for filling suppository molds, the combination with an adjustable horizontally supported cylinder having a plunger and a discharge nozzle, of a vertically adjustable mold support and guide-way, substantially as described.

8. The combination of a stand or pedestal, a cylinder supported horizontally on said pedestal and provided with removable heads, a plunger and a discharge nozzle located in one of said heads eccentrically to the cylinder axis, a spring clamp for adjustably securing the cylinder, and a vertically adjustable mold support and guide-way, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

DAVID GENESE. [L. s.]

Witnesses:

GEO. MCCAFFRAY,
CHAS. H. SHIPLEY.