

- [54] **DISPOSABLE OINTMENT APPLICATOR**
[75] Inventor: **Martin Weinhart**, Lincolnwood, Ill.
[73] Assignee: **Master Molded Products Corporation**, Skokie, Ill.
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Primary Examiner—Richard A. Gaudet
Assistant Examiner—J. C. McGowan
Attorney, Agent, or Firm—Mann, Brown, McWilliams & Bradway

- [52] **U.S. Cl.**..... **128/261, 128/238**
[51] **Int. Cl.**..... **A61m 35/00**
[58] **Field of Search**..... 206/63.2 R; 128/261, 272, 128/234, 235, 236, 237, 238, 218 R, 218 P, 218 PA, 218 M, 218 S, 270, 271, 216; 222/386

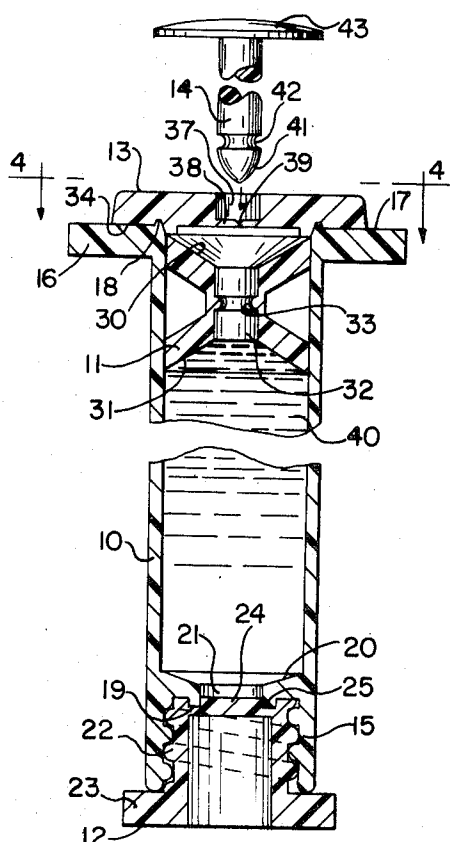
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[57] ABSTRACT

An ointment applicator for use by doctors and by women and which is designed for a single use, after which it is discarded for sanitary reasons. The applicator is molded from a suitable plastic material, such as polyethylene, or polypropylene, or polyvinyl chloride, and made in a plurality of parts which are finally assembled when the applicator is to be used. One part is precharged with a prescribed dosage of a medication or ointment which may be discharged into a body cavity when the several parts are finally assembled for use.

2 Claims, 6 Drawing Figures



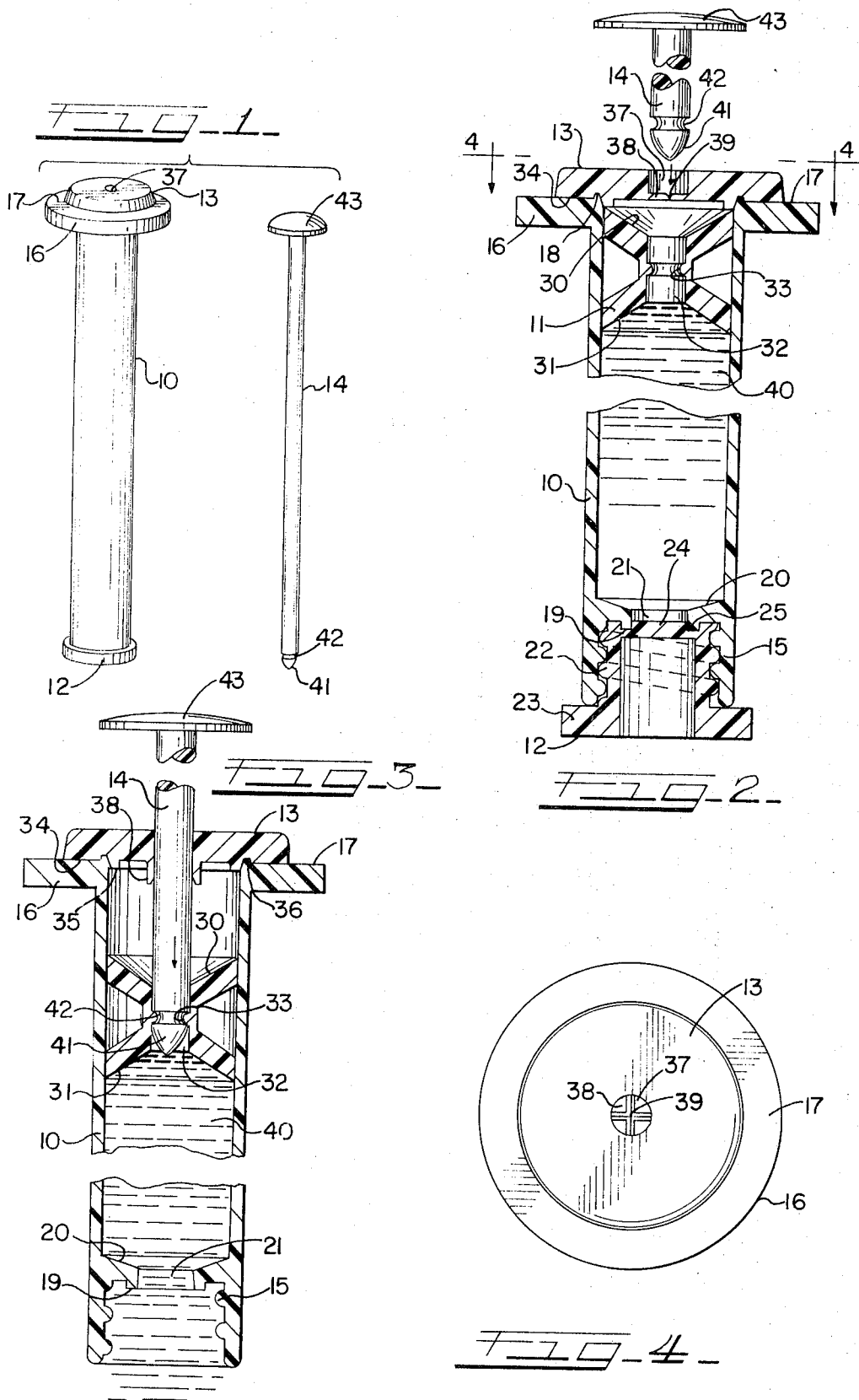


FIG 5

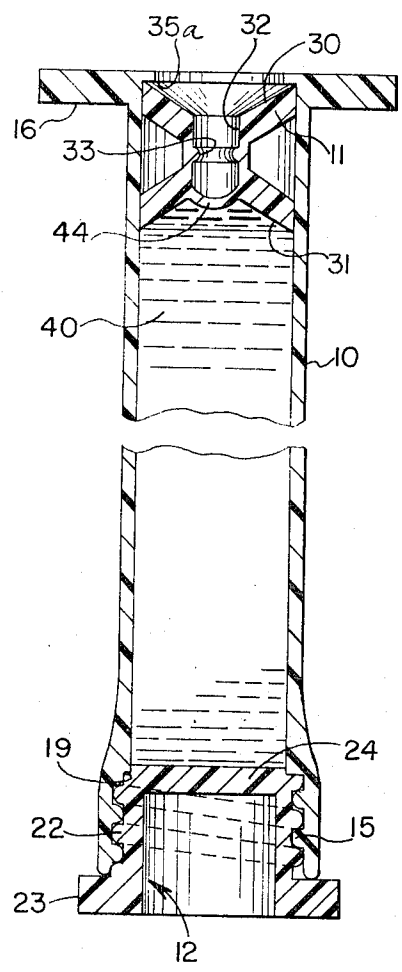
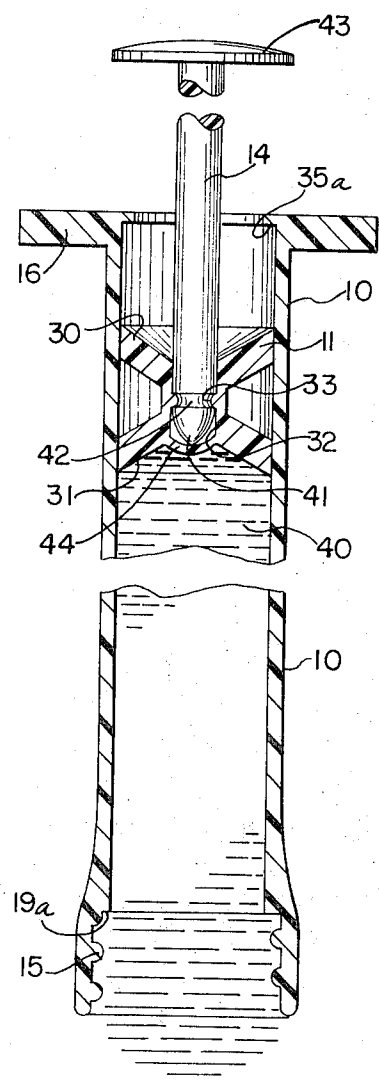


FIG 6



DISPOSABLE OINTMENT APPLICATOR

BACKGROUND OF THE INVENTION

The medication applying device of this invention is of the type for introducing a medication or ointment into a body cavity in a clean and sanitary manner and particularly where it may be necessary to inject a prescribed amount of such medication into the cavity to remedy a condition for which it has been prescribed. Prior articles in this field have contemplated repetitive use of the injector devices which may have the effect of reinfecting the cavity area or aggravate the existing condition. This is distinguished from the present device which is intended for use but once and then discarded and designed so that it is not readily refillable whereby to encourage immediate disposition of the applicator after use.

OBJECTS OF THE INVENTION

The primary purpose of the present invention is to provide an applicator for the injection of a medication or an ointment into a body cavity and which is so made as to be discarded after a single use.

An important object of the invention is the provision of a disposable ointment applicator constructed in several parts from a moldable thermoplastic material such as one selected from the group including polyethylene, polypropylene or polyvinyl chloride and made to be assembled finally at the time of use.

Another object of the invention is to provide a disposable ointment applicator molded in several parts from a thermoplastic material which are assembled into precharged condition and a final part inserted at the time of use.

Still another object of the invention is the provision of a disposable ointment applicator having a cylindrical barrel provided with a permanently sealed end and a removably sealed opposite end formed by a threaded closure and including an operating element entered through the sealed end.

A further object of the invention is to provide a disposable ointment applicator comprising a cylindrical barrel containing a floating piston increased through an open end of the barrel which is then permanently sealed after which the barrel is precharged on the other side of the piston through the opposite end of the barrel which is closed with a removable member and an operating member inserted into the piston through the sealed end.

A still further object of the invention is the provision of a disposable ointment applicator made of a moldable thermoplastic in several parts comprising a cylindrical barrel having a fully open end and a restricted opposite end internally threaded with a cooperatively threaded end closure member and having a floating piston inserted through the open end of the barrel which is then permanently sealed with an end closure member and an operating stem member inserted through the end closure member into engagement with the piston to discharge an ointment in the barrel through the threaded end when the threaded end member is removed.

DESCRIPTION OF THE DRAWINGS

The foregoing and other objects of the invention are attained by the ointment applicator illustrated in the accompanying drawings wherein:

FIG. 1 is a perspective view of the ointment applicator cylinder and piston assembly with removable end closure cap and separate stem;

FIG. 2 is vertical cross sectional view through the precharged cylinder and piston assembly with the end cap screwed in place and the separate operating stem entered through the sealed end wall of the cylinder and in position to be entered into the piston;

FIG. 3 is a vertical cross sectional view similar to FIG. 2 but showing the operating stem fully inserted into the piston with the screwed in end cap removed and the cylinder partially discharged;

FIG. 4 is a top plan view showing the sealing end closure;

FIG. 5 is a vertical cross sectional view of a modified form of the invention showing the fully charged applicator; and

FIG. 6 is a vertical cross sectional view of the modified form of applicator similar to FIG. 5 but showing the operating stem inserted in the piston and the screwed in end closure cap removed and the cylinder barrel partially discharged.

SUMMARY OF THE INVENTION

This invention relates to a disposable ointment or medication applicator that is intended to be discarded after but a single use for cleanliness and sanitary reasons. The applicator is designed for economical manufacture from a moldable thermoplastic and constructed in several parts which are partially assembled and precharged with the ointment or medication and then an operating part is assembled with the applicator when it is to be used. The applicator assembly as precharged includes a cylindrical barrel having an internally threaded end removably closed by a threaded end closure member. A floating piston is inserted into the barrel through the oppositely disposed open end which is then permanently sealed by means of an end closure member secured to the barrel member by means of sonic sealing or by spin welding or other suitable means of bonding the parts together. This applicator assembly is precharged with medication through the threaded end of the barrel by removing the threaded end closure member, injecting the correct amount of medication and then reapply the threaded closure member. A separate operating stem is provided which is inserted through the end closure sealing member to engage the piston member which is backed up by the pressure of the filled charge of medication against the stop afforded by the threaded end closure member. This operating stem is inserted at a time when it is desired to use the applicator and the threaded end closure member is removed after the operating stem has been inserted whereupon the applicator may be inserted into the body cavity and the medication discharged therein by actuation of the operating stem by means of a thumb-piece or push button provided on the free end of the stem to push the piston through the length of the barrel to force the medication ahead of it and out through the threaded end and into the cavity. When the medication from the applicator has been deposited in the body cavity the applicator is withdrawn therefrom and discarded.

DESCRIPTION OF PREFERRED EMBODIMENT

In the drawings the several parts of the ointment applicator assembly comprise the cylindrical barrel mem-

ber 10, a sliding or floating piston 11, a removable end closure member 12 for one end of the barrel, a closure member 13 comprising means at the other end of the barrel to retain the piston in the barrel, and a separate operating stem 14 engageable with the piston to push the piston 11 through the barrel 10 and thus discharge a medication contained in the cylindrical barrel through the one end thereof when the end closure member 12 is removed therefrom.

The barrel member 10 is cylindrical from end to end and is provided with an internally threaded portion 15 at the one end thereof and an outstanding annular flange 16 adjacent to the other end thereof and which has a planar face 17. An annular seat 18 is formed at the inner dimension of flange 16 and coincides substantially with the diameter of the barrel 10. Adjacent to the internally threaded end portion 15 the barrel 10 is provided with an annular pressure seat 19 formed on inwardly extending end wall 20 integral with the barrel 10 so that the seat 19 and discharge opening 21 are of less diameter than the internal diameter of the cylindrical barrel.

The removable end closure member 12 is threaded complementally to the threads 15 of the barrel 10, as at 22, and an outstanding annular flange 23 provides for the actuation of the closure member into and out of the threaded end of the barrel. At its inner end the end closure member is provided with an end wall 24 which closes the discharge opening 21 from the cylinder when the closure member is screwed fully into the threaded end thereof. An internal pressure seat 25 is formed in the end wall 24 and complements the annular pressure seat 19 formed on the end wall 20 extending inwardly from the inside diameter of the cylinder 10 so that when the closure member 12 is effectively engaged a pressure seal is provided which prevents the escape of ointment or medication through this end of the applicator.

The floating piston 11 is installed in the cylindrical barrel 10 through the open other end and is slidable through the barrel during the discharge of medication through the end opening 21. The piston is free in the cylinder in respect to its relative axial movement and is of such dimension diametrically as to provide a close fit with the internal diameter of the cylinder walls of the barrel 10. The face of the piston disposed toward the medication is hollow and slopes toward the center of the piston as at 31 so that as pressure is developed against the medication contained in the barrel the piston is caused to expand outwardly against the inner walls of the cylinder and thereby obtain a still tighter seal therebetween and prevent the escape of any ointment past the piston during operation.

The opposite face of the piston 11 is also sloped inwardly as at 30 and provides a guide surface to a central opening 32 which, as shown, extends entirely through the piston and is restricted adjacent a median position by an inwardly projecting ring 33 which affords a snap lock engagement with the operating stem 14. The surface 30 sloping inwardly to the opening 32 contributes to the guiding of the stem 14 into the central position of the piston where it enters the opening 32. The piston 11 may be retained in the cylindrical barrel 10 by suitable means located adjacent to the other end of the barrel such as a partial closure thereof or an inwardly extending lip or flange, as shown in FIG.

5, but in the form disclosed in FIG. 2, a permanently sealed closure member is provided for this purpose.

The closure member 13 is designed for cooperation with the annular flange 16 on the cylinder 10 and has a planar face 34 adapted to be disposed in opposed contact with the planar face 17 on the annular flange. In practice these two planar faces are brought together and bonded to provide a permanently sealed relationship. This bond may be obtained by sonic sealing or by spin welding where the opposed surfaces are sealed by spinning one of the parts in contact with the other until melting of the surfaces occurs whereupon spinning stops and the bond is formed under pressure. All of the parts of the applicator are made from a moldable thermoplastic material such as polyethylene, or polypropylene or polyvinyl chloride so that such method of bonding the parts together becomes feasible but, if desired, any preferred means for securing the parts together may be utilized.

The piston retaining end closure 13 is shown as completely closing the other end of the cylinder barrel 10. An annular recessed seat 36 is provided on the inner side of the closure piece 13 which cooperates with the annular seat 18 on the cylinder 10 to position the closure member on the barrel and provide an effective sealing relationship between the parts supplementing the bonded seal between the planar faces 17 and 34. An inwardly projecting annular shoulder 35 is provided on the inner side of the member 13 which fits into the end of the cylinder barrel 10 and this element is sufficient to retain the piston 11 in the cylinder but, as shown, the end piece 13 is extended continuously over the other end of the cylinder barrel to provide the complete cover. However a central recess 37 is provided in the outer face of the cover 13 and this results in a relatively thin section 38 at the inner side of the cover which is scored in the shape of a cruciform, as at 39, to provide tear strips that are readily punctured or penetrated by the operating stem 14.

With the piston 11 installed and the end piece 13 in place the threaded closure piece 12 is removed and a prescribed quantity of medication 40 is injected into the cylinder 10 through the opening 21 and the closure 12 then reapplied. The ointment applicator, thus precharged, is then ready for use. The piston 11 is actuated by the operating stem 14 to discharge the medication 40 through the open end of the applicator when the end closure 12 is removed. At this time the applicator is inserted into the body cavity with the operating stem 14 installed in engagement with the piston 11 so that when the stem 14 is actuated the predetermined quantity of medication is deposited and the applicator is then withdrawn and thrown away.

The operating stem 14, as shown, is designed to puncture the thin tear strip section 38 in the recess 37 of the end piece 13 and for this purpose is provided with a relatively pointed end portion 41 adapted to be entered into the recess 37 and through the tear strip area 38 into the piston opening 32 guided by the sloping surface 30. Behind the pointed head 41 of the operating stem a peripheral groove 42 encircles the stem and it is this groove that cooperates with the inwardly projecting ring 33 to provide a snap lock connection between the operating stem and piston. The stem 14 is inserted into the piston 11 in the precharged condition of the cylinder 10 with the end piece 12 closing the opening 21 so that the medication 40 cannot escape

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but builds up pressure within the cylinder to resist movement of the piston and thereby enable the snap locked relationship between the piston and stem to be established. Before the snap lock engagement is effected enough medication 40 enters the piston opening 32 to act as a lubricant to facilitate entry of the pointed head 41 of the stem 14 through the snap lock ring 33 but after the snap lock engagement is made the connection is effectively sealed.

Where only the annular shoulder 35 is utilized to retain the piston 11 in the cylinder 10 the opening 32 does not extend entirely through the piston but is closed at the side of the piston facing the medication 40, as shown at 44 in FIG. 5 and thus acts effectively to close the other end of the cylinder barrel against the escape of the medication or contamination thereof. The piston closes the otherwise open end of the cylinder and the stem 14 is engaged in the opening 32 and snap locked in relation to ring 33 against the pressure afforded by the medication 40 as before.

As shown in the arrangement of the applicator illustrated in FIG. 5 the cylinder barrel 10 is constructed to avoid the need for the sealed end closure member 13 on the other end of the barrel. Instead the barrel is formed with an integral stop or inwardly extending shoulder 35a which functions to retain the piston 11 within the cylinder and prevents its escape through this end. The piston is inserted into the cylinder barrel through the threaded end of the cylinder with its closed side 44 disposed in the direction of the medication 40 and pushed through the barrel to bring its opposite face 30 into bearing engagement with the stop shoulder 35a. The cylinder is then filled with medication 40 and the threaded end piece 12 screwed into the threaded end 15 of the applicator. A sealing pressure joint 19a is provided between end piece 12 and the cylinder barrel 10. It will be noted that the medication 40 is confined be-

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tween the closed side 44 of the piston 11 and the end wall 24 of the end piece 12 so that the medication cannot escape from the applicator until it is ready to be used and then only after the end piece 13 is unscrewed and removed. Similarly, both ends of the cylinder 10 are effectively closed by the piston 11 against the stop shoulder 35a and by the closure 13 at the threaded end of the cylinder. Thus, any possibility of contamination or entry of foreign matter is avoided.

The operating stem is provided with a thumbpiece 43 to facilitate the application of pressure on the stem when it is being installed in the snap ring lock and when it is being actuated to discharge the medication.

From the foregoing it will be seen that a molded plastic ointment applicator has been provided of simple economical design and construction whereby it becomes feasible to discard the applicator after but one use.

What is claimed is:

1. A disposable ointment applicator comprising an assembly of individual parts including a cylindrical barrel, a removable end closure member for one end of the barrel, a sliding piston in the barrel, a sealable end closure member for the other end of the barrel, an operating stem extending through the sealable end closure member into engagement with the piston medication in the cylindrical barrel between the sliding piston and the removable end closure member.

2. A disposable ointment applicator as set forth in claim 1 wherein said sliding piston has an inwardly sloping face on the side thereof toward said medication which in operation increases the sealing pressure of the piston on the cylinder walls whereby to facilitate the build-up of pressure on the medication as said snaplock engagement is established.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,828,778 Dated August 13, 1974

Inventor(s) MARTIN WEINHART

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 44, "increased" should read --inserted;

Column 4, line 46, "mediation" should read --medication--;

In Claim 1, line 28, after the word "member" add the following --,said one end of the cylindrical barrel being internally threaded and the removable end closure member complementally threaded, a sealing joint between the removable end closure member and the cylindrical barrel spaced inwardly of the threaded portion of said one end of the barrel and of less diameter than the one end portion of the barrel said cylindrical barrel having an annular flange adjacent to said other end of the barrel provided with a planar face, said sealable end closure member having a planar face in opposed relation to the planar face of said annular flange, an interengaging joint between said planar faces and sealing means joining said planar faces, a separate operating stem member engageable with the piston through the barrel adapted to discharge said medication through said one end when said end closure member is removed, said piston having a median restriction defined by an inwardly projecting lock ring and said separate operating stem having a generally tapering end portion, and a peripheral groove encircling the stem adjacent to said end portion, said peripheral groove having a snap-lock engagement with said lock ring, said medication resisting movement of said piston by built-up pressure as said stem is engaged with the piston before said end closure member is removed, said medication lubricating said tapering end of the stem and said lock ring to facilitate entry of the tapering end through the lock ring whereby to establish said snap-locked engagement between the lock ring and said peripheral groove.--.

Signed and sealed this 29th day of October 1974.

(SEAL)

Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents