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2,722,218

DISPENSER

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Fig. 1.

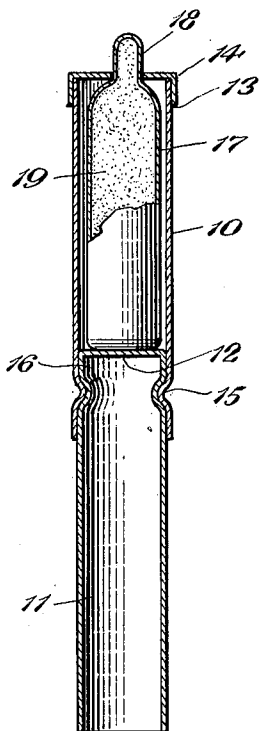


Fig. 2.

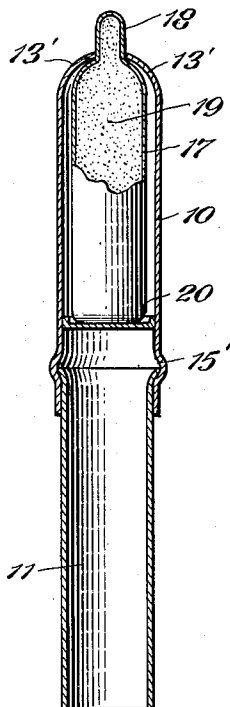
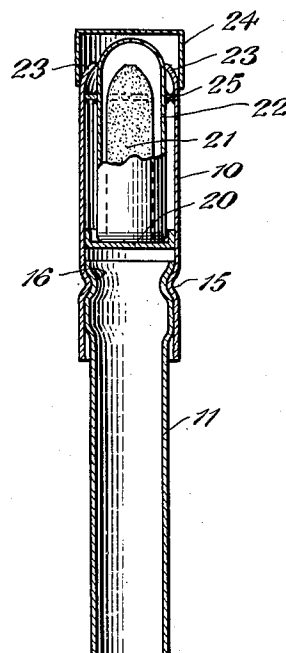


Fig. 3.



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DISPENSER

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9 Claims. (Cl. 128—261)

The subject invention relates to dispensers of the type employable for the introduction of medicinal and hygienic substances into body orifices and more particularly to a disposable dispenser which may also be used as the packaging for the substance.

The need has long been felt for a simple, disposable, readily operable device for the introduction of principally creams and jellies into body orifices and more particularly for vaginal use. Disposability is a desirable attribute of the device since when used in connection with infectious diseases the fact that it may be discarded after one use obviates the possibility of reinfection which exists when reusable dispensers are employed. The problem is twofold. First, it is necessary to provide a device which will introduce the substance within the body at a distance from the manipulation point and secondly, the device must be of such simple and inexpensive construction that it may be disposable. Previous attempts to solve the problem, while they have in some instances resulted in patents, have failed principally by reason of the fact that where the material of the dispenser was cheap enough to warrant its disposal after one use, such material was not a sufficiently good container for therapeutic substances.

An object of the present invention is to provide a disposable dispenser for the introduction of therapeutic substances into body cavities which is easy to manipulate and which provides a dependable package for the substance prior to its use.

Another object thereof is the provision of a disposable dispenser for the introduction of therapeutic substances into body cavities which may be made simply and economically.

The above and other objects are accomplished by inner and outer tubes telescopically associated, there being inserted within the outer tube a deformable container, a portion of which extends from the open end thereof and which extended portion just prior to use may be manually opened to provide passage for the expulsion of the contents of such deformable container, the inner tube acting as a piston which may be moved against the closed end of the container deforming the same and thus expelling the said contents thereof. The container or capsule may be made of a substance such as gelatin or one of the other well known plastic materials or it may even be a soft metallic tube. The top of the outer tube may be turned inwardly or have a collar secured thereto so as to prevent the container from being pushed therefrom when the inner tube is pressed against the container. The upper portion of the inner tube which makes contact with the bottom of the container may be in-turned or may be a solid wall so as to insure a broad-area contact between said inner tube and the bottom of said container. Alternately, a spacer may be placed within the outer tube between the container and the top of the inner tube so as to provide such broad-area contact. Modifications as more fully hereinafter explained, may be made to permit the employment of the device to store and then eject a suppository.

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Other objects and a fuller understanding of the present invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawings which illustrate a preferred embodiment thereof, it being understood that the foregoing statement of the objects of the invention and the brief summary thereof are intended to generally explain the same without limiting it in any manner.

Fig. 1 is an elevational view of a dispenser embodying the present invention, portions being broken away to show internal construction.

Fig. 2 is a similar view of a modification thereof.

Fig. 3 is a similar view of another modification thereof.

Referring to the drawing, a preferred embodiment is there illustrated in Fig. 1 and includes an outer tube 10, preferably made of an inexpensive cellulosic material, such as paperboard, to provide a moderately stiff member. A similar inner tube 11 of an external diameter somewhat smaller than the internal diameter of said outer tube is slideably mounted in said outer tube and movable longitudinally therein. The end 12 of tube 11 extending into outer tube 10 is closed. The free end 13 of outer tube 10 is closed with an apertured cap 14 which extends over the side of said tube and may be affixed thereto by an adhesive. An annular male groove 15 in the outside wall of outer tube 10 near the lower portion thereof, causes the corresponding inner wall to protrude inwardly, thus providing a transverse circumferential protuberance in said inner wall. A female groove 16 is positioned in the upper portion of the outer wall of inner tube 11 and dimensionally matches the protruding portion of groove 15 so that as the two tubes are brought together in the position shown in Fig. 1, the protruding portion of male groove 15 enters female groove 16 and causes the tubes to become lightly engaged and retained in such position. For the purposes of clarity of disclosure, the amount of indentation of each of said grooves has been exaggerated. In the actual form, they are of much lesser extent since what is desired is not a complete locking action, but merely a light locking action which is readily disengageable.

In the space between end 12 of inner tube 11 and apertured cap 14 atop outer tube 10 there is placed a deformable container 17 having a neck portion 18 which protrudes through and extends beyond the aperture in cap 14. Container 17 is intended to hold the substance or medicament 19 to be dispensed by the device and is preferably in the form of a tubular container having a closed tubular neck portion, leaving shoulders at the base of said neck, all of which may be integral. Such tubes made of gelatin are presently readily obtainable. But, of course, instead of gelatin, other plastics or other readily deformable materials which are inert relative to the medicament to be stored therein, may be employed.

To assemble the device, cap 14 is affixed to an end of outer tube 10, container 17 is then inserted so that its neck or nipple portion 18 extends through the cap 14 and tube 11 is slidably inserted in outer tube 10 until grooves 15 and 16 engage so that the device then takes the form shown in Fig. 1. This "package" may then be encased in a transparent cellulose or other wrapper to maintain it in a germ-free or sanitary condition.

In use, the outside wrapper (not shown) is first removed. The user then snips off the top portion of neck 18 so as to provide an opening through neck 18 into container 17. It is preferred that the cutting of neck 18 take place near the top thereof so that a substantial portion of said neck remains. The device is then caused to enter a body cavity and the operator presses forwardly on inner tube 11 causing the end 12 thereof to push against the bottom of container 17 and as the movement of inner tube 11 progresses, container 17 is caused to collapse

while the medicament or other substance contained therein is ejected therefrom into the body cavity. Thus, inner tube 11 acts as a plunger or piston and by the compressive action which takes place between its upper end 12 and cap 14 on the free end of outer tube 10 plus the restrictive influence of the side walls of said outer tube 10, positively drives the contents of container 17 through the open portion of neck 18. Container 17 is held within the tube during the compression stroke of the device, its shoulders engaging cap 14. Neck 18 may be made broader or narrower than its relative dimensions shown in Fig. 1. As it is made broader less effort is required to expel the contents of container 17 therethrough and also the more rapidly such contents may be expelled.

In the somewhat modified form shown in Fig. 2, cap 14 which covered the free end of outer tube 10 is omitted and in its place the free ends 13' of inner tube 10 are intumed to form an apertured end for said tube which will effectively retain container 17 in the outer tube 10 during the compression stroke of the device. In addition, in this form the top of inner tube 11 is slightly flared and is dimensioned to fit into female groove 15' on the inner wall of outer tube 10 to form a locking means which lightly retains tubes 10 and 11 in the engaged position shown in Fig. 2. An element is added in this form, namely a transverse spacer 20 which is approximately of the dimensions of the inner cross-section of outer tube 10 and is frictionally maintained therein at the base of container 17. In other respects the form shown in Fig. 2 is identical with the form illustrated in Fig. 1 and it is assembled and operated in similar fashion except, of course, that in the course of assembly spacer 20 is inserted in outer tube 10 prior to the insertion therein of inner tube 11.

Another embodiment of the present invention adapted to dispense a suppository 21 is illustrated in Fig. 3. Such suppository is initially packaged in a closed container 22 which may be of tin foil or consist of a gelatin capsule or the like, the top portion of which container extends outward of the intumed ends 23 of outer tube 10. A frictionally engaged cap 24 closes the free end of outer tube 10. A ring 25, of dimensions which approximate the inner dimensions of inner tube 11, is placed around container 22 at an upper portion thereof and is adhesively secured to the side walls of outer tube 10. Container 22 is adhesively secured to ring 25. This form has a spacer 20 similar to spacer 20 shown in Fig. 2 and similarly positioned. In the lower portion of outer tube 10 there is formed male groove 15, the corresponding inner annular protuberance formed thereby matching female groove 16 in the outer wall of inner tube 11. However, in this form, the wall of tube 11 is narrowed a short distance below groove 16 so that the lower portion of said tube is of less diameter than the upper portion thereof. This feature has been added so that if desired, grooves 15 and 16 may be made deeper than in the forms shown in Figs. 1 and 2 to provide a tighter locking action. Hence, as tube 11 is pushed forwardly into outer tube 10 the narrower lower walls of tube 11 will more easily pass the inner protuberances of male groove 15.

To use this form, the user first pulls off cap 24 and then cuts off the top portion of container 22. In this case the line of cutting may be across the top of intumed ends 23 of outer tube 10. Then after the forward end of the device has been inserted in the body cavity the user may move inner tube 11 forwardly which causes its upper flared end to contact spacer 20 and push the same against the bottom of container 22. As inner tube 11 and spacer 20 are further caused to proceed forwardly suppository 21 is pushed out of container 22 and into the body cavity. By reason of the fact that container 22 is secured to ring 25 which in turn is secured to the inner wall of outer tube 10, said container is maintained within said tube during the compression stroke. The device, of course, may then be removed from the cavity by the user.

Although the subject invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous additional changes in the details of construction, combination and arrangement may be resorted to without transcending the scope of the invention as hereinafter claimed.

What is claimed is:

1. A disposable dispenser for introducing substances into body cavities comprising a pair of elongated telescopically interfitting inner and outer tubes made of a cellulosic material, the inner tube being insertable in a first end of said outer tube and reciprocally movable therein, a readily deformable container mounted in the second end of said outer tube, a portion of said container extending beyond said second end, whereby when the extending end of said container is opened and said inner tube moved as a piston in the direction of said second end, the contents of said container are discharged through said extending end.
2. A dispenser as described in claim 1 and cooperating means on each of said tubes to lock said tubes in a predetermined position.
3. A dispenser for introducing substances into body cavities comprising a pair of elongated telescopically interfitting inner and outer tubes, the inner tube being insertable in a first end of said outer tube and reciprocally movable therein, a readily deformable container mounted in the second end of said outer tube, a portion of said container extending beyond said second end, cooperating means on each of said tubes to lock said tubes in a predetermined position, said means comprising a transverse circumferential protuberance on one tube and a transverse circumferential groove on the other tube dimensioned to receive said protuberance, said protuberance and groove being positioned to be brought into confrontation and engagement at said predetermined position, whereby when the extending end of said container is opened and said inner tube moved as a piston in the direction of said second end, the contents of said container are discharged through said extending end.
4. A dispenser as described in claim 3, said groove being formed in the inside wall of said outer tube and said protuberance being formed in the outside wall of said inner tube proximate its inner end.
5. A dispenser as described in claim 3, the relative internal diameter of the outer tube and the outside diameter of said inner tube being proximate in the region of the protuberance and groove on said tubes, the difference in said diameters being greater in portions of said tubes other than in said region.
6. A dispenser as described in claim 3, the relative internal diameter of the outer tube and the outside diameter of said inner tube being proximate in the region of the protuberance and groove on said tubes, said groove being in a forward portion of said inner tube, said inner tube being of decreased outside diameter other than in the region proximate said groove.
7. A disposable dispenser for introducing substances into body cavities, comprising a pair of elongated telescopically interfitting inner and outer tubes made of a cellulosic material, the inner tube being inserted in a first end of said outer tube and reciprocally movable therein, the second end of said outer tube being closed by a wall having an aperture therein, a readily deformable container mounted in the second end of said tube, said container having a forwardly positioned neck extending through said aperture beyond said second end of said outer tube, whereby when said neck is opened and said inner tube moved as a piston forwardly toward said second end, the contents of said container are discharged through said neck.
8. A dispenser as described in claim 7, said container having shoulders at the base of said neck, said container being retained in said outer tube when said inner tube

is moved forwardly, by means of the engagement of said shoulders with the inner margins of said aperture.

9. A dispenser as described in claim 1 and a spacer inserted within the said outer tube between the forward end of said inner tube and the rearward end of said container.

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