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F. A. SENGER
COLLAPSIBLE TUBE DISPENSER
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Fig. 1.

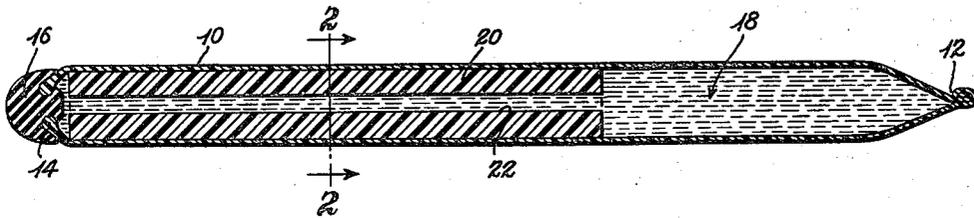
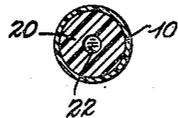


Fig. 2.



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COLLAPSIBLE TUBE DISPENSER

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2 Claims. (Cl. 128—261)

This invention relates to new and useful improvements in dispensers or applicators for pharmaceutical formulations in the nature of liquids, semi-liquids, and jellies, and particularly relates to dispensers or applicators adapted to the application of pharmaceutical formulations into the vagina. The invention is concerned especially with a dispenser which is convenient and highly satisfactory in use and which is capable of being produced economically whereby the dispenser may be employed on a single occasion and immediately thereafter destroyed.

Heretofore it has been the practice to introduce viscous liquid or jelly-like pharmaceutical formulations which are used for the treatment of vaginal infections or for contraception into the vagina by means of an applicator which has been filled with a pharmaceutical formulation from a large supply-storage tube of the collapsible type. It has been customary to use the same applicator repeatedly, and on each occasion it is necessary to fit the supply tube to the applicator, collapse the supply tube so as to discharge therefrom into the applicator the desired amount of formulation. It is then necessary to detach the supply tube from the applicator, close the supply tube and return it to the shelf. This procedure obviously has many disadvantages, among which is the mechanical unhandiness of the several above-mentioned manipulations.

A serious disadvantage of the above described practice of the prior art entails re-use of the mechanical applicator. This disadvantage is readily appreciated in connection with instances where a vaginal infection is being treated since on each occasion the patient is subjected to the possibility of reinfection unless the applicator is adequately sterilized after each occasion of use. While adequate sterilization is entirely feasible and possible, it is a time consuming task; the trouble of doing so is objectionable. The combination of the applicator and a collapsible supply-storage tube containing the pharmaceutical composition to be introduced into the body cavity is bulky and not easily transportable; neither is the combination readily disposable when no longer to be used.

This invention seeks to overcome the disadvantages of the practices of the prior art by supplying a single-application dispenser, i. e., one adapted for use on only one occasion which, nevertheless, will provide all of the advantages of prior devices.

In providing a dispenser for immediate disposition after use the economic factor becomes paramount; such an article must possess many important characteristics and yet must be capable of being manufactured at a very low cost, objectively, of course, at the lowest possible cost. To overcome the disadvantages mentioned in preceding paragraphs, such a device must be capable of storing the pharmaceutical preparation over an extended period of time in a manner such that the formulation will not be attacked by the atmosphere or by the materials of fabrication of the dispenser itself. Similarly,

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the construction must be such that the water and alcohol content, or other volatile content, of the pharmaceutical formulation does not escape during the storage period between manufacture and use.

5 Further, such dispensers should be adapted to discharge substantially the entire content of the dispenser, leaving little or none in the dispenser; and further desirably, the device should be capable of delivering the entire quantity to the desired point of application within the body cavity.

10 It is essential that applicators or dispensers of the type here under consideration embody the utmost in appeal to the user, and it is highly desirable that any objectionable features such as difficulty of actual application be entirely overcome; otherwise they are likely to be unacceptable even though eminently satisfactory mechanically speaking.

15 Accordingly, an object of this invention is to provide a dispenser or applicator by means of which a liquid, semi-liquid, or jelly-like pharmaceutical composition may be neatly, quickly, and conveniently dispensed into a body cavity.

20 Another object is to provide a dispenser or applicator of simple and inexpensive construction which may be manufactured readily in large quantities and which may be discarded economically after a single occasion of use.

25 Another further object of this invention is to provide a dispenser or applicator which in addition to providing means for applying pharmaceutical compositions also serves to provide a holder or container for the composition prior to its being dispensed.

30 Still another object of this invention is to provide a dispenser or applicator of the class described, adapted to maintain its contents in a sterile and effective condition up to the time of use.

35 A further important object of this invention is to provide a dispenser or applicator of the class described which is not bulky and which is convenient to carry and use.

40 Other objects of this invention will appear from the following description and drawings, as well as in the appended claims.

45 According to this invention, it has been discovered that a low cost applicator of a highly satisfactory character is provided by employing the well known collapsible type tube in the novel manner herein described. Generally, the present invention contemplates a collapsible type tube having positioned within its casing an elongated tubular body which, by reason of its size and location in the casing, affords a pharmaceutical formulation reservoir and further which body, by reason of its rigid nature, as will more fully hereinafter appear, provides support to the tube casing sufficient to give it a degree of stiffness necessary to the desired ease of application by the consumer. Thus the applicator of this invention is of the utmost simplicity in that it includes only two parts, aside from a closure member, in its construction.

50 The accompanying drawings illustrate the structure that is designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown in the drawings and that various changes may be made in the specific embodiment of the invention described and illustrated herein within the scope of the claims which follow and without departing from the invention.

In the drawings,

55 Figure 1 is a longitudinal sectional view taken through about the center of the applicator.

60 Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1.

65 Referring to the drawings, numeral 10 denotes a gen-

erally cylindrical collapsible type tube having a permanently closed end 12 and a dispensing end 14, dispensing end 14 being closed by stopper 16. Tube 10 includes a main reservoir portion designated by numeral 18, in which reservoir the pharmaceutical formulation is contained until such time as it is dispensed.

Numeral 20 denotes an elongated generally cylindrical body having passageway 22 therein extending lengthwise of the body and tube 10. Passageway 22 connects reservoir 18 with the dispensing end of tube 10 thus forming a channel through which the contents of the tube are delivered to the dispensing end 14 of the tube.

The cylindrical body 20 has two main purposes. In the first place, it serves to provide a relatively small passageway from the reservoir portion of the tube thereby permitting the discharge of substantially all of the contents of the tube, the only portion of the contents lost being the relatively minor amount remaining in the narrow passageway.

Secondly, cylindrical body 20 acts as a stiffening and supporting means for the walls of the tube thereby greatly facilitating insertion of the applicator into body cavities.

Tube 10 and the enclosed cylindrical body 20 may be of any necessary length and may be formed of any suitable materials. For example, tube 10 may be of any known synthetic material affording inertness to the formulations to be contained therein and the flexibility necessary to permit wall flexing to thereby discharge the formulation contained in the reservoir. Suitable materials are polyethylene, rubber, natural or synthetic, and metal foil.

Cylindrical body 22 should be formed of a material providing rigidity sufficient to resist compression to the point where passageway 22 might be closed when the applicator is put into use. As in the case of tube 10, it should be formed of material inert to the tube contents and the tube itself so that detrimental chemical reactions do not occur. Suitable materials are paper, polyethylene, polystyrene, polyvinyl chloride and many other synthetic materials; it may be formed also of a wax of sufficient hardness to give good stiffness.

Stopper 16 may be of any suitable materials, for example, rubber, polyethylene and the like.

It is contemplated that the applicator described herein will be supplied by the manufacturer for use by the customer properly sealed and containing a premeasured quantity of a suitable pharmaceutical formulation. It will be understood that cylindrical body 20 is already contained within tube 10 at the time the consumer receives the package so that there will be no assembly operations necessary by the user.

To prepare the applicator described herein for use, it is necessary only that stopper 16 be removed from dispensing end 14 of the tube.

In use, the device is inserted into a body cavity to the extent desired and the contents of the tube are discharged into the cavity by squeezing the walls of reservoir 18. It will be understood that the device is formed of sufficient length to permit insertion to the necessary depth while permitting the entire reservoir of the tube to remain outside the body. When the contents of the tube have been discharged, the applicator may be disposed of in any suitable manner since it is contemplated that it will be used only on a single occasion.

Referring again to the materials from which tube 10 may be formed, it should be noted that because of the permanent passageway and the overall rigidity afforded by cylindrical body 20, tube 10 may be of very light weight, thin wall, film material, thus permitting fabrication of the applicator described herein on a very low cost basis. If it is desired to form the device of such thin wall material that difficulty might be encountered in holding stopper 16 in position, a stopper may be formed to be received within the mouth of passageway 22 and with sufficient flange portions to bear upon the dispensing end wall of tube 10 thereby compressing the end wall against the end of cylindrical body 20 and maintaining an effective seal. Similarly, or alternatively, a cap or cup-like closure may be supplied fitting around the outer walls of tube 10.

It will be apparent to those skilled in the art that the principal objects of the invention have been accomplished and that numerous and various changes and modifications may be made in the embodiments of the invention herein described and that the invention is capable of use and has advantages not specifically described herein; it will, therefore, be appreciated that the hereinmade disclosures are to be construed in the nature of illustration only and that the invention is to be limited or delineated only by the appended claims.

What is claimed is:

1. A single-use applicator of substantially uniform diameter, the length of said applicator being about ten times the diameter, said applicator comprising an elongated outer casing having one end thereof permanently closed and the other end open to permit dispensing of material from within said casing, means for closing said open end; an elongated body within said casing of substantially less length than said casing extending lengthwise thereof from a position with one of its ends adjacent the said open end, said elongated body having a relatively small passageway through its length, said passageway having one of its ends adjacent the said open end and the other end opening into a reservoir provided by said casing.

2. A pharmaceutical package comprising a single-use applicator of substantially uniform diameter, the length of said applicator being about ten times the diameter, said applicator comprising an elongated outer casing having one end thereof permanently closed and the other end open to permit dispensing of material from within said casing, means for closing said open end; an elongated body within said casing of substantially less length than said casing extending lengthwise thereof from a position with one of its ends adjacent the said open end, said elongated body having a relatively small passageway through its length, said passageway having one of its ends adjacent the said open end and the other end opening into a reservoir provided by said casing, and a pharmaceutical formulation in premeasured quantity contained in said applicator.

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