United States Patent [19]

Sneider

[11] **3,773,047**

[45] **Nov. 20, 1973**

[54] **DISPOSABLE SYRINGE**

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[22] Filed: **Nov. 6, 1972**

[21] Appl. No.: **304,038**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 153,885, June 16, 1971, abandoned, which is a continuation of Ser. No. 795,574, Jan. 31, 1969, abandoned, which is a continuation-in-part of Ser. No. 704,105, Feb. 8, 1968, abandoned.

[52] **U.S. Cl.** **128/232,** 128/247, 128/251

[51] **Int. Cl.** **A61m 1/00**

[58] **Field of Search** 128/232, 230, 224, 128/251, 222, 247, 227; 215/11

[56] **References Cited**

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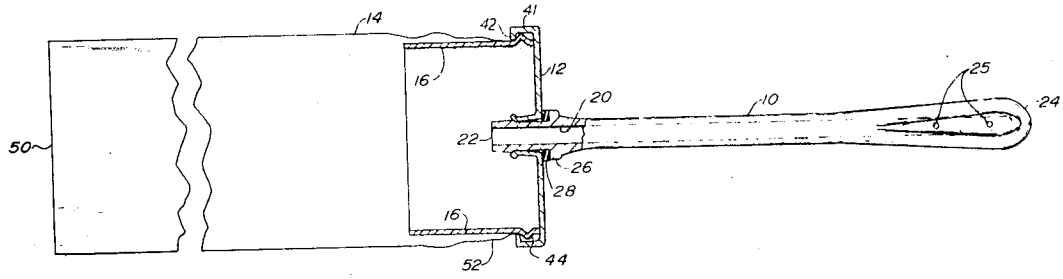
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Assistant Examiner—J. Yasko
Attorney—Nichol M. Sandoe et al.

[57] **ABSTRACT**

This invention relates to a disposable syringe in which a nozzle portion is detachably attached to an end closure member having a tubular portion and a cap portion. A flexible bag is mounted on the tubular portion. In a disassembled array the syringe device may be packaged in a cardboard carton, plastic bag or the like for shipping and/or dispensing, as by means of a vending machine. The components are arranged in a small package. After assembly and use, the complete unit or merely the bag may be disposed of, as desired. As conceived and constructed, the low cost of the disposable syringe is accomplished by having the components adapted for mass production of suitable plastic materials.

16 Claims, 10 Drawing Figures



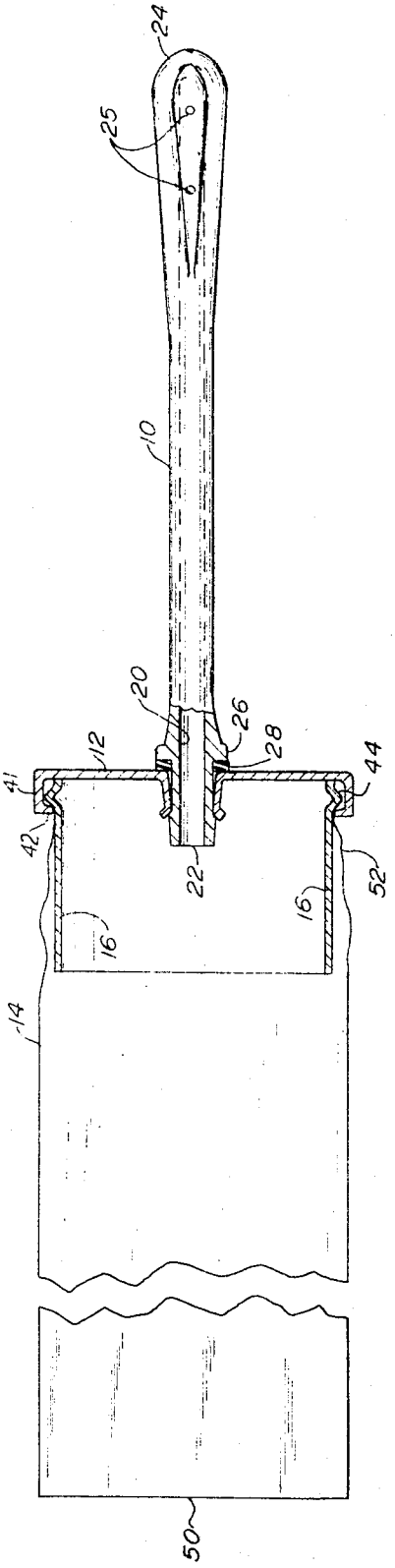


Fig. - 1

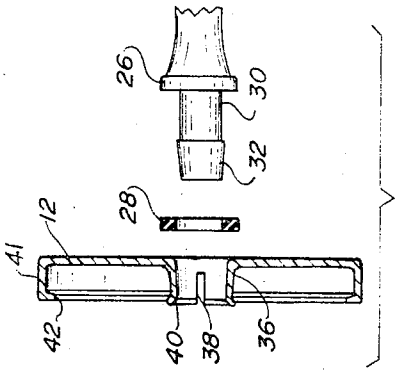


Fig. - 2

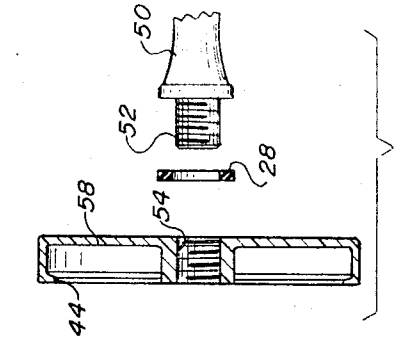


Fig. - 3

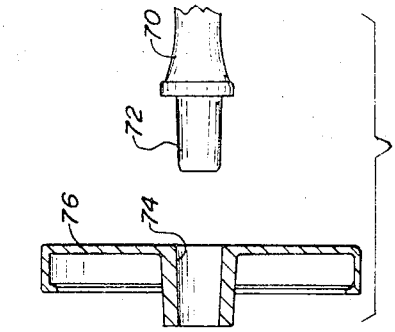


Fig. - 4

Fig.-5

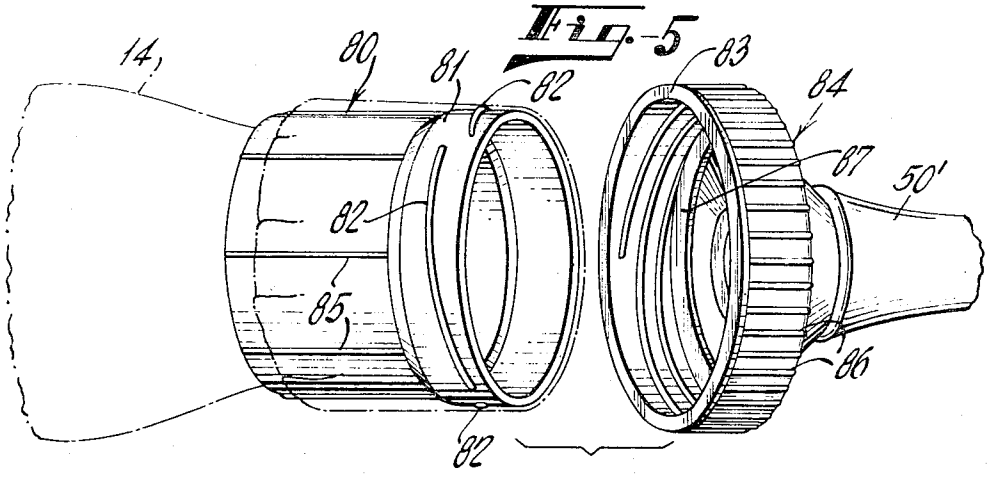


Fig.-6

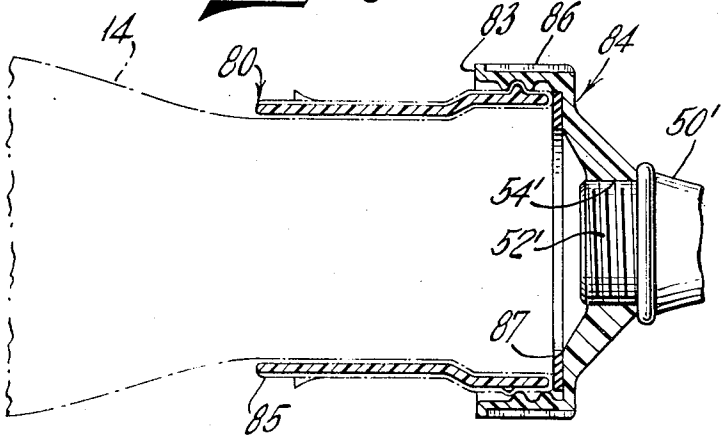


Fig.-10

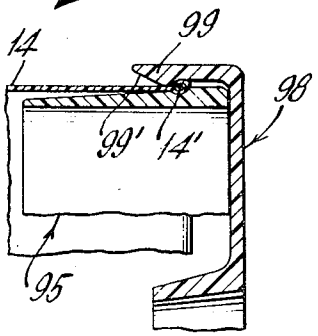


Fig.-7

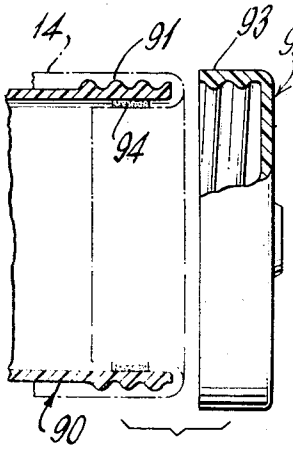


Fig.-8

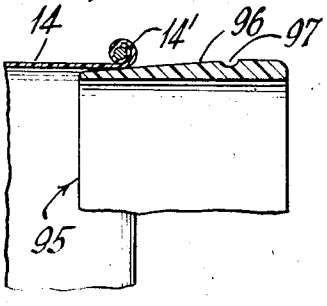
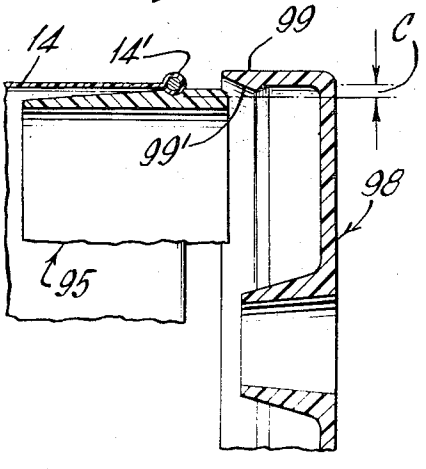


Fig.-9



DISPOSABLE SYRINGE

This application is a continuation-in-part of my copending application Ser. No. 153,885,filed June 16, 1971 now abandoned, which is a continuation of Ser. No. 795, 574 filed Jan. 31, 1969 now abandoned which is a continuation-in-part of Ser. No. 704, 105, filed Feb. 8, 1968 now abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The field of art to which this invention pertains is found generally in the class of Surgery and more particularly in the subclass of "douches" and even more particularly in the subclass of "vaginal douches."

2. Description of the Prior Art

Vaginal douche devices, and syringes in general, are well known in the art and commerce and are exemplified by many patents both United States and foreign. In particular, several patents represent attempts to provide a syringe which may be folded, rolled or disassembled to form a small assemblage for packaging and transport. Many of these syringes are intended for a one-time use, then for discarding of the apparatus. However, these various syringes have not proved commerically acceptable for many reasons, among which are: the syringe is too complicated to assemble and use; the syringe does not provide means for increasing or decreasing the pressure by manual control by the user; and the syringe does not lend itself to the use of modern materials for the best sanitary presentation for use by the user. It is contemplated that the apparatus of this invention may be readily sterilized and that when the package is opened for use that it may be readily filled, assembled and provide manipulative control by the user.

The particular prior art which relates to the present invention is best represented in U.S. Pat. No. 2,925,084 to Brewer of Feb. 16, 1960 and in U.S. Pat. No. 3,144,866 to Ellis of Aug. 18, 1964. In the device of Brewer there is no provision, except for gravity, of any regulation of the pressure of the fluid from the nozzle. In Ellis the preassembly of the filler plug to the bag and the locking of the nozzle to the plug is rather a complicated process.

The simple packaging arrangement and ease of assembly of the syringe of this invention as well as its simple inexpensive construction, represent a significant contribution to the art.

The disposable apparatus as exemplified in the drawing and in the description which follows includes a nozzle portion, either unitary or formed in sections, which is preferably formed by present molding techniques to provide an inexpensive and aesthetically acceptable and medically proved inserting member. This nozzle is shaped at its connecting end so as to be readily assembled in a fluid-tight manner to a forward end closure or cap member. This cap is formed so as to engage and retain a collar, which collar is disposed to slidably receive a flexible bag within which the fluid forming the bulk portion of the douche application is poured. In the specification and drawing there are shown a number of exemplifications of means for attaching thenozzle to the cap portion. Each of these methods is representative of the assembly ease contemplated for this apparatus.

The flexible bag is preferably a cylindrically shaped tubular member having an open and closed end. The open end is mounted on or slidable on a collar or sleeve having an expanded diameter portion. The cap and the collar are constructed and sized to retain the bag therebetween. The engagement of the cap to the collar may be by a snap rim or by a thread or wedge fit.

It is an object of this invention to provide a disposable douche syringe in which the several members may be arrayed in a disassembled condition for packaging in a minimal space box or bag, said syringe disposed for ready assembly and use by the user.

It is a further object of this invention to provide a disposable douche syringe in which a nozzle is attached to an end closure or cap member. The syringe includes a flexible bag of generally tubular construction having one end closed and the other end sized to be slidable on the outer surface of a collar member, the bag and collar member being then an assembly mountable in the retaining rim of the cap member.

INTENT OF THE DISCLOSURE

Although the following disclosure offered for public dissemination is detailed to insure adequacy and aid in the understanding of the invention, this is not intended to prejudice that purpose of a patent which is to cover each new inventive concept therein no matter how it may later be disguised by variations in form or additions of further improvements. The claims at the end hereof are intended as the chief aid toward this purpose, as it is these that meet the requirements of pointing out the parts, improvements and combinations in which the inventive concepts are found.

There has been chosen a specific embodiment of the disposable douche syringe and modifications of the nozzle and cap member as adapted for use therewith. This specific embodiment and the alternate embodiments thereof have been chosen for the purposes of illustration and description as shown in the accompanying drawings wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view, partly in section, showing a disposable douche syringe of this invention in an assembled condition;

FIG. 2 is an exploded view, partly in section, in which is shown one arrangement of assembly of the nozzle to a cap or end closing member of the syringe;

FIG. 3 is an exploded side view, partly in section, in which is shown a screw thread method of attaching the nozzle to the cap or end closing member of the syringe;

FIG. 4 is yet another exploded side view, partly in section, in which is shown a tapered socket and end assembly of the nozzle to the cap or end closing;

FIG. 5 is an exploded view in perspective showing separated subassemblies of another arrangement;

FIG. 6 is a fragmentary longitudinal sectional view through the region of engagement of the subassemblies of FIG. 5;

FIG. 7 is a side view, partly in section, showing a different construction of the collar and the end closure member or cap; and

FIGS. 8, 9 and 10 are side views, in section, of still another arrangement of the collar and cap, showing steps in achieving the assembly of FIG. 10.

DESCRIPTION OF A FIRST EMBODIMENT

In the following description and in the claims various details will be identified by specific names for convenience. The names, however, are intended to be generic in their application. Corresponding reference characters refer to like members throughout the several figures of the drawings.

The drawings accompanying, and forming part of, this specification disclose certain details of construction for the purpose of explanation of the broader aspects of the invention, but it should be understood that structural details may be modified in various respects without departure from the concept and principles of the invention and that the invention may be incorporated in other structural forms than shown. In particular in FIGS. **1** and **2**, there is shown a one-piece nozzle **10** which is removably mountable into a cap or end closure member **12** which is disposed to engage and retain a flexible bag **14** in a fluid-tight condition as it, the bag, is gripped between the cap and a collar or sleeve member **16**.

In particular, it is to be noted that the nozzle **10** is preferably molded of plastic such as polypropylene, polyethylene and the like. The nozzle is formed with a hollow portion **20** which extends from an inner open end **22** to a discharge closed end **24**. Positioned near end **24** and extending from the interior **20** to the outside of the nozzle are a plurality of ports **25**. These ports provide means for directing and carrying the flow of fluid from the nozzle during the time of use. This nozzle is of conventional construction and configuration to conform to acceptable medical practice and use. As shown in the drawing, the nozzle is contemplated to be a generally full size representation of a preferred configuration. It is to be noted that the nozzle shown in FIGS. **1** and **2** includes a shoulder portion **26** which is adapted to engage a gasket **28** of rubber and the like and having a sufficient resiliency to act as a fluid sealing means when this shouldered end of the nozzle is inserted into the cap **12**. As particularly seen in FIG. **2**, the entering end **22** of the nozzle includes a reduced portion **30** which extends from shoulder **26** to a slightly larger tapered collar portion **32**.

Referring now in particular to the cap **12**, it is to be noted that the center portion of the cap has a collar retaining sleeve portion **36**. The bore of the sleeve portion is tapered to accept the end **32** of the nozzle. The rightward end of the bore is sized to pass the largest part of the collar **32** while the leftward end of the bore is sized to snugly engage reduced portion **30**. This retaining sleeve has relieving slots **38** formed in the left portion thereof and an outward shoulder engaging portion **40** which is spaced and shaped so as to engage the inner end of the collar portion **32** when the nozzle is inserted in the cap **12**. The outer portion of the cap **12** has a tubular extending portion or flange **41** terminating with an inwardly extending lip **42** which is disposed to engage an annular outwardly extending portion **44** formed in the collar member **16**. The cap is preferably made of a plastic material which is sufficiently rigid to retain the tapered collar **32** and annular portion **44**. The material is also sufficiently flexible to snap over the annular portion **44** or as spring finger members of the sleeve **36** are deflectable to pass the collar **32** and to then spring into retaining engagement with the inner shoulder of the tapered collar **32**. Also, for ease of manipulation with respect to the member **16**, the axial extent of the telescoped part of the flange **41** is in the order of one half, or less, of the axial extent of member **16**.

The bag **14** is preferably made of a thin plastic film which may be polypropylene and the like and is preferably two or three thousandths of an inch in thickness. The bag is tubular in construction and sealed at the back end **50** and is sized so that its open end **52** is disposed to slide over the annular portion **44** of the collar **16**.

Assembly and Use of the Disposable Douche Syringe of Figs. 1 and 2

It is contemplated that the nozzle **10**, cap **12**, bag **14** and gasket **28** will be packaged in a carton or envelope so that these items may be shipped and stored as unassembled individual syringes. As an assemblable syringe these components, at the time of packaging, are sterilized so that after purchase the user may open the package and have a douche syringe hygienically ready for assembly and use. As contemplated, the bag **14** may be folded flat or may be accordion pleated for packaging and storage in a minimum of space. The bag may be rolled if desired, and in certain circumstances may be used as the package means for the other members comprising the syringe assembly. It is only necessary that at the time of assembly the bag be opened so that end **52** may be slid over the left portion of the collar **16** and forwardly over the annular ring portion **44**. It is, of course, to be noted that the bag **14** may now be filled with the desired amount of water or a solution of water and a medicant or the like as determined by the preference of the user and/or the manufacturer of the device. After the filling of the bag **14** and with the end of the bag **14** forwardly of the annular portion **44** of the collar member **16**, the collar and bag are brought to the lip **42** of cap **12** which is then snapped into the position of FIG. **1**. As thus assembled, the bag **14** is retained in a fluid-tight condition, after which the nozzle **10** is then brought in way of the interior portion **36** of the cap and with the rubber gasket **28** in place adjacent the collar portion **26**. The nozzle **10** is now pushed into the cap **12** until it assumes the position of FIG. **1** whereat the lip portion **40** has engaged the rear shoulder of the tapered portion **32** to cam the nozzle **10** into a fluid-tight condition. This assembled and filled, the syringe is ready for use. The syringe is used in the customary manner and after the fluid in the bag **14** has been expelled by grasping and squeezing of the bag by the user or by an attendant, the syringe is discarded. If desired, the cap **12** is removed from the collar **16** and the nozzle **10** may be removed from the cap **12** so that the contents may be wrapped in the bag and discarded. On occasion, only the bag **14** is discarded. At a later time, a new bag **14** may be placed upon collar **16** and the syringe filled and reassembled for use.

In general, it should be noted that in FIG. **1**, as for the other forms to be described, the bore diameter of sleeve or collar member **16** is sufficiently generous to readily admit the collapsed bag **14** and one or two fingers, so that finger pressure in the course of stuffing an almost depleted bag **14** into member **16** may force the dispensing of substantially all the liquid contents of bag **14**; in practice, a sleeve bore of 1.75 inches diameter and 2.0 inches length has been found to be highly satisfactory.

DESCRIPTION OF THE EMBODIMENT OF FIG. 3

Referring next to FIG. 3, a nozzle 50, which is similar to nozzle 10, has its inner end threaded at 52 so as to engage a threaded portion 54 in an end cap 58 which is similar in construction to the cap 12. Cap 58 has an inner lip 42 which is sized to engage the collar member 16 in the manner of the syringe of FIGS. 1 and 2. The bag 14 and collar 16 are assembled as above described and are fastened to cap 58. The nozzle 50 has its threaded end 52 provided with the rubber gasket 28 mounted thereon and then is brought in way of the threaded opening 54, whereupon the nozzle is rotated to threadedly engage and seat in the opening 54. After assembly, the syringe is used in the manner of the syringe of FIG. 1 above.

DESCRIPTION OF THE EMBODIMENT OF FIG. 4

Referring to FIG. 4, it is to be noted that a nozzle 70, similar to nozzle 10, has a tapered end 72 formed to mate in a tapered socket 74 formed in a cap 76. A nozzle and cap assembly as thus formed is fluid-tight without a gasket 28 as is shown in FIGS. 2 and 3. The tapered end 72 is caused to enter the socket 74 and engages and seats in a frictional and sealing engagement to provide a fluid-tight retention of the nozzle 70. The cap 76 is assembled to bag 14 and collar member 16 in the manner above described, after which the syringe is used in the manner of FIG. 1 above.

It is to be noted that in certain assemblies it may be desirable that bag 14 be attached to collar member 16 prior to packaging for shipment. When such is the case, the bag may be attached as by heat-sealing or cement. It is also noted that the cap and nozzle may be molded as a single unit where desired.

Although the lip 42 is preferably sized and shaped so as to be snapped onto the annular portion 44, it is also contemplated that the lip and portion may be formed as compatible threads for assembly by rotating. It is further noted that the collar portion 36, threaded portion 54 and tapered socket 74 can be formed on the cap so as to extend outwardly of the face of the cap as the syringe is assembled for use.

DESCRIPTION OF THE EMBODIMENT OF FIGS. 5 and 6

In the arrangement of FIG. 5 and 6, the collar or sleeve member 80 is slightly enlarged at a forward land 81 having integral threads 82 for removable engagement to the threaded bore of the flange 83 of cap member 84. A seal washer or gasket 87 of yieldable plastic or elastomeric material may be retained in cap 84, in radially overlapping register with the adjacent axial end of sleeve 80. Preferably, the thread arrangement of members 80–84 is characterized by a multiple pitch, and the angular extent of each of threads 82 is such as to preclude their angular overlap; thus, for the three-lead pitch shown, each thread 82 is at least no greater than 120° in angular extent, and the three threads 82 are equally spaced (on interlaced helices), so that the cap 84 and sleeve 80 can be secured with substantially less than 120° of engaged relative rotation. Manipulation is further aided by spaced peripheral ribs 85–86 on externally exposed parts of sleeve 80 and flange 83, and by proportioning these parts so that the axial extent of sleeve 80 is in the order of at least twice the axial extent of the telescoped part of flange 83, when assembled. Nozzle assembly may be as described for FIG. 3, and so the same reference numbers are adopted, with primed notation.

In use, the open end of the flexible bag 14 is first drawn through the bore of sleeve member 80, and then folded back over the threaded land 81 and into substantial overlap with the ribbed exterior of sleeve 80, as shown; such subassembly enables a firm grasp of the bag end against sleeve 80 while loading the same with syringe liquid, and while later manipulating the loaded bag and sleeve into threaded engagement with cap member 84. Alternatively, FIG. 6 illustrates that by providing the nozzle bore 54′ of relatively large diameter (to accommodate a larger nozzle base 50′), the cap 84 may be assembled to the bag-fitted sleeve 80 prior to filling with liquid, the bore 54′ being large enough to accommodate splash-free faucet filling prior to nozzle attachment at 52′–54′.

DESCRIPTION OF THE EMBODIMENT OF FIG. 7

Referring to FIG. 7, collar or sleeve 90 is shown to have external threads 91 at one end, and cap 92 has coacting threads 93 on the inner surface of its peripheral flange. A pressure-sensitive adhesive band 94, continuously lines a region of sleeve 90. Bag 14 may be placed around the collar 77 so that it is gripped and held in a fluid-tight manner between collar 77 and cap 78 by the engaging action of threads 91–93; bag 14 is shown to have its mouth portion placed first around the circumference of the collar 77 and then folded back within its bore, being retained by adhesive contact at 94. This placing of the bag can, however, be reversed by placing the mouth portion of the bag 14 first in the bore of collar 77 and then folded back as in FIGS. 5 and 6, being again temporarily retained by adhesive contact at 94.

DESCRIPTION OF THE EMBODIMENTS OF FIGS. 8 to 10

Referring to FIG. 8, a sleeve or collar member 95 is externally characterized by a conical ramp 96, terminating in a circumferential groove 97 near the end to be engaged by cap 98 (FIGS. 9 and 10). The bag 14 may be rolled over or secured to a rubber band 14′ of sufficient resiliency, an O-ring or a garter ring. When the mouth portion of the bag 14, containing one of the above elements — rubber band, O-ring or garter ring or the like — is brought into register with groove 97, the bag will be self-retained in subassembly to the sleeve 95, for convenience in filling and in manipulation for assembly to cap 98. Cap 98 is shown with an axially extending lip or flange 99 having a bore which exceeds the minimum diameter of groove 97 to define a clearance C, the latter being greater than the bag thickness but less than the thickness of the rolled end, rubber band or the like 14′. An outwardly flared mouth or counterbore 99′ serves to engage over and inwardly cam the end 14′ as the cap is telescoped over the preassembled bag and collar, thus compressing end 14′ to an elongated section, as suggested in FIG. 10. Upon full telescoping, the bag is secured and sealed in the relation depicted in FIG. 10, and the syringe is ready for use upon assembly of the nozzle, as previously described.

GENERAL REMARKS

The material from which some of the embodiments are manufactured has not been specifically recited. The

same material can be used throughout for the various embodiments. Generally speaking, nozzle, cap and collar parts are relatively stiff, and the bag is soft and pliable, and the polyethylenes and polypropylenes are satisfactory basic materials.

The disposable syringe is illustrated as having a nozzle for feminine hygiene. It is believed that this will be one of the main uses for the disposable syringe. The disposable syringe can, however, be used for other purposes as well, and the plurality of openings **25** can be replaced by a single aperture placed, for example, at the tip of the nozzle. The tip of the nozzle is illustrated as somewhat bulbous. The nozzle can, however, be tapered outwardly so that the tip has the smallest diameter.

Also, it has been indicated that the sleeve member (**16, 80,** etc.,) is preferably of at least a certain length relation to the overlap with the cap that manual manipulation and assembly are facilitated. By the same token, it will be understood that the length and bore diameter of the sleeve may be such as to accommodate or substantially contain bag and nozzle elements, in certain packaging of the disassembled parts.

The terms "inner," "outer," "right," "left" and the like as used in the above description pertain to the assembly of the disposable syringe as shown in the drawings and do not necessarily pertain to the position or attitude in which the disposable syringe may be used and assembled.

The conception of the disposable syringe and the modifications of the nozzle as shown and described above are not limited to the examples shown, but departures therefrom may be made within the scope of the accompanying claims and protection is sought to the broadest extent the prior art allows.

What is claimed is:

1. A disposable syringe in which at least some of the several members comprising the syringe assembly are removably attachable in a selected manner to form said assembly, said members when in a disassembled array being adapted for storage in a compact package, the disposable syringe comprising: a flexible and readily foldable bag having fluid retaining properties and sized so as to be readily grasped and squeezed for the administration of the syringe, said bag having an open end of a predetermined size; end-fitting means including a portion of tubular configuration sized for and engaging the open end of the flexible bag in axially overlapped relation, said end-fitting means including a cap portion having a nozzle-receiving opening; and elongated nozzle means of generally tubular configuration, having an end fitted to said opening and carried by said cap portion in a fluid-tight manner, said nozzle means having at least one discharge port; said cap portion including an axially extending circumferential wall detachably secured to said tubular member in radially stressed register with a circumferentially continuous area of said bag, and the axial extent of said tubular configuration being at least twice the axial extent of said circumferential wall, whereby a substantial axial extent of said tubular configuration projects beyond said wall as a means of firm manual grasp independent of said cap portion or of said nozzle means, for selective assembly, disassembly, filling and administration of the douche.

2. Disposable-syringe means comprising a flexible and readily foldable bag having fluid-retaining properties and sized so as to be readily grasped and squeezed for the administration of the syringe, said bag having an open end of predetermined size, and removably attachable end-fitting means including a tubular sleeve sized to accept and removably retain said bag at said open end; said bag being a length of tubular plastic material closed only at one end, thereby defining said open end at the unclosed end of said material, said length being of generally rectangular planform when flattened in readiness for assembly to said end-fitting means; said end-fitting means including a closure having a nozzle-receiving opening, and nozzle means removably fitted at the nozzle-receiving opening of said closure; and means including a circumferentially continuous flange carried by said closure and removably secured in telescoped relation with only an end part of said tubular sleeve, said last-defined means providing a liquid-sealed connection to said bag with the open end thereof circumferentially interposed between said means and said tubular sleeve, the axial extent of said tubular sleeve being at least twice the axial extent of the telescoped part of said flange, whereby a substantial axial extent of said tubular sleeve projects beyond the telescoped region as a means of firm manual grasp independent of said closure or of said nozzle means, for selective assembly, disassembly, filling and administration of the douche.

3. Disposable-syringe means according to claim **2,** in which interengaging radially extending means on said sleeve and flange have separable engagement to selectively retain said sleeve and flange in position secured to each other and to the open end of said bag.

4. Disposable-syringe means according to claim **3,** in which said interengaging means includes thread elements.

5. Disposable-syringe means according to claim **3,** in which one of said sleeve and flange parts is resiliently deformable, and in which said interengaging means includes coacting circumferential groove and bead formations on said sleeve and flange.

6. Disposable-syringe means according to claim **3,** in which one of said sleeve and flange parts is resiliently deformable, and in which said interengaging means includes coacting circumferential inward and outward bead formations on said sleeve and flange.

7. Disposable-syringe means according to claim **3,** in which said radially extending means is selectively engageable and disengageable by snap action.

8. Disposable-syringe means according to claim **3,** in which said sleeve is of such substantial axial extent as to constitute a body for containment of bag and nozzle elements, when in disassembled relation, in readiness for later assembly.

9. Disposable-syringe means according to claim **2,** in which said nozzle means includes gasket means of resilient material at the fit of said nozzle means at the nozzle-receiving opening.

10. Disposable-syringe means according to claim **2,** in which said closure member includes gasket means of resilient material within said flange and in radial registration with the adjacent axial end of said sleeve.

11. Disposable-syringe means according to claim **2,** in which the bore of said sleeve includes a circumferentially continuous band of self-adhesive material.

12. Disposable-syringe means according to claim **2,** in which the mouth of said bag includes a ring of resilient material, and in which the separably engageable

parts of said sleeve and flange are in sufficiently close clearance relation to resiliently compress said ring.

13. Disposable-syringe means according to claim 12, in which said sleeve has an externally exposed peripheral groove in the region of flange engagement, said ring being seated in said groove.

14. Disposable-syringe means according to claim 2, in which said sleeve has external friction-ridge formations in the region beyond that of overlap with said flange.

15. Disposable-syringe means according to claim 2, in which said bag fully lines said sleeve and is folded back over the secured end of said sleeve, being there compressed by the engaged coaction of overlapped flange and sleeve portions.

16. Disposable-syringe means according to claim 2, in which the nozzle-receiving opening is of relatively large diameter for spash-free accommodation of faucet filling with said nozzle means removed.

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