

[54] **DISPOSABLE SYRINGE**

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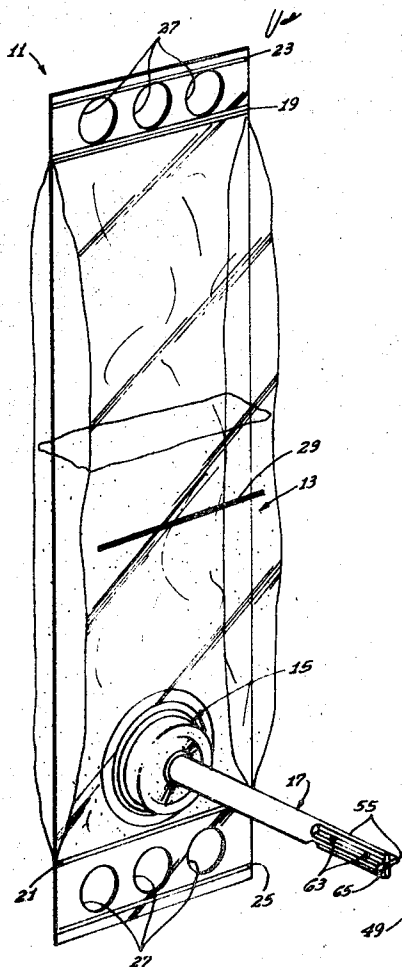
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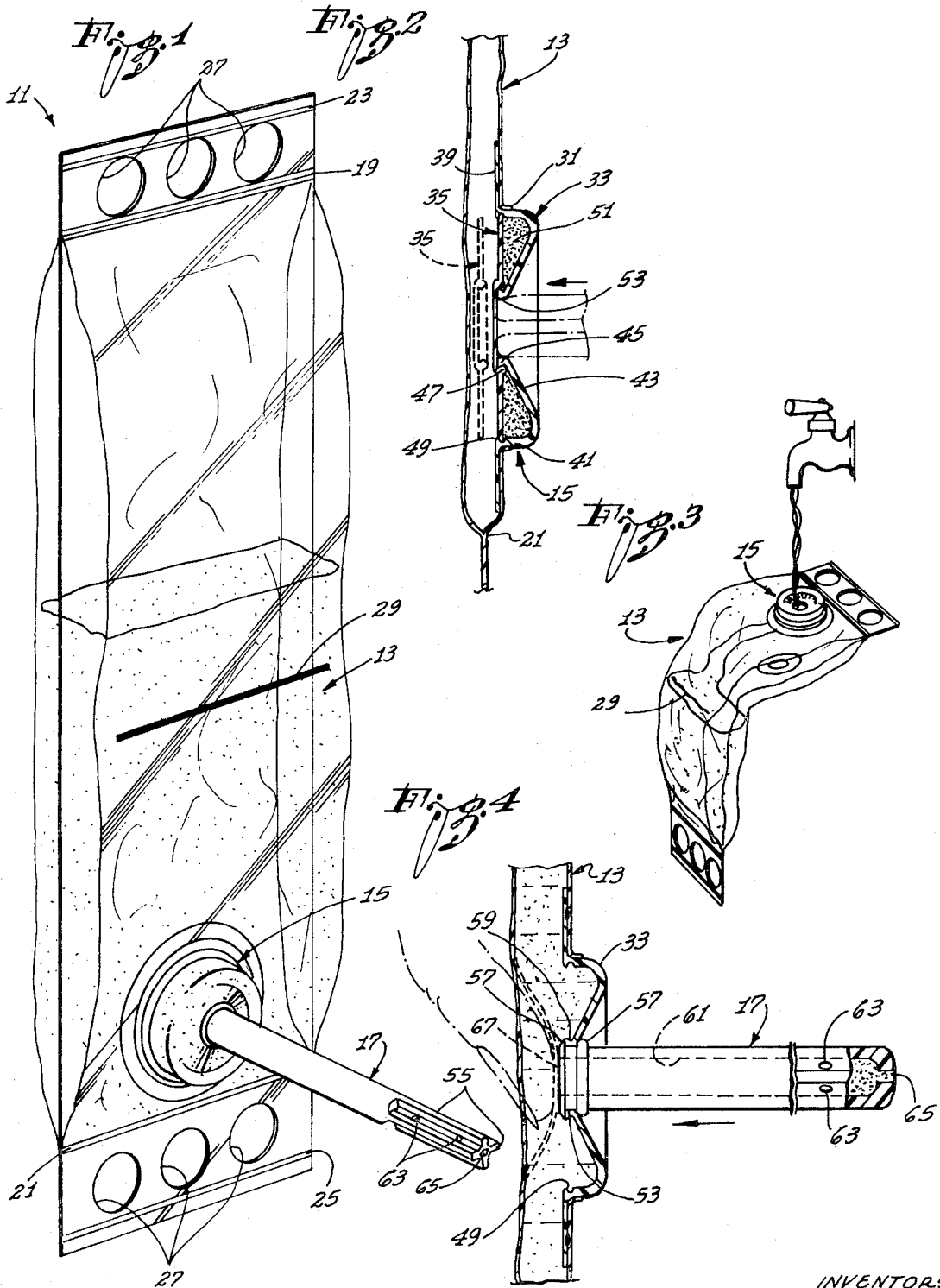
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[57] **ABSTRACT**

A disposable syringe comprising a collapsible bag, a nozzle mounted on the bag, and an openable compartment on the bag for containing an ingredient. The compartment has an aperture for receiving the base of the nozzle and a portion of the compartment is accessible through the aperture to permit opening of the compartment to expose the ingredient therein to the interior of the bag.

21 Claims, 4 Drawing Figures





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DISPOSABLE SYRINGE

BACKGROUND OF THE INVENTION

This invention relates to a syringe of the type which is utilized to inject a fluid into the human body through the natural body openings. Syringes of this type may be used, for example, for douching and enemas.

To prepare a hygienic solution suitable for douching, it is often necessary to mix two or more ingredients together in relatively exact proportions. One of the ingredients may be water and the other a suitable additive. Most prior art syringes provide no means to facilitate premeasuring or mixing of the two ingredients. Thus, when travelling it is necessary to carry the syringe and the additive separately. The mixing process is also made more difficult.

SUMMARY OF THE INVENTION

The present invention provides a disposable syringe including a collapsible bag and a compartment or container on the bag in which an ingredient may be stored. This ingredient is provided in measured amounts thereby eliminating the need for measuring. The interior of the container is effectively sealed from the interior of the bag and the ingredient stored therein is effectively protected against deterioration and outside contamination. The syringe also includes a nozzle which can be mounted on the bag. The nozzle does not define the container or any portion of it, and accordingly, the nozzle may be stored adjacent to the bag for transporting and storage to thereby achieve maximum compactness.

The container is openable and is mounted on the bag so that when it is open, communication is provided between the interiors of the container and of the bag. In a preferred form of the invention, the container includes a wall segment at least partially removable therefrom and an aperture through which the wall segment can be contacted. The wall segment can be dislodged or at least partially removed from the container by inserting any appropriate instrument through the aperture and into contact with the wall segment. With the container open the ingredient falls, or can be caused to fall, into the bag and then a second ingredient such as water is added to the bag through the aperture. The nozzle is then mounted on the bag by inserting the base of the nozzle into the aperture in the container.

The bag is preferably constructed of flexible plastic material. Because the bag is flexible it can be pushed against the nozzle inlet to act as a valve to control water flow. The bag is disposable and so the plastic material may be thin and inexpensive. At least one wall or one wall region of the bag should be sufficiently transparent so that the water level in the bag can be readily observed. Indicia are provided on the bag to indicate the appropriate quantity of water which should be added. Appropriate gripping means can be provided on opposite ends of the bag so that the nozzle can be inserted without hands touching the body.

The container can advantageously be formed by two container sections with one of the container sections being suitably affixed as by an adhesive or a heat seal to the bag. The container has socket means for mounting the nozzle thereon with the socket means being more rigid than the flexible bag. A portion of the container is accessible through the socket means to permit opening of the container by separating the container sections.

It is difficult to provide a container on a bag which (a) has an accessible region to permit opening of the container; (b) will seal an ingredient therein; and (c) when opened will expose the ingredient therein to the bag. To accomplish this, the first container section has an aperture therein and the second container section is sealed to the first container section along two radially spaced circumferential regions. The second container section also extends at least part way across the aperture. Thus, the compartment is generally annular, and the second container section is in a position to be pressed and therefore dislodged from the first container section.

Although special sealing means could be provided to seal the container sections, it will usually be adequate to merely provide for engagement between the appropriate surfaces of the container sections.

The container performs numerous useful functions. In addition to being an ingredient holder and to providing mounting means for the nozzle, it seals the interior of the bag and provides a convenient filler neck for the addition of a second ingredient such as water to the bag. The compartment also serves as a nozzle depth limiter to restrict the depth of entry of the nozzle into the vagina. The compartment also serves as a closure for the outer vulval parts when pressed against the body to enable alternate filling and release of fluid into and from the vaginal cavity. This is desirable because it can be accomplished by a nurse without the necessity for physically contacting the vulva area.

The bag is preferably an elongated flexible bag not in excess of 2 feet in length to assure that a 2-foot pressure head is not exceeded. Because the bag is flexible, the wall thereof opposite the base of the nozzle can be moved toward and away from the base of the nozzle to thereby control the flow of fluid from the bag through the nozzle. Alternatively, flow control can be accomplished by raising or lowering the bag. The solution in the bag can be retained therein without leakage through the nozzle by suspending the solution filled end of the bag over the wrist or hands prior to insertion of the nozzle.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a disposable syringe constructed in accordance with the teachings of this invention.

FIG. 2 is a fragmentary sectional view through the container and the adjacent portions of the bag with the container being closed and with the manner of opening the container being illustrated in dashed lines.

FIG. 3 is a perspective view illustrating the filling of the bag with water.

FIG. 4 is a fragmentary sectional view through the container with the nozzle mounted on the bag.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows a disposable syringe constructed in accordance with the teachings of this invention. Generally, the syringe 11 includes a flexible collapsible bag 13, a container 15 mounted on the bag and a nozzle 17.

The bag 13 is constructed of a single layer of flexible plastic material. The plastic material is in the form of a generally flat tube and has heat seals 19 and 21 to close

the upper and lower ends of the bag, respectively. The bag 11 also has heat seals 23 and 25 spaced a short distance from the heat seals 19 and 21, respectively, with the plastic material between these heat seals containing openings 27 to facilitate holding the bag. The bag 13 is transparent and has a water level mark 29.

Referring to FIG. 2, the bag 13 has an opening 31. The container 15 includes container sections 33 and 35 which are releasably interconnectible. The container sections 33 and 35 are constructed of a plastic material and are somewhat more rigid than the bag 13. The container section 33 includes an annular flange 39, a peripheral wall 41, and a sloping wall 43. The flange 39 is suitably adhered to the wall of the bag 13 as by an adhesive or by a heat and/or pressure weld. The peripheral wall 41 projects through the opening 31 in the wall of the bag 13. The sloping wall 43 terminates in an annular bead 45 which is receivable in an annular groove 47 of the container section 35. In addition, the peripheral wall 41 has a groove 49 for receiving the periphery of the container section 35 to thereby releasably interconnect the two container sections.

An ingredient 51 such as a douche powder is retained within the container 15. The container 15 is generally annular with its inner periphery being closed by the bead 45 and the groove 47 and with its outer periphery being closed by the groove 49 and the peripheral segment of the container section 35. The sloping wall 43 has an aperture 53 therethrough to thereby provide direct access to a central segment of the container section 35 from the exterior of the bag 13.

The nozzle 17 in the embodiment illustrated is in the form of a relatively rigid hollow tube constructed of a plastic material and having a base and a tip. The nozzle 17 terminates in several (four being illustrated) longitudinally extending ribs 55. The inner end or base of the nozzle has two integrally molded axially spaced annular ribs 57 which define an annular groove 59 therebetween (FIG. 4). The nozzle 17 has a longitudinally extending central passage 61 extending therethrough, and a plurality of ports 63 located between adjacent pairs of ribs 55. A port 65 is located at the outer end of the nozzle with the ports 63 and 65 communicating with the passage 61.

Prior to use, the ingredient 51 is stored in the compartment 37 as shown in FIG. 2. The nozzle 17 is stored with the bag 13 in a demounted condition and the bag may be folded into a small compact unit.

To use the syringe 11, the tip of the nozzle 17, a finger or a blunt instrument is inserted into the aperture 53 as shown in FIG. 2. By forcing the nozzle tip against the exposed central portion of the container section 35, the container section 35 is removed from its interlocking engagement with the container section 33. The ingredient 51 is then free to fall out of the container 15 into the interior of the bag 13. The bag 13 can then be filled with water by supplying the water through the aperture 53 into the interior of the bag 13 as shown in FIG. 3. With the bag 13 in the position shown in FIG. 3, the bag is filled up to the marker 29 with water, and the base of the nozzle 17 is inserted into the aperture 53 as shown in FIG. 4 to mount the nozzle on the container section 33, such mounting being accomplished by the rim of the aperture 53 being received in the groove 59.

The marker 29 is positioned on the bag 13 so that it indicates the correct fill height when the bag is in the filling position shown in FIG. 3. With the aperture 53 closed by the nozzle 17, the entire syringe 11 may then be shaken or otherwise agitated to mix the ingredient 51 with the water. The resulting solution can then be expelled through the orifices 63 and 65 of the nozzle 17 by elevating the end of the bag remote from the nozzle. Water flow through the nozzle can also be regulated by pushing a wall region 67 of the bag 13 against the nozzle inlet as shown in dashed lines in FIG. 4. During use, the outermost regions of the peripheral wall 41 adjacent the juncture with the sloping wall 43 can be pressed against, and removed from the vulval parts to permit filling and release of fluid in the vaginal cavity.

In the illustrated embodiment of the invention, the container 15 is adapted to be opened prior to mounting of the nozzle 17 thereon. However, because of the relationship of the container sections 33 and 35, it is not possible in the illustrated embodiment of the invention to mount the nozzle 17 on the container 15 without dislodging or removing the container section 35 from the container section 33, if this has not earlier been done. Accordingly, another relationship inherent in the present invention, although not normally used, is that mounting of the nozzle automatically opens the container 15 if this has not been earlier accomplished. This feature of the invention is useful for applications where the nozzle 17 can be easily demounted from the container 15 or for applications in which a separate water filling opening is provided.

Although an exemplary embodiment of the invention has been shown and described, many changes, modifications, and substitutions may be made by one having ordinary skill in the art without necessarily departing from the spirit and scope of this invention.

We claim:

1. A syringe comprising:

a nozzle having a base and a tip;

an at least substantially collapsible bag for holding liquid;

first means on said bag for cooperatively engaging the base of the nozzle to mount the nozzle on the bag to permit the nozzle to dispense the contents of said bag, said tip projecting from said bag;

second means on said bag circumscribing the nozzle adjacent the base thereof and projecting axially outwardly of the region of engagement between the base of the nozzle said first means; and

said second means including a member mounted on said bag, said member including a peripheral wall extending generally outwardly of said bag and a sloping generally conical wall joined to the peripheral wall and projecting inwardly from the peripheral wall, said first means including an aperture through said member radially inwardly of said peripheral wall.

2. A syringe comprising:

a nozzle;

an at least substantially collapsible bag;

means on said bag for mounting the nozzle on said bag to permit the nozzle to dispense the contents of said bag;

means other than said nozzle for defining a container on said bag, said container being adapted to contain an ingredient;

said container being closed sufficiently to retain the ingredient therein, said bag having an interior region outside of said container; and
said container including a movable section accessible from the exterior of the bag, movement of said movable section opening the container and allowing the ingredient to leave said container and enter said interior region.

3. A syringe as defined in claim 2 wherein said bag is adapted to be at least partially filled with a liquid, said bag having indicia thereon to indicate the level to which the bag is to be filled, said bag being substantially transparent at least adjacent said indicia.

4. A syringe as defined in claim 2 wherein said container includes a first container section, said nozzle mounting means including at least a portion of said first container section.

5. A syringe as defined in claim 2 wherein said container includes a first container section having an aperture therein, said movable section closing said aperture so that the container is closed, said aperture providing access to said movable section from the exterior of said bag.

6. A syringe as defined in claim 5 wherein said nozzle mounting means includes a portion of said first container section around the rim of said aperture.

7. A syringe comprising:

a container adapted to contain a material, said container being closed sufficiently to retain the material therein;

means for attaching said container to said bag, said bag having an interior region outside of said container;

a nozzle;

said container having socket means into which a portion of the nozzle is receivable for mounting said nozzle; and

said container having means accessible through said socket means when said nozzle is removed from said socket means for opening said container to provide communication between the interior of said container and the interior region of said bag.

8. A disposable syringe as defined in claim 7 wherein said bag includes means defining finger receiving apertures at the opposite ends of said bag.

9. A syringe as defined in claim 7 wherein said bag includes first and second generally opposite wall portions, said socket means being mounted on said first wall portion, said second wall portion being movable toward and away from the socket means to permit control of the flow of fluid from said bag through said nozzle.

10. A syringe as defined in claim 7 wherein said socket means has an aperture for receiving the nozzle and includes an exposed protrusion circumscribing said aperture axially outwardly thereof.

11. A disposable syringe comprising:

first and second container sections;

means for releasably interconnecting said container sections to form a container, said container being adapted to contain a material;

said first container section having an aperture, at least a portion of said second container section extending at least partially across said aperture;

means for at least substantially sealing the second container section to the first container section in at least two radially spaced, circumferentially extending zones around said aperture to thereby prevent loss of the ingredient through said aperture;

an at least partially collapsible bag;

means for mounting the container on said bag with the interiors of said bag and said container being separated by said second container section and with said portion of said second container section being in a position to be contacted and at least partially removed from the first container section to thereby provide communication between the interior of said compartment and the interior of the bag;

a nozzle; and

means for mounting the nozzle on the bag to permit the contents of the bag to be dispensed through the nozzle.

12. A disposable syringe as defined in claim 11 wherein said aperture is sized to receive said nozzle and said means for mounting the nozzle includes at least a portion of the surface defining the aperture, said surface portion being adapted to grip said nozzle.

13. A disposable syringe as defined in claim 12 wherein said bag is at least substantially entirely flexible and said container sections are more rigid than said bag.

14. A disposable syringe as defined in claim 12 wherein said first container section has a peripheral flange secured to said bag, said first container section defining a generally annular cavity, said second container section closing said cavity.

15. A disposable syringe as defined in claim 6 wherein said means for substantially sealing includes substantially engaging surfaces of the first and second container sections.

16. A disposable syringe as defined in claim 10 wherein said bag is constructed of substantially transparent flexible plastic material and has indicia thereon, said bag having an opening therein in registry with said aperture, said container being constructed of plastic material and being more rigid than said bag, said first container section having a flange adhered to said bag, said means for mounting said nozzle includes at least a portion of the surface defining said aperture.

17. A syringe comprising:

a flexible bag;

a mounting member, said mounting member being constructed of a plastic material and being generally stiffer than the bag;

said mounting member being mounted on said bag and having an aperture therethrough;

a plastic closure member in said bag;

means for providing a snap fit between the closure member and the mounting member, said snap fit holding the closure member in a position in which it closes said aperture, said closure member being accessible through said aperture and being forcibly removable;

a nozzle; and

cooperating means on said nozzle and said mounting member for mounting the nozzle on said mounting member in communication with said aperture.

18. A disposable douche syringe comprising:

a nozzle having a base and a tip;
 an at least substantially collapsible bag for holding liquid;
 first means on said bag for cooperatively engaging the base of the nozzle to mount the nozzle on the bag to permit the nozzle to dispense the contents of said bag, said tip projecting from said bag;
 a member on said bag extending axially outwardly of said base of said nozzle and substantially circumscribing the nozzle when the nozzle is mounted on said bag; and
 said member defining a recess opening outwardly of said bag.
 19. A disposable douche syringe as defined in claim

18 wherein said first means includes a socket in said member for cooperating with said nozzle to mount the latter.

20. A disposable douche syringe as defined in claim 19 including means defining an openable container for containing a douching ingredient, said container being attached to said bag and including said member.

21. A disposable douching syringe as defined in claim 18 wherein said member includes a first section extending away from the bag and a generally cup-shaped section substantially circumscribed by the first section and defining said recess.

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