April 21, 1970 E. H. POLLOCK 3,507,280

VAGINAL SYRINGE

Filed Aug. 18, 1967 3 Sheets-Sheet 1

Fig 1

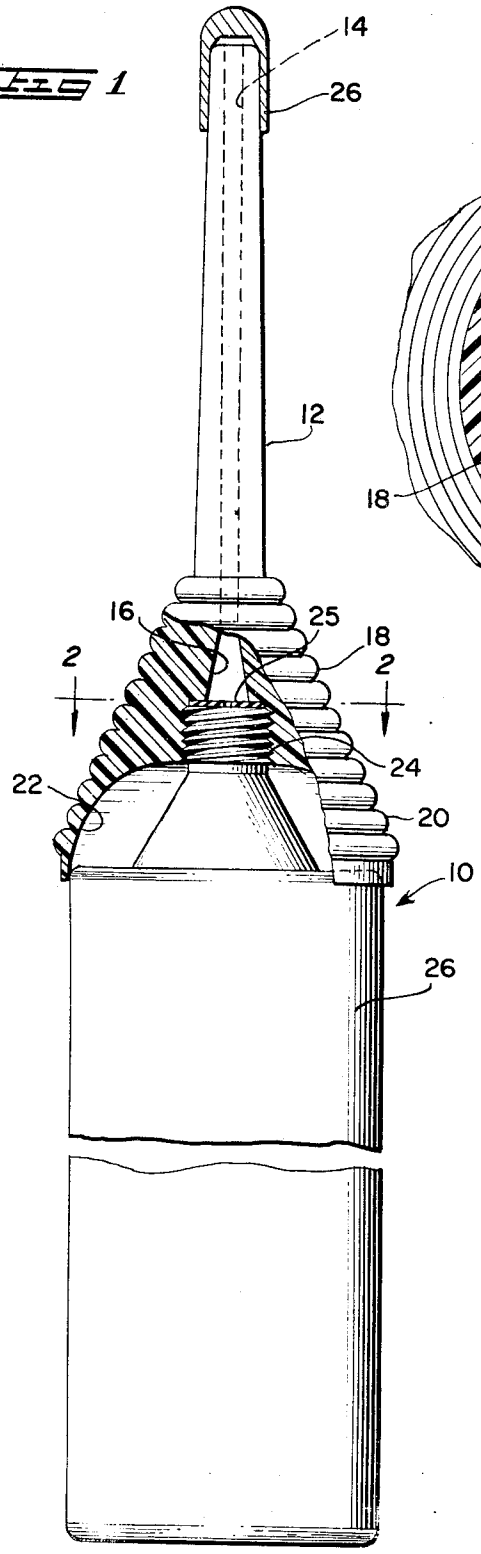


Fig 2

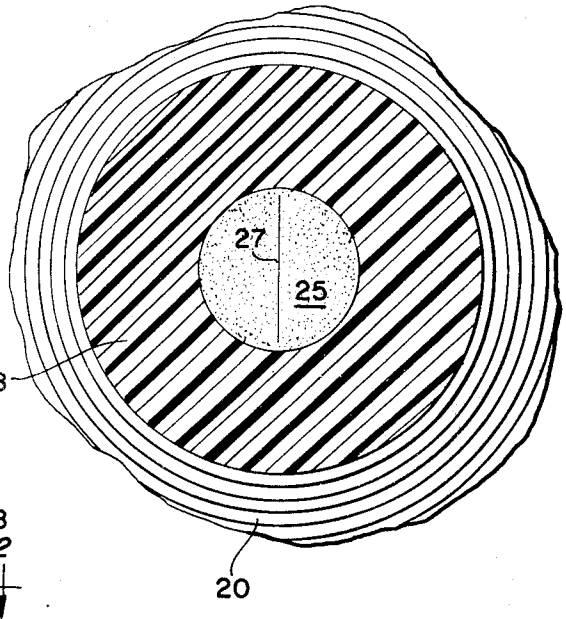
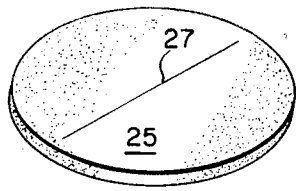


Fig 3



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April 21, 1970 E. H. POLLOCK 3,507,280

VAGINAL SYRINGE

Filed Aug. 18, 1967 3 Sheets-Sheet 2

Fig 4

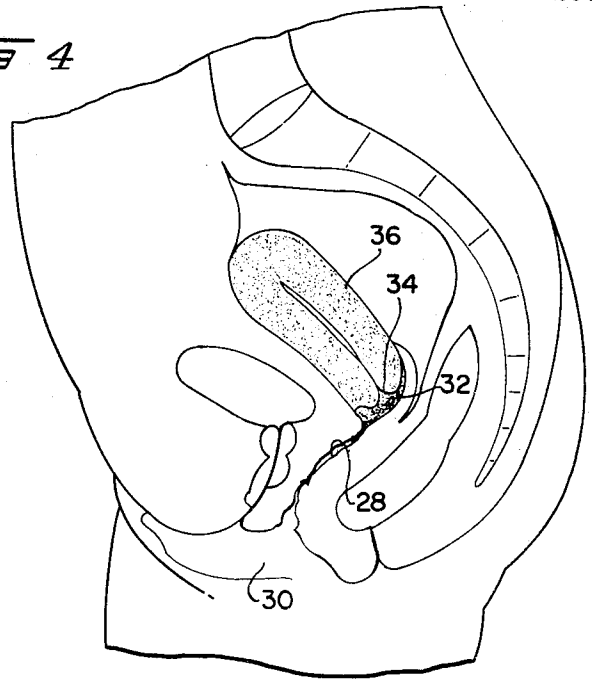
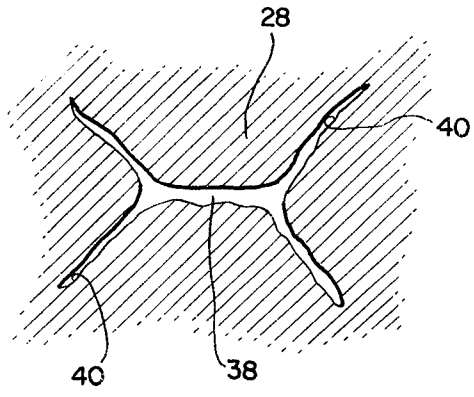


Fig 5



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Filed Aug. 18, 1967 3 Sheets-Sheet 3

Fig 6

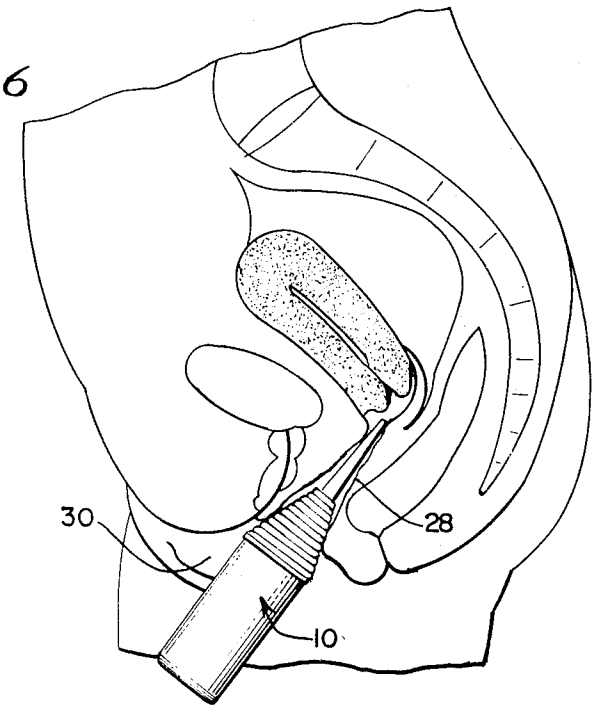
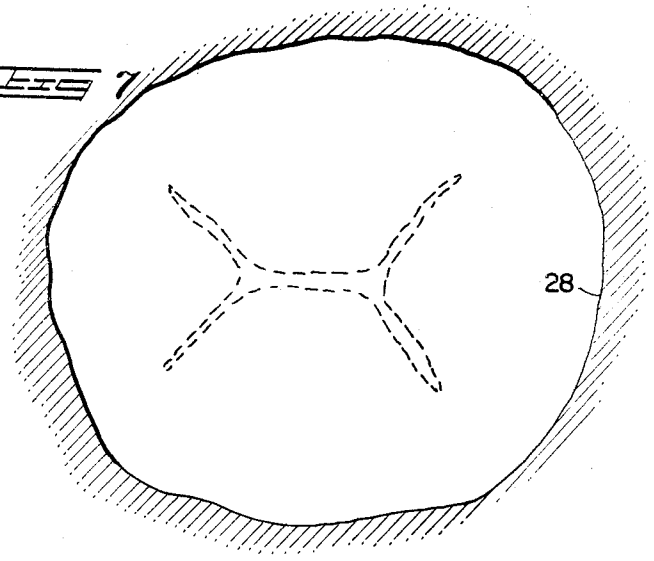


Fig 7



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VAGINAL SYRINGE

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U.S. Cl. 128—232 11 Claims

ABSTRACT OF THE DISCLOSURE

A vaginal syringe having a vaginal tube with a conical, transversely ridged, relatively rigid, vagina-distending member on the input end of the tube. The conical distending member expands the vagina, when inserted therein, to expose folds therein for cleaning by the syringing fluid. The transverse ridges anatomically cooperate with the walls of the vaginal canal to seal fluid therein during syringing thereof.

BACKGROUND OF THE INVENTION

This invention relates generally to syringes and more particularly to a new and improved vaginal syringe particularly adapted for use as a disposable unit with a premedication filled squeeze bottle container.

Vaginal syringes are well known in the prior art. The vaginal canal, in its normal, relaxed state, is characterized by longitudinal folds along the length thereof. Heretofore, it has been common in prior art syringes of this type to utilize the force of fluid pressure, generated through the syringe, to distend the vaginal canal and open the folds thereof for cleaning by the syringing fluid. A primary disadvantage inherent in this system of syringing is that fluid pressure, or overpressure, of a force sufficient to achieve the required distention will tend to drive or wash a biological material through the cervix into the uterine cavity, thereby spreading or complicating infections which may be present, contrary to the purpose and intent of the syringing action.

This is particularly important during pregnancy, since the cervix tends, at that time, to be more open and therefore more susceptible to the admission of fluids from the vagina. For these reasons, most doctors recommend against syringing with present art devices during pregnancy.

Prior art syringes have also, in general, been intended to multiple use applications and have therefore been, in themselves, sources of contamination or recontamination due to improper sterilization of the syringing apparatus between uses.

SUMMARY OF THE INVENTION

This invention provides a novel vaginal syringe which overcomes the disadvantages of the prior art by providing means associated therewith to distend the walls of the vaginal canal and thereby open the folds thereof for syringing action without reliance on fluid pressure generated through the syringe. Such means comprise an outwardly tapering conical vagina-distending member associated with the input end of a vaginal tube which, when inserted into the vaginal canal, radially expands the vaginal walls mechanically, thereby exposing the folds therein to action by the syringing fluid.

This invention also provides a novel means associated with the vagina-distending member for cooperating anatomically with the vaginal walls to seal fluid in the vaginal canal during the syringing operation. Such means comprises circumferential ridges coaxially disposed around the frusto-conical surface of the expanding member, which ridges cooperate with natural ridges located on the vaginal

walls and with the vaginal walls themselves to prevent leakage of fluid therebetween.

The invention also provides means to preclude contamination or re-contamination of the vagina caused by improper sterilization of the syringe apparatus by providing a device particularly suited for single use disposable syringes. Such means are provided by furnishing a premedication filled squeeze bottle and syringe tube-vagina-distension member structure which may be inexpensively manufactured to enable economical single use application.

These objects and other advantages of the invention may be more readily understood by those skilled in the art by reference to the following detailed description when viewed in light of the accompanying drawings wherein like numerals throughout the figures thereof indicate like components.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is an elevational view in section of a syringe constructed in accordance with this invention;

FIGURE 2 is an enlarged sectional view, partly broken away, of the device of FIGURE 1, taken along the line 2—2 thereof;

FIGURE 3 is a perspective view of an element of the syringe of FIGURE 1;

FIGURE 4 is an anatomical illustration of the female pelvic area in longitudinal elevation;

FIGURE 5 is an enlarged transverse sectional view showing a vaginal canal in the normal reposed condition;

FIGURE 6 is a view similar to FIGURE 4 showing a device in accordance with the invention inserted in operational condition in the vaginal canal; and

FIGURE 7 is a view similar to FIGURE 5 showing the configuration of the vaginal canal distended by insertion of the device as in FIGURE 6.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGURES 1 and 2 of the drawings, a syringe unit, shown generally at **10**, is illustrated in its packaged condition. It should be understood that, although the invention is described as specifically applied to premedication filled disposable units hereinafter, the precepts of the invention are applicable to any type of vaginal syringe, such, for example, as the multiple use squeeze bulb, or the "fountain" syringes currently in use. The syringe **10** comprises a vaginal tube **12** having a discharge opening **14** in one end thereof and an inlet opening **16** in the other end thereof. Although the tube **12** is illustrated with a simple rounded end and single opening **14** thereon, it should be understood that multiple opening cruciform tips, as are known in the prior art, may also be furnished at the end of the tube **12** within the scope of the invention. A frustoconical vagina-distending member **18** is formed on the end of the tube **12** proximate the opening **16**, preferably formed as an integral part of the tube.

The tube **12** and member **18** may be formed of any material suitable for the purpose, but are preferably fabricated of a moldable inert plastic material, such for example, as low pressure polyethylene.

The member **18** is provided, on the tapered surfaces thereof, with a plurality of peripheral transverse ridges **20** which are designed to engage the vaginal walls and corresponding ridges occurring on the walls of the vaginal canal as will be described below. The ridges, in conjunction with the taper and dimensions of the member **18**, should preferably be within the range of the pelvic dimensions of the average female so that, upon proper in-

sertion of the device in the vagina, the member **18** distends the vaginal canal to such a degree as to expose the internal surfaces thereof to fluid injected through the vaginal tube **12**. The member **18**, simultaneously, should provide a seal between the ridges **20** coincident with the vaginal orifice to prevent escape of fluid thereby. The length of the tube **12** should also be such that, with the above-described relationship between the ridges **20** and the vaginal orifice, the discharge opening **14** is disposed proximate the area of the cervix as will be described in greater detail below.

It has been found that a vaginal tube and vagina-distending member having approximately the following dimensions is suitable for the purposes of this invention and properly fits the range of pelvic dimensions of the average female in accordance with the above requirements—

	Inches
(A) Member **18**:	
Length	2
Major diameter	2½
Minor diameter	½
(B) Ridges **20**:	
Width	.2
Arcuate segment, diameter of circle	3/16
(C) Tube **12**:	
Length	2
Major diameter	½

Although the above dimensions provide particular utility, they may vary as much as 50% without substantially affecting the operation of the syringe.

The member **18** is provided on the interior surface thereof with a dome-shaped recess **22** which communicates with a threaded receptacle **24**. A diaphragm valve **25** is seated in the receptacle **24** to control flow therethrough in such a manner as to preclude backflow of fluid from the tube **12**. Any standard check valve can be used for this purpose; however, it has been found advantageous to use a flexible diaphragm valve having a slit **27** therein as illustrated more clearly in FIGURE 3. Flapper valves are also useful in this connection.

A medicament containing squeeze bottle **26**, preferably formed of a soft moldable plastic material, such, for example, as high pressure polyethylene, and configured to conform to the general dimensions of the aforedescribed member **18**, is threadedly connected to the member **18** through the threaded receptacle **24** to sandwich the valve **25** therebetween.

A cap **26** is slidably received on the end of the tube **12** to seal discharge opening **14** prior to use of the apparatus. The cap **26** may be suitably sealed to the tube **12** through means common in the art, such, for example, as by means of a plastic ring shrink-fitted over the juncture between the cap and tube or the like.

Referring now to FIGURE 4 of the drawings, the longitudinal, anatomical view of the female pelvis area in its natural, reposed condition, is illustrated. The vaginal canal **28** terminates, at its external end, in labia minora **30** which form a vestibule surrounding the vaginal orifice. The vaginal canal **28** comprises the anterior and posterior vaginal walls which terminate in the cervix posteriorly.

In FIGURE 5, a sectional view of the vaginal canal **28** is illustrated in its relaxed condtion as in FIGURE 2. The canal **28** is characterized in this condition in that its walls are ordinarily in contact and the usual sectional configuration is that of an H, the transverse limb **38** being formed between the top and bottom surfaces thereof and the lateral limbs being formed by folds **40**, in shape somewhat convex towards the median line. In the condition depicted in FIGURE 5, the walls of the vaginal canal are substantially in contact; however, they are shown slightly separate in the figure for purposes of clarity of illustration.

Referring again to FIGURE 4, in its normal longitudinal configuration, the vaginal canal **28** is constricted at its entrance proximate the labia minora **30**, dilated in the middle, and narrowed as it approaches the posterior vaginal wall **32**. The vaginal canal **28** is further structured with longitudinal ridges on its anterior and posterior surfaces known as "columns of the vagina." From these columns, numerous transverse ridges or rugae extend outwardly on either side.

Referring now to FIGURE 6, a unit **10** is shown inserted in the vaginal canal **28** in position for use. As can be seen, the member **18** distends the walls of the canal **28** which, due to their inherent resiliency, assume a configuration closely conforming to the member **18** in section, as can best be seen in FIGURE 7.

The ridges **20** deform the vaginal wall **28** and conform with the aforedescribed rugae to anatomically cooperate with the vaginal canal **28** and provide a seal proximate the vaginal orifice to prevent escape of fluid thereby. As can also be best seen by FIGURE 7, the walls of the vaginal canal **28** are distended to such a degree that the folds **40** (FIGURE 4) are opened and the interior surface of the vaginal canal is exposed for the action of fluid thereon. As was set forth above, the primary constriction in the vaginal canal is proximate the vestibule formed by the labia minora **20** and the distension of the canal is thereby provided by the member **18** at that point. The remaining portion of the vaginal canal **28**, not actually engaged mechanically by the member **18**, is also distended due to the normal tendency of the walls of the canal to follow distension of the portion near the vaginal orifice. Due to the thin wall proximate the major diameter end of the member **18** provided by the recess **22** (FIGURE 1), the member is somewhat flexible at that point so that minor variations in cross-sectional shape in the area of the labia minora may be compensated by distortion of the member.

With the unit **10** inserted as shown in FIGURE 6, the contents of the bottle **24** are then injected into the posterior portion of the canal **28** through the vaginal tube **12**, thereby flushing out the vagina at a pressure considerably reduced over that required for prior art syringes.

Due to the particularly good sealing effected by the member **18**, it is possible to accomplish syringing with the user in the standing position, as opposed to a reclining position as is required in prior art devices having less effective sealing. Such a capability provides additional benefits in that, in syringing in the standing position, there is much less tendency for the syringing fluid to migrate into the uterine cavity than if the body is in a reclining position.

The contents of the bottle **24** may be of any suitable composition and may contain deodorants, antiseptics, or other agents as is known in the art and it has been found that a bottle **24**, sized to contain approximately 4 to 5 ounces of fluid, is preferable and adequate for proper syringing.

The unit **10** is retained in place for a suitable length of time to allow the agents in the syringing fluid to react, at which point the unit **10** is removed and the fluid contained in the canal **28** discharged under the normal reflex action of the canal.

From the foregoing description, one skilled in the art can easily ascertain the essential characteristics of this invention, and without departing from the spirit and scope thereof, can make various changes and modifications of the invention to adapt it to various usages and conditions. Consequently, such changes and modifications are properly, equitably, and intended to be, within the full range of equivalence of the following claims.

What is claimed is:

1. A vaginal syringe comprising:

a vaginal tube having openings in each end thereof;

a substantially frusto-conical relatively rigid vaginal distending member fixed to one end of said tube, the minor diameter end of said member being coincident with and the major diameter end of said mem-

ber being disposed in spaced relation to said one end of said tube; said diameters being of sufficient magnitude to distend and expose the internal surfaces of the vagina when inserted in the vagina canal of an average adult female; and

a plurality of transversely disposed ridges on the periphery of the frusto-conical surface of said member.

2. A syringe in accordance with claim 1 wherein said member is approximately 2 inches in length with a minor diameter of ½ inch and a major diameter of 2½ inches.

3. A syringe in accordance with claim 2 wherein said ridges comprise, in section, arcuate segments of a circle approximately 3/16 of an inch in diameter.

4. A syringe in accordance with claim 2 wherein said vaginal tube is approximately 2 inches in length.

5. A syringe in accordance with claim 3 wherein said tube is approximately 2 inches in length.

6. A syringe in accordance with claim 3 wherein said ridges are approximately .2 of an inch in longitudinal width.

7. A syringe in accordance with claim 1 wherein at least said member is formed of plastic material having substantially the same rigidity as low pressure polyethylene.

8. A syringe in accordance with claim 7 wherein said member is provided with a recess in the major diameter end thereof, the configuration of said recess being such that it defines, in conjunction with the tapered surface of said member, a wall of reduced thickness proximate the major diameter end thereof to provide resilient distortion thereof.

9. A syringe in accordance with claim 8 wherein said recess terminates in an internally threaded opening communicative with the openings in said tube and wherein a squeeze bottle is threadably received in said threaded opening.

10. A syringe in accordance with claim 9 wherein a check valve means is disposed between said squeeze bottle and said tube.

11. A method of cleaning the vaginal canal comprising the steps of:

filling a squeeze bottle connected to the syringe of claim 1 with fluid;

inserting said syringe in the vaginal canal to such a degree as to distend the walls thereof through mechanical engagement thereof by said member and squeezing said bottle to eject fluid through said tube to provide cleaning of the vaginal canal.

References Cited

UNITED STATES PATENTS

381,622	4/1888	Haeley	128—241
856,093	6/1907	Ong	128—246
2,552,469	5/1951	Wahlbeck	128—232
2,881,760	4/1959	McGiveran et al.	128—251

FOREIGN PATENTS

125	1899	Great Britain.
347,081	4/1931	Great Britain.

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U.S. Cl. X.R.

128—242, 245, 247