Oct. 11, 1960 M. H. KNOCH 2,955,596

APPARATUS FOR CLEANSING AND THERAPEUTICALLY TREATING THE HUMAN VAGINA AND VULVA

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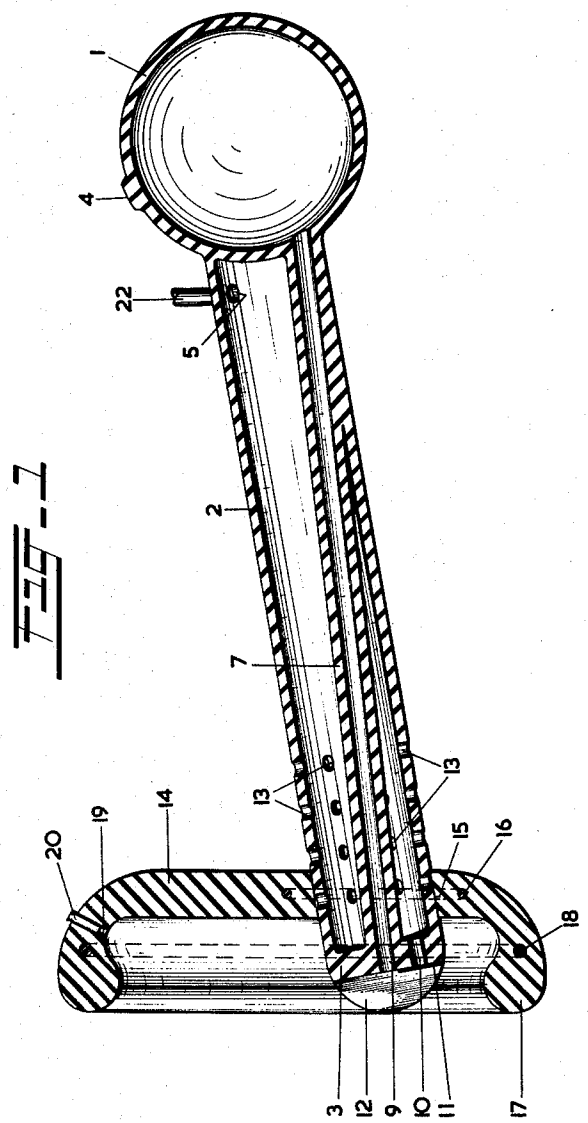


FIG. 1

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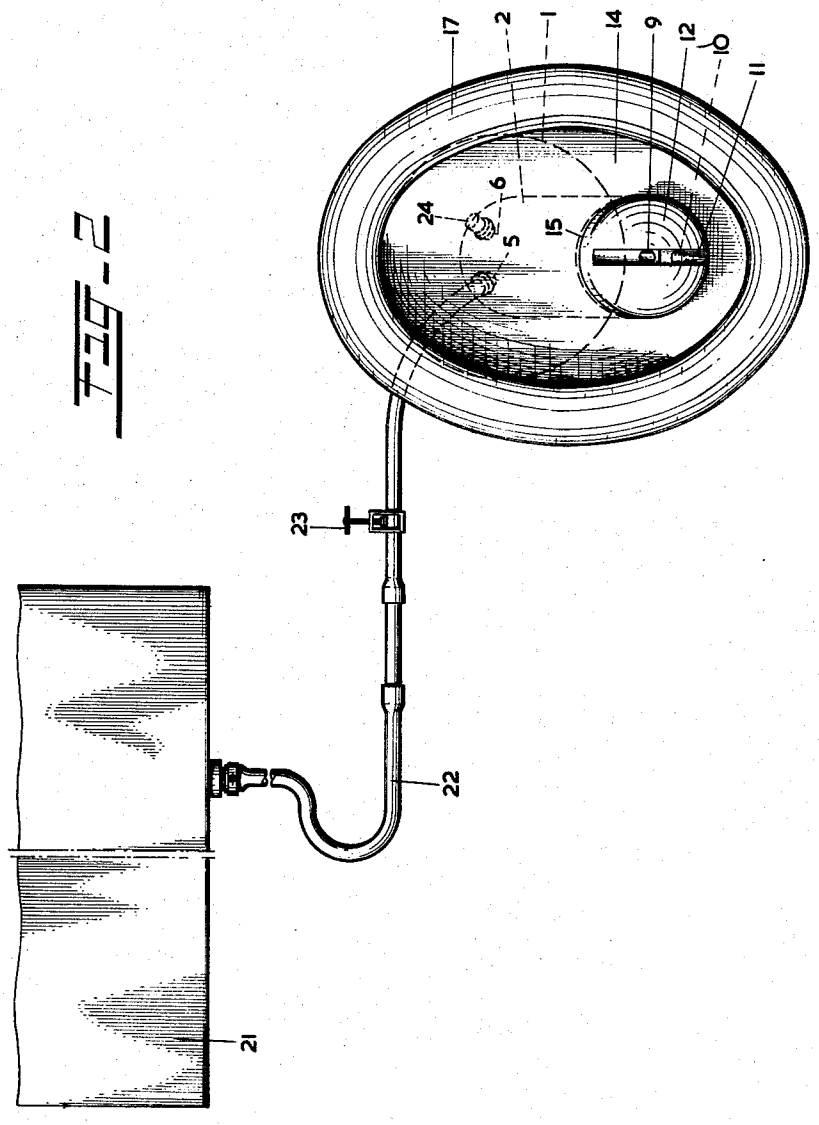
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FIG. 2



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APPARATUS FOR CLEANSING AND THERAPEUTICALLY TREATING THE HUMAN VAGINA AND VULVA

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6 Claims. (Cl. 128—251)

The invention relates to an apparatus for cleansing and therapeutically treating the human vagina and vulva comprising a syringe with a flexible ball and a tubelike cylinder connected therewith and to be inserted into the vagina, with a channel through said cylinder for drawing up treating liquid by suction with the ball and injecting it into the vagina, said cylinder having a second channel which does not communicate with the interior of the ball and which has outward openings near the ball and near the outlet end of the first channel.

In known apparatus of this kind a flow in one direction into the first channel, thence into the vagina, thence into the second channel, and further through the ball outwards is set up by alternate compression and release of the ball, non-return valves in the tubes before and behind the ball ensuring that the flow takes place in one direction only.

With this known apparatus it is not possible to treat and cleanse the vulva as well. Only when this apparatus has been inserted into the body to its maximum depth is the vulva shut off to some extent from the atmosphere, but at the same time compressed. If the apparatus is not inserted to its maximum depth spilling of liquid takes place. The object of the invention is to improve such an apparatus in such a way that the medicines to be used are used economically so that a small quantity thereof is sufficient, that no spilling of the liquid takes place. In particular the invention aims at giving the possibility to cure such diseases as trichomonas vaginalis quickly and with a minimum quantity of cleansing liquid—which is frequently expensive.

To achieve this, an apparatus as referred to in the preamble is characterized according to the invention by the volume of the second channel being approximately equal to or larger than the volume of the flexible ball, the rounded end surface of the cylinder having a diametrical groove, in which the said first channel opens, a mark being provided on the ball, situated in a plane through said groove and the axis of the cylinder, the said second channel having, besides openings in the outer wall of the cylinder, an opening which opens into the groove and which is sealed by a non-return (check) valve opening to the outside and closing against in flow of liquid into the second channel.

Thus a satisfactory cleansing or treating of the vagina can be achieved without liquid being spilled, so that it is possible to cleanse without the use of special aids such as a bed-pan, which normally still involves some spilling of the liquid. Moreover it is possible to reach with the liquid all parts of the vaginal wall with a powerful liquid jet, the diametrical groove preventing injection into the uterus cavity even when treating the deepest parts of the vagina. The same quantity of liquids is used repeatedly, which is a considerable advantage particularly with expensive medicines used in the liquid. Said advantages will be further explained below.

The liquid, after having cleansed or treated the vagina can be taken up entirely in the second channel and with each release of the ball is able to flow back from the second channel to the first. The second channel is able to take up all this liquid by adapting its volume to it as described above.

For also treating the human vulva and maintaining the advantages given above an apparatus according to the invention is further characterized in that a basin- or cup-shaped element is provided around the cylinder, which extends through an opening therein with a liquid-tight sliding seal, said basin-shaped element having a front edge, which is curved ovally so as to fully close around the human vulva against the body, the said element therewith leaving a substantial space in its interior for taking up liquid.

It is advisable to manufacture the basin-shaped element from soft flexible material, such as rubber. This element is preferably so constructed that the front edge of the basin-shaped element forming a seal against the body contains a permanently deformable insert, such as a metal wire, by which means the shape of the front edge can be adapted to the shape of the body of the patient.

Thus the basin-shaped element can be adapted to different shapes of the body of the patient by bending of this insert, in consequence of which the apparatus need be manufactured in one size only.

In order to illustrate the above, the invention will now be elucidated more fully with reference to the annexed drawings.

In these drawings,

Figure 1 is a vertical section of an apparatus in a preferred embodiment according to the invention, and

Figure 2 is a diagrammatic representation of the same apparatus with accessories for treating.

The apparatus shown in the drawings consists of a hollow rubber ball **1**, to which has been connected a hollow cylinder **2** with a nozzle **3**, together constituting a syringe. On the rubber ball a knob **4** has been provided, which marks the upper side of the apparatus. Extending through the cylinder is a tube **7**, which connects the interior of the ball **1** to the opening **9** in the nozzle. The nozzle has an end surface in the shape of a hemisphere with the same diameter as the cylinder. The convex surface has a deep groove **12**, lying in the plane through the axis of the cylinder and through knob **4** and tube **7**, into which groove end two openings: a central opening **9** of the tube **7**, leading to the interior of the ball, and an opening **10** placed lower down and leading to the interior of the cylinder. The latter is provided with a flexible non-return valve **11**, in the shape of a simple rubber strip connected only at one end to the cylinder, which valve permits the liquid to flow from the interior to the exterior, but not from the exterior of the syringe to its interior. In addition a number of openings **13** have been provided all round in the wall of the cylinder **2** near the nozzle. Further two openings **5** and **6** have been provided close to the ball on the upper side in the wall of the cylinder **2**.

The interior volume of the cylinder **2** is approximately equal to or larger than the interior volume of the ball **1**.

A basin- or cup-shaped element **14** has been made of comparatively soft rubber and is provided with an opening **15**, through which the cylinder **2** of the syringe is adapted to slide with a snug fit. This opening lies outside the centre of the basin-shaped element **14**.

Around this opening a steel wire **16** is embedded in the rubber to prevent excessive deformation of the rubber after repeated use in the vicinity of the opening **15**. As shown in the drawing the opening **15** passes obliquely through the bottom of the basin-shaped element in order to give the right direction to the cylinder **2**.

The shape of the basin-shaped element will be perfectly clear from the figures. It has a thickened edge **17**, with

which it can be made to rest against the body of the patient and at some distance therefrom, in a slightly thinner part, a steel wire **18** of soft and permanently bendable steel. To the opposite side of the centre from the opening **15** there is a narrow opening **19** in this basin-shaped element, and this opening connects its interior with its exterior. This opening **19** can be sealed by means of a plug **20**.

With reference to Figure 2 the irrigator comprises a supply vessel **21**, from which a thin rubber tube **22** passes to the opening **5** of the syringe. In this tube **22** a glass intermediate part and a pinch cock **23** are provided.

By means of this unit it is possible to cleanse the vagina and the vulva satisfactorily, namely in the following way:

First the edge of the cup-shaped element **14** is fitted to the vulva area of the patient by bending the wire **18** so as to obtain both the correct width and the correct curvatures. This should be done accurately.

Thereafter vulva and vagina are cleansed with a usual irrigator containing 2 litres of aqueous lysol-solution to remove mucous and waste substances.

Thereupon the required quantity of medicine is introduced into the laquear posterius (fornix vaginae posterius) with the aid of a teaspoon and a speculum. Now a mastisol solution is spread on the edge of the cup-shaped element and said element is now pressed against the vulva while pulling the skin of the vulva as far as possible outwardly from under said edge.

The cylinder **2** is greased by submerging it in liquid paraffin and thereafter it is introduced through the opening **15** of the cup-shaped element so far until the openings **13** have passed the opening **15**. By some suitable mark on the outside of the cylinder, such as a line in red, it is prevented that the cylinder is retracted too far from the cup-shaped element.

The cup-shaped element is now fixed in place on the body of the patient by two thin rubber strips or tubes, of which one end is kept in place under the body of the patient and by the weight thereof, the intermediary parts extending over the cup-shaped element to the right and left of the opening **15** and the other ends extending upwardly and being maintained in place and under tension by the hands of the patient.

Meanwhile the vessel **21** is filled with solvent for the medicine, the valve **23** is shut and the tube **22** is connected to the opening **5**. The valve **23** is now opened, and the solvent flows to the interior of the cylinder **2**. Thereupon the ball **1** is repeatedly compressed and released so that the air in this ball and in all spaces of the cup-shaped element, the vulva and the vagina is replaced by solvent. As soon as the solvent flows from the openings **6** and **19** they are closed by plugs **24** and **20** respectively. The vessel **21** is now if necessary further filled with solvent until a water pressure of 30 centimeters above the vulva is obtained.

The rubber ball is now repeatedly compressed and allowed to expand with the nozzle **3** of the cylinder **2** at different depths. When compressing the ball the liquid flows through the tube **7** to the opening **9** and thus into the vagina and/or vulva. Although this liquid flow will constitute a rather powerful jet there is no danger that liquid is injected into the uterine cavity, as, with the mark **4** on the upper side of the ball **1**, the diametrical groove **12** will be vertical and thus perpendicular to the cervix uteri; which has the shape of a horizontal slot. The liquid thus issued urges the walls of the vagina and/or vulva away and cleans them, after which this liquid flows through the openings **13** into the cylinder **2**. If thereafter the ball **1** is allowed to expand the liquid from the cylinder and from the vagina and/or vulva is sucked back to the ball, but will not have sufficient pressure to flow out through the openings **13** against the contractive action of the wall of the vagina. In this situation the

check-valve **11** opens, allowing the liquid to flow through opening **10** and thence through slot **12**, opening **9** and tube **7** to the ball.

The vessel **21** compensates easily for differences in volume in the system due to compression and expansion of the ball. During this treatment the solvent solves the medicine in the laquear posterius and thus the disease is profoundly fought. With a restricted quantity of often quite expensive medicine a maximum effect is thus obtained. If the medicine is not so expensive or if it is for some reason preferable not to use the liquid repeatedly the plug **24** may be removed and a discharge tube may be inserted in opening **6** to remove the liquid after use. This tube should first extend upwardly to a height insuring the maintaining of sufficient liquid pressure in the device. Therewith the valve **23** is periodically opened for replacing part of the liquid.

After half an hour the treatment is finished and in many cases trichomonas vaginalis will therewith be cured. In more serious cases a repeated treatment on following days is preferable.

The device as described may also be used for treating other diseases, such as haemophilus vaginalis. It is important for the invention that the cup-shaped element fits accurately on the body so as to be able without spilling liquid to treat not only the vagina but also the vulva under a liquid pressure of about 30 centimeters of water. Bacteria will from the vagina easily spread through the vulva even in the proximity of the urethra.

It is possible, for treating the vagina alone, to use the syringe without the cup-shaped element, and it is also possible to omit the irrigator vessel **21** and use the syringe alone or the syringe with the cup-shaped element.

What I claim is:

1. An apparatus for cleansing and therapeutically treating the human vagina comprising a syringe with a flexible ball and a tubelike cylinder connected therewith and to be inserted into the vagina, with a channel through said cylinder for drawing up treating liquid by suction with the ball and injecting it into the vagina, said cylinder having a second channel which does not communicate with the interior of the ball and which has outward openings near the ball and all around in the wall of said cylinder near the outlet end of the first channel, the volume of the second channel being approximately equal to or larger than the volume of the flexible ball, the rounded end surface of the cylinder having a diametrical groove, in which the said first channel opens, a mark being provided on the ball, situated in a plane through said groove and the axis of the cylinder, the said second channel having, besides openings in the outer wall of the cylinder, an opening which opens into the groove and which is sealed by a non-return check valve opening to the outside and closing against in flow of liquid into the second channel.

2. An apparatus according to claim 1, characterized in that a basin- or cup-shaped element is provided around the cylinder, which extends through an opening therein with a liquid-tight sliding seal, said basin-shaped element having a front edge, which is curved ovally so as to fully close around the human vulva against the body, the said element therewith leaving a substantial space in its interior for taking up liquid.

3. An apparatus according to claim 2, characterized in that the opening in the basin- or cup-shaped element is provided below its center and inclined downwardly as seen from the outside to the inside of said element.

4. An apparatus according to claim 2, characterized in that the front edge of the basin- or cup-shaped element forming a seal against the body contains a permanently deformable part, e.g. an insert, such as a metal wire, by which means the shape of the front edge can be adapted to the shape of the body of the patient.

5. An apparatus according to claim 2, characterized

in that the basin- or cup-shaped element has at its top an opening with a removable plug therein.

6. Equipment for cleansing or therapeutically treating the human vagina and vulva comprising an apparatus according to claim 2, characterized in that the second channel in the cylinder of the syringe has two outward openings near the ball, that to one of them a tube is connected, which communicates via a closing valve member with an irrigator placed at a higher level, and that the other opening is provided with a plug for closing it.

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