Oct. 8, 1929. L. F. NOVAK 1,730,378

SYRINGE

Original Filed Feb. 27, 1926

Fig. 1.

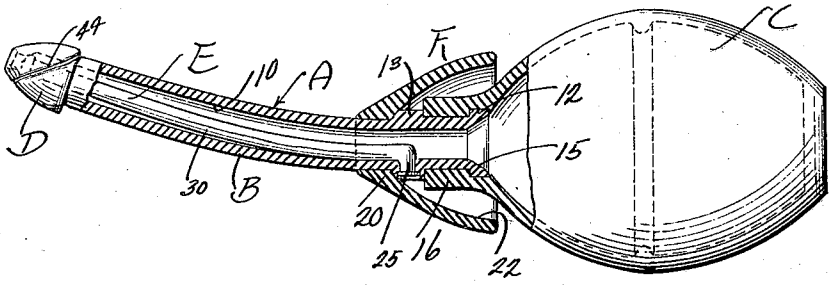


Fig. 2.

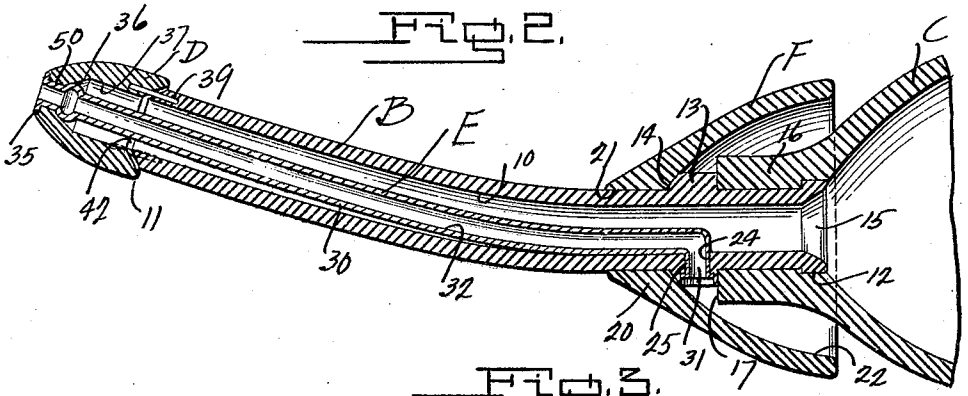
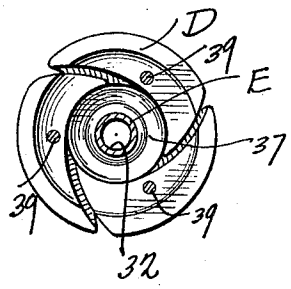


Fig. 3.

Fig. 4.



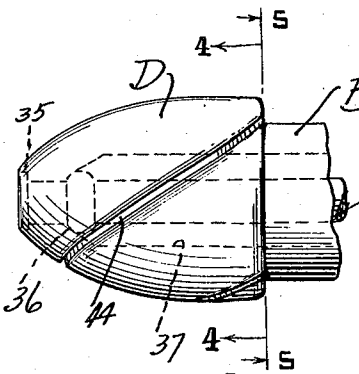


Fig. 5.

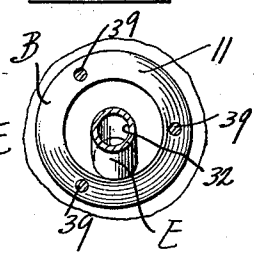
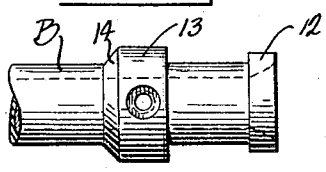


Fig. 6.



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UNITED STATES PATENT OFFICE

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SYRINGE

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This invention relates to improvements in vaginal syringes.

The primary object of this invention is the provision of a vaginal syringe embodying means to provide a lateral and preferably rotary cleasing spray, and including a novel air duct arrangement to permit the drawing of air into the vaginal canal as the syringe is being withdrawn, for the purpose of preventing the displacement of the womb incident to suction created by such withdrawal.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawing, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a side elevation, partly in section, showing details of the improved syringe.

Figure 2 is a fragmentary sectional view taken through the forward part of the syringe, showing novel features thereof.

Figure 3 is a fragmentary side elevation of the nozzle end of the syringe.

Figures 4 and 5 are cross sectional views taken substantially on their respective lines in Figure 3 of the drawing.

Figure 6 is a detailed view of the rear end construction of the main tube.

In the drawing, wherein for the purpose of illustration is shown only a preferred embodiment of this invention, the letter A may generally designate the improved syringe, which may consist of a main tube B; having a detachable and collapsible rubber bulb C supported at one end thereof, and a novel nozzle D supported at the opposite end thereof. A novel air duct or tube E is provided within the main tube in a cooperative relation with respect to the nozzle D, and a resilient guard member F supported at the end of the main tube B adjacent the bulb C.

The main tube B is preferably slightly arcuate as to its length, and it is formed of die cast hard rubber or enameled aluminum or any approved material. It provides a relatively large passageway 10 which extends therethrough from end to end. At its forward end the passageway 10 is entirely open, and the edge of the tube B is beveled as at 11 to a tapered or pointed edge. At its rear end the tube B is provided with an annular bulb retaining flange 12, and in spaced relation with respect to the annular flange 12 is also provided with an annular guard and bulb retaining flange 13 which is relatively wide and preferably provided with a forward bevel edge 14. The passageway 10 is entirely open at the rear end of the main tube B, and in fact is provided with a flaring mouth 15 facing the bulb C. The bulb C is preferably of red collapsible rubber, or analogous material, and may be of any approved shape. The same is closed at one end and at the opposite end thereof it is provided with a main tube attaching tubular shank 16, adapted to be expanded over the rear end of the main tube B, into gripping relation in the annular channel between the annular flanges 12 and 13, with the forward edge 17 abutting against the rear edge of the annular flange 13, as illustrated in the drawing.

The soft rubber guard F is of hollow frusto-conical formation, in accordance with conventional syringe guard construction, and at the forward reduced end 20 thereof the same has a passageway 21 within which the main tube B is received. The guard F from this end 20 slopes rearwardly with an increasing diameter, and the same is provided with a chamber 22 therein. The forward end 20 of course abuts against the beveled edge 14 of the annular flange 13 of the tube B, and thus limits the movement of the guard F towards the bulb C. The guard F extends rearwardly to receive the forward end of the bulb C in the pocket 22 thereof, in a spaced relation, and the outer flange 13 is sufficiently wide to entirely space the shank 16 annularly from the internal periphery of the pocket 22 of the guard F, as illustrated in Figures 1 and 2 of the drawing. This is important, since a lateral opening 24 is provided in the main tube B through which a right angled air inlet end 25 of the vent tube E extends, to receive air from the pocket 22 forwardly of the forward edge 17 of the bulb shank 16, and the passageway of this air tube E must not be obstructed within the pocket 22.

The air tube E is preferably of aluminum or analogous material, and the same is of relatively small diameter, extending along the passageway 10, and only partially filling the same. The tube E includes the main body portion 30, which extends along the passageway 10, and as above mentioned the same is right angled at 25, at the rear end thereof, and extends through the opening 24 of the main tube B, and has an inlet opening 31 to the passageway 32 of the tube E. The end of the tube portion 25 is laterally flanged at the exterior of the main tube B to retain the said air tube E in position at the guard F. The vent tube E extends beyond the forward edge 11 of the main tube B, and at its forward end is open, and the tube E is outwardly provided with a retaining flange 35. Just slightly inwardly of the retaining flange 35 the tube E is preferably annularly outwardly bulged at 36 to provide an anchor for the nozzle D.

The nozzle D is preferably of semi-elliptic or parabolic formation, and the same is hollow and provided of hard rubber, or any approved material similar to the main tube B. The nozzle D is largest at its rear end adjacent the forward end of the tube B, and the nozzle D is provided with a pocket 37 therein, opening at its rear end, and of the same size as the pockets or passageway 10 of the main tube B. A plurality of anchor pins 39 are connected in the forward end of the main tube B and the rear end of the nozzle D to anchor the nozzle D in alignment forwardly of the main tube B, with the passageway 10 and the pocket 37 in aligning relation. In this position the front edge of the tube B is in annularly spaced relation with the rear edge of the nozzle D to provide an annular space 42 through which the cleansing fluid may flow radially of the nozzle and tube. The nozzle is provided with a rear beveled surface parallel with the bevel edge 11 of the tube B, to deflect the cleansing fluid slightly rearwardly as it passes into the annular space 42. Fluid receiving grooves are provided inwardly of the outer surfaces of the nozzle D, and extending from the rear fluid outlet end of the nozzle D forwardly along the nozzle D, and preferably slightly spiralled about the nozzle; these grooves 44 terminating at their front ends short of the front end of the nozzle D. The nozzle D at its front end is provided with an opening 50 within which the front end of the tube E is received; the front end of the nozzle D being received between the retaining flange 35 and the annular bulge 36, to retain the nozzle D in a fixed relation with respect to the tube E and in spaced relation forwardly of the front edge of the tube B, to provide the annular duct or way 42.

From the foregoing description of this invention it is apparent that a novel vaginal syringe has been provided. During its use in the vagina the cleansing fluid upon pressure of the bulb C will flow laterally through the annular way 42 and thence forwardly through the fluid grooves 44, to gently and thoroughly cleanse. If properly inserted the front end of the vent tube E will be closed when the syringe tube B is fully inserted. In this connection it should be noted that the tube E does not provide a duct for return of the cleansing fluid. The same is relatively small, and the sole function of the same is to vent air to a point forwardly of the nozzle D as the syringe tube is being withdrawn from the vaginal canal, to relieve the suction created incident to such withdrawal.

Various changes in the shape, size, and arrangement of parts may be made to the form of invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a syringe the combination of a main tube, a nozzle at the forward end of the main tube having a lateral fluid exit duct construction, means for forcing a cleansing liquid from said main tube thru the nozzle, and an air vent tube within the main tube having a rear air inlet opening and a front air exit opening at the tip of said nozzle.

2. In a syringe the combination of a main tube, a nozzle forwardly supported by the main tube providing a cleansing liquid outlet duct construction, a collapsible bulb supported at the opposite end of the main tube, and a vent tube within the main tube having a rear inlet opening laterally extending through the main tube forwardly of and adjacent to the bulb and a forward outlet opening at the very tip of said nozzle.

3. In a syringe the combination of a main tube having a passageway therethrough, nozzle means for the forward end of the main tube, collapsible bulb means for the opposite end of the main tube, a guard for the main tube forwardly of the nozzle sloping rearwardly towards the bulb and providing a rearwardly facing pocket therein, and an air vent tube extending through the passageway of the main tube having an end thereof laterally extending through the main tube to provide an air inlet opening in the pocket of said guard member, said air vent tube having an exit opening on said nozzle means.

4. In a syringe construction the combination of a main tube having a passageway therethrough, means for forcing liquid through said passageway, an air vent tube supported in the passageway of said main tube having the rear end thereof anchored to said main tube and laterally extending thru the main tube to provide an exterior air inlet opening to the air vent tube, said air vent tube extending forwardly beyond the forward end of said main tube and having an opening at its extreme forward end, and a nozzle connected with the forwardly projecting end of

said air vent tube and with the rear edge of said nozzle in spaced duct providing relation with the forward end of said main tube.

5. In a syringe construction the combination of a main tube having a passageway therethrough, means for forcing liquid through said passageway, an air vent tube supported in the passageway of said main tube having the rear end thereof anchored to said main tube and laterally extending thru the main tube to provide an exterior air inlet opening to the air vent tube, said air vent tube extending forwardly beyond the forward end of said main tube, and having an opening at its extreme forward end, and nozzle means supported by the forwardly projecting end of said air vent tube so that the rear edge of said nozzle is in spaced duct provided relation with the forward end of said main tube, said nozzle having grooved liquid receiving ways therealong extending from said duct.

6. In a syringe construction the combination of a main tube having a passageway therethrough open at the forward end thereof and at said forward end thereof providing a rearwardly sloping edge, a tubular nozzle having a passageway therethrough and a reduced opening at the tip end thereof aligning with the passageway, said nozzle at the rear end thereof having a sloping rear edge converging from the rear end towards the tip end of the nozzle, a small tube of less diameter than the passageway of the main tube disposed in the passageway of the main tube and at its forward end extending beyond the sloping edge of the main tube, and extending into the opening of the tip end of said nozzle, and means to support the nozzle with its passageway in alignment with the passageway of the main tube and with the sloping surfaces of the main tube and nozzle in spaced duct providing relation.

LOUIS F. NOVAK.