

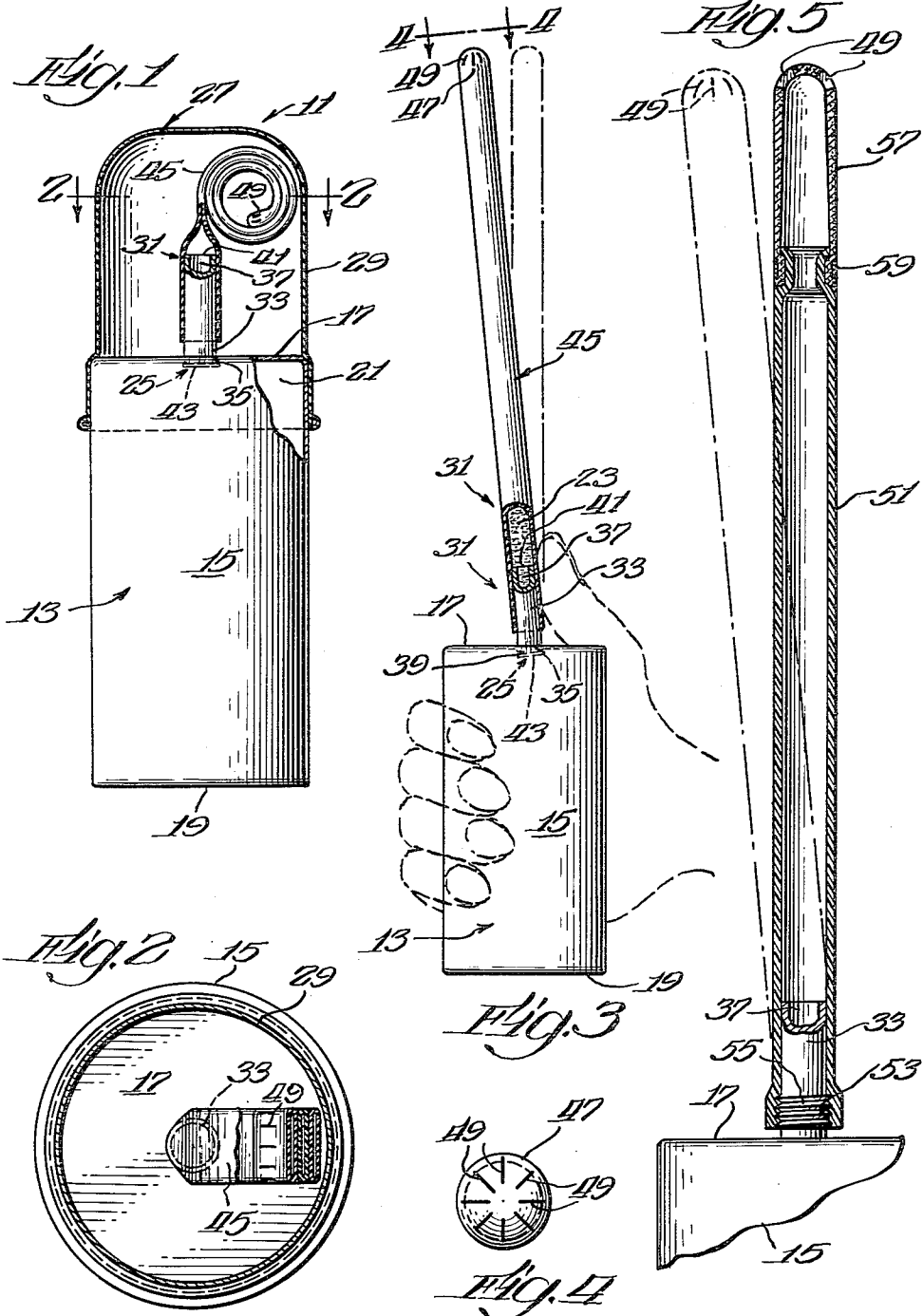
Nov. 12, 1963

E. W. LUNDAHL

3,110,311

HYGIENIC DEVICE

Filed March 1, 1962



By

Inventor:
 Ernest W. Lundahl
 Soano, Anderson, Luedeker *Attys*

1

3,110,311

HYGIENIC DEVICE

Ernest W. Lundahl, P.O. Box 2124, Idaho Falls, Idaho
 Filed Mar. 1, 1962, Ser. No. 176,587
 3 Claims. (Cl. 128-225)

This invention relates to portable fluid-dispensing devices which include means for containing fluid under pressure and means for selectively releasing the fluid therefrom. More specifically, the invention relates to an improvement in such devices which directs the fluid, for example, a hygienic douching solution, to a localized region after it has been released.

The principal object of the present invention is to provide an improved device of the class described.

An additional object of the invention is to provide a device which includes means for containing a supply of fluid under pressure and improved means for conducting fluids released therefrom to points not otherwise conveniently accessible.

A further object of the invention is to provide such a device in which the fluid-conducting means serves to regulate the discharge of fluid therefrom.

A still further object of the invention is to provide such a device in which the fluid-conducting means includes a coilable tube which becomes extended when occupied by fluid under pressure.

Other objects and advantages of the invention will become apparent with reference to the following description and the accompanying drawing.

In the drawing:

FIGURE 1 is an elevational view, partially broken away and partially in section, of one embodiment of a device formed in accordance with the present invention, showing the device in its storage position;

FIGURE 2 is an enlarged sectional plan view taken along line 2-2 of FIGURE 1;

FIGURE 3 is an elevational view of the device of FIGURES 1 and 2, as it might appear when held in the hand of a user during the operation thereof;

FIGURE 4 is an enlarged plan view of a portion of the device as viewed in the direction of the arrows 4-4 of FIGURE 3; and

FIGURE 5 is an enlarged fragmentary elevational view, partially in section, of a modified form of the device.

While the present invention relates generally to improvements in devices for dispensing fluid under pressure to regions which are not conveniently accessible, a specific embodiment of a device formed in accordance with the invention is hereinafter described which is particularly adapted to the dispensing of a douche solution for feminine hygiene. Other applications of the invention should become apparent by reason of the following description.

Accordingly, a device 11 formed in accordance with the present invention comprises generally a container 13 having a cylindrical side wall 15, a top wall 17, and a bottom wall 19 which define an inner chamber 21. The container is fluid-tight and is adapted to maintain a douche solution and a liquified gas (not shown) under pressure within the chamber 21, the gas serving to propel the douche solution from the container in the form of a froth or foam 23 (FIG. 3) when a valve 25, hereinafter described, is opened. The application of the solution in the form of a froth or foam is particularly advantageous in a douching device since the foamy solution will have a greater tendency to cling to the tissue surface and will therefore remain in contact with the uterine wall for a longer period of time.

The douche solution is discharged from the container 13 through the dispensing means 31 comprising an up-standing pipe 33 mounted on the top wall 17 of the container and extending into the chamber 21 through an

2

opening 35 in the top wall. A passageway 37 extends longitudinally of the pipe 33 and provides communication between an inlet port 39, located within the container at the lower end of the pipe, and an outlet port 41 located at the upper end of the pipe. The fluid, in the form of a froth or foam, passes upwardly through the passageway 37 as it is discharged from the container.

The valve means 25, shown diagrammatically in FIGURES 1 and 3 as including a disk 43 biased by a spring (not shown) against the lower end of the pipe 33, seals the inlet port 39 of the pipe when the device is not in use. The valve is opened by applying pressure laterally to the pipe, preferably adjacent its upper end (FIGURE 2) so as to tilt the valve disk 43 and open the inlet port 39. It is to be understood, of course, that other forms of valves well-known in the art may be used as the valve means 25 without departing from the scope of the invention.

The fluid discharged from the pipe is conducted to the area of application, such as the vaginal canal and uterine region of a female user, by means of a flexible tube 45 secured to the upper end of the pipe 33 as, for example, by bonding. The tube 45 is preferably formed of a plastic such as polyethylene and is sufficiently flexible so that it can be flattened and coiled into a spiral configuration when not in use (see FIGURE 1). However, the tube is adapted to be extended to a relatively stiff position (FIGURE 3) when occupied by fluid having a predetermined minimum pressure and, when so extended, is preferably between three to six inches in length. As the tube is extended, its cross-sectional configuration becomes generally circular with an outer diameter, such as one-half inch, which will permit it to be easily inserted into the vaginal canal.

When the tube is extended and relatively stiff, it may be substantially straight, i.e., normal to the top wall 17 of the container, or may assume a curved shape. Also, the tube can be secured to the pipe of the container so as to extend laterally therefrom, a construction which would also further facilitate operation of the valve when the device is being used.

It is desirable that a certain amount of back-pressure be allowed to build-up in the tube 45 prior to the discharge of fluid from its outer end so that the tube may remain filled with fluid and be maintained in a stiff and extended condition for insertion into the vaginal canal. This feature is provided in the illustrated embodiment by providing the outer end of the tube with a nozzle 47, formed by sealing the tube at this end and providing the sealed portion with a plurality of vents 49 in the form of slits or openings sufficiently small in size such that they will not open until the pressure of the fluid in the tube reaches a predetermined minimum value which is slightly greater than that required to maintain the tube in a stiffened condition. The sealed end 47 of the tube, therefore, serves not only as a nozzle but also as a valve which regulates the discharge of fluid from the device.

The desirable size of the vents 49 will depend, of course, upon the thickness of the wall of the tube at the sealed end. Preferably, the tube is constructed so that the walls of the nozzle are somewhat thicker than the walls of the remainder of the tube, thereby providing sufficient resistance to the passage of fluid through the vents while maintaining the desired flexibility in the tube.

Since the vents impede the flow of fluid from the tube, they thereby serve also as a safety feature to prevent a sudden discharge of fluid from the tube at maximum pressure, should the main valve 25 be opened too suddenly, since the passage of the fluid through the vents effects a drop in the pressure of the fluid.

In using the device, which incidentally is preferably made small enough to be carried in the pocket or purse,

3

the user removes the cap 27 and opens the main valve 25 slightly until enough fluid has filled the tube to extend it and make it relatively stiff. By filling the tube in this manner, any air that may have been trapped in the tube will be expelled therefrom before the tube is inserted into the vaginal canal, thus preventing a flow of air under pressure into the uterus.

When the tube is thus extended, the user inserts the nozzle 47 into the vaginal canal and, when the nozzle is properly positioned therein, again opens the main valve 25 to release the foamy douche solution 23 into the vaginal canal and uterine region.

When the douching has been completed, the main valve 25 is closed and the nozzle 47 is withdrawn from the vaginal canal. The tube 45 is then collapsed, as by pinching it with the fingers near its lower end and moving the fingers along the tube toward the nozzle 47 to force any solution still in the tube toward the nozzle. This action will create sufficient pressure on the fluid within the tube to force the vents 49 in the nozzle 47 open and permit the fluid to be discharged therefrom. The tube may then be recoiled into its spiral configuration, the cap replaced, and the device stored for use on another occasion.

If desired, the tube may be constructed so as to have a tendency to automatically assume the coiled configuration when there is no fluid pressure within the tube, as by making one side thereof slightly shorter than the other or by providing a resilient member in a wall of the tube extending longitudinally thereof. If the tube is provided with such a feature, it would recoil itself after the fluid has been evacuated from it.

In another embodiment of the device, a portion of which is shown in FIGURE 5, a rigid tube 51 is used in place of the flexible tube 45, and is preferably carried with the container as part of a kit and attached to the container when it is desired to use the device. The illustrated rigid tube 51 comprises an elongated body portion provided with internal threads 53 on one end which engage mating external threads 55 provided on the outer wall of the pipe 33 adjacent the lower end thereof. The outer end of the tube is provided with a nozzle in the form of a closure 57, similar to the sealed or nozzleed end 47 of the flexible tube 45, and is secured to the tube by a spring clip 59. The closure is formed of a flexible material and is also provided with vents 49 so as to serve as a nozzle for the dispensing end of the rigid tube.

While there is no need to create a back pressure in the rigid tube, as there was in the flexible tube, the vents 49 of the closure 57 impede the outward flow from the tube and thereby prevent a sudden discharge of fluid at a high pressure if the valve 25 is opened too suddenly, since the passage of fluid through the vents effects a drop of pressure of the fluid.

In using the modified form of the device, the rigid tube 51 is attached to the pipe 33 of the device by means of the mating threads 53 and 55, and the nozzle end of the tube including the closure 57 is inserted into the vaginal canal. The main valve 25 is then opened slightly to permit fluid in the form of a foam to fill the tube and be discharged from the nozzle. If desired, of course, the valve may be opened for a short time prior to the insertion of the nozzle into the vaginal canal to first fill the tube with fluid so that further opening of the valve after the nozzle has been inserted will result in the immediate discharge of fluid from the device. When the douching has been completed, the tube and nozzle 47 are withdrawn, and the tube detached from the pipe and rinsed.

A device has thus been provided which is adapted to provide a supply of fluid under pressure, which fluid can be selectively released and applied directly to regions not otherwise readily accessible. The device is particularly adapted to dispense a douching solution for feminine hygiene, and can be carried in the purse or pocket so as

4

to be available at times, such as during travel or the like, when conventional douching means are not available.

While certain of the structural features of the invention have been shown and described, it should be apparent that various modifications may be made therein without departing from the scope of the invention as set forth in the following claims.

What is claimed is:

1. A fluid-dispensing device comprising a sealed container having fluid under pressure therein, means carried by said container defining a passageway through which said fluid is discharged from said container, releasable valve means adapted to control the flow of fluid through said passageway, a tube connected at one of its ends to said passageway-defining means so as to define a continuation of said passageway, said tube being sufficiently flexible so as to be collapsible when not occupied by said fluid but adapted to become relatively stiff when occupied by a quantity of said fluid under a predetermined minimum pressure, and maintaining means at the other end of said tube adapted to prevent fluid within said tube having less than said predetermined minimum pressure from passing outwardly of said tube, thereby maintaining said minimum fluid pressure within said tube and the stiffness thereof.

2. A fluid-dispensing device comprising a sealed container having fluid under pressure therein, a pipe carried by said container defining a passageway through which said fluid is discharged from said container, releasable valve means adapted to control the flow of fluid through said passageway, a tube connected at one of its ends to said pipe, said tube being sufficiently flexible so as to be coilable when not occupied by said fluid but adapted to uncoil and become relatively stiff when occupied by a quantity of said fluid under a predetermined minimum pressure, and means at the other end of said tube defining a vent, said vent-defining means being adapted to prevent fluid within said tube having less than said predetermined minimum pressure from passing through said vent so as to maintain said minimum fluid pressure within said tube and prevent collapsing thereof by a discharge of fluid therefrom.

3. A douche-dispensing device comprising a sealed container having a douche solution under pressure therein, a pipe carried by said container defining a passageway communicating with the interior of said container and through which fluid is discharged therefrom, releasable valve means adapted to control the flow of fluid through said passageway, a normally spirally coiled flexible tube secured at one of its ends to the outer end of said pipe, said tube being sufficiently flexible so as to uncoil and become relatively stiff when occupied by a quantity of fluid under a predetermined minimum pressure, the walls of said tube adjacent the other of its ends being thicker than the walls at said one end to said tube, said other end of said tube being normally closed but being provided with a plurality of vents, the walls of said tube defining said vents being sufficiently stiff relative to the size of said vents so as to prevent fluid having less than a predetermined minimum pressure from passing through said vents so as to maintain said minimum fluid pressure within said tube when extended and stiff and thereby prevent collapsing thereof by a discharge of fluid therefrom.

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