

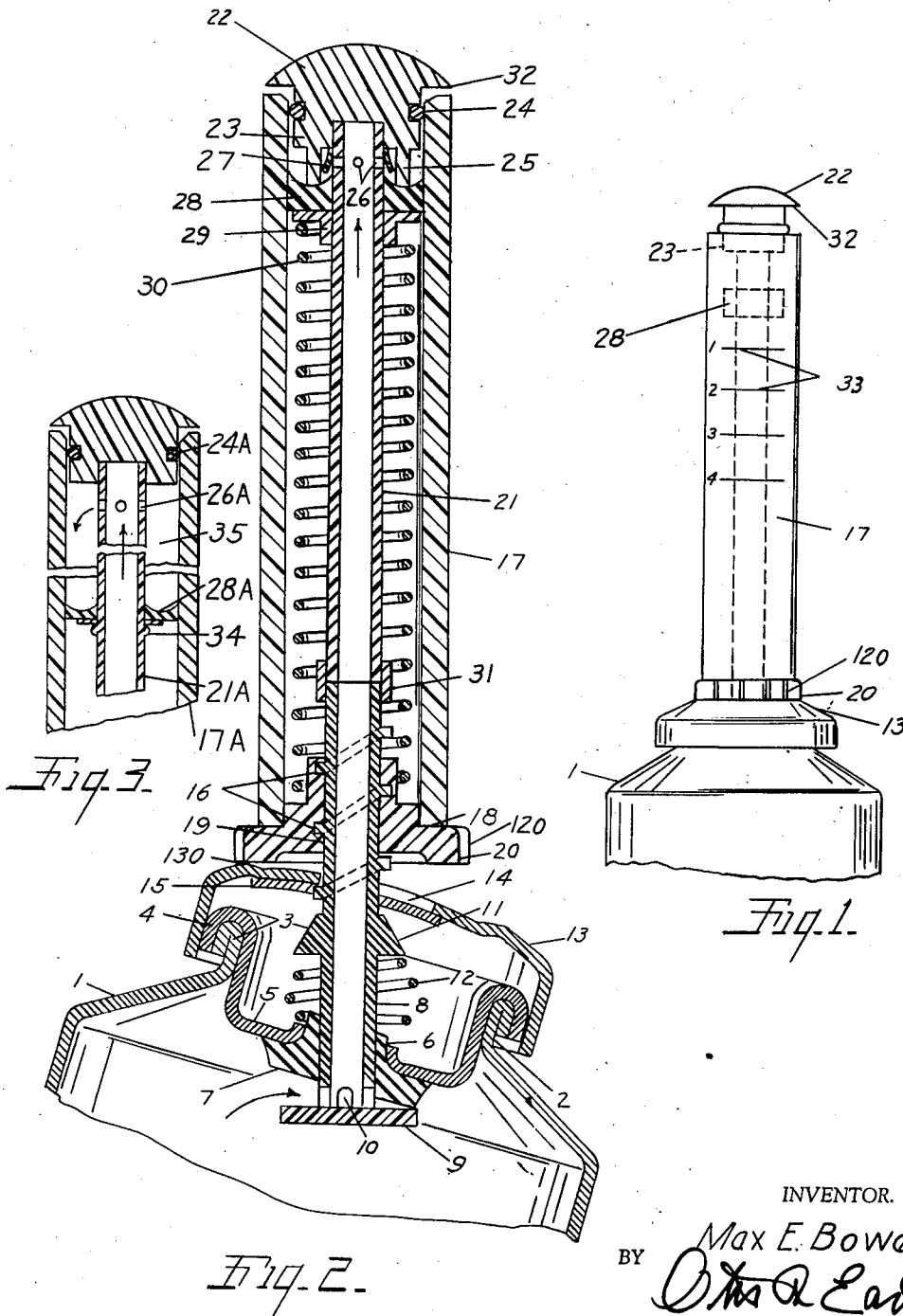
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PRESSURIZED DOUCHE APPLICATOR

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PRESSURIZED DOUCHE APPLICATOR

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This invention relates to improvements in pressurized douche applicator. It is an improvement of the applicator disclosed and claimed in the copending application, Serial No. 671,605, filed July 12, 1957, now Patent No. 2,870,767, dated January 27, 1959. The principal objects of the invention are:

First, to provide an applicator that dispenses fluid at a safe low pressure which is less than the pressure in the storage container for the fluid.

Second, to provide an applicator that will dispense a variable but measured dose of fluid.

Third, to provide an applicator that will dispense a stream of fluid in an annular pattern laterally and completely around an elongated nozzle.

Fourth, to provide an applicator having a transfer chamber and spring pressed ejector arranged so that conditioning the applicator to fill the transfer chamber from the pressurized container closes the delivery passage of the applicator while opening the delivery passage conditions the applicator to prevent opening the passage to the pressurized container.

Other objects and advantages of the invention will be apparent from a consideration of the following description and claims. The drawings, of which there is one sheet, illustrate a highly practical form of the applicator and its connection to a pressurized container and one modified form of the applicator.

Fig. 1 is a fragmentary elevational view of the applicator and a container in closed position as for storage or shipment.

Fig. 2 is an enlarged fragmentary longitudinal cross sectional view through the applicator and the top of the container in actuated position to charge the applicator from the container.

Fig. 3 is an enlarged fragmentary cross sectional view through a modified form of the applicator.

The applicator is applied to and used with a pressurized container having an old and well known valve mechanism. The container indicated at 1 has its neck 2 rolled over as at 3 and rolled or seamed within the rim 4 of a cup-like interior valve seat 5. The valve seat 5 has a hole 6 in its center in which a deformable gasket 7 is positioned. A combined nozzle and valve has a tubular nozzle portion 8 projecting through the gasket and a radially projecting valve portion 9 on its inner end that is urged into closed sealing position against the gasket by the pressure in the container. The inner end of the nozzle has ports 10 formed therein that are opened to the container by tilting the nozzle relative to the container as shown in Fig. 2. The angle of the tilt is exaggerated in the drawing to better illustrate the action of the valve.

Outwardly of the valve seat 5 the nozzle 8 has a shoulder 11 and a conical spring 12 seated thereagainst and bearing against the cupped valve seat to further urge the valve to closed position. A domed top or cover 13 on the container has a hole 14 therein passing the nozzle 8 with sufficient clearance to permit the tilting of the nozzle.

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A dished closure disc 15 on the nozzle closes the gap around the nozzle. The upper or outwardly projecting end of the nozzle 8 has a high pitch thread 16 formed therearound. The cover 13 has an annular ridge 130 forming a circular seat around the nozzle. The applicator of the invention is applied to the foregoing old structure to take advantage of its construction as will be described.

An elongated cylindrical barrel 17 of molded thermoplastic material has a bottom closure wall 18 with an internally threaded boss 19 thereon engaged with the thread 16 on the nozzle. The rim of the barrel has a grip or shoulder 20 sized to seat against the ridge or seat 130 on the cover of the container. The shoulder 20 is grooved or notched as at 120 to be easily gripped by the fingers. Secured to the end of the nozzle 8 as an extension thereof is a discharge tube 21 positioned in radially spaced relation within the barrel 17. The outer end of the nozzle extension is closed by a cap 22 that projects radially over the outer end of the barrel 17.

The cap 22 has a cylindrical neck 23 that projects slidably into barrel. The neck is annularly grooved and fitted with an O-ring seal as at 24 that seals against the inside of the barrel. The cap 22 thus forms a closure wall for the outer end of the tube 21 and when the barrel is threaded outwardly on the tube the cap also forms a closure wall over the end of the barrel. A depending cylindrical flange 25 on the bottom of the cap 22 is spaced both from the tube 21 and the barrel 17 and surrounds ports 26 formed in the sides of the tube near the outer end thereof. A cylindrical flexible check valve 27 cover the outer ends of the ports.

Positioned slidably within the barrel 17 and around the tube 21 is a flexible piston 28. The piston is backed up by a rigid ring 29, and urged outwardly by a spring 30. The depending flange 25 on the cap 22 serves as an outer limit stop for the piston without engaging the tapered sealing edges at the inner and outer edges of the piston.

The cap 22 is axially secured to the outer end of the tube 21 by adhesive or press fit and the inner end of the tube is likewise axially fixed to the nozzle tube 8 by the sleeve 31. A fixed distance is thus established between the overhanging lip 32 on the cap 22 and the top of the cover 13. This distance is greater than the length of the barrel 17 including the bottom wall 20 thereof so that the barrel may be rotated on the high pitch thread 16 to move outwardly over the neck 23 and O-ring 24 on the cap or inwardly against the cover 13. In its inwardly adjusted position as shown in Fig. 1, the rim 20 abuts against the cover 13 and prevents tilting of the barrel and the tube 21 and therefore prevents opening of the valve 9. In its inwardly adjusted position, the outer end of the barrel clears the O-ring seal and opens an annular discharge port completely around the end of the barrel. Graduation indicia 33 on the side of the barrel permit the application of a measured dose of fluid to be dispensed. The barrel is desirably either transparent or translucent to permit observation of the dose.

In use, the barrel 17 and the rounded top wall 22 constitute a probe and applicator. The barrel can of course be sized as desired. The applicator is designed primarily for the dispensing and application of feminine douche fluid and the barrel is sized accordingly. The storage or non-use position of the applicator is as shown in Fig. 1. In this position the annular discharge opening around the O-ring 24 is open but the engagement of the rim 20 on top of the container prevents tilting of the barrel and the valve tube extension 21 and the valve stem 8. This prevents opening of the valve 9 and prevents escape of fluid from the container.

When the applicator is to be used the barrel is screwed

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outwardly on the thread 16 and this extends the barrel over the O-ring and closes the discharge opening as shown in Fig. 2. In this position the barrel can be tilted on the circular seat 130 and this tilts the valve stem 8 and opens the valve 9. The fluid in the container will then be forced by the pressure in the container into the tubes 8 and 21 and will flow past the check valve 27 into the barrel in the manner indicated by the arrows in Fig. 2. The piston 28 will descend under the force of the fluid and against the pressure of the spring 30. When the piston has descended to the desired dosage indicated by the graduations 33, the barrel is returned to upright position thus closing the valve 9. The dose of fluid remains in the transfer chamber formed by the barrel 17 and cannot escape due to the closure of the O-ring 24 in the top of the barrel. The probe formed by the barrel may then be inserted into the body of the user and the barrel 17 screwed down onto the seat 130. This opens the discharge opening around the O-ring and the fluid in the transfer chamber of the barrel is dispensed under the relatively low pressure of the spring 30. At the same time seating of the barrel against the seat 13 prevents tilting of the barrel and opening of the valve 9 so the relatively high pressure of the container cannot escape to damage delicate tissues in the user's body.

The applicator will function without its measuring feature by the modifications shown in Fig. 3. In this form the tube 21A has a stop 34 that holds the piston 28A merely as a bottom closure for the transfer cavity formed between the tube 21A and the barrel 17A. The spring is omitted as is the depending flange on the cap as the piston does not move. No valve is provided over the ports 26A. In other respects the structure is the same as in the first form of the applicator.

The modified applicator works as follows: The barrel 17A is screwed outwardly so that the seal 24A seals the outer end of the barrel. The barrel and tube 21A are then tilted to open the container valve and charge the transfer chamber 35 above the fixed piston 28A with fluid at the pressure of the container. The applicator is straightened on the container to close the container valve and the probe formed by the barrel is inserted by the user. The barrel is then threaded down onto the end of the container thus preventing accidental opening of the container valve and opening the discharge opening around the seal 24A. Sufficient residual pressure remains in the fluid in the transfer chamber 35 to discharge a dose of the fluid. Due to the limited volume of the transfer chamber this residual pressure which is initially the same as that in the container falls almost immediately to a safe value so the user is not subjected to the unsafe pressure of the container. The size of the dose is of course fixed by the size of the transfer chamber and the pressure in the container.

Various alterations may be made in the disclosed structure without departing from the spirit of the invention. For instance, the cover 13 of the container can be eliminated and the bottom of the barrel extended to coact with the top of the valve seat 5 or the tube extension 21 may be formed integrally with the valve tube 8. The invention is defined in the claims.

Having thus described the invention, what is claimed as new and is desired to be secured by Letters Patent is:

1. A dispensing applicator and closure mounted on a pressurized container having a tiltable threaded nozzle and valve comprising a tubular barrel of translucent material having a shoulder at its lower end adapted to seat against the top of said container around said nozzle, an internally threaded boss formed on said barrel in the lower end of the barrel and threadedly engaged with the thread on said nozzle, a discharge tube secured to the end of said nozzle and extending through said barrel in spaced relation to the interior of the barrel, a closure cap on the outer end of said tube projecting into the barrel and ex-

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tending over the outer end of said barrel, the outer end of said tube having a laterally opening hole formed therethrough, a flexible valve sleeved over the outer end of said tube and covering said hole, a flexible O-ring on the underside of said cap received in the end of said barrel, an annular piston of deformable material slidably mounted between said barrel and said tube and sealingly engaged with the walls thereof below said hole, said cap having a depending cylindrical flange spaced from said flexible valve and engageable with the center of said piston, and a helical spring disposed around said tube and engaged at its ends between the underside of said piston and the bottom of said barrel, said barrel having visible graduation indicia disposed along its length for measuring the depression of said piston in said barrel.

2. A dispensing applicator and closure mounted on a pressurized container having a tiltable threaded nozzle and valve comprising a tubular barrel of translucent material having its lower end adapted to seat against the top of said container around said nozzle, an internally threaded boss on the lower end of the barrel and threadedly engaged with the thread on said nozzle, a discharge tube secured to the end of said nozzle and extending through said barrel in spaced relation to the interior of the barrel, a closure cap on the outer end of said tube projecting into the barrel and extending over the outer end of said barrel, the outer end of said tube having a laterally opening hole formed therethrough, a flexible valve sleeved over the outer end of said tube and covering said hole, a flexible O-ring on the underside of said cap received in the end of said barrel, an annular piston mounted between said barrel and said tube and sealingly engaged with the walls thereof below said hole, and a helical spring disposed around said tube and engaged at its ends between the underside of said piston and said barrel, said barrel having visible graduation indicia disposed along its length for measuring the depression of said piston in said barrel.

3. A dispensing application for a pressurized container having a tiltable threaded nozzle and valve comprising a tubular barrel having its lower end adapted to seat against the top of said container around said nozzle, an internally threaded boss on the lower end of the barrel adapted to be threadedly engaged with the thread on said nozzle, a discharge tube adapted to be secured to the end of said nozzle and extending through said barrel in spaced relation to the interior of the barrel, a closure cap on the outer end of said tube and extending over the outer end of said barrel, the outer end of said tube having a laterally opening hole formed therethrough, a flexible valve secured to the outer end of said tube and covering said hole, a flexible O-ring on the underside of said cap received in the end of said barrel, an annular piston mounted between said barrel and said tube and sealingly engaged with the walls thereof below said hole, and a helical spring disposed around said tube and engaged at its ends between the underside of said piston and said barrel.

4. A dispensing applicator and closure on a pressurized container having a tiltable threaded nozzle and valve comprising a tubular barrel having its lower end adapted to seat against the top of said container around said nozzle, an internal thread on the lower end of the barrel and threadedly engaged with the thread on said nozzle, a discharge tube on the end of said nozzle and extending through said barrel in spaced relation to the interior of the barrel, a closure cap on the outer end of said tube and extending over the outer end of said barrel, the outer end of said tube having a laterally opening hole formed therethrough, a check valve on the outer end of said tube and covering said hole, an annular valve on the underside of said cap engageable in the end of said barrel when the barrel is screwed upwardly from said container, an annular piston mounted between said barrel and said tube and sealingly engaged with the walls thereof below said

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hole, and a spring disposed between the underside of said piston and said barrel, said barrel having visible graduation indicia disposed along its length for measuring the depression of said piston in said barrel.

5. A dispensing applicator and closure on a pressurized container having a tiltable threaded nozzle and valve comprising a tubular barrel having its lower end adapted to seat against the top of said container around said nozzle, an internal thread on the lower end of the barrel and threadedly engaged with the thread on said nozzle, a discharge tube on the end of said nozzle and extending through said barrel in spaced relation to the interior of the barrel, a closure cap on the outer end of said tube, the outer end of said tube having a laterally opening hole formed therethrough, a check valve on the outer end of said tube and covering said hole, the side of said cap having an annular valve element engageable in the end of said barrel when the barrel is screwed upwardly from said container, an annular piston mounted between said barrel and said tube and sealingly engaged with the walls thereof below said hole, and a spring disposed between the underside of said piston and said barrel.

6. A dispensing applicator on a pressurized container having a tiltable nozzle and valve comprising a tubular barrel having its lower end adapted to seat against the top of said container around said nozzle, means rigidly connecting the lower end of the barrel and said nozzle, means for moving said barrel axially on said nozzle away from said container, a discharge tube on said nozzle and extending through said barrel in spaced relation to the interior of the barrel, a closure on the outer end of said tube and forming a closure for the outer end of said barrel, the outer end of said tube having a hole formed therethrough and opening into said barrel, a check valve covering the outer side of said hole, said closure and the end of said barrel coacting to form a dispensing opening that is closed when said barrel is moved outwardly and opened when said barrel is moved inwardly on said nozzle, an annular piston slidably mounted between said barrel and said tube and sealingly engaged with the walls thereof below said hole, and a spring engaged with said piston and biasing the piston outwardly from the bottom of said barrel.

7. In combination with a pressurized container having a tiltable nozzle and valve projecting therefrom with an annular external seat surrounding the nozzle, an elongated tubular extension on the outer end of said nozzle and axially fixed with respect thereto, a closure wall on the outer end of said tube and projecting radially therebeyond, the outer end of said tube having a hole formed laterally therethrough, a flexible check valve on said tube seating over the outer end of said hole, a barrel positioned around said extension in radially spaced relation with respect thereto, means connecting the bottom of said barrel to the exterior of said nozzle in laterally and angularly fixed relation, said means and said barrel being movable axially with respect to said nozzle extension, an annular plunger slidably positioned between said barrel and said nozzle extension, and a spring bearing at its ends between the underside of said plunger and said means at the bottom of said barrel, the bottom of said barrel being sized to engage the annular seat around said nozzle.

8. In combination with a pressurized container having a tiltable nozzle and valve projecting therefrom, an elongated tubular extension on the outer end of said nozzle and axially fixed with respect thereto, a closure wall on the outer end of said tube and projecting radially therebeyond, the outer end of said tube having a hole formed laterally therethrough, a flexible check valve on said tube seating over the outer end of said hole, a barrel positioned around said extension in radially spaced relation with respect thereto, the projecting portion of said closure wall coacting with the outer end of said barrel as a closure means connecting the bottom of said barrel

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to the exterior of said nozzle in laterally and angularly fixed relation, said means and said barrel being movable axially with respect to said nozzle extension to open and close the outer end of the barrel, an annular plunger slidably positioned between said barrel and said nozzle extension, and a spring bearing at its ends between the underside of said plunger and said barrel.

9. In combination with a pressurized container having a tiltable nozzle and valve projecting therefrom, an elongated tubular extension on the outer end of said nozzle and axially fixed with respect thereto, a closure wall on the outer end of said tube and projecting radially therebeyond, the outer end of said tube having a hole formed therethrough and below said closure wall, a check valve on said tube seating over the outer end of said hole, a barrel positioned around said extension in radially spaced relation with respect thereto, the projecting portion of said closure wall coacting with the outer end of the barrel as a closure, means laterally and relatively non-tiltably connecting the bottom of said barrel to said nozzle, said barrel being movable axially with respect to said nozzle to seat alternatively with its bottom against said container and with its outer end in coacting relation to said projecting portion of said closure, and an annular wall sealingly positioned between said barrel and said nozzle extension below the outer ends thereof.

10. In combination with a pressurized container having a tiltable nozzle and valve projecting therefrom, an elongated tubular extension on the outer end of said nozzle and axially fixed with respect thereto, a closure wall on the outer end of said tube, an annular projection on said tube extending radially around the outer end of said tube, the outer end of said tube having a hole formed therethrough and below said projection, a check valve seating over the outer end of said hole, a barrel positioned around said extension in radially spaced relation with respect thereto, an annular seal on the projection on said tube receivable in the outer end of said barrel, means laterally and relatively non-tiltably connecting the bottom of said barrel to said nozzle, said barrel being movable axially with respect to said nozzle to seat alternatively with its bottom against said container and with said projection and seal in the outer end of the barrel, and an annular wall sealingly positioned between said barrel and said nozzle extension below the outer ends thereof.

11. In combination with a pressurized container having a nozzle and valve projecting therefrom, said valve being openable by movement of the nozzle relative to the container, an elongated tubular extension on the outer end of said nozzle and axially fixed with respect thereto, a closure wall on the outer end of said tube and projecting radially therebeyond, spring means biasing said nozzle outwardly from said container and biasing said valve to closed position, the outer end of said tube having a hole formed therethrough below said wall, a check valve seating over the outer end of said hole, a barrel positioned around said extension in radially spaced relation with respect thereto, the projecting portion of said closure wall coacting as a closure with the top of said barrel, means centering the bottom of said barrel around the exterior of said nozzle, said barrel being movable axially with respect to said nozzle to seat alternatively against said container and said closure wall, an annular wall sealingly positioned between said barrel and said nozzle extension, and stop means on said tube supporting said annular wall below the tops of said tube and said barrel.

12. In combination with a pressurized container having a nozzle and valve projecting therefrom, said valve being openable by movement of the nozzle relative to the container, an elongated tubular extension on the outer end of said nozzle and axially fixed with respect thereto, a closure wall on the outer end of said tube and projecting radially therebeyond, spring means biasing said nozzle outwardly from said container and biasing said valve to closed position, the outer end of said tube having a hole

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formed therethrough below said wall, a barrel positioned around said extension in radially spaced relation with respect thereto, the projecting portion of said closure wall coacting as a closure with the top of said barrel, means centering the bottom of said barrel around the exterior of said nozzle, said barrel being movable axially with respect to said nozzle to seat alternatively against said container and said closure wall, an annular wall sealingly positioned between said barrel and said nozzle extension, and stop means on said tube supporting said annular wall below the tops of said tube and said barrel.

13. In combination with a pressurized container having a nozzle and valve projecting therefrom, said valve being openable by movement of the nozzle relative to the container, an elongated tubular extension on the outer end of said nozzle and axially fixed with respect thereto, a closure wall on the outer end of said tube and projecting radially therebeyond, means biasing said nozzle and said valve to closed position, the outer end of said tube

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having a hole formed therethrough below said wall, a barrel positioned around said extension in radially spaced relation with respect thereto, the projecting portion of said closure coacting with the top of said barrel as a closure, said barrel being movable axially with respect to said nozzle to seat alternatively with its bottom against said container and with its outer end in closing relation with said closure wall, an annular plunger slidably positioned between said barrel and said nozzle extension, and spring means biasing said plunger outwardly in said barrel.

References Cited in the file of this patent

UNITED STATES PATENTS

997,939	Wahl	July 11, 1911
1,746,727	Dunlap	Feb. 11, 1930
2,710,006	Barnhart	June 7, 1955
2,772,814	Meyers	Dec. 4, 1956