

Sept. 10, 1968

G. SCHWARTZMAN

3,400,997

SQUEEZE CONTAINER APPLICATOR

Filed March 26, 1965

2 Sheets-Sheet 1

FIG. 1

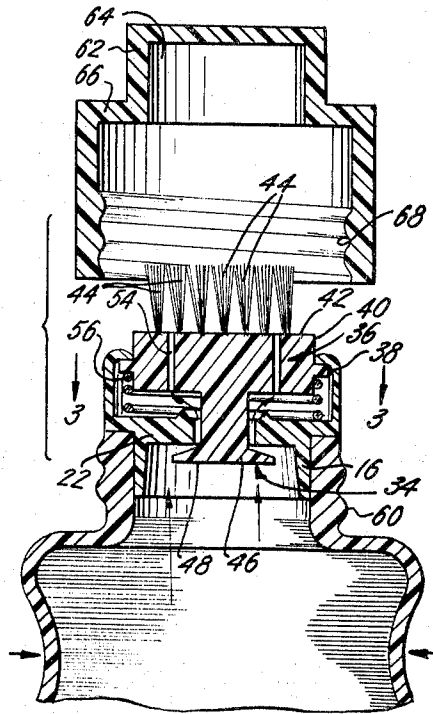
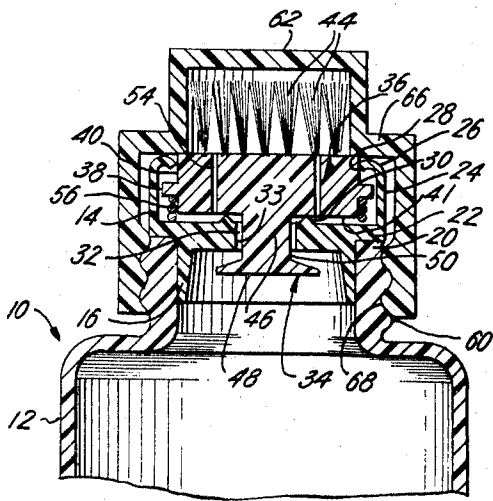


FIG. 2

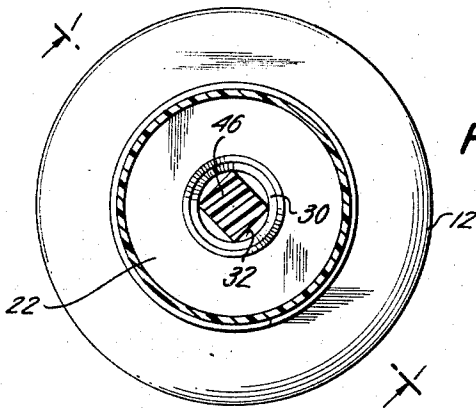


FIG. 3

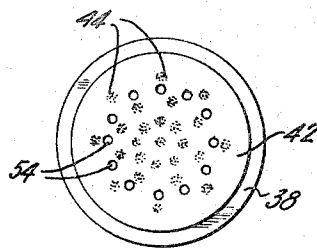


FIG. 4

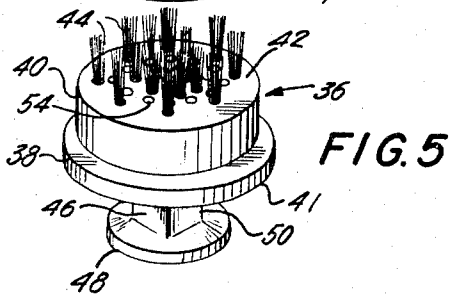


FIG. 5

INVENTOR
GILBERT SCHWARTZMAN

BY

Brustein & Goldfarb
ATTORNEYS

Sept. 10, 1968

G. SCHWARTZMAN

3,400,997

SQUEEZE CONTAINER APPLICATOR

Filed March 26, 1965

2 Sheets-Sheet 2

FIG. 6

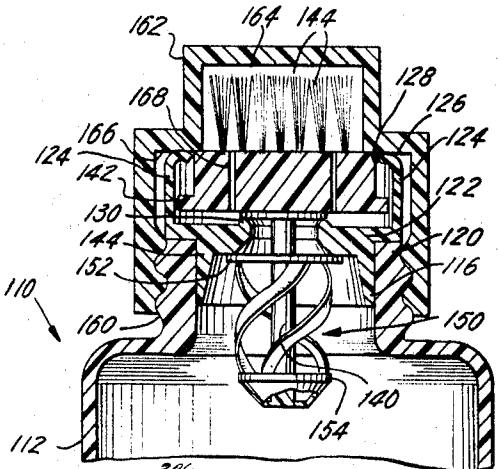


FIG. 7

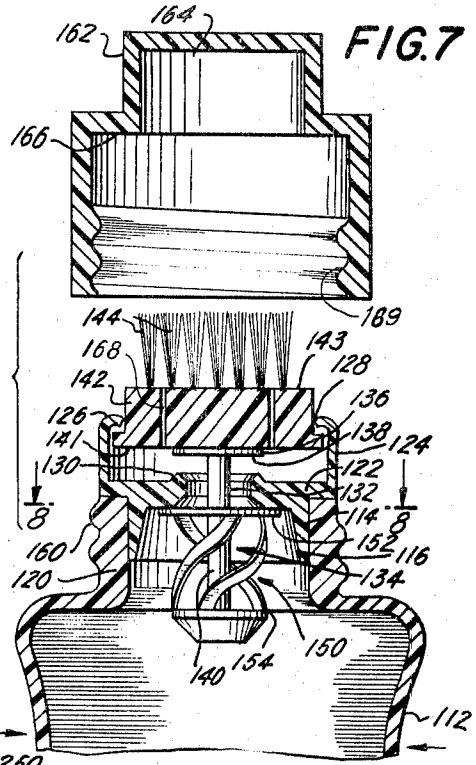


FIG. 11

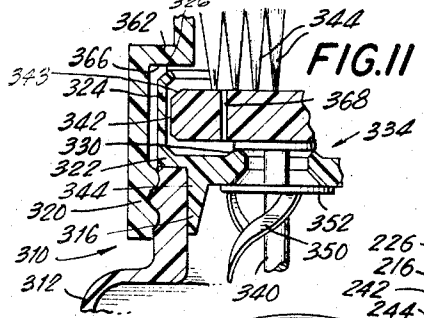


FIG. 10

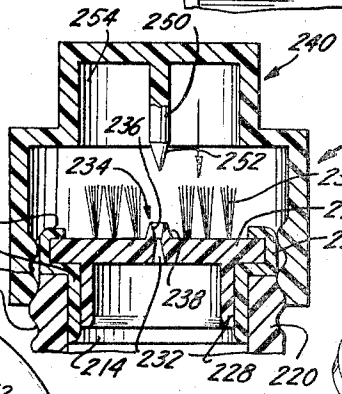


FIG. 9

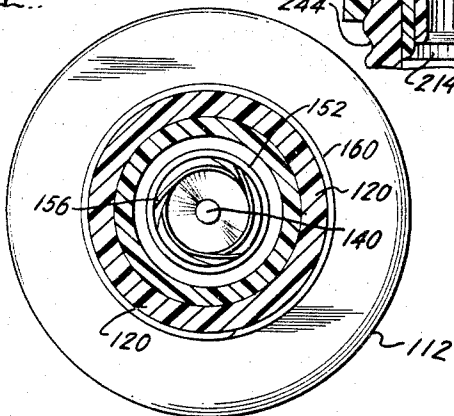
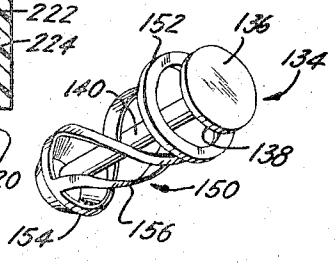


FIG. 8

INVENTOR
 GILBERT SCHWARTZMAN
 BY
Brisson & Alderson
 ATTORNEYS

1

3,400,997
SQUEEZE CONTAINER APPLICATOR
 Gilbert Schwartzman, 20 Wilmot Circle,
 Scarsdale, N.Y. 10583
 Filed Mar. 26, 1965, Ser. No. 443,021
 8 Claims. (Cl. 401—186)

ABSTRACT OF THE DISCLOSURE

An applicator comprising a squeezable container having a cylindrical body secured thereto. The body includes a transverse web having an opening with a raised peripheral rib about the opening and forming a valve seat. A valve member is movable with respect to the valve seat and controls fluid flow through the opening. The valve member includes an applicator head above the web engageable with the rib to control fluid flow from the container to the head. A helical coil spring disposed entirely below the web is provided for urging the head away from the rib. A cap is provided which is threadably engageable with the container and has a shoulder engageable with the head for forcing the head against the rib when the cap is closed.

This invention relates to an applicator adapted for use in conjunction with squeeze type containers in applying metered amounts of medications, cosmetics, polish, paints, ink, and other fluids of various viscosity from said squeeze type containers onto an appropriate surface.

An object of this invention resides in the provision of means for facilitating the application of metered amounts of fluid from a squeeze type container to the applicator head for application to appropriate surfaces, and for providing means for maintaining the applicator within a substantially dome-like cover which effectuates a positive seal preventing fluid loss when the cover is affixed to the body of the applicator.

Another object of this invention resides in the provision of novel valve means which is adapted to be manually actuated and serves to meter the amount of fluid to be dispensed from the applicator for delivery of fluid onto the appropriate surface, independent of the contour or shape of the surface so that the fluid may be conveniently dispensed onto the applicator head, which is provided with bristles, in a manner facilitating the application of fluid.

One of the features of this invention resides in the novel movable applicator head arranged to co-act in conjunction with the various parts of a squeezable or deformable applicator, yet which applicator head is rotatable and longitudinally movably mounted.

One of the disadvantages of prior art daubers and applicators is that the applicator head, which has previously been made of a porous resilient material, such as foam rubber, becomes deformed and often loses the desired shape thereof when it is saturated with fluid. In order to maintain the desired shape, various inserts of sponge or foam material, reservoirs, or the like have been employed, but likewise these materials often become deformed and become saturated and clogged with fluid therein and deteriorate as a result of being constantly saturated with fluid. Further, it is very difficult to control the amount of fluid which will be dispensed from the squeezable or deformable applicator in view of the fact that the applicator surface has been continually saturated with fluid. By the use of a manually actuatable valve mechanism, the user can control the flow of fluid since no reservoir need be provided, and no sponge-like material is employed, thereby making it possible to provide an accurate disbursement of fluid from the applicator.

A further object of the invention resides in the pro-

2

vision of an applicator having formed in one piece a body having a valve housing, a projecting portion for fitting in the neck of a squeezable fluid container, an applicator head and a sealing cap or cover which is so arranged as to positively seal the applicator assembly when not in use, which applicator may be used for dispensing medications, cosmetics, shoe polish, ink or paints, in metered amounts, yet which is very inexpensive to manufacture since it requires only one movable part therein.

Further, it is an object of this invention to provide a fluid applicator which will be long lasting and not subject to deterioration wherein numerous applicator heads such as brushes, combs, daubers, felt nibs or the like may be employed with the identical construction of the valve assembly and applicator body.

Further, it is an object of the present invention to provide an applicator having an applicator head and a closure cap, which, when the cap is in a closed position, will form a vapor lock within the cover to prevent seepage and hardening or evaporation of the fluid within the applicator or from within the applicator head.

Still another object of this invention is to provide a manually operable spring actuated valve means for use in an applicator which may be used with a plurality of different applicator surfaces such as brushes and daubers for dispensing metered amounts of fluid without any modification of the valve assembly.

Still further objects, features and advantages of this invention reside in the provision of squeezable applicators which are not only inexpensive to manufacture and simple to use, but which yield the unexpected advantage of permitting the metering of fluid of various viscosities in a very even and easily controllable manner, thereby preventing waste of fluid contained therein.

These, together with the various ancillary objects and features of this invention, which will become apparent as the following description proceeds are attained by this applicator, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

FIG. 1 is a longitudinal sectional view of an applicator constructed in accordance with the concepts of the present invention as installed in conjunction with the squeezable container forming a part of the applicator with the removable cap attached to the applicator;

FIG. 2 is an exploded longitudinal sectional detail view of the applicator illustrating the valve member in an open position, with the removable cap spaced above the applicator;

FIG. 3 is a transverse sectional detail view illustrating the valve member, taken along the plane of line 3—3 in FIG. 2;

FIG. 4 is a top plan view of the applicator head with the cap removed;

FIG. 5 is a perspective view of the valve member and applicator head in accordance with the concepts of the instant invention;

FIG. 6 is a longitudinal sectional view of a modified form of applicator constructed in accordance with the present invention as installed in conjunction with a squeezable container forming a part of the applicator;

FIG. 7 is an exploded longitudinal sectional view of the modified applicator illustrating the valve member in an open position, with the removable cap spaced above the applicator;

FIG. 8 is a transverse sectional view of the modified form of the applicator illustrating the valve member as taken along the plane of line 8—8 in FIG. 7;

FIG. 9 is a perspective view of the valve member of the modified applicator;

FIG. 10 is a longitudinal sectional view of a second

3

modification of the applicator constructed in accordance with the present invention; and

FIG. 11 is a sectional detail view of another modified form of the invention.

With continuing reference to the accompanying drawings, wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 is used to generally designate the applicator formed of nylon, rubber or polyethylene comprising the present invention. This applicator includes a squeezable container 12, in which a body 14 is fitted. The body 14 includes a projecting portion 16 of generally cylindrical shape, having a tapered lower end for convenience of inserting the projecting portion 16 in the neck 20 of the squeezable container 12. Further, the body 14 includes a web 22 which is integrally molded with the projecting portion 16. Extending upwardly from the web 22 is a flange or side wall 24 which terminates in an inwardly extending swaged upper lip 26.

The web 22 is provided with a raised interior circular rib 30 which rib 30 is located inwardly of the interior edge 28 of the lip 26. Spaced inwardly of the raised rib 30 is a central opening 32 which extends through the web 22. A valve member 34 is provided with an enlarged head portion 36 which has a peripherally extending shoulder 38 extending outwardly from the lower surface 41 of the head portion 36. Extending upwardly from the lower surface of the head portion 36, interior of the peripheral shoulder 38, is a head side wall 40 which terminates in an upper surface 42. A plurality of bristles or the like 44 are appended thereto extending outwardly from the upper surface 42 of the head portion 36.

Extending downwardly from and integrally formed with the head portion 36 is a neck portion 46 which extends through the central opening 32 and has integrally formed thereon an enlarged based portion 48 extending outwardly therefrom, which enlarged base portion 48 is of wider cross section than the central opening 32 at at least one point. The enlarged base portion 48 may be force fitted through the central opening 32 or may be affixed to the neck portion 46 after the insertion through the central opening 32.

The neck portion 46 of the valve member 34 is of a smaller cross section than the opening 32 in the web 22. The neck portion may be of any desired configuration such as circular, triangular, rectangular or any other shape. The side wall 50 of the neck portion 46 at no time will completely abut the side wall 33 of the central opening 32 so as to prevent the passage of fluid through the opening 32 in the body 14.

A plurality of fluid passages 54 are formed, which extend through the enlarged head portion 36. The fluid passages 54 extend from the lower surface 41 of the head 36 to the upper surface 42 and are located between the bristles 44 at a point outwardly of the rib 30 of web 22.

A coiled spring 56 is inserted into the body portion 14 which coiled spring lies against the lower edge of shoulder 38 of the head portion 36 and the web 22 of the body 14.

The squeezable container 12 is provided with screw threads 60 along the neck portion 20 thereof. A cap 62 is provided with a bristle-receiving area 64 therein and an inwardly and downwardly extending shoulder portion 66 which extends across the interior of the cap 62. The cap is provided with screw threads 68 which are complementary to and adapted to cooperate with the screw threads 60 on the squeezable container 12.

In use, with the body 14 inserted into the neck 20 of the squeezable container 12 with the cap 62 removed, the applicator may be used in the following manner:

The entire applicator unit would be inverted so that the body 14 and the bristles 44 are facing downward toward a receiving surface. In this position, with the cap 62 removed from the squeezable container 12, the coiled

4

spring exerts a force on the valve member 34 so as to urge the lower surface 41 of the valve member 34 out of engagement with the upwardly extending circular rib 30 of web 22 in such a manner that the upper surface of the shoulder 38 will abut the swaged lip 26. In this position, fluid can be squeezed through the central opening 32 in web 22. Since the fluid passages 54 in the head 36 are located outwardly of the circular rib 30, the head 36 must be away from the web 22 for fluid to flow.

In order to dispense the desired amount of fluid from the squeezable container 12, the user merely squeezes the container inwardly as is seen in FIG. 2. When the container is squeezed in this manner, the fluid within the container, under pressure, forces past the circular rib 30.

In order to effectuate a positive seal when the applicator is not in use and to prevent the undesirable leakage or evaporation of fluid from the applicator, the cap 62 is placed over the neck 20 of the squeezable container 12 and is screwed on to the neck 20. As the cap is screwed down on the neck, the cap shoulder 66 engages the outer edge of the upper surface 42 of the applicator head 36 and as the cap 62 is screwed down, the shoulder 66 exerts a force on the outer edge of the upper surface 42 of the applicator head 36 thereby compressing the spring 56 and forcing the base 41 of the applicator head 36 against the circular rib 30 of web 22 so as to positively seal the applicator and prevent the loss of any fluid.

In the alternate form of the invention illustrated in FIGS. 6 through 9 of the drawings, like reference numerals of the 100 series will be used to designate similar parts throughout the various views, reference numeral 110 is used to designate generally the applicator. The applicator includes a squeezable container 112 into which a body 114 is fitted. The body 114 includes a projecting portion 116 of generally cylindrical shape, having a tapered lower end for convenience of inserting the projecting portion 116 into the neck 120 of the squeezable container 112. The body 114 includes a web 122 which is integrally molded with the projecting portion 116. Extending upwardly from the web 122 is a flange or side wall 124 which terminates in an inwardly extending swaged upper lip 126. The interior edge 128 of the swaged lip 126 acts as a retaining ring for the applicator head, the purpose of which will become apparent as the specification continues.

The web 122 is provided with a raised interior circular rib 130 which rib is located inwardly of the interior edge 128 of the swaged lip 126. A valve member generally designated as 134 is inserted through the central opening 132 in the web 122. The valve member has an enlarged head portion 136. Extending downwardly from the lower surface 138 and formed integrally therewith is an elongated narrow neck section 140. The elongated narrow neck section of the valve member is placed within and through the central opening 132 in the web 122.

A helical spring assembly, generally designated as 150 having an enlarged upper ring collar 152 and a closed base section 154 and a plurality of deformable spring bands 156. The entire helical spring assembly 150 is slipped upwardly toward the web 122 so that the upper ring collar 152 will abut the lower portion of the web 122 and is secured thereto. The lower end 156 of the neck section 140 is secured to the closed base section 154 by glueing, swaging or the like. In the alternative, the helical spring assembly 150 and the valve member 134 may be formed as a single unit.

The head portion 136 of the valve member 134 after insertion through the web 122 bears against the lower portion 141 of the head portion 142, which causes the head portion to bear against the inwardly extending swaged upper lip 126 of the body 114.

The squeezable container 112 is provided with screw threads 160 along the neck portion 120 thereof. A cap 162 is provided with a bristle-receiving area 164, and further has an inwardly and downwardly extending shoulder portion 166 which extends across the interior of the cap

162. The cap is provided with screw threads 169 which are complementary to and adapted to cooperate with the screw threads 160 on the squeezable container 112.

In use, with the body 114 inserted in the neck 120 of the squeezable container 112 with the cap 162 removed, the applicator may be used in the following manner:

The entire applicator unit would be inverted so that the body 114 and the bristles 144 are facing downward toward a receiving surface. In this position, with the cap 162 removed from the squeezable container 112, the helical spring 150 exerts a force against the lower surface 141 of the head 142 so as to urge the lower surface 141 out of engagement with the upwardly extending circular rib 130 of the web 122 in such a manner that the upper surface of the shoulder 138 will abut the swaged lip 126. In this position, fluid can be squeezed through the central opening 132 in web 122. Since the fluid passages or bores 168 in the head 142 are located diametrically outwardly of the circular rib 130, the head must be raised off of the rib 130 for fluid to flow out of the container 112.

In order to dispense the desired amount of fluid from the squeezable container 112, the user merely squeezes the container 112 inwardly as is seen in FIG. 7.

In order to effectuate a positive seal when the applicator is not in use and to prevent the undesirable leakage or evaporation of fluid from the applicator, the cap 162 is placed over the neck 120 of the squeezable container 112 and is screwed onto the neck 120. As the cap is screwed onto the neck 120, the cap shoulder 166 engages the outer edge 143 of the upper surface of the head 142 and as the cap 162 is screwed down, the shoulder 166 by abutting the head 142 exerts a force on the head thereby compressing the helical spring 150 and forcing the lower edge 141 of the head 142 against the circular rib 130 of web 122 so as to positively seal the applicator and prevent any fluid loss.

In the alternate form of the invention illustrated in FIG. 10 of the drawings, like reference numerals of the 200 series will be used to designate the parts of the invention wherein reference numeral 210 designates the applicator assembly. The assembly includes a container (not shown) having a neck 220. The body 214 includes a downwardly extending portion 216 which is to be inserted into the neck 220 of the squeezable container. Extending upwardly from the body 214 is a flange or side wall 224 which terminates in an inwardly extending swaged upper lip 226.

A web portion 222 having downwardly extending legs 228 is inserted into the body section 214 in such a manner that the downwardly extending legs 228 of the web 222 abut the downwardly extending portion 216 of the body 214. The web 222 is provided with bristles 230 and has a central opening 232 therein. A circular rib 234 having tapered interior and exterior walls 236, 238 respectively extends upwardly of the web 222 and serves as a plug guide.

A cap 240 is provided with threads 242 which are complementary to and adapted to cooperate with the screw threads 244 on the container neck 220. Extending downwardly from the central portion of the cap is a plug 250 which has a tapered or pointed lower end 252.

When the cap 240 is screwed onto the neck 220 of the container, the lower pointed end 252 of the plug 250 moves downward and functions as needle valve means until the lower pointed end 252 fits snugly into the central opening 232 within the interior walls 236 thereby positively preventing any leakage from the container.

When the cap 240 is removed from the neck 220 in order to use the applicator, the applicator is inverted and squeezed until such time as sufficient fluid has been dispensed.

Referring now to the embodiment of the invention illustrated in FIG. 11, reference numeral 310 is used to generally designate the applicator which includes a squeezable container 112 in the neck 320 of which projecting

portion 316 is fitted. The web 322 is integrally molded with the projecting portion 316 and extending upwardly from the web 322 is a side wall 324 which terminates in an upper inwardly bevelled lip 326.

The web 322 is provided with a circular rib 330. A valve member generally designated at 334 is provided and is provided with a neck section 340. A helical spring assembly 350 having an enlarged upper ring collar 352 and a closed base section is used to control the valve assembly much in the same manner as the embodiment of FIG. 6.

Mounted on the neck section 340 is an enlarged head section 342 which has a bevelled upper edge 343 and may have bristles 344 or the like thereon, and bores 368 there-through. A cap 362 provided with a shoulder 366 is provided.

This embodiment of the invention functions in a manner similar to the embodiment of FIG. 6. The lip 326 engages the bevelled edge 343 which functions as a stop.

A latitude of modification, substitution and change is intended in the foregoing disclosure, and in some instances some features of the invention will be employed without a corresponding use of other features. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope of the present invention.

I claim:

1. An applicator comprising a cylindrical body including, a valve seat provided about said opening, a transverse web having an opening therein, a valve member rotatably disposed in said body and extending through said opening and movable with respect to said valve seat to control fluid flow through said opening, said body having retaining means at its upper edge, said valve member including an applicator head above said web, spring means for urging said head away from said web, stop means on said head for engaging said lip to limit outward movement of said head, and a cap threadedly engageable with said container, said cap having a shoulder engageable with said head for forcing said head toward said web when said cap is in a threadedly closed position.

2. An applicator comprising a squeezable container; a cylindrical body secured to said container, said body including a transverse web, said web having an opening therein, a valve seat provided about said opening, a valve member extending through said opening and movable with respect to said valve seat to control fluid flow through said opening said body having an inwardly extending lip at its upper edge, said valve member including an applicator head above said web, spring means for urging said head away from said web, stop means on said head for engaging said lip to limit outward movement of said head, and a cap threadedly engageable with said container, said cap having a shoulder engageable with said head for forcing said head toward said web when said cap is in a threadedly closed position.

3. An applicator according to claim 2, wherein said spring means includes a coil spring disposed between said stop means and said lip.

4. An applicator comprising a squeezable container, a cylindrical body secured to said container, said body including a transverse web having an opening therein, a raised peripheral rib on said web and extending about said opening and forming a valve seat, a valve member extending through said opening and movable with respect to said valve seat to control fluid flow through said opening, said body having an inwardly extending lip at its upper edge, said valve member including an applicator head above said web, said head being engageable with said rib to control fluid flow from said container to said head, spring means for urging said head away from said rib, stop means on said head for engaging said lip to limit outward movement of said head, and a cap threadedly engageable with said container, said cap having a shoulder engageable with said head for

7

forcing said head against said rib when said cap is in a threadedly closed position.

5 5. An applicator comprising a cylindrical body, including a transverse web having an opening therein, a raised peripheral rib on said web and extending about said opening and forming a valve seat, a valve member rotatably disposed in said body and extending through said opening and movable with respect to said valve seat to control fluid flow through said opening, said body having an inwardly extending lip at its upper edge, said valve member including an applicator head above said web, said head being engageable with said rib to control fluid flow from said container to said head, spring means for urging said head away from said rib, stop means on said head for engaging said lip to limit outward movement of said head, and a cap threadedly engageable with said container, said cap having a shoulder engageable with said head for forcing said head against said rib when said cap is in a threadedly closed position, said valve head having a plurality of bores extending therethrough outwardly spaced from said rib.

10 6. An applicator according to claim 5, including bristles in said valve head forming fluid application means.

15 7. An applicator according to claim 5, wherein said opening is circular, said valve member having a neck portion disposed in said opening, said neck portion being square in cross sectional shape.

20 8. An applicator comprising a squeezable container, a cylindrical body secured to said container, said body including a transverse web, said web having an opening

8

therein, a raised peripheral rib on said web and extending about said opening and forming a valve seat, a valve member extending through said opening and movable with respect to said valve seat to control fluid flow through said opening, said body having an inwardly extending lip at its upper edge, said valve member including an applicator head above said web, said head being engageable with said rib to control fluid flow from said container to said head, spring means for urging said head away from said rib, stop means on said head for engaging said lip to limit outward movement of said head, and a cap threadedly engageable with said container, said cap having a shoulder engageable with said head for forcing said head against said rib when said cap is in a threadedly closed position, said spring means including a helical coil disposed entirely below said web, said helical coil having a closed base portion and an enlarged upper ring collar, said valve member having an elongated neck section, said neck section being secured to said base portion of said helical spring and to said head, said neck section extending through said ring collar and said web, said ring collar engaging said web so that said helical coil normally urges said head away from said web.

References Cited

UNITED STATES PATENTS

3,331,094 7/1967 Schwartzman ----- 401-269

30 EDWARD L. ROBERTS, *Primary Examiner.*