

Schwartzman

[15] **3,661,468**

[45] **May 9, 1972**

[54] **FLUID APPLICATOR HAVING WINE-
CUP SHAPED VALVE ASSEMBLY**

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[72] Inventor: **Gilbert Schwartzman**, 20 Wilmont Circle,
Scarsdale, N.Y. 10583

Primary Examiner—Lawrence Charles
Attorney—Kenneth S. Goldfarb

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[57] **ABSTRACT**

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[51] Int. Cl. A46b 11/02

[58] **Field of Search** 401/206, 273, 278-280;
251/625.28, 525

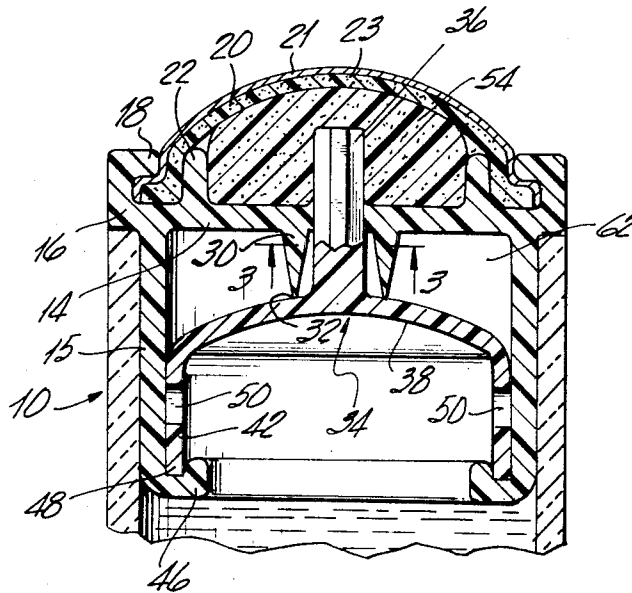
A fluid applicator having a wine-cup shaped valve assembly. The valve assembly provides a two-point fluid control arrangement with the cup being disengaged from its valve seat to permit fluid flow through the opening onto a compressed body and thence onto a cover. Flexure of the cup will disengage the cup from engagement with a projecting portion so as to permit fluid flow through suitable apertures into a reservoir space.

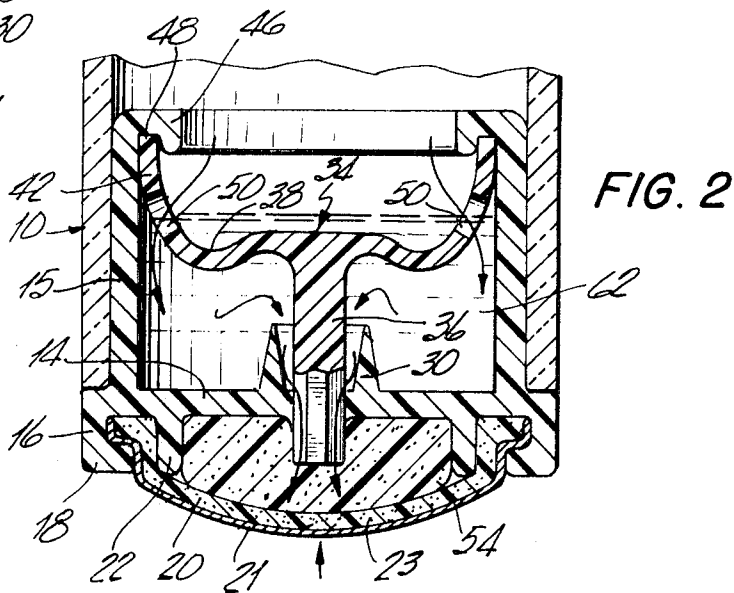
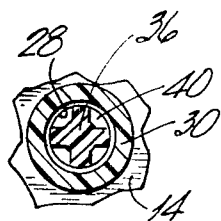
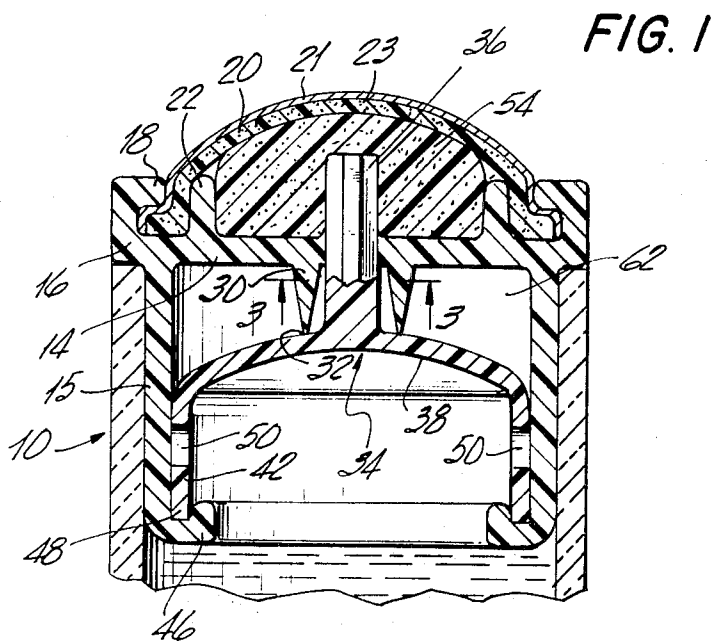
[56] **References Cited**

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4 Claims, 3 Drawing Figures





INVENTOR.
 GILBERT SCHWARTZMAN
 BY
 Kenneth S. Goldfarb
 ATTORNEY

FLUID APPLICATOR HAVING WINE-CUP SHAPED VALVE ASSEMBLY

This invention relates to a fluid applicator or dauber especially adapted for use in applying shoe polish, cosmetics, medications or the like, and is of the type disclosed in U.S. Pat. No. 3,203,026 of Gilbert Schwartzman, for "Fluid Applicator," issued Aug. 31, 1965.

In U.S. Pat. No. 3,203,026, there is disclosed a fluid applicator having a valve assembly provided with helical springs for urging the valve head into a valve closed position. The present invention relates to a dauber of this type which employs a wine-cup shaped valve assembly where the flow of fluid is controlled at two separate locations, thereby assuring accurate and positive metering and discharge of the fluid.

Another object of the invention resides in the provision of an applicator having a compressed body which not only transfers fluid from the container to the cover, but which will hold the wine-cup shaped valve assembly slightly under stress, thereby assuring better control of operation and against leakage.

Still further objects and features of the present invention reside in the provision of a fluid applicator that is simple in construction, capable of being manufactured out of a minimum number of parts and assembled by mass production methods so as to be very inexpensive to manufacture, thereby permitting wide use and distribution.

These, together with the various ancillary objects and features of the present invention, which will become apparent as the following description proceeds, are attained by this fluid applicator having wine-cup shaped valve assembly, a preferred embodiment of which is illustrated in the accompanying drawing, by way of example only, wherein:

FIG. 1 is a vertical sectional view of a fluid applicator constructed in accordance with the present invention, and shown with the valve assembly in a closed position;

FIG. 2 is a view similar to FIG. 1, but showing the valve assembly in an open position; and,

FIG. 3 is a transverse sectional detail view, taken along the plane of line 3-3 in FIG. 1.

With continuing reference to the accompanying drawing, wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 is used to generally designate the fluid applicator or dauber comprising the present invention. This applicator is adapted to be disposed in a container, not shown, with the applicator 10 fitting into the neck of the container. The applicator 10 includes a retaining ring 14 having a flange 16 provided with a swaged lip 18 for retaining a disc 20 in position between the lip 18 and a rib 22 of circular configuration. The disc 20 is constructed of two layers, the upper layer 21 of which is formed of a nylon knitted brushed fabric and has laminated or bonded thereto a lower layer 23 of coarse polyurethane foam. The retaining ring 14 has an opening 28 therein and depending from the retaining ring is a rib 30 forming at its edge 32 a valve seat. The rib 30 surrounds the opening 28.

A valve assembly, generally indicated at 34, is provided and is of generally inverted wine-cup shape including a stem-like valve head 36 and a cup 38 integral with the valve head. The valve head 36 is of a generally cruciform configuration as can be best seen in FIG. 3, so that fluid can readily flow through the passageways 40 between the valve head 36 and the open-

ing 28. The lower side wall 42 of the cup 38 bears against the projecting portion 15 of the retaining ring 14 and the lower edge 46 of the projecting portion 15 is swaged to overlie, grasp, and embrace and hold securely the lowermost edge 48 of the cup 38. The side wall 42 is provided with apertures 50 therethrough and because of the grasping of the lower edge 48 by the swaged portion 46, the side wall 42 is normally held tightly flush against the projecting portion 15 so that no fluid can pass through the aperture 52, as can be best seen in FIG. 1. Further, with the valve stem 32 bearing against the cup 38, no fluid can pass into the opening 28 and thence through the passageways 40.

A body 54 is held slight under compression when the disc 20 forming the cover is held in its swaged position overlying the body 54 by the swaged flange 18. This slight compression of the body 54 is enough to place stress on the valve assembly 34, and while it will rigidify and make more positive the contact between the side wall 42 and the projecting portion 15, it will not disengage the cup 38 from the valve stem 32. However, when the cover is depressed, further compressing the body 54, the valve head will be pressed downwardly disengaging the cup 38 from the valve stem 32 and causing a flexure of the cup 38 so as to pull the side wall 42 out of contact with the projecting portion 15 and thus permit fluid flow in the direction of the arrows as shown in FIG. 2.

It is to be noted that when fluid flows through the apertures 50, it will pass into a reservoir space 62 and thence through the space between the valve stem 32 and the cup 38 and through the passageways 40 onto the compressed body 54, which serves as a fluid reservoir from which the fluid can pass to the cover disc 20.

A latitude of modification, substitution and change is intended in the foregoing disclosure, and in some instances, some features of the present invention may be employed without a corresponding use of other features.

I claim:

1. A fluid applicator comprising a retainer ring having a projecting portion, a cover secured to said ring, said ring having an opening therein, a valve seat surrounding said opening, a valve assembly of inverted wine-cup shape and including a valve head and a flexible resilient cup engageable with said valve seat to control flow through said opening, the lowermost end of said cup being secured to said projecting portion, said cup being provided with at least one aperture through the lower side wall thereof, said lower side wall normally engaging said projecting portion to prevent fluid flow through said aperture, and a resilient porous body disposed between said cover and said ring, said body being deformable so that said cover may be depressed urging a portion of said body toward said opening to depress said cup away from said valve seat and to spring said lower side wall away from said projecting portion to permit fluid flow through said aperture and said opening, said cover holding said body under slight compression to maintain said lower side wall against said projecting portion.

2. An applicator according to claim 1, wherein the lowermost end of said projecting portion swagingly grasps said cup.

3. An applicator according to claim 1, wherein said valve head is of a cruciform shape.

4. An applicator according to claim 1, wherein said valve head is of a cruciform shape, said projecting portion being swaged over said cup.

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