

Aug. 31, 1965

G. SCHWARTZMAN

3,203,026

FLUID APPLICATOR

Filed April 5, 1963

2 Sheets-Sheet 1

FIG. 1

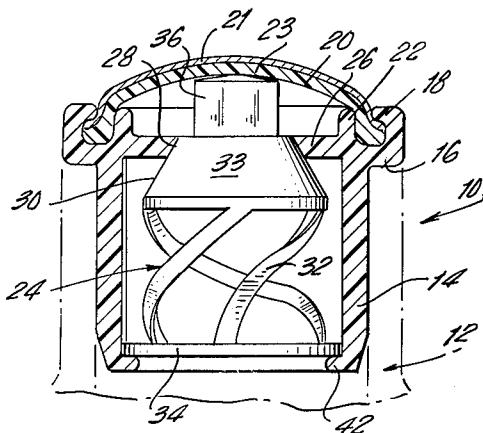


FIG. 4

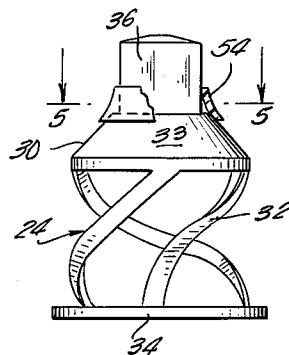


FIG. 2

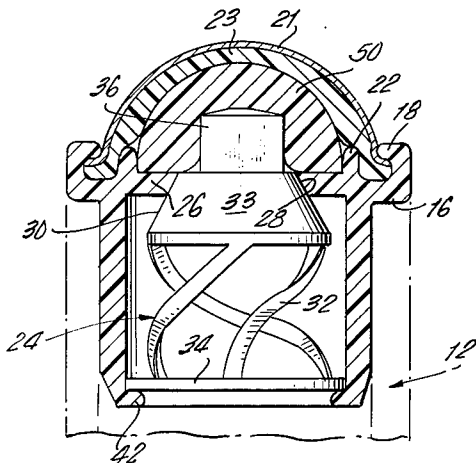


FIG. 5

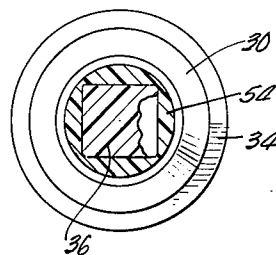


FIG. 3

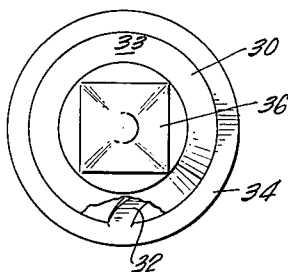
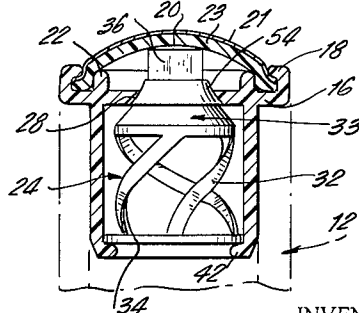


FIG. 6



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FIG. 7

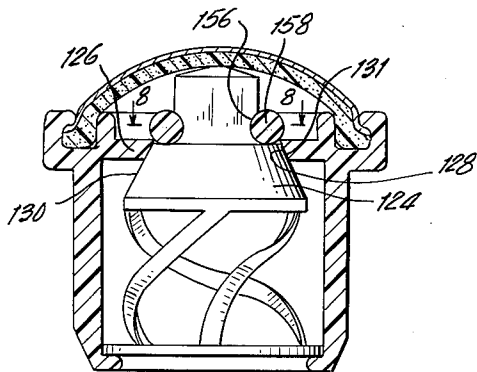


FIG. 9

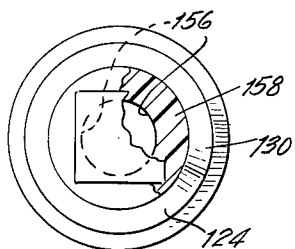
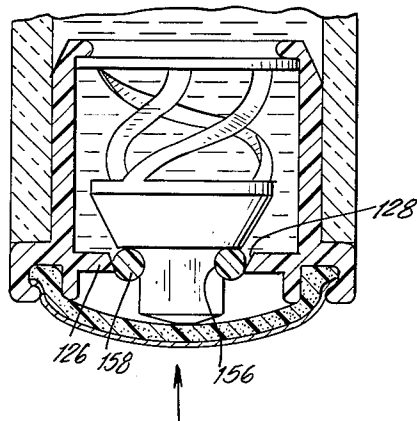


FIG. 8

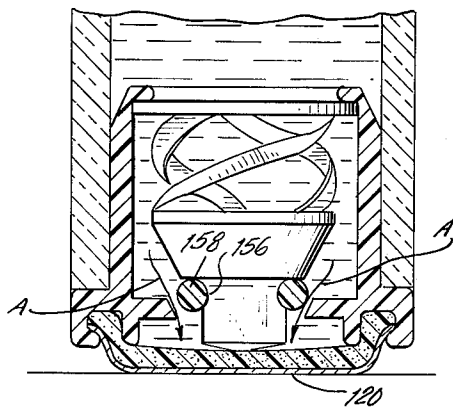


FIG. 10

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3,203,026

FLUID APPLICATOR

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2 Claims. (Cl. 15-566)

This application is a continuation-in-part of the application Serial No. 856,424, filed December 1, 1959, for "Dauber," now Patent No. 3,084,375; application Serial No. 241,862, filed December 3, 1962, now Patent No. 3,129,452, for "Dauber Having Compressed Body"; application Serial No. 266,940, filed March 21, 1963, for "Dauber Having a Spherical Valve Head."

This invention relates to a fluid applicator or dauber especially adapted for use in applying shoe polish or for applying cosmetics or medications on the shoes, clothing or on the person of the user.

An object of this invention resides in the provision of means for facilitating the application of cosmetics, medications, shoe polish or the like.

Another object of this invention resides in the provision in a dauber of novel valve means which are automatically actuated and adapted to control the flow of shoe polish from the dauber for obtaining an even flow of shoe polish onto a shoe, independent of the contours or shape of the shoe and so that fluid flow may be conveniently had onto the outer surface of the dauber for applying shoe polish into crevices, corners, and other spaces where access is difficult, while assuring complete closing of the valve means when the dauber is not in use.

In the past daubers have been produced which are provided with applicator ends serving to actuate mechanical valves. However, these prior art valve members normally have a surface area which is relatively small, and it has been very difficult to obtain proper sealing of the valve to prevent undesired fluid flow when the dauber is not in use and especially prior to first use of the dauber so as to prevent evaporation or spilling prior to first use thereof. Shoe polish, cosmetics, and medications will often stain garments and other items closely adjacent thereto if there is any spillage and loss of contents may spoil or adversely affect the salability of the dauber. It is, therefore, a further object of this invention to overcome the disadvantages of the prior art daubers by preventing leaking or spilling by having an initial fluid-tight seal and providing for better control of fluid flow of the shoe polish being applied while also assuring that the shoe polish will be spread evenly along the entire surface being covered by the dauber.

Still another object of the invention resides in the provision of a dauber which includes a novel compressed body disposed between a spherical-shaped dauber cover and the valve member, which compressed body will transfer fluid from the container to the cover and which will permit fluid flow to other parts of the cover and into the space between the cover and the retainer ring.

A further object of the invention resides in the provision of an integrally formed valve head, valve body, valve spring and seating ring for use in the dauber, all formed together in one molding operation from a synthetic plastic material such as polyurethane or polyethylene.

An additional object of the invention resides in the provision of a valve assembly for a fluid applicator that is provided with novel gasket means for assuming an initial seal and for preventing spillage or leakage, especially prior to initial use thereof.

Still further objects and features of this invention resides in the provision of a dauber which is inexpensive to manufacture, simple to use, capable of metering fluid

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of various viscosities in an effective manner so that the dauber is especially adapted for use in applying shoe polish, medications, cosmetics, oils, polishes and the like, and which dauber may be made in any convenient size as desired.

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

FIG. 1 is a vertical sectional detail view of an assembled fluid applicator constructed in accordance with the concepts of the present invention;

FIG. 2 is a cross-sectional view similar to FIG. 1, but illustrating a modified form of the invention having a spherical-shaped cover;

FIG. 3 is a top plane view of an integral valve assembly utilized in the fluid applicator;

FIG. 4 is a side elevational view of the integral valve assembly;

FIG. 5 is a sectional detail view taken along the plane of line 5-5 in FIG. 4; and

FIG. 6 is a cross-sectional view of a further modification of the fluid applicator;

FIG. 7 is a cross-sectional view of an additional form of the invention shown in an initial sealed position;

FIG. 8 is a sectional detail view of the integral valve assembly looking along the plane of line 8-8 in FIG. 7;

FIG. 9 is a view similar to FIG. 7 but showing the applicator in a closed position after its initial use; and, FIG. 10 is a view similar to FIG. 9 but illustrating the device in use.

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 fluid applicator or dauber comprising the present invention. This dauber includes a container 12 in which a retaining ring 14 is positioned. The retaining ring is designed to fit in the neck of the container 12 and includes 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 so as to achieve a felt-like applicator surface and appearance, while having the chemical inertness and strength of the nylon. Laminated and bonded to the nylon knitted brushed fabric is the lower layer 23 of coarse polyurethane foam.

The retaining ring 14 is provided with a web 26 which has an arcuate tapered opening 28 therein which is of approximately one-half the diameter of the web 26. Cooperating with the arcuate tapered opening 28, which serves as a valve seat, is the conical surface 30 of an integrally molded valve assembly generally indicated at 24. The valve assembly 24 includes a spring 32 formed in helical coils, the lower portion being integrally formed with a mounting ring 34. The mounting ring is held in place by the swaged end 42 of the retaining ring 14. The swaged end 42 thus retains the valve assembly 24 within the retaining ring 14 with the spring 32 in a continuously stressed condition under compression so that the valve head 36 is continuously urged into and through the opening 28 for the purpose of closing the opening and preventing fluid flow from the container 12 into the space between the web 26 of the retaining ring 14 and the cover 20. The upper end of the spring 32 is integrally formed with the body portion 33 of the valve assembly.

In the form of the invention shown in FIG. 2, there is disposed between the valve head 36 and the cover 20 a cylindrical body 50 of coarse polyurethane foam which

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is continuously compressed and serves to bulge the cover 20 in a convex manner. The valve head 36 is continuously biased into engagement with the compressed body 50 further squeezing the body. However, when the applicator is used for applying shoe polish or other fluids, the cover 20 is depressed, forcing the compressed body 50 slightly into the opening 28 and opening the valve by depressing the valve head to permit passage of fluid, whereby fluid will not only saturate the polyurethane foam body 50 but will saturate the cover 20. Since the inner or lower layer 23 is of a polyurethane foam, it will absorb and retain sufficient fluid so that the dauber will be able to provide a uniform coating of shoe polish on the surface being treated.

One of the great advantages of this invention is that the compressed body 50 provides in continuous contact with the cover a source of fluid and will absorb all the excess fluid in the space 52 which remains there after the valve member 24 has moved to its "valve closed" position thereby preventing leaking or spilling of fluid out of and beyond the cover 20.

In the form of the invention as shown in FIGS. 4 through 6, the valve assembly 24 is provided with a tapered gasket 54 formed of rubber-like material. This gasket, as shown in FIG. 6, will provide for an effective fluid seal.

In the form of the invention as shown in FIGS. 7 through 10, the valve assembly 124 is slightly modified from the valve assembly 24. The valve assembly 124 is undercut at 156 to form a seat for a ring-shaped gasket 158 of rubber-like material which is of a circular cross-sectional shape. This gasket 158 extends beyond the web 126 when the valve is in an initial closed position forming a positive seal and drawing the conical surface 130 closely into engagement with the surface 131 of the web 126.

Upon initial use, the gasket is pushed through the opening 128 in the web 126 and then the gasket 158 will cooperate with the surface 131 to assure a good seal.

Depressing the cover 120 will depress the valve head 136 and permit fluid flow in the direction of arrows A to saturate the cover 120. This form of the invention may be provided with a foam body similar to body 50.

In all the forms of the invention the retaining ring 14 is of identical construction. The retaining ring and the valve assembly are preferably molded from readily available plastic material such as polyethylene or polyurethane.

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 invention herein.

I claim:

1. A fluid applicator comprising a retainer ring having a projecting portion, a cover secured to said ring, said

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ring having a tapered opening therein forming a valve seat, a valve assembly formed of polyethylene and including a valve head having a conical surface portion engageable with said valve seat to close said opening and being movable with respect to said valve seat to control fluid flow through said opening, said valve assembly further including a mounting ring, said projecting portion having a swaged end holding said mounting ring in place, said valve assembly also including helical coils of polyethylene integrally connected to said mounting ring and said valve head urging said valve head against said valve seat, and a resilient porous body disposed between said cover and said valve seat, said body being deformable so that said cover may be depressed urging a portion of said body toward said opening to depress said valve head away from said valve seat against the forces exerted by said helical coils of polyethylene.

2. A fluid applicator comprising a retainer ring having a projecting portion, a cover secured to said ring, said ring having an opening therein forming a valve seat, a valve assembly formed of polyethylene and including a valve head movable with respect to said valve seat to control fluid flow through said opening, said valve assembly further including a mounting ring, said projecting portion having a swaged end holding said mounting ring in place, said valve assembly also including helical coils of polyethylene integrally connected to said mounting ring and said valve head urging said valve head against said valve seat, and a resilient porous body disposed between said cover and said valve seat, said body being deformable so that said cover may be depressed urging a portion of said body toward said opening to depress said valve head away from said valve seat against the forces exerted by said spring means, said valve head having a groove therein, and a ring-shaped gasket of resilient rubber-like material disposed in said groove and engageable with said valve seat, said gasket prior to initial depression of said valve head being disposed above said valve seat and adjacent said cover, said gasket being of larger diameter than said opening so that upon initial depression of said valve head, said gasket passes through said opening, the force exerted by said spring being insufficient to thereafter force said gasket entirely through said opening.

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