

Jan. 10, 1967

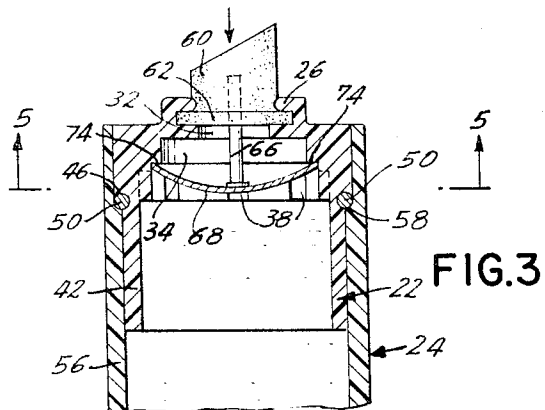
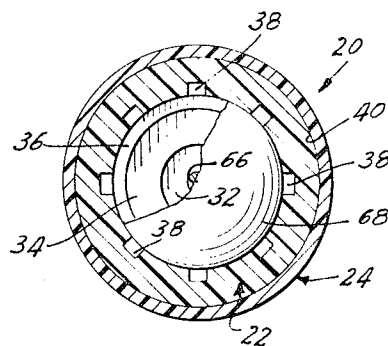
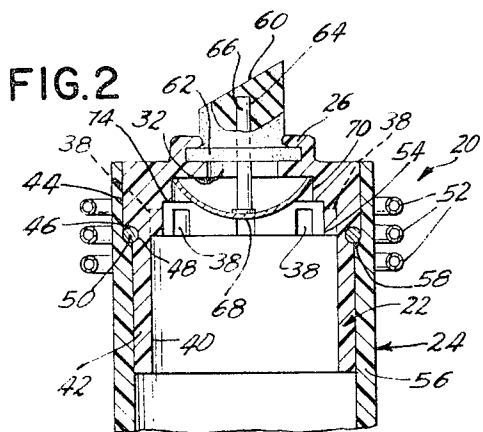
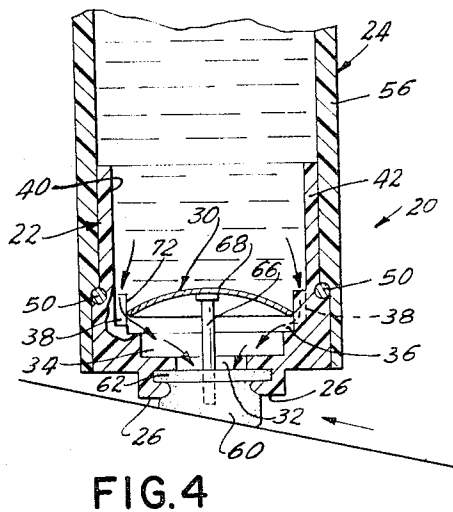
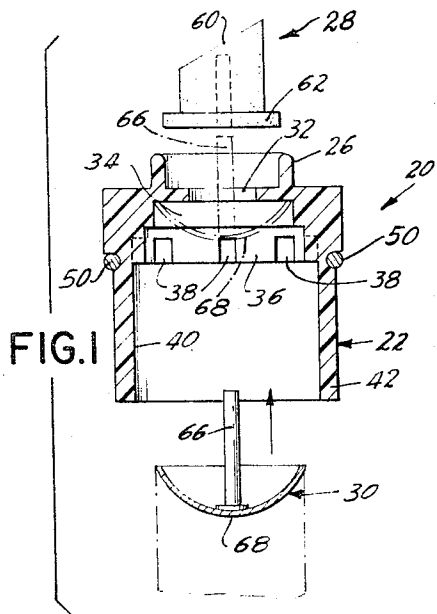
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3,296,649

SEALED APPLICATOR

Filed Oct. 20, 1964

3 Sheets-Sheet 1



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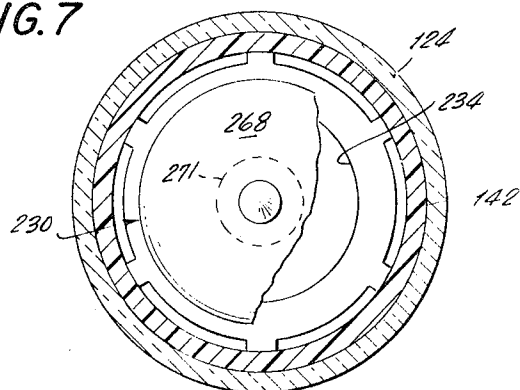
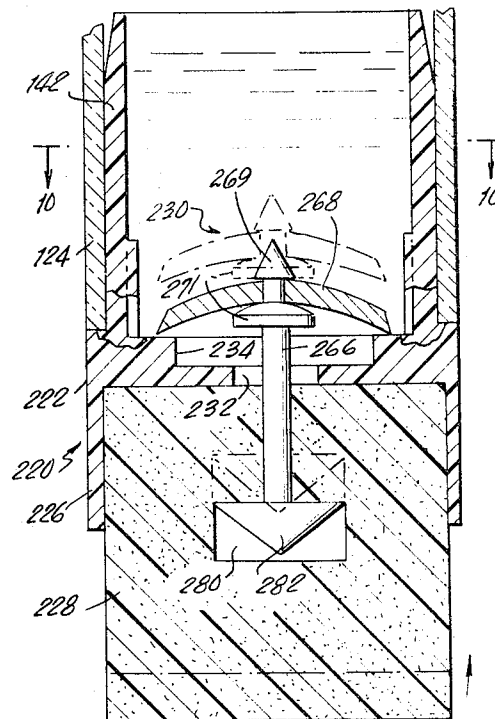
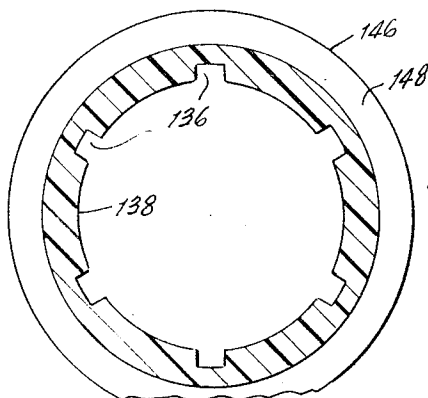
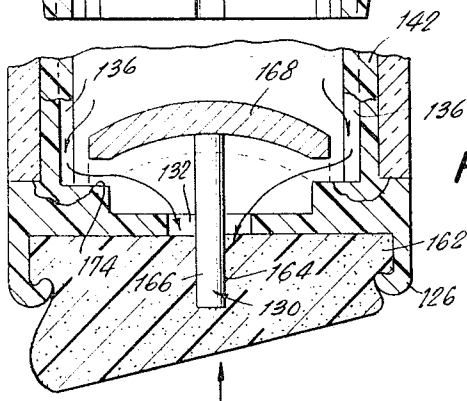
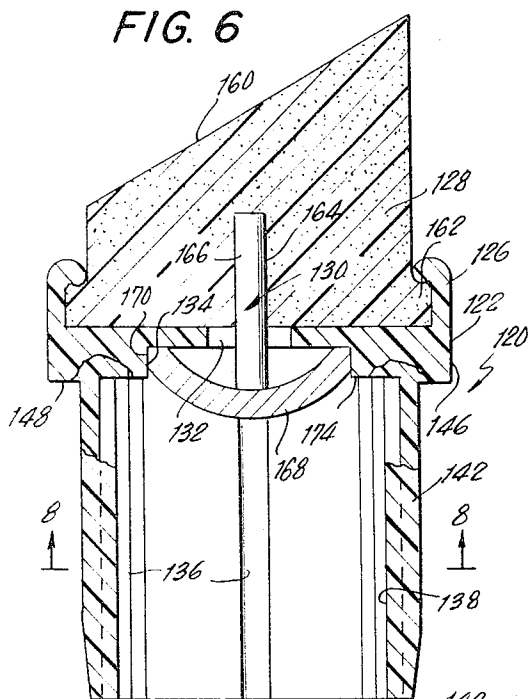
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SEALED APPLICATOR

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3 Sheets-Sheet 2



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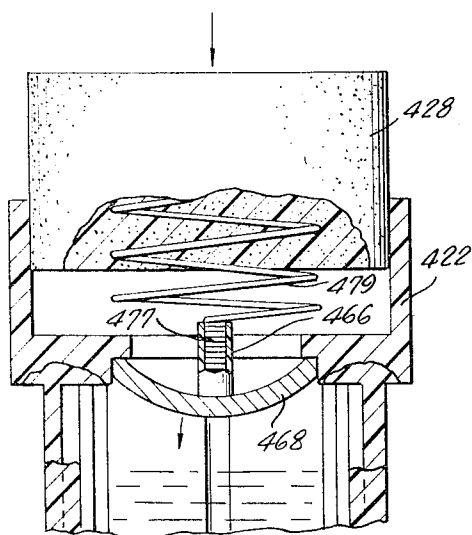
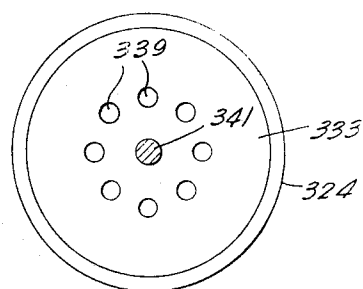
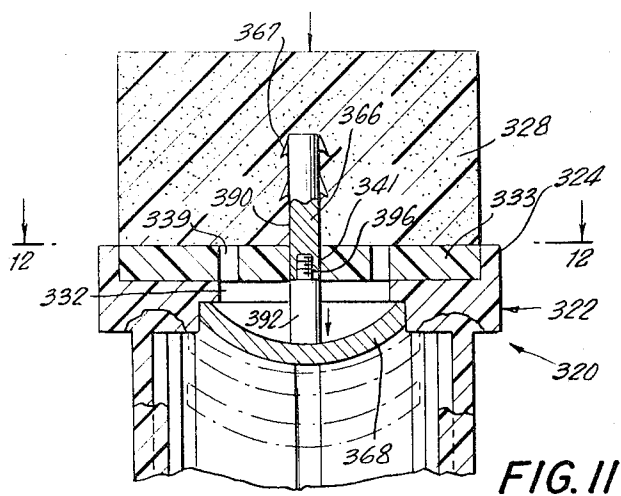
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3,296,649

SEALED APPLICATOR

Filed Oct. 20, 1964

3 Sheets-Sheet 3



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3,296,649

SEALED APPLICATOR

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15 Claims. (Cl. 15-566)

This invention relates to a fluid applicator or a dauber and is adapted for applying shoe polish, cosmetics, medications, paints or marking pigments, or the like on various surfaces.

An object of this invention resides in the provision of a dauber for facilitating the application of cosmetics, medications, shoe polish, paints, marking materials, or other suitable fluids or the like.

Various types of applicators have been devised which are provided with valve means for controlling the flow of fluid from the interior of the applicator and onto a dauber head. However, because of the nature of such applicators, there is always a possibility of seepage and furthermore, it has been difficult to provide a dauber head of a desired effective shape which will not only facilitate the application of an even flow of fluid onto the surface to be covered but which will automatically actuate the valve means while the fluid is being applied. While prior art applicators have been produced with dauber heads serving to actuate mechanical valves, it has been very difficult to obtain proper sealing of the valve means thereof to prevent undesired fluid flow when the applicator is not in use and especially prior to first use of the applicator so as to prevent evaporation or spilling prior to such first use thereof. Shoe polish, cosmetics, and medications often have a base of volatile fluids and are prone to evaporate. Further, such fluids are of the type which will stain garments and other items closely adjacent thereto if there is any spillage and loss of contents. Further, fluid applicators such as are used with medications, cosmetics or shoe polish or the like are often packed in luggage such as suitcases for travel by air. It is therefore a further object of this invention to overcome the disadvantages of prior art daubers by preventing leaking or spilling with an initial fluid-tight seal and by providing for better control of fluid flow of the material being applied while also assuring that the material will be spread evenly over the entire surface being covered by the dauber.

Still another object of the invention resides in the provision of an applicator which includes a novel compressed valve body disposed in a recess prior to first use which provides a primary fluid-tight seal, which compressed valve body is ejected from the recess after first use and functions to provide for a secondary seal when the dauber is not in use and which will permit fluid flow to the dauber head while the applicator is in use.

A further object of the invention resides in the provision of a combination valve member and dauber head in which the dauber head, which is formed of a porous material such as foam rubber or the like, is so closely associated with the stem of the valve member that by depressing the valve head, the valve member will be actuated.

Still further objects of the present invention reside in the provision of a dauber that is simple in construction, capable of preventing spillage or leakage, especially prior to initial use thereof, and which is adapted to be formed from various synthetic plastic materials such as polyurethane or polyethylene.

Additional objects and features of this invention reside in the provision of an applicator which is inexpensive to manufacture, capable of metering fluid of various viscosities in an effective manner, and which applicator may be made in any convenient size as desired.

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A yet additional object of the invention resides in the provision of an applicator which includes a dauber assembly which is conveniently bonded in a novel manner to the applicator container so as to provide an integral highly effective unit.

In accordance with this invention, the dauber assembly is sealed to the applicator container by means of induction heating of a gasket disposed between the dauber assembly and the applicator container so that the gasket serves the dual function of providing a block against seepage and for facilitating the fusing of the dauber assembly to the applicator container.

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 applicator, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

FIG. 1 is an exploded sectional view of the invention illustrating the manner in which the valve member and stem is assembled with the rest of the component parts;

FIG. 2 is a sectional detail view of the applicator illustrating the manner in which the retaining ring is sealed to the applicator container, and showing the valve member in position providing for a primary seal;

FIG. 3 is a sectional detail view of the applicator showing the valve member in position for secondary sealing;

FIG. 4 is a sectional detail view showing the applicator in use with the valve in an open position;

FIG. 5 is a transverse sectional view taken along the plane of line 5-5 in FIG. 3;

FIG. 6 is a longitudinal sectional view of a modified form of the invention showing the valve in position providing a primary seal;

FIG. 7 is a sectional detail view illustrating the applicator of FIG. 6, with the valve in an open position;

FIG. 8 is a transverse sectional view taken along the plane of line 8-8 in FIG. 6;

FIG. 9 is a sectional view of another modification of the invention illustrating the valve in a position providing a secondary seal in solid lines and illustrating the valve in open position in phantom lines;

FIG. 10 is a transverse sectional view taken along the plane of line 10-10 in FIG. 9;

FIG. 11 is a vertical sectional view of another form of the invention employing a plate for maintaining the dauber head in position;

FIG. 12 is a horizontal sectional view taken along the plane of line 12-12 in FIG. 11; and

FIG. 13 is a vertical sectional view of an additional modification of the invention.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, and with special attention directed to the embodiment shown in FIGS. 1 through 5, reference numeral 20 generally designates an applicator constructed in accordance with the concepts of the present invention. The applicator 20 includes a retaining ring 22 adapted to be secured to an applicator container 24. The retaining ring 22 includes a rib 26 for mounting a dauber head 28. Connected to the dauber head 28 is a valve assembly generally indicated by reference numeral 30.

The retaining ring 22 has an opening 32 therein and the rib 26 extends peripherally about the opening 32 and is spaced therefrom.

The retaining ring 22 is provided with a recess 34 which is undercut as at 36. Further, a plurality of passages indicated at 38 are provided about the periphery of the undercut portion 36. The passages 38 are of the same diameter so as to lie flush with the inner surface

width of the inner surface 40 of a projecting portion 42 inwardly formed with the retaining ring 22. The retaining ring is preferably molded of such synthetic plastic materials as polyurethane, polyvinyl chloride, polyethylene or the like and the projecting portion 42 is of slightly less diameter than the outer surface 44 forming the portion of largest diameter of the retaining ring 22.

The projecting portion 42 together with the annular portion 44 of widest diameter define a shoulder 46 at which there is an annular groove 48 for receiving a gasket 50 formed of copper, iron or steel or other suitable metal. This gasket 50 serves as a metal ring susceptor so that when induction coils 52 are placed outwardly of the applicator container 24 and electric current is passed through the induction coils 52, the susceptor ring 50 will become heated, causing the plastic material of the retaining ring 22 to fuse with the plastic material of the applicator container 24. The applicator container 24 may be of any suitable size and shape and is provided with an upper flange portion 54 of lesser thickness than the lower container portion 56 so that a shoulder 58 corresponding to shoulder 46 is provided and so that a streamlined integral applicator is formed.

The dauber head 28 is generally of cylindrical shape having a tapered edge 60 forming a slanting top surface and is provided with a peripheral flange 62 over which the rib 26 is swaged to hold the dauber head 28 in position. The dauber head 28 is preferably formed of a synthetic plastic material such as foamed polyurethane or the like, and is provided with a recess or cavity 64 therein for receiving the stem 66 of the valve assembly 30. The assembly besides the stem includes a valve body 68 of generally saucer shape. Both the valve stem 66 and the valve body 68 are preferably formed of a synthetic plastic material such as polyethylene, polyvinyl chloride, polyurethane or the like which is rigid and yet flexible and is designed to be compressed so as to fit within the recess 34 and resiliently engage the peripheral wall 70 defining the recess 34, with the stem 66 being received in the cavity 64 and preferably bonded to the dauber head 28.

The valve body 68 as shown in FIG. 2 is in a position so as to primarily seal the opening 32 against fluid flow from the container 24 and onto the dauber head 28. However, as soon as the dauber head is firmly depressed initially, the valve body 68 will be pushed out of the recess 34 at which time it will then expand so as to fit within the undercut 36 and engage the side wall 72 defining the undercut 36. The resilient construction of the dauber head 28, will, upon release of the dauber head, pull the valve body 68 to such position that it will engage the shoulder 74 and form a fluid-tight seal. When it is desired to provide for fluid flow onto the dauber head 28, even slight depression of the dauber head 28 will release the valve body from engagement with the shoulder 74 so as to permit passage of fluid from the container 24.

Referring now to the embodiment of the invention as is shown in FIGS. 6 through 8, there is shown a simplified version of the embodiment illustrated in FIGS. 1 through 5. In this form of the invention the dauber 120 is designed for insertion in the neck of a jar or bottle or like container and includes a retaining ring 122 which has a rib 126 for mounting a dauber head 128. Connected to the dauber head 128 is a valve assembly, generally indicated by reference numeral 130. The retaining ring 122 has an opening 132 therein and the rib 126 extends peripherally around the opening 132 and is spaced therefrom. The retaining ring 122 is provided with a recess 134 which is provided with a plurality of undercut grooves 136 therein as can be best seen in FIGS. 6 and 8. These grooves define a plurality of circumferentially spaced ribs 138. The retaining ring 122 is preferably molded of suitable synthetic plastic material, such as polyurethane, polyvinyl chloride, polyethylene or the like and has its projecting portion 142 of slightly less diameter than the

outer surface 146. This defines a shoulder 148 adapted to fit the rim of the container in which the applicator 120 is disposed.

The dauber head 128 is generally of cylindrical shape and has a tapered edge 160 forming a slanting top surface and is provided with a peripheral flange 162 over which the rib 126 is swaged to hold the dauber head 128 in position. The dauber head 128 is preferably formed of a synthetic plastic material, such as foamed polyurethane or the like, and is provided with a recess or cavity 164 therein for receiving the stem 166 of the valve assembly 130. The assembly, besides a stem, includes a valve body 168, which is generally of a saucer shape. Both the valve stem 166 and the valve body 168 are preferably formed of synthetic plastic material, such as polyethylene, polyvinyl chloride, polyurethane or the like, which is just flexible enough to allow it to be compressed so as to fit within the recess 134 and resiliently engage the peripheral wall 170 defining the recess 134, with the stem 166 being received in the cavity 164 and bonded to the dauber head 128.

The valve body 168 when in the position as shown in FIG. 6 primarily seals the opening 132 against fluid flow from a container to the dauber head 128. As soon as the dauber head 128 is firmly depressed initially, the valve body 168 will be pushed out of the recess 134 at which time it will ride along the ribs 138 and allow fluid flow to pass the grooves and into the space between the valve body 168 and thence through the opening 132. The resilient construction of the dauber head 128 will, upon release of the dauber, pull the valve body in such position so that it will engage the shoulder 174 and form a fluid tight-seal. Thereafter, a slight depression of the dauber head will serve to push the valve body in position such as shown in FIG. 7, so as to permit passage of fluid into the dauber head.

The embodiment shown in FIGS. 9 and 10 is for the purpose of eliminating the necessity of swaging the rib of the retaining ring 22 or 122 as in the previous embodiments. To carry out this form of the invention, means are provided for providing a larger surface area of engagement between the valve stem and the dauber head.

In this embodiment the applicator which is generally designated by the reference numeral 220 and includes a retaining ring 222 adapted to have its projecting portion 142 seated within a container 124. The retaining ring 222 includes a rib or flange 226 within the periphery of which a dauber head 228 is deposited. Connected to the dauber head is a valve assembly generally indicated by the reference numeral 230. The valve assembly extends through an opening 232 in the retaining ring. The retaining ring is provided with a recess 234 therein and the valve body 268 is of a disc or saucer shape and functions in the same manner as the valve body 168 or 68. However, the valve body 268 is provided with an opening there-through for lockingly receiving the head 269 of the valve stem 266 so that the saucer 268 is detachably secured on the valve stem after the valve head has been inserted through the opening 232. The saucer engages a flange member 271, preferably integrally molded with the valve stem 266.

The polyurethane foam dauber 228 is provided with an enlarged recess 280 therein for reception of the conically shaped head 282 integrally formed on the end of the valve stem 266. It is not necessary to swage the rib 266 in the manner that the rib 126 or the rib 26 is swaged because the conical head 282 sufficiently holds the dauber head 228 in place against displacement during operation of the applicator.

In the embodiment shown in FIGS. 11 and 12, there is employed a novel arrangement for holding the dauber head 328 on the retaining ring 322. The retaining ring 322 of the applicator is generally indicated at 320 and is provided with a relatively short rib or flange 324 in which there is set a disc or plate 333. This disc or plate is pro-

vided with a series of apertures 339 peripherally spaced about a central aperture 341 through which the two-piece valve stem 366 extends. The valve stem is provided with barbed ends 367 and is preferably bonded to the dauber head 328. Connected to the valve stem 366 is a saucer-shaped valve body 368 of similar construction to the other embodiments of the invention. The retaining ring has its other portions of similar construction to the embodiments of the invention as shown in FIG. 1 or 6. The valve stem 366 is formed in two pieces 390 and 392 which are threadedly secured together as at 396 for simplicity of assembly of the device. This form of the invention functions in a similar manner to the other forms of the invention with fluid flow passing through the opening 332 in the retaining ring and thence through the apertures 339.

The retaining ring of the embodiment of FIG. 13, generally indicated by reference numeral 422, is very similar in construction to the form of the invention as is shown in FIG. 9. However, the valve stem 466 is formed of two major portions. The valve stem 466 has a recess for receiving a tightly coiled portion 477 of a helical coil arrangement which includes a helical coiled spring 479 which is threaded in and seats within the dauber head 428. Depression of the dauber head will actuate the valve body 468 so that it functions similarly to the embodiments previously described.

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. A fluid applicator comprising a retainer ring having a tubular projecting portion, a resilient dauber head secured to said ring, said ring having an opening therein, a valve member for closing said opening and including a valve stem extending through said opening and engaging said head, said valve member being initially compressed under stress engaging one part of said ring to primarily seal said opening so that upon depression of said head, said valve member is pushed out of engagement with said one part of said ring allowing said valve member to expand, said head when released resiliently urging said valve member against another part of said ring to secondarily seal said opening.

2. A fluid applicator according to claim 1, wherein said head has a hollow therein, said stem extending into said hollow and being bonded to said head.

3. A fluid applicator as set forth in claim 1, wherein said head is of substantial thickness and is formed of porous rubber-like material.

4. A fluid applicator comprising a retainer ring, a resilient dauber head secured to said ring, said ring having an opening therein, said ring having a recess therein opposite said head, said recess being in alignment with said opening and being of greater diameter than said opening while being of lesser diameter than said ring so as to define a peripheral flange and a shoulder, a valve member including a resilient saucer-shaped valve body having a valve stem connected thereto, said valve stem extending through said opening and engaging said head, said valve body being initially compressed under stress and engaging said flange to primarily seal said opening so that upon depression of said head, said valve body is pushed out of engagement with said flange allowing said body to expand, said head when released resiliently urging said body against said shoulder to secondarily seal said opening.

5. A fluid applicator comprising a retainer ring having a tubular projecting portion, a resilient dauber head secured to said ring, said ring having an opening therein, said ring having a recess therein opposite said head, said recess being in alignment with said opening and being of greater diameter than said opening while being of lesser diameter

than said projecting portion so as to define a peripheral flange and a shoulder, a valve member including a resilient saucer-shaped valve body having a valve stem connected thereto, said valve stem extending through said opening and being secured to said head, said valve body being initially compressed under stress and engaging said flange to primarily seal said opening so that upon depression of said head, said valve body is pushed out of engagement with said flange allowing said body to expand, said head when released resiliently urging said body against said shoulder to secondarily seal said opening.

6. A fluid applicator as set forth in claim 1, wherein said head is formed of foam rubber-like material.

7. A fluid applicator comprising a retainer ring having a tubular projecting portion, a rib on said ring, a resilient dauber head, said rib being swaged over said head securing said head to said ring, said ring having an opening therein, said ring having a recess therein opposite said head, said recess being in alignment with said opening and being of greater diameter than said opening while being of lesser diameter than said projecting portion so as to define a peripheral flange and a shoulder, a valve member including a resilient saucer-shaped valve body having a valve stem connected thereto, said valve stem extending through said opening and being secured to said head, said valve body being initially compressed under stress and engaging said flange to primarily seal said opening so that upon depression of said head, said valve body is pushed out of engagement with said flange allowing said body to expand, said head when released resiliently urging said body against said shoulder to secondarily seal said opening.

8. A fluid applicator comprising a retainer ring having a tubular projecting portion, said ring having a peripheral rib extending oppositely from said projecting portion a resilient dauber head disposed within said peripheral rib and secured to said ring, said ring having an opening therein, said ring having a recess therein opposite said head, said recess being in alignment with said opening and being of greater diameter than said opening while being of lesser diameter than said projecting portion so as to define a peripheral flange and a shoulder, a valve member including a resilient saucer-shaped valve body having a valve stem connected thereto, said valve stem extending through said opening and being secured to said head, said valve body being initially compressed under stress and engaging said flange to primarily seal said opening so that upon depression of said valve head, said valve body is pushed out of engagement with said flange allowing said body to expand, said head when released resiliently urging said body against said shoulder to secondarily seal said opening.

9. A fluid applicator comprising a retainer ring, a resilient dauber head secured to said ring, said ring having an opening therein, said ring having a recess therein opposite said head, said recess being in alignment with said opening and being of greater diameter than said opening while being of lesser diameter than said ring so as to define a peripheral flange and a shoulder, a valve member for closing said opening, said valve member including a resilient saucer-shaped valve body having a valve stem connected thereto, said valve stem extending through said opening and extending into and being bonded to said head, said valve body being initially compressed under stress and engaging said flange to primarily seal said opening so that upon depression of said valve head, said valve body is pushed out of engagement with said flange allowing said body to expand, said head when released resiliently urging said body against said shoulder to secondarily seal said opening.

10. A fluid applicator according to claim 9, wherein said ring is provided with means defining passageways for insuring flow of fluid past said valve body when said head is depressed.

11. A fluid applicator comprising a retainer ring hav-

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ing a tubular projecting portion, a resilient dauber head secured to said ring, said ring having an opening therein, a valve member including a valve body for closing said opening and including a valve stem, means detachably securing said valve stem to said valve body, said valve stem extending through said opening and engaging said head, said valve body being initially compressed under stress engaging one part of said ring to primarily seal said opening so that upon depression of said head, said valve body is pushed out of engagement with said one part of said ring allowing said valve member to expand, said head when released resiliently urging said valve member against another part of said ring to secondarily seal said opening.

12. A fluid applicator according to claim 11, wherein said head has a hollow therein, said stem extending into

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said hollow, and means on said stem for holding said head on said stem.

13. A fluid applicator as set forth in claim 11, including a plate disposed on said ring, said head being bonded to said plate.

14. A fluid applicator according to claim 13, said plate having a plurality of spaced apertures therethrough.

15. A fluid applicator according to claim 11, said stem including a helical coil spring member, said spring member having an enlarged part seating in said head.

No references cited.

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