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LIQUID APPLICATORS

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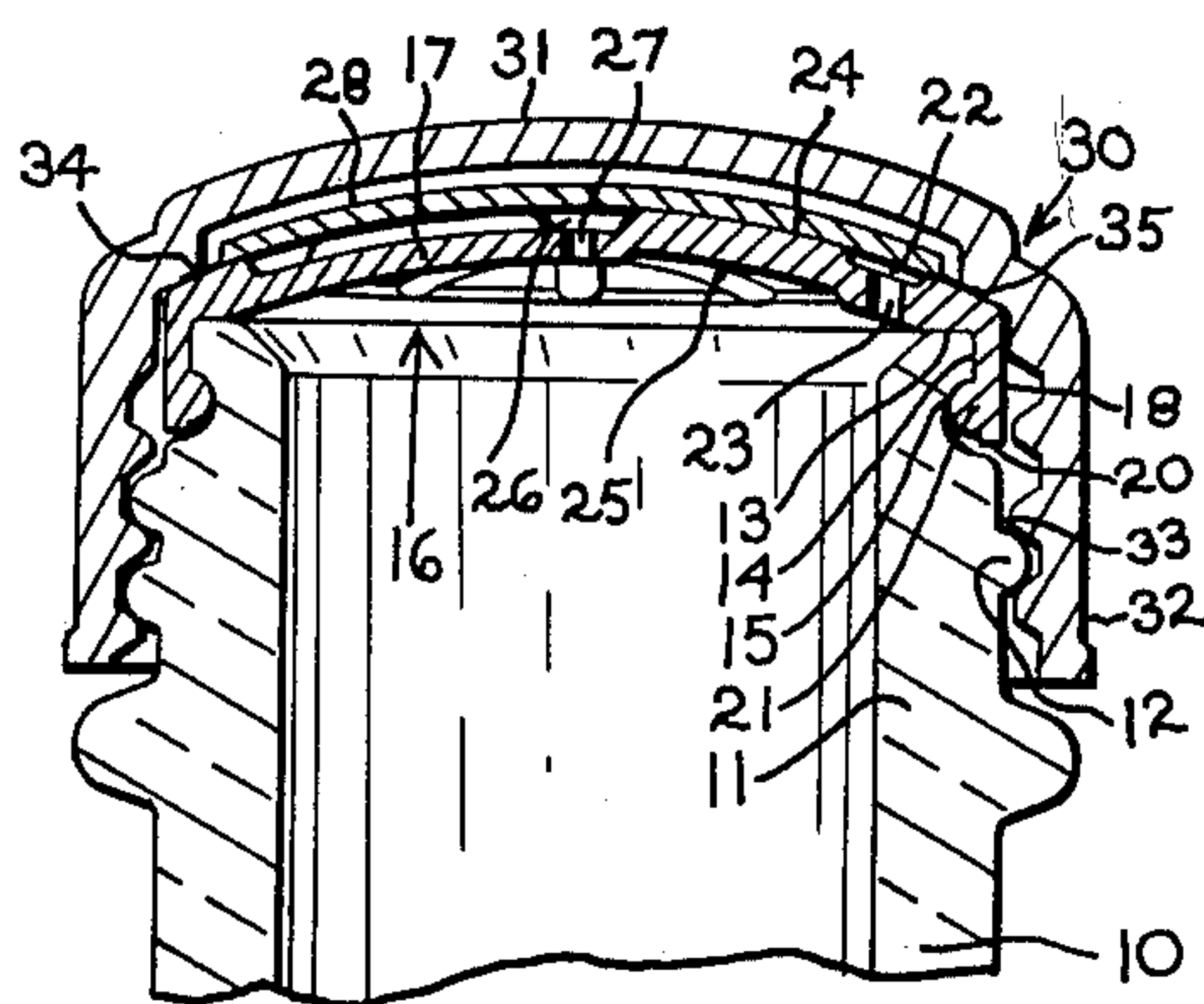


FIG. 1

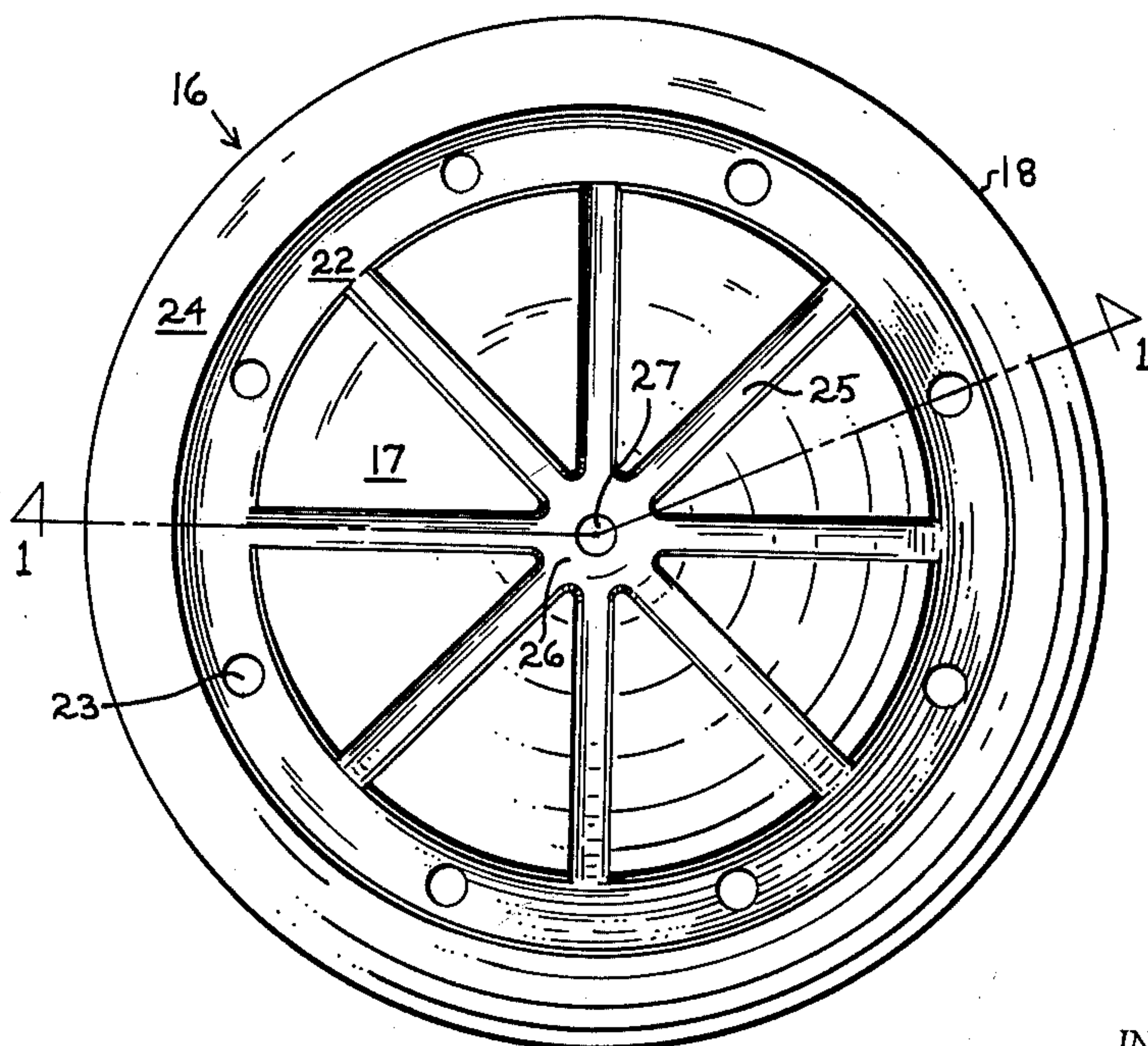


FIG. 2

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LIQUID APPLICATORS

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This invention relates generally to liquid applicators and more particularly to that class of applicators designed for use in applying thin films of liquid deodorants, lotions, etc., directly to the human body.

It is an object of my invention to provide a liquid applicator fitment for dispensing liquids from containers which is readily attachable to the mouth of a liquid container, and which is ready for immediate application upon inversion of the container.

A further object of my invention is to provide an applicator fitment which readily dispenses an even supply of liquid to the surfaces to which it has been brought into contact.

It is also an object of my invention to provide a liquid applicator fitment, composed of a minimum number of elements, all designed to be capable of rapid assembly and attachment to a liquid container mouth.

Another object of my invention is to provide a liquid container, applicator fitment and closure cap combination which is capable of supplying to the skin a uniform, thin layer of the liquid contents of the container.

A further object of my invention is the provision of a liquid applicator fitment, which fitment has, as its skin contacting surface, a cover of microporous plastic material.

These and other objects of this invention will become apparent from a reading of the following detailed description, taken in conjunction with the drawing, wherein:

FIGURE 1 is an enlarged fragmentary sectional view showing my applicator attached to a bottle neck with the cross sectional view of the fitment taken along the plane of line 1-1 of FIGURE 2.

FIGURE 2 is a top plan view of the applicator fitment of FIGURE 1 with the closure cap and microporous plastic cover removed to reveal the construction of the top panel portion of the fitment.

In brief, my invention comprises a liquid applicator fitment having a top panel portion and a depending attaching skirt at the periphery of the top panel portion. The top panel is provided with a circular channel on the top thereof, and a plurality of radial channels communicating with the circular channel. A plurality of holes are provided in the circular channel to provide open communication between the interior of the container and a microporous plastic cover which is attached to the top panel portion.

Referring now to the drawings, reference numerals 10 denotes the body of a conventional liquid container, such as a glass bottle. While this invention will be described with reference to a glass bottle, it should be understood that this invention may be used equally well with plastic containers. Rising from the body 10 is a neck 11 which is provided with external screw threads 12 designed for holding engagement with similar threads on a closure cap. Obviously, lugs or equivalent holding means may be used in lieu of the screw threads 12. Near the end 13 of the neck 11 is an external annular bead or rib 14 which provides a generally downwardly facing abutment or shoulder 15 for holding engagement with a portion of the liquid applicator fitment 16.

The liquid applicator fitment 16 comprises a top panel portion 17 and a depending attaching skirt 18 at the periphery of the top panel portion 17. The top panel portion 17 is preferably dome-shaped, however the same may be flat if desired. Near the lower or free end 20 of

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the skirt 18 is a relatively small annular bead 21 which functions to hold the fitment 16 on the container neck 11 by snap fit engagement with the shoulder 15 of the rib 14. The shoulder 15 and annular bead 21 are constructed and arranged in order that the bead 21 will be firmly engaged with and press against the shoulder 15 and as a result exert a strong axial downward pull upon the fitment 16.

The top panel portion 17 is provided with an annular channel 22 which is positioned near the periphery of the top panel portion 17. A plurality of holes 23 are provided in the channel 22 to establish open communication with the interior of the container 10. Channel 22 is in the nature of a shallow groove formed on the top 24 of panel portion 17. The top 24 of the top panel portion 17 is also provided with a plurality of radial channels 25 which are connected at one end thereof with each other as by a depression 26 and at the other end thereof with the circular channel 22. These channels 22 and 25 are arranged in the shape of a wheel. If desired a hole 27 may be provided in depression 26. The fitment 16 may be molded, as by injection molding, of any suitable plastic material such as polyethylene, by methods well known to those skilled in the art.

The microporous plastic cover 28 covers substantially all of the top 24 of the top panel portion 17 of the fitment and extends to a point near the periphery 35 of the top panel portion 17. Microporous plastics suitable for this purpose are described in U.S. Patent Number 2,794,753 and include polyvinyl chloride, polyvinylidene chloride, nylon, polyethylene, polypropylene, styrene, acrylonitrile, methyl methacrylate, cellulose acetate, etc. The size of the micropores in the plastic cover 28 may range from one to fifty microns with one to fifteen microns being the preferred range.

A closure cap 30 is provided for the container 10 and fitment 16 combination. The cap 30 comprises a top panel portion 31 overlying the open end of the container 10 and the fitment 16, and a depending attaching skirt 32. On the interior of the skirt 32 are provided screw threads 33, which mate with the threads 12 on the neck 11 of the container in order that the cap 30 may be secured to the container 10. If desired, a downwardly projecting shoulder 34 may be provided on the interior of the cap 30 at the juncture of the top panel portion 31 and the depending attaching skirt 32. The shoulder 34 is constructed and arranged to overlie the periphery 35 on the top panel portion 17 of the fitment 16. Upon application of the closure 30 to the container 10, the shoulder 34 will press against the peripheral portion 35 and assist in sealing the container 10. The shoulder 34 is annular in configuration as is the periphery 35 of the top panel portion 17 of the fitment 16. The cap 30 may be molded of any suitable material such as polyethylene or polystyrene.

In operation, the liquid material is placed in the container 10 and the fitment 16 applied thereto. When the consumer desires to use the contents of the container, he merely inverts the container and the fluid flows through holes 23 and 27 into circular channel 22 and radial channels 25. This distributes the liquid in the channels 22 and 25. The liquid material then flows into and through the pores of the cover 28 and thence to the surface to which the liquid is to be applied. The use of the very small openings in the cover 28 prevents dripping of the liquid from the applicator when the same is inverted but allows a uniform dispensing when applied to a surface to be coated.

The cover 28 is secured to the top panel 17 by any suitable means. It may be heat bonded to the periphery of the top panel 17 or an adhesive may be utilized. The cover 28 is preferably secured to the top panel 17 only at the peripheral edge of the cover 28.

It will be apparent, from the foregoing, that various modifications may be resorted to within the spirit and scope of this invention, which is to be limited only by the following claims.

I claim:

1. A liquid applicator fitment comprising a top panel portion, a depending attaching skirt at the periphery of said top panel portion, means on said skirt for securing the fitment to a container for liquids, a circular channel in said top panel portion, a plurality of radial channels communicating with each other at one end thereof and said circular channel at the other end thereof, a plurality of holes in said circular channel to provide communication with the interior of a container, and a microporous plastic cover secured to the outside of said top panel portion.

2. An applicator fitment for dispensing liquids from a container comprising a domed top panel portion, a depending attaching skirt at the periphery of said top panel portion, an annular rib on the free end of said skirt for securing said fitment to said container, a circular channel in the top of said top panel portion having a plurality of holes therein in open communication with the interior of said container, a plurality of radial channels communicating with each other at one end thereof and with said circular channel at the other end thereof, and a microporous plastic cover secured to the outside of said top panel portion.

3. An applicator fitment, according to claim 2, wherein said radial channels are arranged in a pattern of the spokes of a wheel.

4. An applicator fitment, according to claim 2, wherein said microporous plastic cover is polyethylene.

5. A liquid applicator fitment for dispensing liquids from a container comprising a domed top panel portion, a depending attaching skirt at the periphery of said top panel portion, an annular rib on the inside of the free end of said skirt, a circular channel near the periphery of said top panel portion, radial channels in said top panel portion extending from said circular channel to the central portion of said top panel portion, a plurality of holes in said circular channel in open communication with the interior of said container, and a microporous polyethylene cover heat bonded to the outside of said top panel portion and covering substantially all of said top panel portion.

6. A liquid applicator fitment comprising a top panel portion with a depending attaching skirt at the periphery of said top panel portion, means on the interior of said skirt for securing said fitment to a container for said liquid, an annular channel on said top panel portion near the periphery thereof, a plurality of holes in said channel in open communication with the interior of said fitment, at least one hole in the center of said top panel portion, a plurality of radial channels communicating with each other at one end thereof, and with said annular channel at the other end thereof, and a microporous plastic cover secured to the outside of said top panel portion.

7. In combination, a liquid container having a mouth-defining neck formed with an annular external rib near the mouth providing a generally downwardly facing abutment, and a plurality of threads formed on said neck below said rib, and a liquid applicator fitment closing said mouth, comprising a top panel portion, a depending attaching skirt at the periphery of said top panel portion, means on such skirt for securing the fitment to said container, a circular channel in said top panel portion, a plurality of radial channels communicating with each other at one end thereof and said circular channel at the other end thereof, a plurality of holes in said circular channel to provide communication with the interior of said container, and a microporous plastic cover secured to the outside of said top panel portion.

8. In combination, a liquid container having a mouth-

defining neck formed with an annular external rib near the mouth providing a generally downwardly facing abutment, and a plurality of threads formed on said neck below said rib, and a liquid applicator fitment closing said mouth, comprising a domed top panel portion, a depending attaching skirt at the periphery of said top panel portion, an annular rib on the free end of said skirt for securing said fitment to said container, a circular channel in the top of said top panel portion having a plurality of holes therein in open communication with the interior of said container, a plurality of radial channels communicating with each other at one end thereof and with said circular channel at the other end thereof and a microporous plastic cover secured to the outside of said top panel portion.

9. In combination, a liquid container having a mouth-defining neck formed with an annular external rib near the mouth providing a generally downwardly facing abutment, and a plurality of threads formed on said neck below said rib, a liquid applicator fitment closing said mouth, comprising a domed top panel portion, a depending attaching skirt at the periphery of said top panel portion, an annular rib on the inside of the free end of said skirt, a circular channel near the periphery of said top panel portion, radial channels in said top panel portion extending from said circular channel to the central portion of said top panel portion, a plurality of holes in said circular channel in open communication with the interior of said container, and a microporous polyethylene cover heat bonded to the outside of said top panel portion and covering substantially all of the outside of said top panel portion, and a closure cap for said fitment and container, comprising a top panel portion constructed and arranged to overlie said fitment, and a depending attaching skirt at the periphery of said top panel portion, the interior of said skirt being provided with screw threads to cooperate with said threads on the neck of said container.

10. In combination, a liquid container having a mouth-defining neck formed with an annular external rib near the mouth providing a generally downwardly facing abutment, and a plurality of threads formed on said neck below said rib, a liquid applicator fitment closing said mouth, comprising a domed top panel portion, a depending attaching skirt at the periphery of said top panel portion, an annular rib on the inside of the free end of said skirt, a circular channel near the periphery of said top panel portion, radial channels in said top panel portion extending from said circular channel to the central portion of said top panel portion, a plurality of holes in said circular channel in open communication with the interior of said container, and a microporous polyethylene cover heat bonded to the outside of said top panel portion and covering substantially all of the outside of said top panel portion, and a closure cap for said fitment and container, comprising a top panel portion constructed and arranged to overlie said fitment, and a depending attaching skirt at the periphery of said top panel portion, the interior of said skirt being provided with screw threads to cooperate with the threads on the neck of said container, a downwardly projecting annular rib on the interior of said cap at the junction of said top panel portion and said skirt, said rib constructed and arranged to be brought into sealing contact with the periphery of the top panel portion of the fitment when the closure is secured to the container.

11. The combination, according to claim 10, wherein the rib on the interior of closure cap is constructed and arranged to contact only that portion of the top panel of the fitment which is not covered by said microporous plastic cover.

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CHARLES A. WILLMUTH, *Primary Examiner*.