

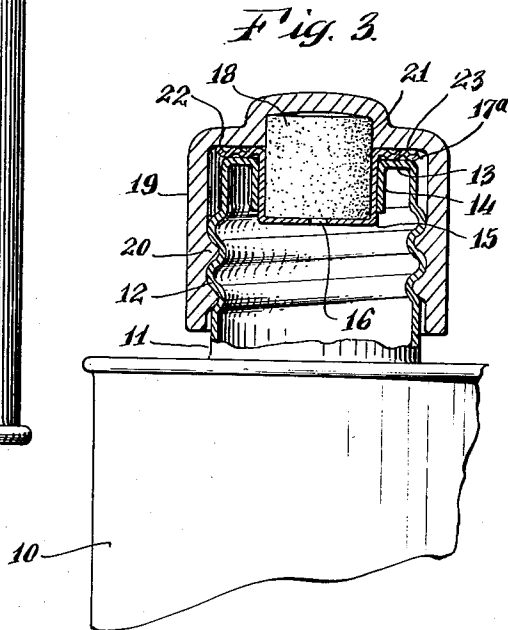
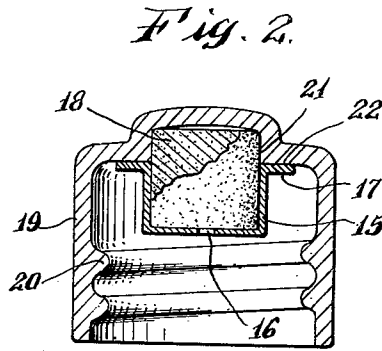
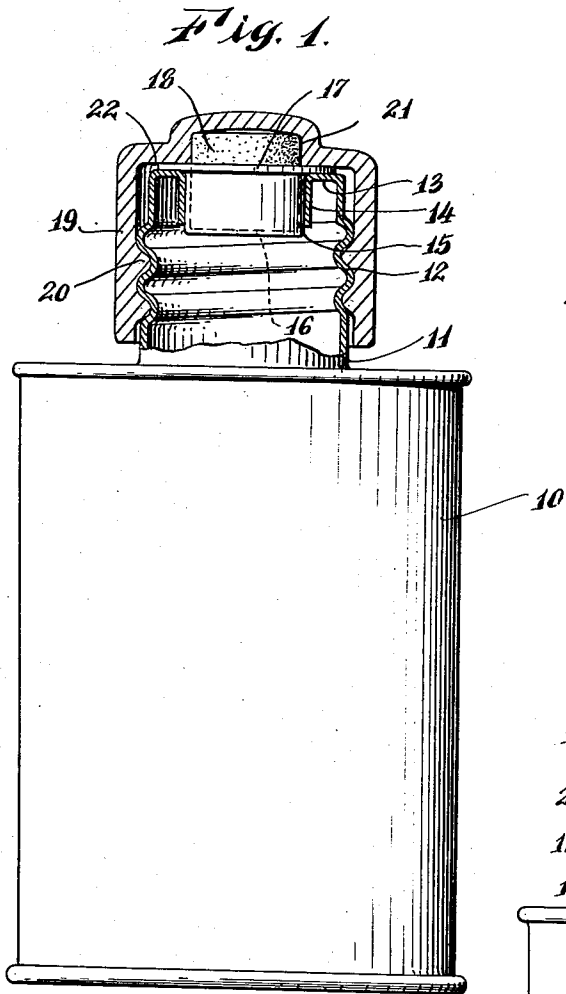
April 29, 1952

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2,594,729

CLEANING FLUID CONTAINER AND APPLICATOR

Filed July 28, 1948



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2,594,729

CLEANING FLUID CONTAINER AND APPLICATOR

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Application July 28, 1948, Serial No. 41,055

3 Claims. (Cl. 15-134)

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My present invention relates to a cleaning fluid container and applicator and aims to provide certain improvements therein.

Although the device of my invention is primarily intended for use in removing spots and stains from fabrics, wearing apparel and the like, it will be apparent that it may be used in applying any liquid in a thin film to any surface, for example, in applying perspiration inhibiting or deodorizing liquids, cosmetic lotions and the like to the surface of the skin. As most of such liquids contain volatile constituents it is highly desirable that the applicator provide a closure for the container which will prevent or reduce to a minimum evaporation loss of the liquid, while at the same time permit sufficient flow of the liquid to the applicator when the container is inverted or tilted during use thereof.

Accordingly, the primary object of my invention is the provision of an improved combined liquid container and applicator. A further object is to provide a device of the character set forth, in which the applicator may be simply and efficiently applied as a unit to the container after the latter is filled with the desired liquid. A still further object is to provide a device of the character set forth which will insure a liquid-tight seal between the applicator carrier and the container so as to preclude leakage between said parts when the container is inverted or tilted during use or shipment. A still further object is to provide an applicator which will reduce to a minimum evaporation loss of the liquid contents from the container in the event that the closure cap is inadvertently not replaced on the container after use. A still further object is to provide such device which will be so cheap as to permit being discarded after the liquid contents of the container have been used up.

The foregoing and other objects of my invention not specifically enumerated I accomplish by providing in a device of the character described an applicator in the form of a plug of suitable densely felted material adapted to be frictionally held in a sealing cup formed of material which is adapted to provide a liquid-tight seal with a container, said sealing cup having a perforation in its bottom through which liquid may reach the applicator by slow absorption or capillary action and thereby carry just the requisite quantity of liquid to the exposed end of the applicator for its intended use. Preferably, also, the applicator is of a diameter to initially frictionally engage within and be held by the closure cap so that the closure cap, applicator and sealing cup may be

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pre-assembled and applied as a unit to the container with an applying force transmitted through the cap and the applicator to the sealing cup and also directly through the cap to the sealing cup to provide a liquid-tight seal between the cup and the container.

The invention will be better understood from the detailed description which follows when considered in connection with the accompanying drawings, wherein—

Figure 1 is an elevation of a device embodying my invention, the neck and parts associated therewith being shown in section.

Fig. 2 is a diametrical section through the closure cap, applicator and cup assembly prior to attachment to the container.

Fig. 3 is a fragmental view similar to Fig. 1 illustrating a modified form of the cup support for the applicator.

Referring first to Figs. 1 and 2 of the drawings, the numeral 10 indicates a container made of sheet metal having a neck portion 11 provided with screw-threads 12, the outer end of the neck portion being bent first radially inwardly and then axially inwardly to provide respectively a top finish 13 for the container and a re-entrant annular flange 14 disposed substantially concentric with the neck portion.

Frictionally held by the re-entrant annular flange 14 is a cup-shaped sealing member 15 having an opening 16 in its bottom and an outwardly extending flange 17 at its top. The cup-shaped member 15 is preferably formed of deformable packing material and is force-fitted into the neck of the container to provide a liquid-tight seal between the outer surface of the cup wall and the inner surface of the re-entrant flange. It is also desirable that in the course of such force-fitting operation that a liquid-tight seal be made between the flange 17 on the cup and the top finish 13 of the container. Although the cup-shaped member may be formed of various substances I prefer to make the same from relatively stiff resinous plastic material which will be either non-reactive to the liquid contents of the container or reactive to the extent that it will swell upon contact with the liquid contents of the container to enhance the liquid-tight seal between the cup wall and the re-entrant flange. A material which I have found eminently suitable for this purpose is polyethylene.

Mounted to be frictionally held within the cup-shaped member 15 is a plug 18 of a densely compacted absorbent material, said plug filling the cup and projecting beyond the top thereof to an

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extent less than the depth of the cup. Although the plug 18 may be formed in various ways I prefer to use a cylindrical plug of dense felt which will have a slow absorption characteristic and capillary action such as to carry just the requisite quantity of liquid to the exposed end of the plug for its intended purpose when the container is inverted, tilted or shaken to permit the liquid contents to pass through the opening 16 in the base of the cup.

A closure cap 19 having internal screw-threads 20 adapted to engage the screw-threads 12 on the neck of the container is adapted to be applied over said neck to enclose the same and the applicator plug 18 and also hold the flange 17 of the cup in liquid sealing engagement with the top finish 13 of the container. The closure cap 19 may be formed of any suitable dimensionally stable material which is non-reactive with the contents of the container and has an internal socket 21 of a size to frictionally engage the projecting portion of the plug 18, and a shoulder 22 adapted to bear against the flange 17 when the cap is screwed home on the neck of the container.

In Fig. 3 of the drawings the flange 17a on the cup-shaped member 15 is formed with a plurality of annular beads or ribs 23 which will "give" when the cap is screwed home, thereby providing a tighter seal between said flange 17a and the top finish 13 of the container.

Although the cup 15 and applicator plug 18 may be mounted in the container neck in successive stages I prefer to assemble the cap, the plug and the cup as a unit and mount the plug and the cup into the container simultaneously with the application of the cap to the container after the latter is filled with the desired liquid. Such assembly unit is shown in Fig. 2 wherein the applicator plug 18 is first frictionally mounted within the cup, filling the same, and the projecting portion of said plug is then frictionally mounted within the socket 21 of the cap whereby the plug functions to hold the cup and cap in assembled relation.

Upon screwing the cap down over the threads on the container neck, the cup, which is preferably of slightly larger outer diameter than the inner diameter of the re-entrant flange 14, is thereby forced into the opening provided by said re-entrant flange, in the course of which application the material of the cup is either slightly deformed or the flange "gives" radially outwardly to a slight extent to provide a liquid-tight seal between the cup wall and the flange. Also, as the cap is screwed home, the flange 17 on the cup is pressed tightly against the top finish of the container thereby providing a second seal between the cup and the container. There being a greater area of frictional engagement between the plug and the cup than between the plug and the cap, it will be appreciated that after the cap has been screwed home onto the container to apply the cup and the plug to said container, the cap may be unscrewed without withdrawing either the plug or the cup from the container.

In the use of the device the cap 19 is removed and the container is inverted or shaken so as to cause an absorption of liquid by the plug. The exposed end of the plug is then rubbed over the surface upon which a film of the contained liquid is to be applied. Where the liquid is a cleaning fluid the applicator will be actively rubbed over the stain in the material or fabric to remove the stain therefrom. Where a deodorant

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or perspiration inhibiting agent is employed, a light rubbing of the applicator over the skin serves to supply the requisite film of liquid for its intended purpose. In the manner of use of the device as described, it will be appreciated that the intended use of the liquid contents can be accomplished without waste and, upon completion of the application, the cap is reapplied, thereby sealing the container against any loss of the liquid contents by evaporation. The densely felted plug 18 will also serve to a substantial degree to prevent evaporation or volatilization of the liquid contents from the container in the event that the cap is inadvertently not replaced on the container.

Although I have shown and described two embodiments of my invention and several intended applications thereof, it is to be understood that I do not wish to be limited to either the use of any specific liquid or any intended application of the device, and that changes in constructional details thereof may be made within the range of mechanical skill without departing from the spirit of the invention as defined in the appended claims.

What I claim is:

1. A device of the character described comprising a container having a neck with an open mouth and means on the exterior of the neck for engagement with a closure cap, a deformable cup-shaped member having an opening in its base and an outwardly extending flange at its top frictionally engaging within the open neck and over the mouth of the container and providing therewith a liquid-tight seal, a plug of densely compacted absorbent material frictionally held within and filling the cup and projecting beyond the top thereof to an extent less than the depth of the cup, and a removable closure cap engaging over the engagement means on the exterior of the container neck, the cap having an internal socket the wall of which frictionally engages the projecting end of the plug and an internal shoulder engaging the flange on the cup and operating to hold said flange in liquid-tight engagement with the mouth of the container, the frictional engagement between the projecting portion of the plug and the socket in the cap being less than the frictional engagement between the plug and the cap, whereby, when the cap is removed from the container, the plug will remain in the cup and extending beyond the top of the container.

2. A device according to claim 1, wherein the container has an externally screw-threaded neck and a re-entrant annular flange substantially concentric with said neck, and the cup-shaped member is force-fitted within the neck of the container and provides a leak-tight seal with the re-entrant flange thereof wherein the flange on the cup-shaped member also forms a liquid-tight seal with the top of the container between the neck and the re-entrant flange.

3. In combination, a unit assembly consisting of a cup-shaped member of deformable packing material having an opening in its bottom and an outwardly extending flange at its top, a plug of absorbent material frictionally held within and filling the cup and projecting beyond the top thereof to an extent less than the depth of the cup and a cap member having an internal socket, an internal shoulder and means for holding the cap onto a container, the projecting portion of the plug being frictionally held within the socket of the cap and operating to hold the cup-shaped

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member to the cap, so that the cap, cup-shaped member and absorbent material may be attached as a unit to a container.

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REFERENCES CITED

The following references are of record in the file of this patent:

Number	Name	Date
801,087	Kahn -----	Oct. 3, 1905
1,295,240	Unruh -----	Feb. 25, 1919
2,026,211	Brennan -----	Dec. 31, 1935
2,235,453	Kirmes -----	Mar. 18, 1941
2,327,454	Punte -----	Aug. 24, 1943
2,416,069	Scott -----	Feb. 18, 1947

6**UNITED STATES PATENTS**