J. M. WHEATON
CAPILLARY APPLICATOR ROD
Filed July 29, 1933

Inventor
Jack M. Wheaton

35
My invention relates to an applicator rod or tube which may be combined with or form an attachment for a closure cap for bottles or other containers. At the present day glass applicator rods attached to the interior of bottle caps or closure devices are in common use. When the cap is in position on the bottle the rod extends downward into the liquid contained in the bottle. When the cap and rod are withdrawn, a drop of the liquid adheres to the rod and may be applied to any surface or material. Only a very small amount of the liquid can thus be applied at one time.

An object of my invention is to provide a novel applicator rod to which a comparatively large amount of the liquid will adhere and can be withdrawn, and by which the amount of the liquid applied to a surface or substance can be regulated and controlled. More specifically, the invention comprises the use of a capillary rod or tube combined with a bottle cap or the like, said rod operating by capillary action to draw and hold a substantial quantity of the liquid and permit a regulated amount thereof to be applied to any surface or material with which the rod is brought in contact.

In the accompanying drawings:

- Fig. 1 is a diagrammatic view of a bottle to which the present invention is applied.
- Fig. 2 is a sectional elevation of the bottle cap and the capillary rod attached thereto.
- Fig. 3 is a section at the line III—III on Fig. 2.
- Fig. 4 is a view similar to Fig. 2, showing a modified form of cap.

Referring particularly to Figs. 1, 2 and 3, I have shown a molded closure or cap 5 for a bottle 6 or other container. The cap may be made of a hard rubber composition, vulcanite or other material. It comprises a circular top portion 6 and a depending skirt or flange 7 formed with internal screw threads for attaching the cap to the bottle 6.

A capillary rod or tube 9 made of glass or other suitable material is attached to the cap by means of an attaching device or plug 10 formed with a socket 11 to receive the upper end of the rod. The attaching plug 10 is preferably made of comparatively soft rubber so that the rod 9 which has a snug or tight fit within the socket 11 is frictionally held securely in position by the rubber. The plug 10 is attached to the cap by vulcanizing, cementing or otherwise. The rod is in the form of a capillary tube having the opening 12 which extends centrally therethrough of small enough diameter to obtain an effective capillary action.

The tube is vented by means of a channel or passageway 13 extending through the plug 10 and opening into the tube at the upper end thereof. As shown, this channel comprises a groove in the wall of the socket 11. The plug 10 may be formed with a shoulder 14 against which the upper end of the tube abuts, thereby providing a space at the upper end of the tube permitting communication between the channel 13 and the capillary opening. The vent provided by the channel 13 permits effective capillary action of the tube.

When the cap is in position on the bottle, the rod 9 extends downward into the liquid within the bottle. When the cap is removed and the rod withdrawn from the liquid therein a certain amount of the liquid which has entered the tube is held therein by capillary action. This retained liquid 15, or any desired portion thereof, may now be applied to any surface or material by contacting the tip of the tube therewith. This causes the liquid to be drawn out of the tube and applied to said surface or material. The amount of liquid that can thus be applied by a single operation is much greater than is possible with the ordinary solid rod. The amount of liquid dispensed by a single application of the rod can also be regulated and controlled by controlling the length of time the rod is held in contact with the surface to which the liquid is being applied.

Fig. 4 shows a modified form of cap and connector or plug. As here shown, the cap is provided with a central opening 16 to receive the upper portion of the connector or plug. The latter is formed with an annular flange 17 to seat in a corresponding recess in the cap. The plug is also formed with a flange 18 to engage the inner surface of the cap. The construction is such that the connector plug may be frictionally held in place, if desired, without use of cement or vulcanizing.

Modifications may be resorted to within the spirit and scope of my invention.

What I claim is:

1. The combination of a bottle, a removable closure device therefor, and an applicator rod attached to the interior of said closure device in position to extend downward within the bottle, said rod having a capillary opening extending therethrough, said closure device having an open channel extending therethrough which, when the closure device is in bottle closing position, provides an open channel from the interior of the bottle to the capillary opening.
bottle to the capillary opening for venting said opening.

2. The combination of a bottle, a removable stopper therefor, and an applicator rod attached to the stopper and extending downward therefrom into the bottle, said rod having a capillary opening extending therethrough from top to bottom, said cap being formed with a channel opening into the interior of the bottle and extending to the open upper end of said capillary opening and thereby venting said capillary opening while the stopper is in position on the bottle.

3. The combination of a bottle, a screw cap thereon, and an applicator rod having a capillary opening extending therethrough from top to bottom, said rod being attached at its upper end to the cap and extending downward therefrom into the bottle, said cap formed with an open passageway extending from the interior of the bottle to the upper end of the capillary opening for venting said opening while the cap is in sealing engagement with the bottle.

4. The combination of a bottle, a screw cap thereon, a plug of comparatively soft plastic material within and attached to said cap, and a glass rod having a capillary opening extending lengthwise therethrough, said plug having formed centrally thereof a socket in which the upper end of the rod is frictionally held, said socket having formed therein a channel extending upwardly from the interior of the bottle and communicating with said capillary opening at the upper end thereof.

5. A closure device for bottles or other hollow articles, and a rod attached at one end thereto, said rod having a capillary opening extending therethrough, said closure device being formed with a passageway extending from said capillary opening to the surface of the closure at a point spaced inwardly from the bottle engaging surfaces of the closure.

6. The combination of a closure cap comprising a top portion and a depending flange portion, a rod having a capillary opening extending lengthwise therethrough, and means for attaching one end of the rod to the interior of the closure, the latter formed with a passageway extending from the capillary opening to the surface of the cap at a point spaced inwardly from the said flange portion.