

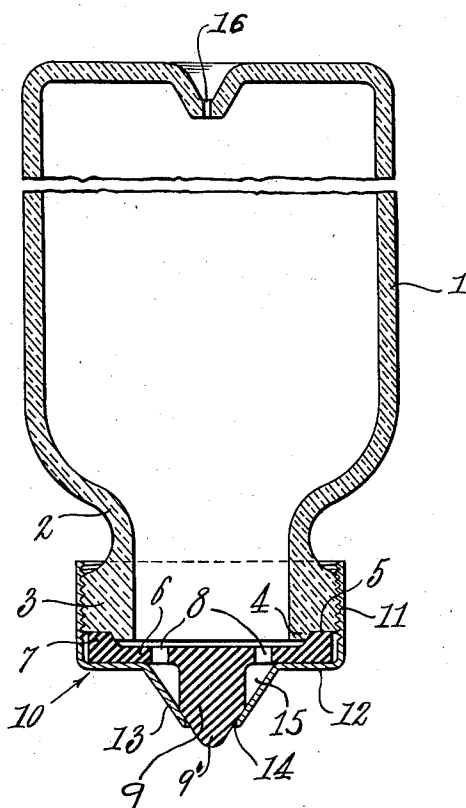
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LIQUID DISPENSER

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LIQUID DISPENSER

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6 Claims. (Cl. 91—67.4)

This invention relates to liquid dispensers and more particularly to a novel form of the closure in such dispensers.

In dispensers of the type to which the invention relates, a bottle or other container containing adhesive or similar material in liquid form is mounted in an inverted position ready for manual actuation toward a dispenser base upon which the sheet or surface to be treated is placed. An example of such a mounting is shown in my copending application, Serial No. 325,227, filed March 21, 1940. Such adhesive dispensers present a special problem in the provision of a suitable closure, for inasmuch as the container is normally in an inverted position, the cap must provide an effective seal to prevent leakage of the adhesive from the closure and the container when the dispenser is not in use, or hardening or oxidation therein, but must nevertheless be capable of permitting the flow of the adhesive, at a suitable rate from the closure immediately upon contact thereof with the sheet or surface to be treated without leakage or dribbling thereafter.

It is among the important objects of this invention to provide a liquid dispenser having the aforesaid characteristics and yet being of simple, compact and inexpensive construction involving a minimum number of parts all of durable materials. In the preferred embodiment of the dispenser, as hereinafter disclosed, this closure comprises a cap of rigid material as metal adapted to be attached to the container and a single integral deformable elastic or resilient member as rubber which coacts with the cap to perform all the functions above indicated.

Further objects of the present invention will become more apparent from a consideration of the following detailed description taken in conjunction with the accompanying drawing which shows a central vertical section through an adhesive-dispensing container provided with a closure constructed in accordance with the present invention.

Referring to the drawing, reference numeral 1 indicates a bottle or other suitable container having a reduced neck portion 2 and a relatively thick, externally-threaded annular lip 3. This lip has a boss 4 surrounding the orifice of the container, leaving a depressed or shouldered portion 5 adjacent the upper external circumference of the lip. An integral member 6 of deformable elastic or resilient material, as rubber, is provided with a boss 7 adjacent its outer circumference which boss is adapted to seat upon

the shouldered portion 5. The member 6 has an intermediate disc section with perforations 8 extending therethrough, and a raised boss 9 projecting centrally therefrom on the side opposite the annular boss 7. A cap 10 of metallic or other rigid material is provided with an internally screw-threaded cylindrical portion 11 adapted to engage the externally screw-threaded portion of the lip 3, and a flat shouldered portion 12 adapted to press against the flat outer face of the member 6 and force the boss 7 into tight fluid-sealing contact with the lip of the container. The central part of the cap 10 projects outwardly to form a funnel-shaped portion 13, which terminates in an opening 14 through which the outer end or tip 9' of the boss 9 projects. This outer end of the boss is conical to conform to the slope of the funnel-shaped portion 13, and it provides a surrounding channel 15, open to the container 1 through the perforations 8 and normally containing a limited quantity of adhesive in close proximity to the orifice 14.

When the dispenser is not in use, the conical surface of the boss 9 is pressed firmly against the inner surface of the funnel-shaped portion 13 to form a tight closure for the container and effectively prevent any leakage or dribbling therefrom, and also to prevent hardening or oxidizing of the adhesive therein. It will be observed that the weight of the adhesive within the container, together with the natural elasticity or resilience of the member 6, tends to force the boss 9 into a position tightly closing the orifice 14 and with the tip 9' extending therethrough.

When it is desired to apply the adhesive, the container is lowered and the tip 9' is pressed against the point or along the surface to which the adhesive is to be applied. This presses the boss 9 inwardly permitting an immediate flow of adhesive through the orifice 14 from the limited quantity in the channel 15, which quantity is quickly replenished from the container 1.

Where the container is normally supported with the cap down in the manner disclosed in my copending application above mentioned, an orifice 16 may be provided in the base of the container to admit air to the space above the surface of the adhesive in the container, thereby permitting the fluid to flow readily when the orifice 14 is opened in the manner above described. Also the bottle may then be filled with liquid through the opening 16. It will be understood, however, that the dispensing cap herein disclosed also possesses utility when used with a container that is normally supported in up-

right position, in which case the opening 16 is omitted.

From the above description it will be seen that I have provided a dispensing cap for adhesive or similar materials in which a single member 6, 7, 9 with perforations 8 provides a valved closure of the dispensing orifice and at the same time provides a liquid-tight seal for the rim or lip of the dispensing container. The use of separate springs for pressing the valve in the closing position is avoided and likewise separate members for sealing various places at which dribbling or leakage of the adhesive is likely to occur or as a result of which hardening or oxidation of the adhesive may occur. It will also be observed that the arrangement is such that the flexible member is not distorted by the weight of the material in the container except to the extent that it is pressed into closing position against the rigid wall surrounding the orifice, even though a quantity, limited in this case to the volume of the channel 15, is normally in close proximity to the discharge orifice. It will further be observed that the perforations weaken the intermediate section of the member 6 so that the boss 9 is held by the liquid in the container in tighter sealing engagement with the interior wall of the funnel 13 while at the same time this sealing engagement may be more readily and easily broken by inward pressure executed on the tip 9'.

While but a single embodiment of the invention has been described, other embodiments within the scope of the appended claims will be obvious to those skilled in the art from a consideration of the form shown.

Having thus described my invention, what I claim is:

1. A liquid dispenser including, in combination, a container having an opening, and a closure for the opening, said closure comprising a rigid integral member attached to the container and having an orifice, and a deformable integral member having a portion extending between the rigid member and container to form a liquid-tight seal for the joint therebetween, and also having another portion with a tip projecting through said orifice in liquid-tight engagement therewith to seal the orifice as the sole result of the elasticity of the deformable member after the application of external pressure to the tip to open the orifice.

2. A liquid dispenser including, in combination, a container having an opening, and a closure for the opening, said closure comprising a rigid integral member having a rim attached to the container and also having a funnel projecting outwardly of the rim to an orifice, and an integral member of rubber having a peripheral portion clamped between the container and rigid member to form a liquid-tight seal for the joint therebetween, and also having a boss with a tip extending through and outwardly of the orifice in liquid-tight engagement with the interior of the funnel to seal the orifice as the sole result of the elasticity of the rubber after the applica-

tion of external pressure to the tip to open the orifice.

3. A liquid dispenser including, in combination, a container having an opening with a lip surrounding the opening and an outer shouldered portion externally threaded, and a closure for the opening, said closure comprising a rigid integral cap having a rim engaged with the threaded portion and also having a funnel projecting centrally of the cap to an orifice, and a deformable member having a peripheral portion clamped between the container and shouldered portion to form a liquid-tight seal for the joint therebetween, and also having a central boss with a tip projecting through the orifice in liquid-tight engagement with the interior of the funnel to seal the orifice as the sole result of the elasticity of the deformable member after the application of external pressure to the tip to open the orifice.

4. A liquid dispenser including, in combination, a container having an opening, and a closure for the opening, said closure comprising a rigid integral member attached to the container and having a funnel projecting to an orifice, and a deformable integral member having its periphery clamped between the container and rigid member to form a liquid-tight seal for the joint therebetween, and also having a boss with a tip projecting through and outwardly of the orifice, said deformable member also having a perforated portion intermediate its periphery and the boss, whereby as the sole result of its own elasticity the deformable member seals said orifice in liquid-tight manner after the application of external pressure to said tip to open the orifice.

5. A liquid dispenser including, in combination, a container having an opening, and a closure for the opening, said closure comprising a member attached to the container and having a funnel projecting to an orifice, and a deformable member with a boss forming a space between it and the interior of the funnel and having a tip projecting through and outwardly of the orifice, said deformable member also having its periphery clamped between the container and the member attached thereto and a portion between its periphery and the boss with a perforation opening into said space.

6. A liquid dispenser including, in combination, a container having an opening, and a closure for the opening, said closure comprising a rigid integral member attached to the container and having a funnel projecting centrally to an orifice, and a unitary rubber member having its periphery clamped between the container and rigid member to form a liquid-tight seal for the joint therebetween, and also having a central boss with a channel between it and the interior of the funnel in proximity to the orifice and with the tip projecting through and outwardly of the orifice, said rubber member also having an intermediate portion around the boss with perforations leading to the channel.

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