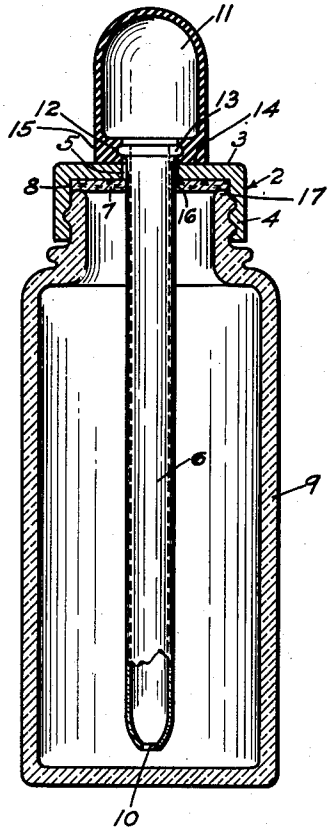
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DROPPER SERVICE

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DROPPER SERVICE

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My invention relates to a dropper of the type including a closure cap adapted to close the mouth of a receptacle and a dropper tube and bulb associated therewith. The combination of a closure and a dropper is generally designated as a dropper service in the art and my invention is directed to such dropper services. The reissue patent to Dykema, Re. No. 19,520, discloses a dropper service which is removable as a unit from the receptacle to which it is applied and is an example of the prior art structures.

It is an object of my invention to provide a dropper service in which the sealing gasket is formed separately from the dropper bulb and may be composed of any suitable sealing composition without respect to the composition employed in the manufacture of the bulb. Droppers are commonly used with oily liquids, such as nose drops, which liquids have a softening effect upon rubber and a particularly deleterious effect upon the portion of the unit which, in the prior art structures, forms the gasket for the closure. Since the dropper bulb and gasket have been integrally formed, and, since the bulb must be made of rubber or some equivalent material, many of the commonly used sealing compositions cannot be used because they are not capable of being formed into dropper bulbs. Certain cork compositions, for example, are highly resistant to attack by oils and are admirably suited for use as sealing gaskets. They cannot, however, be formed into bulbs.

No means have heretofore been provided to remove the liquid disposed on the outer surface of the pipette upon removal of the dropper service from the receptacle to which it is applied and in the liquid of which the pipette is disposed. This is objectionable since the pipette may be accidentally brought into contact with the clothing of the user and result in soiling. When the pipette is used as a nasal injector, it is undesirable to have the outer surface thereof covered with liquid which will be deposited upon the skin of the user. This is particularly true of "Argyrol" and other dark colored staining compositions. Another object of my invention, therefore, is to provide a dropper service in which the bulb and pipette may be withdrawn from the closure and in which the outer surface of the pipette may be wiped clean in the withdrawing operation.

The dropper service of my invention is illustrated in the accompanying drawing, which is a sectional view showing a dropper service applied to a bottle.

The dropper service comprises a closure cap 2, which, in the embodiment illustrated, has a top 3 and a screw threaded skirt 4. The top 3 is provided with a central opening 5 through which a pipette 6 is adapted to freely pass. A sealing gasket 7, which in the drawing is shown as a cork composition sealing gasket which may be so compounded as to be oil resistant, lies in engagement with the under surface of the top 3 and preferably frictionally engages the inner wall 8 of the skirt 4 of the cap above the screw thread formations provided therein. The pipette 6 extends to a point adjacent the bottom of bottle 9 and is provided with an opening 10 through which the contents of the container is directed upwardly upon suction being created by bulb 11 which is preferably made of rubber or other elastic material. An annular recess 12 is formed in the open mouth of the bulb and is adapted to receive an annular rib or bead 13 formed adjacent the top of the pipette 6.

The particular shape of the bulb 11 is not important, although I have found it desirable to provide a flat surface 14 for engagement with the top 3 of the closure in order to insure a relatively rigid unit upon assembly of the component elements. A thickened end portion 15 is also desirable to provide an area which may be grasped by the user in removing the bulb and tube from the closure. This portion 15 serves a dual purpose, reenforcing the bulb adjacent the dropper bead receiving recess 12 and thus enhancing the frictional grip between the pipette 6 and the bulb 11 and also providing protection against accidental compression of the bulb in removing the dropper from the closure. The lower portion of the bulb 11 may be flanged adjacent the portion 15 and will provide a dropper unit which may rest on a horizontal surface with the open end 10 of the tube directed upwardly and away from such surface. The flange may have any particular outline and may be so formed as to prevent rolling.

In the assembly of the dropper service, the beaded end 13 of the pipette is positioned within the open end of the bulb 11 with the bead 13 lying within recess 12. Sealing gasket 7 is placed within closure cap 2 with the opening 5 in the cap in substantially axial alignment with an opening 16 provided in the gasket 7. The diameter of the opening 16 should preferably be somewhat less than the outer diameter of the pipette 6 in order that the tube will be frictionally and sealingly engaged thereby. The pipette and bulb are then assembled with the closure and

gasket by forcing the open end 10 of the pipette 6 through the openings 5 and 16 until the flattened portion 14 of the bulb 11 lies in engagement with the top 3 of the cap 2. The dropper service thus assembled constitutes a unit which may be conveniently applied to and removed from a receptacle in a single operation and a relatively rigid structure is provided by reason of the fact that flattened portion 14 of the bulb 11 extends over a considerable area of the top 3 of the cap 2 and the sealing gasket 7 frictionally engages the wall 8 of the cap and holds the dropper tube against radial displacement. The pipette, which is usually made of glass or other friable material, is thus protected against breakage, floating within opening 5 and being cushioningly held by the bulb and gasket in spaced relationship with respect to the wall of the opening 5. If it is desired to provide a structure in which the service is removable as a unit, but in which the bulb and pipette are held against displacement with respect to the closure and gasket, a bead may be formed on the pipette to lie below the gasket 7 and will thus prevent axial displacement of the component parts. If such a structure be employed, the opening 5 in the top of the closure must be of sufficient diameter to pass the bead.

In the use of my dropper service, the entire unit may be removed from the bottle for application of the contents or the bulb and pipette may be separated from the closure and gasket. If the pipette is withdrawn from the gasket, frictional engagement of the gasket with the outer surface of the pipette will result in a wiping action, leaving it clean and free of liquid on its outer surface.

My invention is particularly adapted for use with metal type closures, since the cut or raw edge resulting from perforation of the top of the closure will not come into cutting engagement with the bulb or gasket but will be positioned therebetween. In the prior art structures, the bulb passed through the closure and was often abraded, cut or punctured by the raw edge of the metal.

Upon the application of my dropper service to a container, a tight seal is obtained by reason of the compression of the gasket 7 about lip 17 of the bottle and by sealing engagement of the gasket 7 with the pipette 6 at the opening 16. It is thus possible to close receptacles containing compositions including volatile materials, obviating the excessive evaporation resulting from a poor seal.

While I have illustrated and described certain preferred embodiments of my invention, it will be understood that the invention is not so limited but may be otherwise embodied within the scope of the following claims.

I claim:

1. A dropper service comprising a closure cap having a top and an axially extending skirt, a sealing disk disposed within the cap in engagement with the top and skirt portions thereof, a pipette passing through an opening provided in the top of the cap and sealingly engaging the disk at the periphery of a pipette receiving opening therein, and a bulb disposed exteriorly of the cap and secured to the pipette, the opening in the top of the closure cap being of materially lesser diameter than the diameter of the bulb at the base thereof which lies in engagement with the cap and the bulb having an extended flat surface for engagement with the top of the cap surrounding the opening therein.

2. A dropper service in accordance with claim 1 in which the bulb is provided with a thickened area adjacent its base providing a digit engageable portion whereby the bulb and pipette may be removed from the closure without compression of the bulb.

3. A dropper service in accordance with claim 1 in which the sealing disk is formed of oil resisting material.

4. A dropper service in accordance with claim 1 in which the pipette is formed with a bead adjacent one end thereof and the bulb is provided with a recess adapted to receive the bead.

5. The combination with a container, of a dropper service comprising a closure cap having a top, an axially extending skirt provided with means for engaging complementary means on a container to be closed, a sealing disk disposed within the cap in engagement with the top and skirt portions thereof and adapted to lie in engagement with the container lip to seal the same, a pipette passing through an opening provided in the top of the cap and sealingly engaging the disk at the periphery of a pipette receiving opening therein and a bulb disposed exteriorly of the cap and secured to the pipette, said bulb at the base thereof being of greater diameter than the opening in the top of the cap and having an extended flat surface for engagement with the top of the cap surrounding the opening therein, the arrangement being such that the bulb and pipette may be withdrawn from the closure.

6. A dropper service in accordance with claim 1 in which the arrangement is such that the pipette serves to hold the assemblage as a unit.

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