Oct. 11, 1955 D. M. ACKERMAN 2,719,997

DISPENSER AND APPLICATOR

Filed July 11, 1952

Fig. 1.

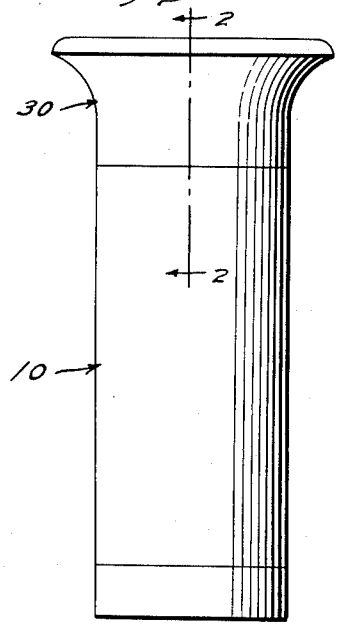


Fig. 2.

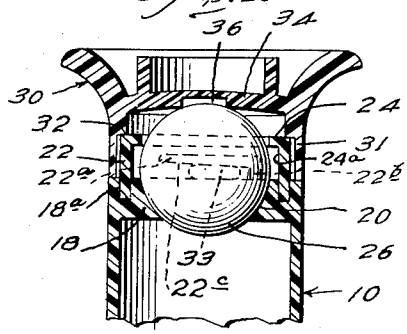


Fig. 3.

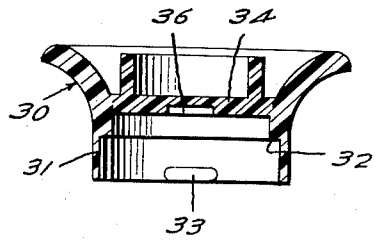


Fig. 5.

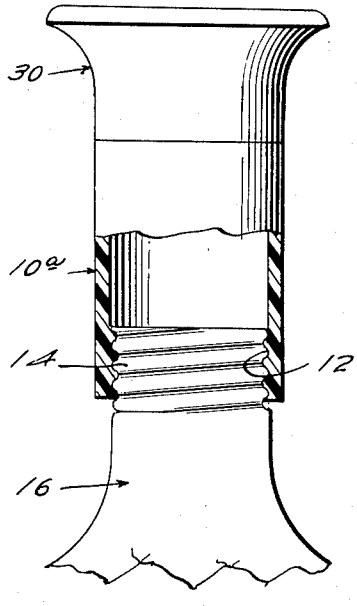
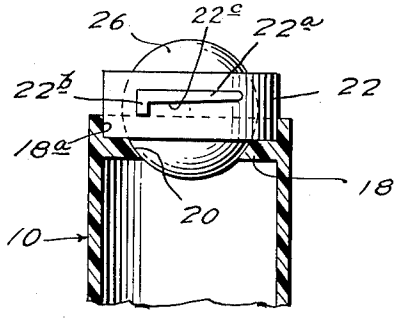


Fig. 4.



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DISPENSER AND APPLICATOR

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2 Claims. (Cl. 15—132.7)

This invention relates generally to the class of liquid or fluid dispensing devices and is directed particularly to a dispensing device designed primarily for the dispensing of toilet preparations.

A primary object of the present invention is to provide a fluid or liquid dispenser which is provided with a rotatable applicator which transfers liquid from the receptacle in which it is retained, to the surface of the skin.

Another and more specific object of the invention is to provide a liquid dispensing device of the character stated wherein the outlet of the dispenser is formed to provide a curved or toric seat upon which is loosely positioned a fluid transfer sphere which is restricted to a limited movement away from its seat by an internally flanged collar whereby when the liquid container carrying the dispensing top or head is inverted the sphere will leave its seat and position upon the flange of the collar where its contact with the flange will limit the escape of liquid from the container. Consequently by raising the container and reapplying the sphere to the surface to which the liquid is to be applied, small amounts of the liquid will be permitted to flow over the surface of the sphere to be applied to the surface with which the sphere is in contact.

A still further object of the invention is to provide a liquid dispenser of the above described character wherein there is provided a closure or cover cap of novel design which is adapted to be detachably connected with the flanged collar and when so connected will contact the fluid transferring sphere so as to retain the sphere tightly upon its seat, thereby preventing leakage of the liquid from the container in the event that the container is inverted while the cap is on.

A still further object of the invention is to provide a dispenser of the above described character which is designed so that it may be applied to any conventional commercial container in which is sold liquids or lotions designed to be applied to the skin, such as perfumes, astringent lotions, hand lotions, deodorant lotions, etc.

Other objects and advantages of the invention will become apparent as the description of the same proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming a part of the specification, with the understanding, however, that the invention is not to be limited to the exact details of construction shown and described since obvious modifications will occur to a person skilled in the art.

In the drawing:

Figure 1 is a view in side elevation of a dispensing receptacle constructed in accordance with the present invention.

Figure 2 is a central longitudinal section through the top part of the receptacle taken substantially on the line 2—2 of Figure 1.

Figure 3 is a sectional view through the cap per se.

Figure 4 is a sectional view through the upper part of the receptacle with the cap removed and showing the retaining collar in elevation.

Figure 5 is a view partly in elevation and partly in section of a modified form adapted for attachment to the threaded neck of a conventional commercial receptacle.

Referring now more particularly to he drawing the numeral **10** designates any suitable or conventional type of receptacle for holding a liquid. This receptacle may be of any design desired or it may be formed merely as a short cylindrical body as illustrated in Figure 5 and designated **10***a* having the lower end open and provided with the internal screw threads **12** for the application of the dispenser to the threaded mouth **14** of any type of bottle or other receptacle **16** in which liquids of the nature above referred to, might be sold commercially.

From the foregoing it is to be understood that where in the specification or claims reference is made to the body of the dispenser this is intended to apply either to a complete receptacle such as is shown at **10** or to the cylindrical body **10***a* which is designed for application to a receptacle. Accordingly the hereinafter set forth description will be confined to the body designated **10** but it is to be understood that it applies also to the body **10***a*.

In accordance with the present invention the body **10** is provided with a thickened top or head portion containing an internal flange **18** having an opening through the center thereof, the edge of which opening is curved or shaped to form a toric seat **20** having a generally inclined or beveled seating surface.

Fixed in the flange **18** at the top or head portion of the body **10** and extending outwardly therefrom is an annular collar **22** which is concentric with the seat **20** and has an inturned flange **24** at its outer edge.

The collar **22** may be secured to the head in any suitable manner. It is here shown as being seated in an annular recess or groove **18***a* but it is to be understood that the invention is not limited to this specific construction.

Upon the outer surface of the collar there are formed two or more circumferentially extending locking ribs **22***a* which, as shown in Figure 4, having in each case an inclined edge **22***c* that terminates in a downturned stop end **22***b*.

Positioned within the collar **22** and adapted to rest snugly upon the seat **20** is a ball or sphere **26**. As shown, the center of this sphere is slightly above the top end of the body **10** and the flange **24** of the collar extends inwardly toward the ball or sphere to overlie the same outwardly of the center thereof and coact with the flange **18** to define an annular cavity **24***a* extending circumferentially around the sphere **26**. Since the diameter of the opening defined by the flange **24** is less than the diameter of the sphere and when the sphere is resting on the toric seat **20** the flange **24** is free of contact with the surface of the sphere, but when the body **10** is inverted the sphere will drop away from its toric seat **20** and rest upon the flange **24** to form a fluid tight contact therewith. By reason of the slight movement permitted the sphere **26** between the seat **20** and the flange **24**, a small amount of fluid will escape from the receptacle forming a part of the body **10** into the cavity **24***a* and, as the sphere projects slightly beyond the flange **24** or the outer edge of the collar, the sphere can be applied to the surface of the skin and move thereover to transfer the fluid from the surface of the sphere to the skin.

Adapted to be detachably connected with the collar **22** is the cap which is generally designated **30**. This cap is, like the body **10**, preferably formed of a plastic of suitable character and comprises the circular portion **31** having an outside diameter approximately the same as the outside diameter of the body **10** and an inside diameter, through a portion of its axial extent, slightly larger than the overall diameter of the collar which is enclosed in the cap in order to accommodate the locking means hereinafter described. At the inner end of the collar encircling

portion of a cap there is formed an annular shoulder **32** which rests upon the edge of the collar **22**, and upon the inner surface of the cap are two or more locking lugs **33** which when the cap is applied and rotated on the collar **22**, move under and slidably engage the respective inclined edges **22c** of the locking ribs **22a** to draw the cap with a wedging action tightly into a seated position.

The cap **30** includes the head wall **34** in the center of the undersurface of which is a slight circular depression **36**. This head wall is preferably formed of a suitable resilient plastic and the inside dimensions of the cap are such that when the cap is secured on the body the topmost portion of the ball or sphere **26** will be pressed into the depression **36** and the flexible character of the cap head wall **34** will cause it to function in a manner to firmly press the ball onto the toric seat **20**. Thus it will be seen that when the cap **30** is applied to the dispenser the yieldable or flexible portion **34** will impose a yielding pressure to the ball so as to firmly hold it on the seat **20** and prevent flow of liquid from the container to cavity **24a**.

While the head wall **34** of the cap has been defined as preferably formed of a resilient or flexible plastic, the remainder of the construction is preferably formed of a suitable hard plastic or it may be formed of any other suitable material although the plastic is preferred.

From the foregoing it will be apparent that there is provided by the present invention a novel type of dispenser which may form an integral part of a receptacle or be formed for application to a commercial type of receptacle, which dispenser may be employed in any convenient manner to apply liquids of any desired character to the surface of the skin, the nature of the dispenser being such that the liquids will be applied in small amounts and no danger of an excessive amount of liquid escaping is present and also when the cap is applied the movable applicator sphere or ball will be firmly held on its seat so as to seal the opening against the accidental escape of liquid.

It will be apparent that in the use of the present invention, as the sphere is moved over the skin it will be rotated also and this action together with the slight movement which the sphere may have between the seat **20** and the flange **24**, due to the lifting and repositioning of the receptacle, will let the liquid flow past the seat outwardly of the sphere and permit air to enter past the flange and seat, so that the movement of the liquid is in a thin film onto the skin surface, is accomplished in the desired manner.

I claim:

1. In a liquid dispenser and applicator: a hollow cylindrical container open at its top end; an annular flange at the top end having the upper side of its inner edge beveled to form a valve seat; a collar secured to said flange and projecting beyond said top end; a spherical valve element normally supported on said seat, an annular flange inturned from the top edge of said collar and defining an opening of a lesser diameter than that of said valve element, and through which opening a portion of said valve element projects, said latter flange acting to limit movement of the valve element relative to said seat and coacting with the first flange to form an annular cavity circumferentially around the valve element; a cap slidably engageable over and guided by said projecting portion of the collar to a seated position; and interlocking means between said collar and the cap for detachably securing the cap in its seated position, said valve element being displaced from said seat upon the inverting of said container for passage of liquid into said cavity and the filming of the valve element by the liquid and its subsequent application to a surface by rolling contact of the valve element with the surface.

2. The invention as defined in claim 1, with said cap having a flexible top wall provided with a depression in the center of its inner side to seat over the portion of said valve element protruding through the opening in said annular flange and to exert pressure thereon to hold the valve element on its seat and prevent flow of liquid from the container to said cavity, when the cap is secured in place on the collar.

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