

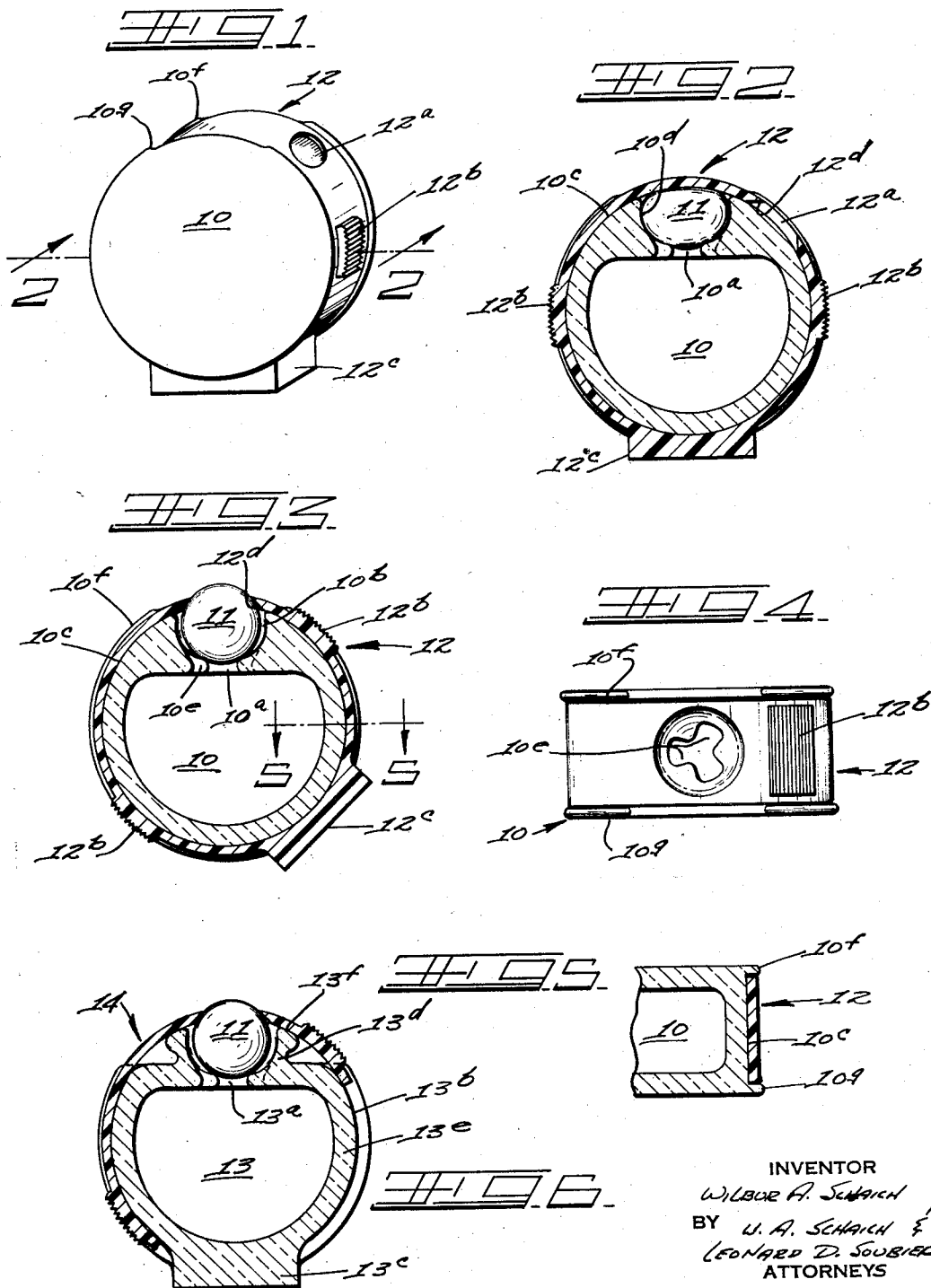
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W. A. SCHAICH
APPLICATING DEVICE

2,912,708

Filed March 24, 1958

2 Sheets-Sheet 1



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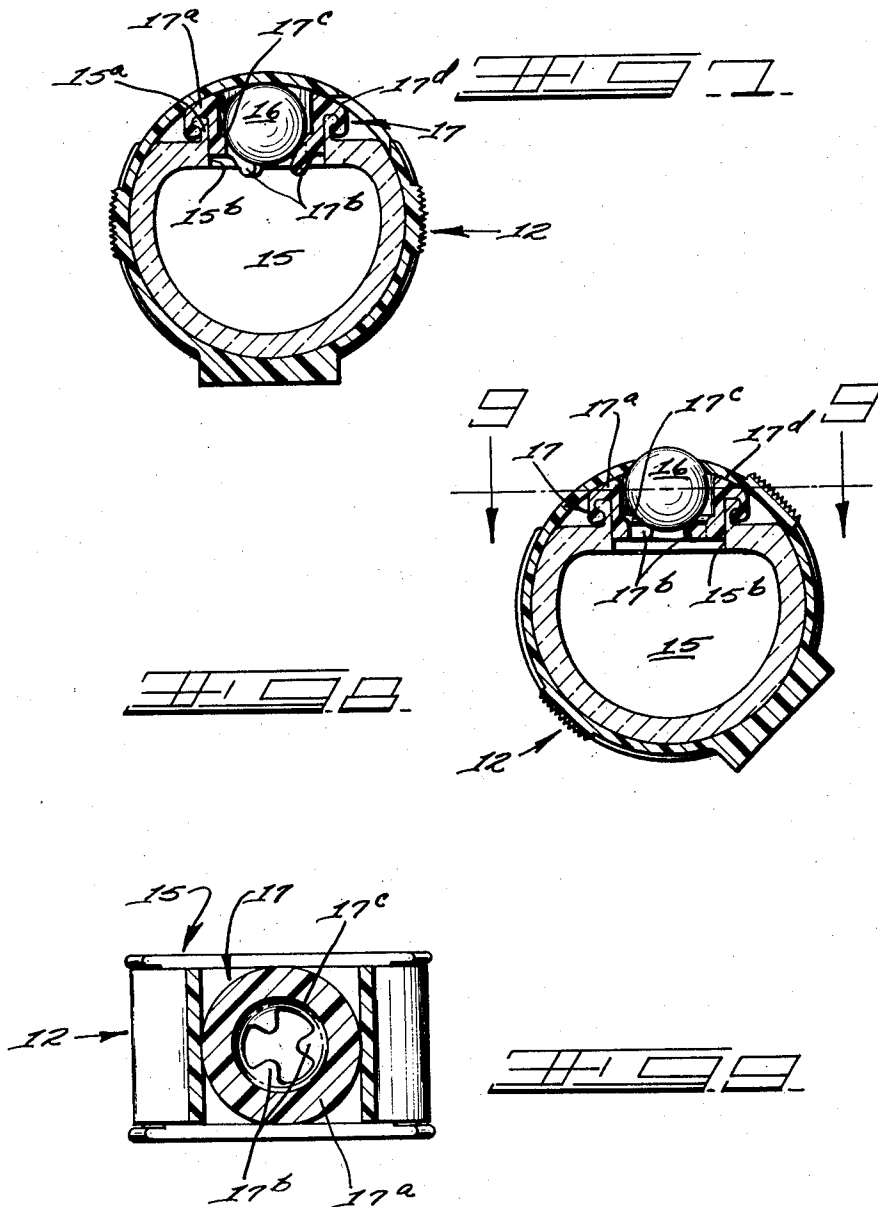
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APPLICATING DEVICE

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The present invention relates to an applying device for various fluid and semi-fluid substances, and more particularly to that type of device having a reservoir for supplying a fluid or semi-fluid substance to a rotatable element, which when rotated transfers the substance onto a selected surface at a regulated rate and in a smooth and uniform manner.

Heretofore, applying devices of the aforementioned type have been, so far as is known, utilized only with bottles and other like containers or receptacles having a conventional reduced diameter neck portion from which the container's contents are dispensed and upon which the applying ball is mounted to receive and transfer said contents to the intended surface. Applicators and dispensers of this type, however, due to their shape, size and general appearance are not suitable for use as a companion-type applicator or accessory item, such as may be carried conveniently on or with the person of the user. On the other hand, many various fluid and semi-fluid substances, such as, for example, cosmetic, deodorants, toiletries, and particularly medicinal preparations are of such a nature that a convenient and suitable means for applying such preparations while the user is away from home is highly desirable.

The applying device embodying the present invention, as will become clearly apparent from the detailed description presently following, is, in addition to being adapted for ordinary home use, particularly well suited for companion-type use, and is constructed in such manner that it may conveniently be carried as an appropriate accessory item, which fits neatly in a pocket of a person's clothing, or a lady's handbag, or the like, to facilitate a uniform roll-on type application of various fluid and semi-fluid substances and preparations when the user is away from home.

An object of the present invention is to provide a novel applying device which facilitates a controlled transfer and application of various fluid and semi-fluid substances, such as cosmetic preparations, toiletries, medicants, and the like.

A further object of the present invention is to provide an applying device for applying various fluid and semi-fluid substances and in which a rotatable element, such as a ball, or the like, functions to transfer a smooth and uniform coating of the substance onto the surface to which application is desired in response to rotational movement of the element in contact with such surface.

A further object of the present invention is the provision of a dispensing container and applicator assembly having the foregoing characteristics, which is compact in design, attractive in appearance and easily carried on or with the person of the user.

A further object of the present invention is the provision of a dispensing container and applicator assembly, which, in addition to facilitating smooth and uniform application, effectively precludes leakage and evaporation of the container's contents when the assembly is not being utilized for applying purposes; and to this end

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providing means for opening and closing the assembly in convenient manner without necessitating detachment and replacement of a cover or closure therefor.

A particular object of the present invention is the provision in a ball-type applicator assembly having the above characteristics, of: a container, a flexible applying element and a retaining element arranged on the container in such manner that simple manipulation of the retaining element between alternate positions on the container functions to open and close the assembly, respectively, to permit application and, when application is not desired, to preclude escape of the container's contents.

These and other objects of the present invention, as well as the specific nature thereof, will become apparent to those skilled in the art from the following detailed description taken in conjunction with the annexed sheets of drawings on which, by way of preferred example only, three embodiments of this invention are illustrated.

As represented on the drawings:

Fig. 1 is a perspective view of an applying device embodying the present invention and illustrated in closed position.

Fig. 2 is a vertical sectional view of the device shown in Fig. 1.

Fig. 3 is a view similar to Fig. 2 but for comparative purposes illustrating the device in an open applying position.

Fig. 4 is a plan view of the device in open applying position, and for clarity of illustration with the applying element removed.

Fig. 5 is a fragmentary sectional view taken substantially along the line 5—5 in Fig. 3, showing a portion of the container wall and retaining element in cross section.

Fig. 6 is a view similar to Fig. 3, but illustrating a modified form of the container and retaining element.

Figs. 7 and 8 are views similar, respectively, to Figs. 2 and 3, but illustrating another modified form of the device embodying the present invention.

Fig. 9 is a view taken along the line 9—9 of Fig. 8, and for clarity of illustration showing the assembly with the applying element omitted from the assembly.

Briefly, the embodiment represented by Figs. 1—5 includes a hollow dispensing container 10 having a cylindrical exterior configuration quite similar in general appearance to a conventional lady's facial compact, in which a desired fluid or semi-fluid cosmetic, deodorant, medicant, or similar preparation may be retained. The container 10 may be filled and emptied with respect to such substances through a dispensing opening 10a, which is shaped to form a pocket 10b in the cylindrical rim 10c of the container communicating with the container's hollow interior. A smooth and uniform application of the container's contents is effected with a resiliently deformable applying ball 11, which is confined in assembled relationship within the pocket 10b by a retaining element or band 12 slidably arranged on the rim 10c of the container. The retaining band 12 is movable on the rim 10c between alternative open and closed relative positions illustrated, respectively, in Figs. 3 and 2. When in open position, a transverse opening 12a of smaller diameter than the applying ball 11 and extending through the retaining band 12 registers with the applying ball 11 and permits a minor diameter segment of the applying ball to project loosely there-through for exposure to the surface to which application is desired. In this position the applying ball 11 may be easily rotated in any direction within the pocket 10b. When in closed position, however, the retaining band 12 overrides the applying ball 11 and resultantly closes the dispensing opening 10a by compressing the exposed

surface of the applying ball 11, thus distending the applying ball laterally outward into sealing contact with the wall surface of the pocket 10b, as at 10d. Thus, a camming action which is produced by the retaining band 12, when in closed position, prevents evaporation or leakage of the container's contents. By merely manipulating the retaining band 12 in circular fashion, the device may be quickly reopened. Whereupon, the resilient applying ball 11 resumes its normal spherical shape and projects through the transverse opening 12a in the retaining element 12 in the manner previously described.

Referring to the invention in greater detail, the container 10 is preferably constructed from glass, rigid plastic, metal, or other similar material capable of retaining a fluid substance therein. The rim 10c of the container 10 defines a relatively smooth exterior surface which facilitates sliding movement of the retaining band 12 thereon as the latter is shifted between the aforementioned open and closed positions. To restrict edgewise displacement of the retaining band 12 and to prevent accidental dislodgement thereof from the container 10, the rim 10c is provided with integrally formed ribs 10f and 10g best observed in Figs. 4 and 5, which protrude radially outward in parallel spaced relation from each opposite marginal edge of the rim thereby defining an annular groove and providing a track guiding the movement of the retaining band. Preferably, but not necessarily, these ribs 10f and 10g are reduced in height or omitted in the vicinity of the dispensing opening 10a to provide greater exposure of the surface of the applying ball 11 during application of the container's contents. As best illustrated in Fig. 4, the dispensing opening 10a has a spheroidal shape toward its outer axial end and defines a pocket 10b in which to confine a major portion of the applying ball 11 in ball and socket relationship. At the inner end of the pocket 10b, the wall of the opening 10a converges inwardly and restricts the opening 10a to a lesser diameter than that of the applying ball 11, and prevents the latter from being displaced into the interior of the container 10 even when pressure is imposed upon the applying ball during use or when the applying ball is compressed by the retaining band 12. The inner rim of the pocket 10b is transversely fluted or otherwise perforated, as best illustrated in Fig. 4, to form at least one fluid passage 10e, which by-passes the area of contact between the applying ball 11 and the wall of the pocket 10c when the unit is in an applying position. Thus, the fluid passage or passages 10e obviate the tendency of the applying ball 11 to seal against the ball supporting surface of the pocket 10b or scrape thereagainst and remove the adhering layer of the container's contents from the ball's surface.

The applying ball 11, which is constructed from a flexible material such as rubber, resilient plastic, or other material having similar properties of deformability, resiliency and sealability, is loosely retained within the pocket 10b to permit universal rotational movement thereof during application, and rests under its own weight upon the restricted portion of the dispensing opening 10a when the container is positioned with the dispensing opening 10a in an upper position, or when the ordinary pressure accompanying application is imposed upon the applying ball. The exterior surface of the applying ball 11 is preferably smooth and substantially free from molding seams or other rough surface areas which would adversely affect the sealability of the applying ball with the wall of the pocket 10b, or which might produce objectionable irritation when rolled in contact with such surfaces as the sensitive human skin.

The retaining band 12 is formed of plastic, metal, rubber, or other similar material, having sufficient resiliency to permit the retaining band to be snapped snugly into position over the rim 10c of the container 10, but which also possesses sufficient rigidity to deform the ap-

plicating ball 11 when the retaining band is moved to its closed position. The transverse opening 12a in the retaining band 12 is, as previously mentioned, of smaller diameter than the applying ball 11, and surrounds a minor diameter chordal segment of the applying ball in proximately spaced relationship to thereby permit substantially free rotational movement of the ball 11 while confining same within the pocket 10b when the unit is in an applying position. The wall surface defining the transverse opening 12a is preferably frustoconical in shape, as at 12d in Fig. 2, which facilitates the overriding movement of the retaining band 12 over the applying ball 11 when the former is moved from an open to a closed position. Additionally, the outer surface of the retaining band 12 may be provided with grips, as at 12b, in order to facilitate manipulation of the retaining band 12 between its open and closed positions. Also, a flat protruding base 12c is preferably formed on the exterior surface of the retaining band 12 to provide means for supporting the container in an upright position.

In the modified construction of the invention, illustrated in Fig. 6, the container is shaped in the form of a bottle 13 having a cylindrical body portion 13e and a reduced diameter neck portion 13d defining a dispensing opening 13a on one end, and having a protruding base 13c formed on the opposite end, which provides means of upright support for the container. The neck portion 13d defines an outwardly facing surface finish 13f defining a cylindrical segment coaxial with and having the same radius as that corresponding to the cylindrical exterior surface of the body portion 13e of the bottle. The retaining band 14, in this modified construction, extends only partially around the periphery of the bottle 13, to permit sliding movement of the retaining band between its respective open and closed positions without interference occasioned by the protrusion of base 13c. To provide sufficient engagement between the retaining band 14 and the cylindrical rim 13b of the bottle and to prevent same from being dislodged from the bottle 13 under ordinary conditions of use, the retaining band is constructed to encompass the body of the container 13 through an angle in excess of 180°. In all other practical respects, the structure and function of the modified construction corresponds to the embodiment initially described and shown in Figs. 1-5. In either respective embodiment, it will be observed that when the retaining band is in closed position the applying ball, which is of deformable construction in both instances, is compressed against the inner end of the pocket and is deformed laterally outwardly into sealing contact with the wall of the pocket. Thus, a seal which effectively precludes evaporation, leakage or other loss of the container's contents may be formed by merely twisting the retaining band to a closed position when application is not desired. Conversely, when the retaining band is twisted to an open position, application may be readily effected by merely rolling the exposed portion of the applying ball in contact with the surface on which application is desired.

Pursuant to another aspect of this invention, Figs. 7-9 represent an applying device in which the cylindrical container 15 has a neck portion 15a formed with a conventional straight walled dispensing opening 15b. In this instance the spherical applying ball 16 may be fabricated from a rigid material, such as glass, polystyrene, metal or other like material, and is supported by an annular insert 17 which fits snugly within the dispensing opening. The insert 17 is formed from a pliant material, such as polyethylene, rubber, or other material having similar properties of resiliency, pliability and sealability, and includes: a radial outwardly projecting rim 17a which seats on the container neck portion 15a; at least one internal projection, such as the three marginally spaced projections 17b, best illustrated in Fig. 9,

which gravitationally supports the applying ball 16; and, a continuous annular sealing surface 17c defined on the internal wall surface of the insert. Rim 17a defines an outwardly facing end surface 17d having the contour of a cylindrical segment having a radius identical with the radius of the cylindrical body portion of the bottle 15 and centered coaxially therewith. The projection or projections 17b are positioned relative to the applying ball 16 and the annular sealing surface 17c in such manner that the projections will maintain the applying ball in spaced elevated position over the sealing surface and with a minor diameter segment of the applying ball protruding outward from the rim 17a of the insert 17 when the device is in its open applying position illustrated in Fig. 8.

The retaining band in this form of the invention is the same as that previously described with reference to the embodiment shown in Figs. 1-5, and functions in this instance to override and depress the applying ball 16 when slidably moved on the periphery of the container from its open to closed position, the latter position being shown in Fig. 7. In this instance, however, the applying ball 16 is rigid and does not deform or distend, but depresses the projection or projections 17b downward and seats firmly on and in sealed contact with the annular sealing surface 17c, when the retaining band is in closed position. Conversely, when the retaining band is moved to its open position the projections 17b resiliently elevate the applying ball 16 and return same to the afore-described applying position shown in Fig. 8.

In each of the three aforedescribed embodiments, a further seal is effected by the retaining band at the outer end of the dispensing opening which further precludes any escape of the container's contents, and particularly such residual contents as may remain within the ball supporting pocket when each application is terminated in addition to preventing leakage or seepage of the container's contents from beneath the retaining band in the region adjacent the mouth of the dispensing opening during application of the container's contents. In this regard, the cylindrical rim 10c of the container 10 shown in Figs. 1-5, as well as the finish 13f of the container neck portion 13d represented by embodiment shown in Fig. 6, and the outwardly facing end surface 17d on the insert 17 shown in Figs. 7 and 8, respectively, define an arcuate surface mating with the underside surface of the retaining band to form a frictional seal extending in continuous manner around the periphery of the dispensing opening. Hence, the container's contents can only escape through the annular opening defined between the applying ball and the transverse opening in the retaining band when the device is in open applying position, and such residual contents as may remain on the surface of the applying ball or within the ball supporting pocket, following application, are sealed from the atmosphere when the retaining band is moved to its closed position.

From the foregoing description, it is readily apparent that regardless of which of the foregoing embodiments is utilized, there is provided a handy and useful applying device which presents an attractive appearance and which facilitates application of various fluid and semi-fluid substances both at home and while away from home. Also, among other advantages, the compactness of the assembly and the ease of opening and closing the device without necessitating removal of a closure member constitute highly desirable structural and functional features which are novel and extremely beneficial.

It will, of course, be understood that various details of construction may be modified through a wide range without departing from the principles of this invention, and it is not, therefore, the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim:

1. A liquid applicator comprising a hollow cylindrical container having a radial opening through its cylindrical wall portion, the outer end of said radial opening defining a ball-receiving pocket, a deformable ball inserted in said pocket and being of such diameter that a portion of said ball normally projects radially beyond said cylindrical wall portion, an arcuate retainer rotatably mounted on said container in surrounding relation thereto, said retainer having an aperture permitting said projecting portion of said ball to protrude therethrough and freely rotate to apply liquid contents of said container, said retainer also having a surface portion operable by rotation of said retainer relative to said container to compress said ball into said pocket to seal said opening.

2. The combination defined in claim 1, wherein said cylindrical wall of said container is provided with an annular groove defining an annular track to receive said retainer in relatively rotatable relationship.

3. The combination defined in claim 2, wherein said retainer is formed of resilient material permitting it to be snapped into engagement with said groove.

4. A liquid applicator comprising a hollow container having a cylindrical wall portion and a radial opening through said cylindrical wall portion, the outer end of said radial opening having a ball chamber, an annular sealing surface in said ball chamber, an applicator ball freely confined in said chamber and radially shiftable therein between a sealing position in contact with said sealing surface and an applying position wherein a portion of said ball projects radially beyond said cylindrical wall portion, an arcuate retainer rotatably carried on said container in surrounding relation thereto, said retainer defining an aperture permitting said projecting ball portion to protrude therethrough and freely rotate to apply liquid contents of said container, said retainer also defining a surface portion operable by rotation of said retainer relative to said container to shift said ball into said sealing position.

5. The combination defined in claim 4, wherein said cylindrical wall portion of said container is provided with an annular groove defining an annular track to receive said retainer in relatively rotatable relationship.

6. The combination defined in claim 5, wherein said retainer is formed of resilient material permitting it to be snapped into engagement with said groove.

7. An applying device for fluid and semi-fluid substances comprising a hollow container having a cylindrical rim defining a radial dispensing opening communicating with the interior of said container, the outer end of said radial opening defining a ball-receiving pocket, a rotatable applying ball inserted in said pocket and being of such diameter that a portion of said ball normally projects outwardly beyond said rim, a cylindrically shaped retainer slidably mounted on said rim in surrounding relation to said container for rotational movement between alternate open and closed positions and confining said applying ball within said pocket, said retainer defining a transverse opening receiving said projecting portion of said applying ball therethrough when said retainer is in said open position, said retainer also having a surface portion operable by rotation of said retainer to said closed position to depress and enclose said ball within said pocket.

8. An applying device for fluid and semi-fluid substances comprising a hollow cylindrical container having a cylindrical rim defining a radial dispensing opening communicating with the interior of said container, the outer end of said dispensing opening defining a ball-receiving pocket, a rotatable applying ball inserted in said pocket and being of such diameter that a portion of said ball normally projects radially beyond said rim, a cylindrically shaped retainer slidably mounted on said rim in surrounding relation to said container for rotational movement between alternate open and closed positions

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and confining said applying ball within said pocket, said retainer defining a transverse opening receiving said projecting portion of said applying ball therethrough when said retainer is in said open position and having a surface portion contacting said rim in sealing relation around the periphery of said dispensing opening, said retainer also having a surface portion operable by rotation of said retainer to said closed position to depress and enclose said ball within said pocket.

9. A liquid applicator comprising a hollow container having a cylindrical wall portion and a neck portion defining a radial dispensing opening, an annular resilient insert supported on said neck portion coaxially with said dispensing opening, said insert having an internal pocket and an internal flexible projection forming the base of said pocket, said internal pocket having an annular sealing area on the wall surface thereof near said flexible projection, a rigid applicator ball freely supported in said pocket upon said flexible projection, said projection being

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resiliently deflectable to accommodate movement of said ball between a sealing position in sealing contact with said sealing surface and an applying position out of contact with said sealing surface and with a portion of said ball projecting outwardly beyond said insert, an arcuate retainer rotatably mounted on said container in surrounding relation thereto, said retainer having an aperture permitting said projecting ball portion to protrude therethrough and freely rotate to apply liquid contents of said container, said retainer also having a surface portion operable by rotation of said retainer relative to said container to shift said ball into said sealing position.

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