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3,039,132

DISPENSER-APPLICATOR DEVICE

Filed Nov. 23, 1959

FIG. 1.

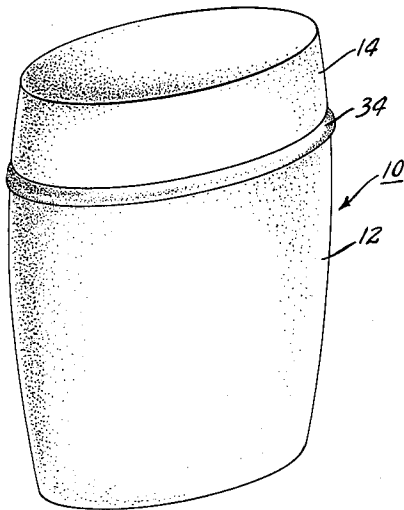


FIG. 2.

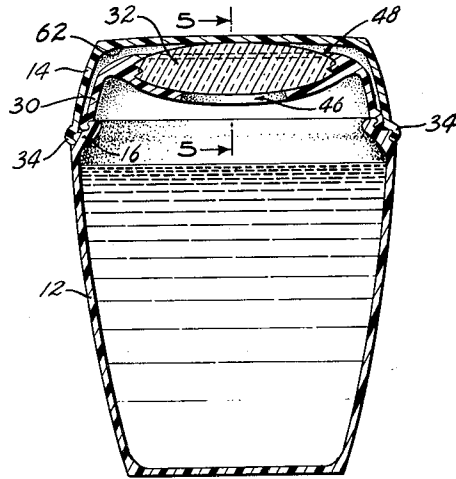


FIG. 3.

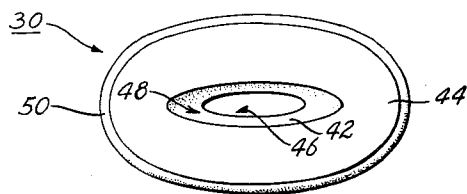


FIG. 4.

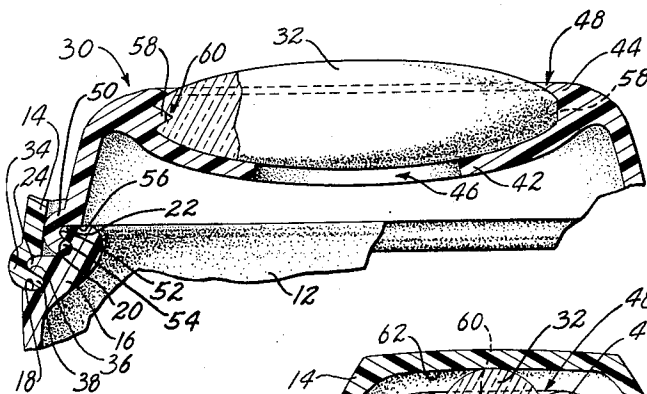


FIG. 6.

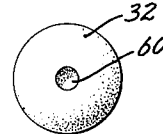
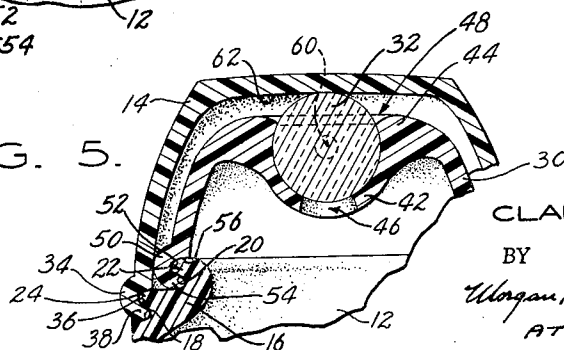


FIG. 5.



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DISPENSER-APPLICATOR DEVICE

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7 Claims. (Cl. 15-571)

This invention relates to improvements in devices for the dispensing and applying of liquid deodorants, cosmetic lotions and the like to the person. More particularly, the invention relates to dispenser-applicator devices in which a rotatable element together with its retaining element or fitment, functions as the dispenser and applicator.

Previously, it has been proposed to provide spherical elements as the applicators. The spherical element applicators, by their very nature require, in general, a cylindrically shaped fitment and, a priori, a cylindrically shaped container for the liquid to be dispensed. Where attempts have been made to use an applicator element which deviates from the spherical shape, difficulties in manufacture were encountered so as to render an applicator which deviated from the spherical shape too costly to manufacture on a quantity basis with the proper quality control and uniformity. Further difficulties have arisen with regard to the fitment for holding the applicator element in engagement with the container in a leak-proof and air-tight manner when not in use and yet enabling the liquid to flow freely for coating the applicator element when in use.

Since the dispenser-applicator devices used heretofore employed the spherical element and the cylindrical fitment, the associated containers for the liquid to be dispensed and applied proved to be quite bulky and cumbersome. The size and shape of the container are controlled by the shape of the applicator and by the quantity of liquid to be stored in the container. Hence, it was not usually feasible for a woman to carry one of the prior art dispenser-applicator devices in an evening bag, or in one of the smaller types of women's handbags or purses, nor was it feasible for a man to carry one of the prior art dispenser-applicator devices on his person in a pocket of his outer clothing, without creating an unsightly bulge.

It is therefore a primary object of this invention to provide a dispenser-applicator for liquid deodorants, cosmetic lotions and the like, which will overcome the aforementioned disadvantages and to provide a dispenser-applicator for liquid deodorants, cosmetic lotions and the like, which will provide for a greater useable applicator surface area than is obtainable with an equivalent diameter spherical applicator.

A further object of this invention is to provide an ellipsoidal dispenser-applicator and a container having a substantially rectangular or oblate elliptical cross-section so as to have a width considerably greater than its depth.

Another object of this invention is to provide an applicator which can be rough molded to form the ellipsoidal shape and then run through an automatic milling machine to form the finished ellipsoidal applicator with precise tolerances and yet enable the production of the applicators in quantity.

Yet another object of this invention is to provide an ellipsoidal applicator which cooperates with a fitment holding the applicator in engagement with the container for liquid to present the liquid for use as a coating or a thin film on the applicator, and which can be placed in sealing engagement with each other and with a cap for the container to prevent leakage of liquid from the container during storage or transport.

A further object of this invention is to provide a dispenser-applicator in which both the cap or cover and the fitment engage the container by means of a snap-on con-

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nection so that the cover, applicator and fitment form a tight-sealing unit with the container to prevent the escape of the liquid.

In pursuance of the foregoing objects, the invention proposes to provide an allipsoidal applicator which is held to the container by a fitment which engages the container by means of a snap-on connection. A cover which encloses the fitment and ellipsoidal applicator when the dispenser is not in use also engages the container by means of a snap-on connection. Since an allipsoidal applicator is used a substantially flat container or bottle may be used so that a smaller depth is required for storage of the container and a greater applicator area is obtainable.

In a preferred form of the present invention, the ellipsoidal applicator is provided with indentations at the opposite ends of its major axis and the fitment is provided with an ellipsoidal seat portion having a liquid-dispensing opening, the applicator being rotatably mounted in the fitment in closely spaced relation to the seat portion and in overlying relation to the opening. The fitment is provided with projections in the form of axle pins or pivot elements for engagement with the aforementioned indentations. The pivot elements engage the indentations to permit the applicator to rotate with respect to the fitment to deliver a metered quantity of liquid through the space between the fitment seat portion and the applicator, the container to the applicator surface. Proper sealing between the applicator and the fitment seat portion is obtained since the ellipsoid can now be manufactured to very close tolerances. The indentations on the ends of the applicator are used to support the same on a milling machine after the applicator has been rough cast. The indentations in addition to enabling the applicator to be rough cast and then machined to close tolerances provide a preferred sealing and rotatable engagement of the applicator with the fitment seat portion.

The objects, advantages and nature of the invention will be more fully understood from the following description of the preferred embodiment of the invention, shown by way of example, in the accompanying drawing, in which:

FIG. 1 is a perspective view of a liquid dispenser in accordance with this invention having a substantially oblate ellipsoidal shape having a width which is greater than its depth;

FIG. 2 is a vertical sectional view of the liquid dispenser shown in its closed condition with the cap and fitment in engagement with the container so as to position the ellipsoidal applicator in its sealing position;

FIG. 3 is a top plan view of the fitment with the ellipsoidal applicator and cap removed;

FIG. 4 is a fragmentary sectional view to an enlarged scale with a portion of the cap removed and the ellipsoidal applicator shown in its dispensing condition with respect to the fitment;

FIG. 5 is a partial vertical fragmentary sectional view taken on line 5-5 of FIG. 2; and

FIG. 6 is an end view of the applicator when removed from the liquid dispenser.

Referring now more particularly to the figures of the drawing which illustrates the presently preferred mode now contemplated by me for carrying out the invention, the liquid dispenser 10 comprises a container 12 having a non-circular or elliptically-shaped base, and a cap or cover 14 therefor.

The liquid dispenser is generally flat-shaped so as to form an oblate ellipsoid thereby providing a shape which has a width substantially greater than its depth. Container 12 is provided with an elliptically-shaped neck portion 16 defining a non-circular or elliptically-shaped opening provided with a pair of circumferentially extending grooves 18 and 20 and a pair of peripherally projecting

tongue elements 22 and 24 for a purpose to be explained hereinafter.

Positioned between cap 14 and container 12 in the closed condition of the liquid dispenser 10 is a non-circular fitment 30 and an ellipsoidally-shaped liquid applicator 32 coupled to the fitment for rotation relative thereto. Both cover 14 and fitment 30 are made from suitable resilient plastic material, such as polyethylene, to provide a certain degree of flexibility while providing a tight sealing engagement with the neck portion 16. Fitment 30 has an outer surface shaped in the form of a truncated-ellipsoid and a pair of oppositely disposed inner surfaces shaped in the form of an ellipsoid. Cap 14 is provided at its open end with a peripherally extending circumferential portion 34 having an inner groove 36 and outer tongue portion or rib portion 38 for snap-fit engagement with container 12. When cap 14 is placed into closed engagement with container 12, tongue 24 engages inner groove 36 and groove 18 receives tongue portion 38 to provide a fluid-tight engagement between container 12 and cap 14. Container 12 may be made of any suitable material, such as rubber, polyethylene or glass.

Applicator 32 which may be made of glass or any other suitable hard plastic is held within and retained by fitment 30 between a lower cavity forming surface portion 42 and an upper surface portion 44 thereof. The terms "lower" and "upper" as used herein with reference to portions of the fitment 30, relate to portions below and above, respectively, the horizontal plane containing the major axis of the applicator 32 as seen in FIGS. 4 and 5 of the drawing. Lower surface portion 42 is provided with an opening 46 to permit the liquid in the container 12 to be picked up by the applicator 32 and dispensed through an opening 48 provided in the upper surface portion 44. Fitment 30 which is releasably coupled to container 12 in a manner similar to cap 12 is shaped in the form of an inverted cup element with a base portion and a circumferentially continuous side portion projecting therefrom which is provided with a peripherally extending circumferential outer portion or rib portion 50 having an inner groove 52 and an outer tongue or rib portion 54 to provide a snap-fit engagement with tongue 22 and groove 20, respectively, to provide a fluid-tight engagement between container 12 and portion 50. A shoulder portion 56 is provided on the peripherally extending circumferential portion 50 for engagement with the top portion of tongue 22 for a purpose to be explained hereinafter.

Referring now more particularly to FIG. 3 of the drawing it will be seen that the bottom opening 46 is smaller than the top opening 48. Opening 46 is the liquid receiving opening and opening 48 is the liquid dispensing opening. Upper portion 44 is sufficiently flexible to distend the ends for insertion of applicator 32 yet resilient enough to retain the same for rotation about its major axis.

A preferred form of applicator 32 and fitment 30 is shown in FIGS. 2 and 4 of the drawing in which fitment 30 is provided with a pair of axle pins or pivot elements 58 for engagement with a pair of indentations 60 provided in applicator 32. The line which passes through the pivot elements 58 defines an axis about which applicator 32 rotates when dispensing the liquid in container 12. Applicator 32 is non-spherical and shaped in the form of an ellipsoid, and the inner portions of lower surface portion 42 and upper surface portion 44 closely conform to the shape of the applicator 32 leaving only a substantially hairline space therebetween into which liquid can flow through opening 46 from the container 12 for coating the applicator surface at either side of the opening 46. Cap 14 when engaged with container 12 presses upon the applicator and closes the hairline space to prevent any liquid from entering the hairline space through opening 46. The interior configuration of fitment 30 is also shaped in the form of an ellipsoid.

The shape of the ellipsoidal applicator 32 is fairly critical since it seals against the fitment 30, and as shown in FIG.

6 the ends of the applicator are provided with the indentations 60. When manufacturing the applicator, it is possible to first rough cast or mold it with the indentations 60 and then place the rough cast applicator on a milling machine with the applicator 32 being supported by means of the indentations 60 on the spindles of the milling machine, to smooth and polish the applicator surface to a high degree of smoothness. It will be apparent that since the applicator 32 is to contact the human body any abrasive portion or burr which is left on applicator 32 will prove to be detrimental to the proper and desired use of the applicator. Problems of this nature do not arise when a spheroid is used since the problems of milling a spheroid are different from the problems of milling an ellipsoid.

In addition to providing a dispenser which has a desirable flattened or streamline contour, the dispensing operation and sealing operation is improved when using an ellipsoid applicator. Referring now more particularly to FIG. 4 of the drawing, it will be seen that pivots 58 are always engaged with indentations 60 to provide an extended seal area between the ends of applicator 32 and the pivots 58 of fitment 30 whether or not cap 14 is engaged with container 12. Furthermore, pivots 58 are also effective to secure the applicator 32 to the fitment 30. The upper surface portion 44 alone also performs a securing function and a partial sealing function with applicator 32. However, even without upper surface portion 44, pivots 58 are effective to secure the applicator 32 to fitment 30. When cap 14 is removed, pivot elements 58 serve to maintain the portion of applicator 32 in closely spaced relation to the lower surface portion 42 so that, although a hairline space is provided between lower surface portion 42 and the opposed surface of applicator 32, no liquid will leak out between the container 12 and applicator 32. During normal use, the hairline opening forms a reservoir and permits a ball-adhering layer of liquid such as deodorant, lotion or the like, to be picked up by substantially the entire surface of the applicator 32 for application to the body surface by rolling movement of the applicator along such surface. When a moderate pressure is exerted on applicator 32, as by means of the cap 14, the applicator is then brought into sealing contact with the lower surface 42 thereby closing the hairline opening to prevent any liquid from passing between surface 42 and applicator 32. The pressure on applicator 32 is transmitted also to shoulder 56 which bears against the upper surface of tongue 22 to prevent any vertical movement of fitment 30 with respect to container 12 and thus ensure a liquid-tight seal at this point. It will therefore be seen that fitment 30 and applicator 32 in their compressed positions provide a fluid-tight engagement therebetween. Cap or cover 14 which has an ovaloid inverted cup-shaped configuration, is provided to effect a further sealing of container 12 in addition to continuing the continuity of the streamline configuration of the dispenser 10. In FIGS. 2 and 5 of the drawing, which illustrate cap 14 in engagement with container 12, applicator 32 is shown engaged with inner surface 62 of the base of cap 14. When cap 14 is snapped upon container 12 with groove 36 and tongue 38 engaged with tongue 24 and groove 18, respectively, inner surface 62 is effective to exert a heavy pressure on applicator 32 to cause the same to enter into sealing engagement with lower surface 42. When cap 14 is in its closed condition on container 12, it exerts pressure on tongue 24 to cause rib portion 50 to exert radial pressure on peripherally extending circumferential portion 22 and engage tightly therewith, thus to further assist in providing an effective seal therebetween. Cap 14 is removed from container 12 by pressing the sides of the cap inwardly while simultaneously exerting a pulling action to separate the cap from the container. Moreover, not only does the rib portion 50 engage the inner

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surface of the side portion of the cap 14 in the engaged position of the cap with the container to provide a fluid-tight seal, but the rib portion also forms a pivot edge to facilitate removal of the cap from the container. Since fitment 30 is also made with the snap-fit engageable tongue and groove elements, container 12 may be made as a reusable container refillable with the liquid to be dispensed.

While there has been shown what is at present considered to be the preferred embodiment of this invention, it will be obvious that various changes and modifications may be made therein without departing from the scope of the invention.

What is claimed is:

1. A liquid-dispensing article comprising a container having an elliptical neck defining a dispensing opening; a fitment including an elliptical base portion and a circumferentially continuous side portion projecting from said base portion; engagement means on said side portion for coupling said fitment to said neck in fluid-tight sealing engagement; said base portion having an inner substantially ellipsoidal seat portion forming an ellipsoidal cavity, said seat portion having a liquid-receiving opening leading to said cavity and a liquid-dispensing opening leading from said cavity, said seat portion also including a pair of oppositely disposed pivot elements; and an ellipsoidal applicator disposed in, and substantially filling, said cavity; said ellipsoidal applicator provided in alignment with the major axis thereof with a pair of oppositely disposed indentations, said pivot elements providing sealing engagement with said applicator and securing said applicator in relation to said seat portion, whereby said ellipsoidal applicator is mounted in said fitment for rotation relative thereto on the major ellipsoidal axis and for displacement bodily relative to said fitment in a direction normal to said axis between a fluid-sealing position in which it is in sealing engagement with said seat portion and a fluid-dispensing position in which it is in closely spaced relation to said seat portion.

2. An article according to claim 1, in which said seat portion is of flexible plastic material and includes an upper and lower portion each having an inner surface in closely spaced relation to said applicator; said pivot elements projecting from the common juncture of the inner surfaces of said upper and lower portions; said upper portion providing securing engagement with said applicator and substantially sealing engagement therewith; said applicator and each said surfaces defining a hairline opening therebetween, and said applicator and said lower surface closing the hairline opening therebetween when a moderate pressure is applied to said applicator.

3. A liquid dispenser comprising a container having a neck defining an elliptical dispensing opening; a support member of flexible plastic material having an elliptical horizontal cross-section on said container in sealing engagement therewith having an axial bore axially aligned with said opening, said support having a lower surface forming, at one end of said bore, a liquid-receiving opening and an inwardly projecting seat and an upper surface forming, at the opposite end of said bore, a liquid-dispensing opening and an inwardly projecting rim portion axially spaced from said lower surface; said support also including a pair of axle pins axially aligned and oppositely disposed; an ellipsoidal ball applicator interposed between said upper and said lower surfaces, said ellipsoidal applicator ball having a pair of oppositely facing openings axially aligned with and engaged with said pair of axle pins whereby said applicator is rotatably coupled about its major axis to said support; said axle pins being effective to secure and seal said ball to said support at the engaging surfaces between said pins and said facing openings; said upper surface holding said ball in alignment with said opening and against rotation

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about its minor axis, said lower surface and said upper surface for a portion thereof defining with said ball a substantially hairline space; and a closure cap of flexible plastic material having a side portion in sealing engagement with the side of said container and a base portion engageable with said ball to force the same into engagement with said lower surface to provide a fluid-tight seal with the same.

4. A liquid dispenser according to claim 3, in which said support member includes a base portion and an elliptical cylindrical side portion projecting therefrom, said base portion includes said upper and said lower surfaces, and said side portion includes flexible and resilient means for removably coupling said support member to said container at the neck thereof.

5. A liquid dispenser according to claim 4, in which said side portion is provided with first and second peripherally projecting tongues and first and second outer peripheral grooves; said flexible and resilient means is provided with a first inner circumferential groove and a first inwardly projecting tongue member; and said side portion of said cap is provided with a second inner circumferential groove and a second inwardly projecting tongue member, said first inner groove and said first tongue member being resiliently engageable by said first tongue and said first outer groove, respectively, to provide a snap-fit engagement of said support member with said container, said second inner groove and said second tongue member being resiliently engageable by said second tongue and said outer groove, respectively, to provide a snap-fit engagement of said closure cap with said container; the snap-fit engagements of said support member and said closure cap with said container providing a fluid-tight seal in the engaged position, and said side portions of said support member and said closure cap being sufficiently resilient to facilitate removal of said closure cap and said support member.

6. A liquid dispenser according to claim 5, in which said side portion of said support member includes an outer rib portion, said rib portion engages the inner surface of the side portion of said closure cap in the engaged position thereof with said container to provide a fluid-tight seal; said rib also forming a pivot edge to facilitate removal of said closure cap from said container.

7. A liquid-dispensing article, comprising: a container having a neck defining a dispensing opening; a fitment including a base portion and a circumferentially continuous side portion projecting from said base portion; engagement means on said side portion for coupling said fitment to said neck in fluid-tight sealing engagement; said base portion having an inner substantially ellipsoidal seat portion forming an ellipsoidal cavity, said seat portion also having a liquid-receiving opening communicating with said cavity through said seat portion, and a substantially elliptical liquid-dispensing opening leading from said cavity; an ellipsoidal applicator disposed in, and substantially filling, said cavity, said applicator being mounted in said fitment for rotation relative thereto about the major ellipsoidal axis of said applicator and for movement between a compressed fluid-sealing position and an uncompressed fluid dispensing position; said applicator also provided in alignment with the major axis thereof with a pair of oppositely disposed indentations; said seat portion including an upper member and a lower member each having an inner surface in closely-spaced relation to said applicator, said seat portion also including a pair of oppositely disposed pivot elements alignable with said indentations, said pivot elements engaging said indentations to provide sealing engagement with said applicator and to rotatably mount said applicator in relation to said seat portion and to said surfaces of said upper and lower members; said applicator and each of said inner surfaces defining a hairline opening therebetween when said applicator is in said uncompressed position, the curvature of said

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inner surfaces of each said upper and lower members conforming generally to the curvature of said ellipsoidal applicator, whereby a displacement of said applicator, inwardly into said cavity, in a direction normal to said axis, will move said applicator into a compressed fluid-sealing position in which said applicator is in sealing engagement with said inner surface of said lower member of said seat portion and whereby a displacement of said applicator in the opposite direction will move said applicator into an uncompressed fluid dispensing position in which it is in closely-spaced relation to the inner surface of said upper member of said seat portion.

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