Sept. 18, 1962 J. J. HUBLARD ET AL 3,054,133

DISPENSER-APPLICATOR DEVICE

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Fig. 1.

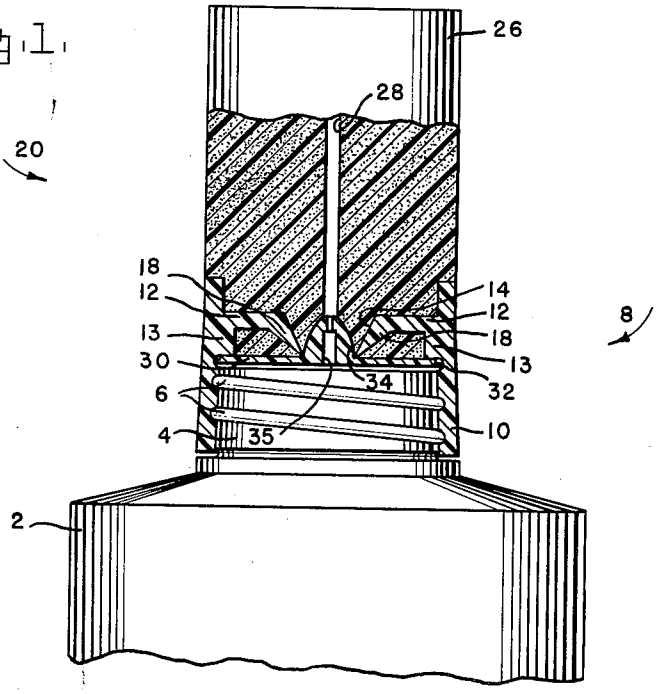


Fig. 2.

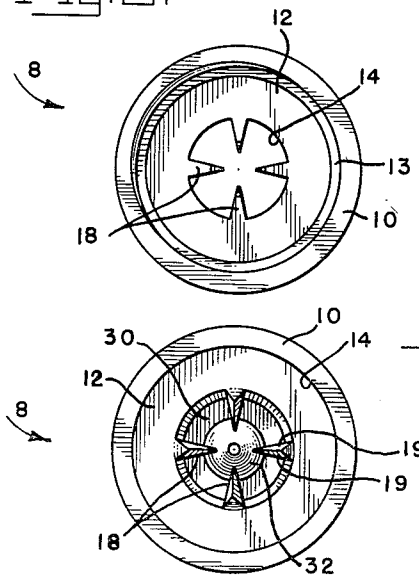


Fig. 3.

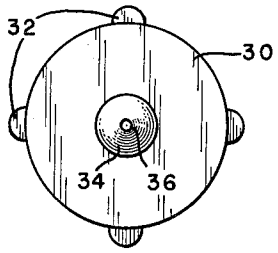


Fig. 4.

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DISPENSER-APPLICATOR DEVICE

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Our invention relates to improvements in dispenser-applicator devices and is directed particularly to means for dispensing and applying the liquid contents of a container.

The invention resides in the particular arrangement, construction and relationship of the various elements of the dispenser-applicator, as exemplified in the detailed disclosure hereinafter set forth, wherein the objects hereof, as defined in the paragraphs below, will be apparent.

The invention embraces broadly the concept of a dispenser-applicator which may be associated with the outlet neck of a container, such as a bottle or the like, for the dispensing of the liquid contents thereof and for applying same to a surface.

It will be helpful to an understanding of our invention to first briefly consider some of the more important features and aspects thereof, so that same may be kept in mind during the subsequent reading of the detailed description of the practical embodiment of our improvements and of the illustration thereof in the annexed drawing.

Accordingly, it is first to be noted that the device of the invention may be embodied as a dispenser-applicator for numerous and various uses but will be described, for purposes of disclosure, in connection with liquid preparations, such as hair waving solutions or other liquid cosmetic products to be applied to the body or hair; its many uses, however, will not be construed as being limited to the dispensing and applying of such materials.

As herein envisioned, the dispenser-applicator is particularly useful for applying lotions, such as hair-waving lotions, to hair while it is wound upon curlers.

As is known, in the cold permanent waving of hair, the usual procedure involves winding the hair upon curlers and applying to the hair, before and/or after the winding, a solution of a reducing agent capable of splitting the disulfide bonds in the hair keratin and softening the hair. The softened hair, after it has assumed the desired curled configuration, is then hardened in place, either by treating the hair with a solution of a suitable oxidizing agent known as a neutralizer or by subjecting the hair to aerial oxidation simply by exposing it to atmospheric oxygen in order to restore the disulfide linkages.

The application to the hair of the solution of reducing agent or waving lotion, particularly after it has been wound upon the hair curlers, has been a difficult operation for unskilled operators to perform.

Accordingly, it is an object of our invention to provide a dispenser-applicator for applying the liquid hair-treating material, such as a permanent waving lotion or neutralizer, with a minimum of loss and a minimum of contact between lotion and scalp.

Another chief object of the invention is to construct a dispenser-applicator of the general character indicated wherein same includes an applicator or dauber member of a resilient material associated with a cap or sleeve which is adapted for securement to the neck of a reservoir, said reservoir being formed of a resilient flexible material such as polyethylene or other suitable plastic. The squeezing of the deformable plastic augments the flow of the liquid from the reservoir wherefore it may be more easily dispensed by the applicator.

A salient feature of the invention lies in the fact that it is efficient for the uses intended, and provides a convenient means for readily and easily dispensing and applying the desired amount of liquid to the surface being treated.

Stated in another way, the invention relates to a liquid dispensing-applying device of the type in which an applicator means is disposed in and extends upwardly and outwardly from an end of a tubular cap or sleeve threadedly engaged with the receptacle containing the dispensible fluid.

In accordance with a preferred embodiment representative of the best-known mode of practicing the invention, the device is provided with a novel sealing means which prevents unwanted leakage of liquid from the reservoir and further prevents leakage of liquid into the reservoir from the applicator.

Other of the chief objects and purposes hereof are to provide advantageous structural and operational features in a device of the class to which reference has been made so as to provide an apparatus having the following meritorious characteristics; first, a simplicity in construction and compactness of design and therefore an adaptability to economical manufacture; second, a uniqueness in engineering design of coacting parts wherefore the components are coordinated for facile assembly; third, a high degree of efficiency and dependability in its operational use; and fourth, the provision of such other improvements in and relating to dispenser-applicators of the type above referred to as are hereinafter described and claimed.

To the end of attaining these objects and other incidental ends and advantages, some of which will in part be obvious and some of which will in part be more fully pointed out in the progress of the disclosure, it will be explained that the invention consists substantially in the combination, construction, location and relative arrangement of parts, as described in detail hereinafter, and as defined with particularity in the appended claim forming a part hereof.

The protection which is sought for this invention is covered by the language of the specification and the spirit represented thereby and same is limited only by the prior art and the scope of the claim.

The physical embodiment delineated is only indicative of but one of the various ways, albeit the preferred exemplification, in which the principles of the invention may be employed, and is submitted in accordance with the patent statutes with a view to illustrating and explaining the precise nature of said principles, in order that others skilled in the art may be enabled to adapt and modify them in numerous embodiments, variations and modifications, each as may be best adapted to the conditions of any particular use.

These above named objects and such other objects will appear from a perusual of the description and an examination of the structure as illustrated in the accompanying drawing in which:

FIG. 1 is a fragmentary sectional elevational view through a cap or sleeve and applicator embodying the novel features of the invention;

FIG. 2 is an inverted plan view of the cap shown in FIG. 1;

FIG. 3 is a top plan view of the sealing disc of the structure shown in FIG. 1; and

FIG. 4 is a top plan view of the cap shown in FIG. 1, with the applicator removed for purposes of clarity.

Before the structure here illustrated is specifically described, it is to be again particularly understood that this invention is not limited to the structural details or arrangement of parts here shown since a dispenser-applicator construction embodying the present invention may take various forms, it being susceptible of various modifications and alternative constructions.

We do not intend to limit the invention to the specific form disclosed, but rather intend to embrace herein all modifications, variations, alternative constructions, and equivalents falling within the spirit and scope of the invention and within the meaning and purview and range of equivalency of this disclosure thereof.

With continued reference now to the drawing, we have shown a receptacle which may be any tubular casing which constitutes a reservoir and may take the form of a glass, metal or plastic bottle 2, although preferentially the reservoir is a flexible, resilient, plastic container such as a molded polyethylene bottle which may contain a supply of the treating liquid.

At its open top end, said receptacle is normally provided with an upper neck 4 having an external thread 6 therearound, as is known.

With said construction, our invention may be advantageously incorporated.

Receptacle 2, for purposes of disclosure, will be considered as being of the well known squeeze bottle type. As the receptacle is squeezed, the liquid contents therein will be displaced from the reservoir directly to the surface being treated through a direct channel provided for such purpose, product flow being controlled by orifice size and also by the amount of squeezing pressure applied to the receptacle, all as will hereinafter appear.

A tubular cap or sleeve, represented generally by 8, has a lower portion 10 which is internally threaded to receive the externally threaded neck 4 of receptacle 2. Said cap or sleeve may be formed as by molding or turning metal although it is preferably made as an elongated molded plastic body of circular section.

Cap 8 is provided with a transversely extending wall 12 which extends as a partition across the cap in a plane transverse to its axis upwardly of its internally threaded lower portion.

An annular shoulder 13 lines the inner wall of said cap and extends inwardly toward the center of the cap so as to underlie and embrace the transversely extending wall 12 with which it is integral. Said shoulder is likewise disposed upwardly of the internally threaded portion of the cap.

Transverse wall 12 is provided with a central opening 14 therethrough and the peripheral edge of said opening is formed with a series of circumferentially-spaced inwardly-extending pointed projections 18 so as to converge toward a vertical axis through the center of the opening 14. If desired, said projections may depend slightly downwardly toward the center of the opening to a plane below the horizontal plane of the transverse wall 12.

As viewed in FIG. 4, the upper planar surfaces of the projections 18 have angularly-disposed downwardly-extending sides 19 so that the projections have innermost points which converge to form an apex or gripping point centrally of the cap whereby the applicator or dauber may be firmly impinged upon insertion into the cap.

An applicator, generally indicated by 20, comprises a body in the form of an elongated, cylindrical, flat ended, deformable resilient, compressible, bibulous plastic member. Preferentially, it is made from regenerated cellulose sponge, polyurethane sponge material, felt, or like yieldable material, which has a capacity to receive and retain liquid and, when pressed or squeezed or otherwise deformed, to release that liquid.

Applicator 20 is of such diameter as to enable it to be snugly receivable within the cylindrical socket of the cap as by a spring-pressed fit.

The lower end portion of the applicator or dauber is adapted to be manually compressed axially so as to be inserted into and through opening 14 of transverse wall member 12.

Following the insertion into the cap and upon release of the lower end portion of the applicator, the material expands so as to fill the socket of the cap below transverse wall 12 and to be gripped by projections 18 in an impinging manner so as to be held thereby, being releasable therefrom only upon subsequent and further compression of the applicator.

The upper end 26 of the applicator is disposed outwardly of the cap, said applicator being of such over-all length that the said upper end thereof extends axially beyond the upper peripheral edge of the cap.

The applicator 20 is provided with a vertically disposed central passageway 28 hereinafter to be referred to.

To prevent unwanted leakage of liquid from the reservoir, and further, to prevent leakage of liquid into the reservoir from without, a yieldable annular relatively flat sealing washer or disc 30 is provided having a plurality of peripherally-arranged circumferentially-spaced ears 32 extending outwardly thereof.

Ears 32 are preferentially of less thickness than the main body portion of disc 30 to offer relatively greater yieldability and to permit the flexing of the ears so as to slide over the threads on the inside of the wall 10 so as to allow said disc to be marginally-clamped between the circular, radial, shoulders of adjacent threads of lower portion 10 of cap 8 and to embrace the lower annular surface of shoulder 13 in a sealing manner.

Centrally of disc 30 and integral therewith, an upwardly-extending annular button or boss or infusion device 34, having a generally conical external surface, is provided, same having a vertically-extending slot or passageway or channel 35 communicating with an axially-aligned restricted upper orifice or bleed hole 36 at its upper end. Through such passageway and orifice, the liquid may be metered into opening 28 of the applicator.

Orifice 36 is preferentially of such dimension as to limit the free flow of the liquid contents from the reservoir wherefore excessive flowing or flooding is avoided.

As aforesaid, the liquid contents flow directly from the reservoir to the surface being treated.

Disc 30 is desirably removable or replaceable so that other washers having orifices therethrough of different diameters may be selected to provide metering characteristics better suited to the particular liquid contained in the receptacle.

Preferentially, disc 30 is clamped within the cap in manner so that the flat circular inner end face of applicator 20 rests on the upper face thereof and the button 34 thereof extends into opening 28 of applicator 20 all to the end that the conical surface thereof bears against the walls of the opening 28 to spread same open, it being appreciated that the applicator tends to bunch at the region adjacent the transverse wall so as to restrict the normal diameter of said opening 28.

The opening 28 is in vertical alignment with the passageway 35 and orifice 36 of the disc 30 so as to receive therein a charge of liquid from the receptacle when the device is tilted or inverted to use position.

When in said use position, a limited quantity of liquid flows into the passageway 35.

Endwise pressure upon the applicator displaces the same in manner to cause it to flex from its normal elongated position to a shortened stubby position causing an enlargement or spreading of the channel 28 all so as to permit, as needed, the flow of a quantity of liquid from the receptacle directly onto the surface being treated.

When the device, following a period of normal use, is upended or returned to the upright applicator-expanding position, wherein the applicator is disposed upwardly of the receptacle, the applicator returns to its expanded or so called storage position.

By thus sealing the device, return to the recptacle or reservoir of any liquid that may be captured in the applicator is prevented, the trapped liquid constituting a small, ready supply for immediate release when the device is next inverted to use position.

As will be observed, the lower end of the applicator is secured within the cap in such manner as to obviate dis-

placement of said applicator from the cap, while at the same time the cap and bottle neck are sealed against leakage.

The invention is not restricted to the embodiment shown and same is not intended to be exhaustive of, nor limiting of, the spirit or scope hereof. That is, the precise construction of the drawing need not be slavishly followed as, of course, the dispenser-applicator may have to be adapted or modified in accordance with the use to which it is to be put, such adaptations and/or modifications being intended to be comprehended within the meaning and range of equivalence of the below subjoined claim, there being no intent to have this invention limited to or circumscribed by any specific details.

Without further analysis, the foregoing is intended to so fully reveal the gist of my invention and its construction and operation that others can, by applying current knowledge, readily adapt it for various applications without omitting features which from the standpoint of prior art, fairly constitute essential characteristics of its generic and/or specific aspects.

What is claimed as new and useful is:

A liquid dispenser-applicator device for the neck of a receptacle comprising in combination, an open-ended tubular cap having a lower end for securing to the neck of a bottle an upper end for receiving an applicator and an apertured transverse wall intermediate its lower and upper ends, an annular shoulder extending inwardly from the walls of said cap and integral with the lower planar surface of said transverse wall, an applicator formed from a resilient sponge material and having a vertically-disposed central flow passageway therein projecting from the upper end of said cap and having a lower end portion extending downwardly through the opening in said transverse wall, said transverse wall having prongs which relatively converge inwardly from the aperture thereof into the lower end portion of said applicator, and a yieldable sealing washer clamped within said cap adjacent said annular shoulder for squeezing the lower end of said applicator against said transverse wall and sealing the upper end of the bottle neck and lower portion of said applicator, said sealing washer including a centrally-disposed upwardly-extending annular boss, said boss being receivable in the flow passageway in said applicator and having a vertically-extending channel communicating with an axially-aligned restricted orifice in the upper end thereof and leading into said flow passageway in said applicator.

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