Aug. 4, 1964 J. R. PENGUE 3,143,250

AEROSOL SPRAY DISPENSERS

Filed Jan. 5, 1962

Fig. 1.

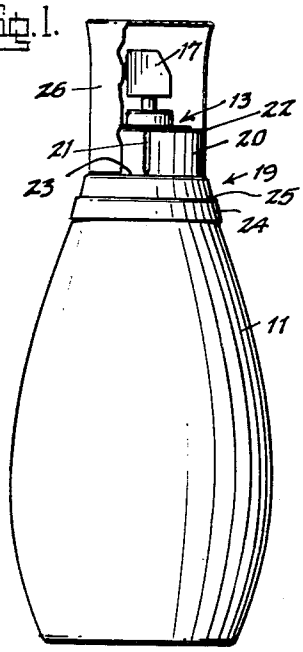


Fig. 2.

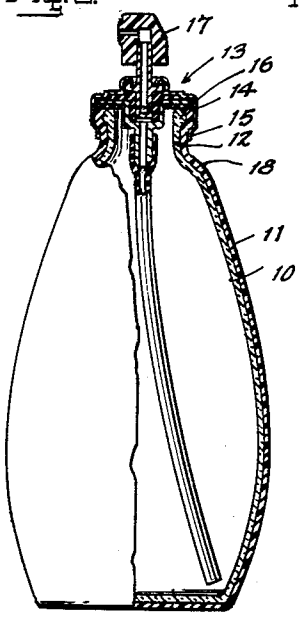


Fig. 3.

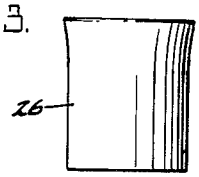


Fig. 4.

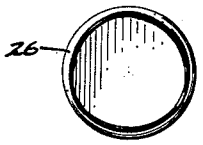


Fig. 5.

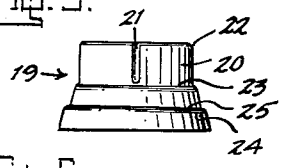


Fig. 6.

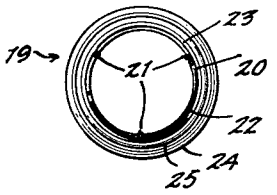


Fig. 7.

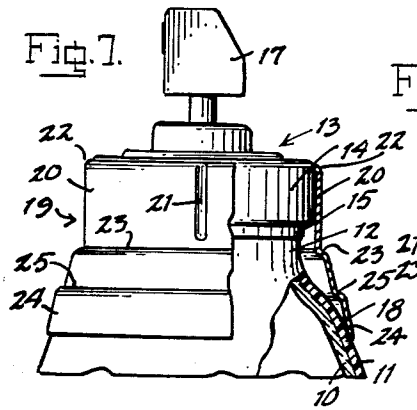


Fig. 8.

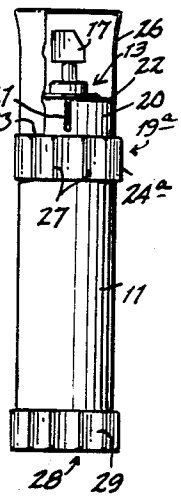


Fig. 9.

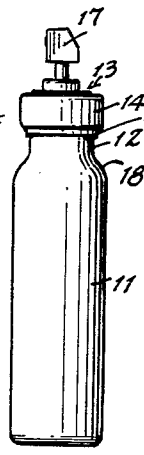


Fig. 14.

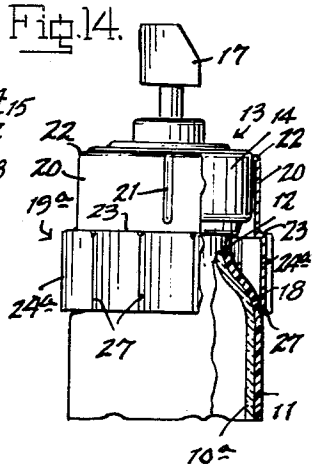


Fig. 10.

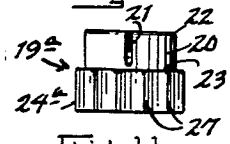


Fig. 12.

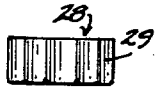


Fig. 11.

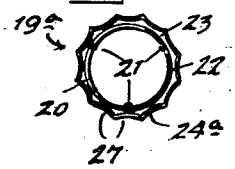
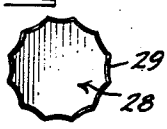


Fig. 13.



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AEROSOL SPRAY DISPENSERS

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3 Claims. (Cl. 222—182)

The present invention relates to aerosol spray dispensers, particularly toiletry and cosmetic dispensers of the type comprising a glass container encased in a protective sheath of vinyl plastic material and having a valve unit permanently secured upon the reduced neck end of the container. The plastic covering presents a relatively soft surface and the manufacturing procedures in this type of manufacture are such that substantially large dimensional tolerances obtained, particularly with respect to the dimensional relationship between the valve unit and contiguous shoulder formation of the plastic covered glass container. It has been the practice to provide such containers with a decorative overlay to enclose the sides of the valve unit and to provide a receptor for a removable cap to cover the actuator head of the valve unit, and because of the large dimensional tolerances obtaining in such structures the overlay would very often fail to properly fit the valve unit and the container.

It is an object of the present invention to provide an overlay which will adjustably engage about the side wall of the valve unit with an effectual frictional resistance against looseness and displacement, and will by virtue of the yielding nature of the plastic covering of the container firmly engage about the contiguous shoulder portion of the container with a wedging fit, the adjustability of the overlay upon the valve unit allowing a uniformly tight fit upon the contiguous shoulder portion of the container despite large dimensional variations.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein a satisfactory embodiment of the invention is shown. However, it will be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawings:

FIG. 1 is a side elevation of an aerosol dispenser according to the invention, the removable closure cap for the actuating head being shown partially in vertical section;

FIG. 2 is a view partially in vertical section and partially in side elevation of the dispenser as seen in FIG. 1 with the overlay and cap removed;

FIG. 3 is a side elevation of the removable closure cap;

FIG. 4 is a bottom plan view thereof;

FIG. 5 is a side elevation of the overlay according to the invention;

FIG. 6 is a top plan view thereof;

FIG. 7 is a fragmentary view on an enlarged scale partially in side elevation and partially in vertical section showing the overlay in place upon the dispenser;

FIG. 8 is a side elevation of a modified form of the invention, the removable closure cap for the actuating head being shown partially in vertical section;

FIG. 9 is a side elevation of the dispenser as seen in

FIG. 8 with the overlay, the closure cap, and the base cap removed;

FIG. 10 is a side elevation of the overlay according to the invention as seen in FIG. 8;

FIG. 11 is a top plan view thereof;

FIG. 12 is a side elevation of the base cap as seen in FIG. 8;

FIG. 13 is a top plan view thereof; and

FIG. 14 is a fragmentary view on an enlarged scale partially in side elevation and partially in vertical section showing the overlay in place upon the dispenser as seen in FIG. 8.

Referring to the drawings and more particularly to FIGS. 1–7 the aerosol dispenser according to the exemplary embodiment of the invention illustrated therein comprises a glass container **10**, enclosed in a protective sheath **11** of yieldable elastic vinyl plastic material, and having a reduced neck portion **12** at its upper end, upon which there is secured a valve unit **13** having a cylindrical outer wall **14** crimped at its lower marginal edge portion **15** about the neck portion below a projecting annular bead **16** formed at the upper end of the neck portion. The valve unit may be of any suitable well-known type provided it has the cylindrical outer wall **14**, a valve unit of the type illustrated being shown for example in the patents to Venus, Jr. for Spray Nozzles, No. 2,767,023 dated October 16, 1956. Such a valve unit has an actuator head **17** at its upper side which through lateral pressure applied thereto opens the valve to emit a spray of the liquid contained in the dispenser under the pressure of a pressure medium, for example Freon gas.

In accordance with the invention the continer includes a rounded annular shoulder **18** spaced directly below the cylindrical wall **14** of the valve unit, and which presents a downwardly divergent surface for cooperation with the overlay element of the invention, as will presently more fully appear. It is pointed out that in manufactures of this type relatively large dimensional tolerances obtain, so that there may be variations in the vertical dimensional relationship between the cylindrical wall **14** and the shoulder **18**, as well as in the diameters of the wall **14** and the shoulder.

The overlay element **19** in accordance with the invention is preferably formed of very thin relatively stiff resilient material as for instance rolled brass having a thickness dimension for example of approximately .010″, and comprises a cylindrical sleeve portion **20** having an inside diameter slightly greater than the approximate outside diameter of the cylindrical wall portion **14** of the valve unit and provided at equally spaced points, preferably three points, with vertically extending inwardly directed ribs **21** having a predetermined projection calculated as being slightly within the aproximate outside circumference of the wall **14**. The upper edge of the sleeve **20** is slightly rolled inwardly as at **22** to provide a smooth lead surface for engagement of the closure cap as will presently more fully appear, the inside dimension of this rolled edge being slightly larger than the approximate outside diameter of the wall **14**. An annular shoulder **23** is provided at the lower end of the sleeve **20**, and an anular flared skirt portion **24** extends downwardly from the shoulder and is preferably stepped as at **25**, the stepped formation in addition to presenting a pleasing ornamental appearance functioning to stiffen the skirt portion.

The angle of the flare of the skirt portion is calculated

as being slightly less than the downward divergence of the surface of the plastic covering of the shoulder portion **18** of the container, and the diameter of its lower edge is such as to engage this divergent surface of the shoulder portion with a wedging fit in the engaged relation of the overlay element as seen in FIG. 7. In such engaged relation the ribs **21** have relatively tight frictional engagement with the cylindrical wall **14** of the valve unit by virtue of the fact that the circumferential portions of the sleeve between the ribs **21** will have a slight resilient yield, so that even though there may be slight dimensional variations in the outside diameter of the wall **14** the ribs **21** will engage it with a relatively tight frictional slide fit. The overlay has vertically adjustable sliding engagement with the wall **14** to the point where the lower edge of the skirt portion **24** wedges against the downwardly divergent surface of the shoulder portion **18**, the wedging action being preferably carried to the point where the edge of the skirt will slightly indent the yieldable elastic plastic sheath **11**, thus creating an interlock between the skirt portion and the plastic sheath as a result of the compressive displacement of the plastic material and its tendency through elastic memory to resume its original form. As a result of dimensional variations that may occur between the point of contact of the skirt portion with the plastic sheath and the lower edge of the wall **14**, the sleeve portion **20** will have a final position about the wall **14** which will vary in a vertical direction in correspondence with such dimensional variations, this accommodation being made possible through the vertical adjustability of the sleeve portion upon the wall **14**.

The closure cap **26** is also preferably made of relatively stiff resilient material, as for example thin rolled brass having a thickness of approximately .010", and its circumferential wall in its separated position as seen in FIGS. 3 and 4 has a slight out-of-round three-sided shape as seen in FIG. 4, so that in its engaged position as seen in FIG. 1 with its edge seated upon the annular shoulder **23** it will engage about the sleeve portion **20** of the overlay element with yielding pressure.

In the modification FIGS. 8–14 the glass container **10***a* is of generally cylindrical form, and like the form of the invention shown in FIGS. 1–7 a rounded downwardly divergent shoulder **18** is provided in spaced relation directly below the cylindrical wall **14** of the valve unit **13**. The overlay element **19***a* is substantially similar to the overlay element **19** of the first embodiment except that the annular skirt portion **24***a*, instead of being downwardly flared from the annular shoulder **23**, extends vertically downward and preferably comprises a circumferential series of scallop formations **27**. These formations in addition to their ornamental appearance function to stiffen the skirt portion. The engagement of the overlay with the dispenser is substantially the same as in the first embodiment, the lower edge of the skirt portion **24***a* having wedging engagement with the plastic sheath **11** at the downwardly divergent shoulder portion **18** of the container, this wedging engagement taking place between the central points of the convex inner edges of the scallop formations **27** and the plastic sheath.

A base cap **28** having a scalloped side wall **29** substantially identical with the skirt portion **24***a* of the overlay element is engaged upon the lower end of the container with a tight frictional fit made possible by the yielding elasticity of the plastic sheath **11**. This base cap provides a hard surfaced flat base for the dispenser and in cooperation with the skirt portion **24***a* provides protection against breakage in the event that the dispenser is dropped upon its side, the projecting surfaces of the skirt portion **24***a* of the overlay element and the side wall **29** of the base cap protecting the intervening surface of the container against impact with the surface upon which the dispenser is dropped.

The closure cap **26** is substantially identical to the closure cap **26** of the first embodiment in form as well as in its cooperative engagement with the overlay element.

What is claimed is:

1. In an aerosol dispenser, a container having a reduced neck portion at its upper end, an outwardly extending upwardly facing annular shoulder adjacently below said neck portion, a valve unit secured upon said neck portion including a cylindrical vertical wall disposed in spaced relation above said annular shoulder, an overlay element comprising a cylindrical vertical sleeve portion having a circular upper edge disposed in a plane normal to its vertical axis and defining an open upper end in which said cylindrical wall is received, said sleeve portion having an inside diameter slightly greater than the outside diameter of said cylindrical wall and having a plurality of circumferentially spaced vertical ribs integral therewith and projecting inwardly from its inner surface a predetermined distance which in the detached relation of said overlay element will project slightly within the approximate outside circumference of said cylindrical wall, said ribs being frictionally engaged along vertical contact lines with said cylindrical wall under pressure resulting from outward displacement of said ribs and inward flexing of the circumferential portions of said sleeve portion between said ribs, whereby said overlay element is frictionally retained upon said valve unit under yielding pressure in any position of vertical adjustment thereon, an annular shoulder portion extending outwardly from the lower end of said sleeve portion in upwardly spaced relation to said annular shoulder of said container, and an annular skirt portion extending downwardly from said shoulder portion of said overlay element and engaged at its lower edge with said annular shoulder of said container to limit and determine the position of vertical adjustment of said overlay element, and a removable closure cap having a circumferential wall frictionally engaged for vertical sliding movement with the outer surface of said sleeve portion and having an annular lower edge for abutting said annular shoulder portion of said overlay element to limit its engaged position upon said sleeve portion.

2. The invention as defined in claim 1, further characterized in that the upper marginal edge portion of said sleeve portion is curved inwardly to provide a convergent lead surface for engagement of said closure cap and has an inside diameter greater than the outside diameter of said cylindrical wall.

3. In an aerosol dispenser, a glass container having a reduced neck portion at its upper end, a downwardly divergent upwardly facing annular shoulder adjacently below said neck portion, a valve unit secured upon said neck portion including a cylindrical wall disposed in spaced relation above said annular shoulder, a yieldable elastic plastic sheath encasing at least said annular shoulder of said glass container, an overlay element comprising a cylindrical sleeve portion having an inside diameter slightly greater than the outside diameter of said cylindrical wall and having a plurality of circumferentially spaced vertical ribs projected inwardly from its inner surface a predetermined distance which in the detached relation of said overlay element will project slightly within the approximate outside circumference of said cylindrical wall, said ribs being frictionally engaged along vertical contact lines with said cylindrical wall under pressure resulting from outward displacement of said ribs and inward flexing of the circumferential portions of said sleeve portion between said ribs whereby said overlay element is frictionally retained upon said valve unit in any position of vertical adjustment thereon, an annular shoulder portion extending outwardly from the lower end of said sleeve portion, and an annular skirt portion extending downwardly from said shoulder portion and having

wedging engagement at its lower edge with the annular portion of said sheath encasing said divergent annular shoulder of said container to limit and determine the position of vertical adjustment of said overlay element, and a closure cap having a circumferential wall engaged with the outer surface of said sleeve portion with its lower edge abutting said annular shoulder portion of said overlay element.

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