This invention relates to an aerosol container and dispenser adapted to discharge a fine spray of cologne or perfume or the like. It comprises a bottle or similar container for a liquid having a propellant fluid for ejecting the liquid upon the depression of a valve stem. A special cap structure is provided to enclose the valve stem and to enable the operation of the latter by a downward pressure applied by the finger to a slidable element of the cap structure.

An important feature of the invention is the provision of a cap structure which may be readily snapped onto the neck of the container and then permanently retained thereby. The cap is formed of only a few simple parts which may be economically produced and readily assembled. One of the parts of the assembled cap structure serves to identify the contents of the particular container to which it is applied, while the other parts are identical for application to containers having a variety of different contents. Thus in the packaging of perfumes of a variety of different fragrances, the same cap structure may be used for all, except for an attractive fragrance identifying disc which may readily be snapped into permanent position in the top of the cap. This greatly simplifies the problem of producing and storing the various elements needed for the caps to be applied to containers having a variety of different types of perfumes.

In accordance with the invention there are only four separate parts to form the cap structure, three of these being molded and the other one stamped into the desired form. The three molded parts mentioned are preferably formed of a suitable plastic, which as polypropylene, while the stamped part is cut from sheet material having a resilient, plastic body or base with a layer of fabric or the like adhesively applied to its upper surface. It is only this fabric layer which differs in the various cap structures in accordance with the nature of the contents of the bottle or container to which the caps are to be applied.

A preferred embodiment of the invention will now be described in detail by reference to the accompanying drawings, in which:

FIG. 1 is an elevational view of the complete aerosol package;

FIG. 2 is a plan view of the package;

FIG. 3 is a view showing the container portion and the valve actuating means of the package in elevation, while the major portion of the cap is shown in vertical cross-section;

FIG. 4 is a horizontal cross-sectional view through the cap structure, taken along the line 4--4 of FIG. 3;

FIG. 5 is an enlarged view of the upper portion of the package showing the cap with its valve actuating means in vertical cross-section;

FIG. 6 is a front end view of a nozzle element incorporated in the package;

FIG. 7 is a side elevational view of the nozzle;

FIG. 8 is an end view of the nozzle as seen from the right in FIG. 7;

and FIG. 9 is a cross-sectional view through the nozzle, taken along the line 9--9 of FIG. 8.

Referring now to the drawings, the package comprises a container 10 for a liquid, such as perfume, together with a suitable gaseous propellant. The propellant may either be simply a compressed gas or it may be a volatile substance, such as Freon, which at reduced temperatures is in liquid form but at ordinary room temperatures is a gas. While the container may be formed or any suitable material, in the preferred embodiment of the invention it is in the form of a glass bottle carrying a suitable ornamental configuration or design on its outer surface. It will be understood that the package as a whole, particularly when used for the dispensing of cologne or similar products, must present an attractive appearance. This objective is very effectively achieved by the simple combination of parts involved in accordance with the present invention.

The bottle has a reduced neck 11 at its upper end through which the contents may be introduced into the bottle. A closure member 12 is fixedly secured to the neck of the bottle in any suitable way. This closure member may suitably be formed of metal and may have its bottom portion bent inwardly to lock it in place about a flange or bead provided at the upper end of the portion of the bottle. A shoulder 12a is thus formed around the bottom of the closure member 12. Appropriate sealing means is provided between the closure member and the cooperating surfaces of the flange or bead. Extending upwardly from the center of the closure member 12 is a reduced neck 12b, and this provides a suitable bearing support or guide for a compressible, hollow stem 13. As is well known in the art, the stem 13 is normally urged upwardly by a suitable spring within the upper portion of the container which serves to close a valve within the latter. When the stem 13 is pressed downwardly within the bearing portion 12b it serves to open the valve and place the bore of the stem 13 in communication with the contents of the bottle. Preferably the arrangement is such that the liquid contents of the bottle is forced upwardly into and through the stem 13 through a siphon tube which extends to a point close to the bottom of the bottle. If desired, the siphon tube may be eliminated and the construction adapted to discharge its liquid contents under the pressure of the propellant only when the bottle is inverted or tilted sufficiently to present the liquid in the region of the valve and the inlet to the stem 13.

A collar 14, forming the larger portion of a relatively tall cap, is adapted to be forced onto the upper end of the bottle, into the position shown in FIGS. 1, 3 and 5, and is then retained permanently in place on the bottle. The collar 14 is preferably formed of a bendable resilient plastic material, such as polypropylene of suitable wall thickness, that is sufficiently stiff to be form-retaining. It has a vertically extending cylindrical portion 14a which may suitably have substantially the same outside diameter as the container 10. At its lower end, the collar 14 has an inwardly and upwardly extending portion 14b which converges to a diameter substantially equal to that of the outside diameter of the member 12. The upper portion of the inwardly and upwardly extending part 14b of the collar is provided with a plurality of slots 14e to enable the sections at the free end of the portion 14b, thus formed, to be forced outwardly to a certain extent as the collar is applied to the container. Two such slots 14e, in diametrically opposed positions, have been found sufficient for the purpose but, if desired, three or more equally spaced slots may be provided. Since the portion of which the collar is formed is of a resilient character, the sections of the part 14b, after being forced outwardly by the member 12 in applying the collar to the bottle, will spring back into place. At a position in the region of the shoulder 12a of member 12, when the collar is applied to the container as shown in FIG. 5, there is provided a substantially annular shoulder 14d around the part 14b. This shoulder, which is divided into sections by the slots 14e, springs into position beneath the shoulder 12a of member

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AEROSOL CONTAINER AND DISPENSER
Andrew Gentoso, Cresskill, N.J., assignor, by mesne assignments, to Faberge, Inc., Ridgefield, N.J., a corporation of Delaware
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5 Claims. (Cl. 222—182)

Patented Apr. 13, 1965
12 when the collar is in its assembled position, so that the collar is permanently attached to the container.

Within the upper end of the collar 14 there is slidably mounted a member 15. This, in combination with the collar 14, provides a cap for the upper end of the container. It also forms the actuating means for the valve stem 13. Member 15 has a cylindrical, downwardly extending skirt 15a having a sliding fit in relation to the inner surface of the cylindrical portion of the collar 14. At the center of the horizontally disposed closure portion of member 15, the latter is provided with a downwardly extending, cylindrical projection 15b having an opening adapted to snugly receive the upper end of the stem 13. Preferably the lower end of this opening is of frusto-conical form to facilitate application of the cap to the container. Extending transversely from the downward projection 15b is a substantially cylindrical portion 15c having at its outer end a larger, substantially cylindrical portion 15d which merges into the wall 15a. The downward projection 15b is provided with an inwardly extending shoulder 15e, semicircular in cross-section, which reduces the area of the remainder of the passage through the extension 15b to half the cross-sectional area through the lower portion of the passage, as indicated at 15f in FIG. 5. The shoulder 15e rests upon the top of the stem 13 with downward force applied to member 15 to the stem 13. The bore of the latter communicates with passage 15f, which in turn communicates with a horizontally extending passage 15g through the portions 15c and 15d.

Portion 15f of the cap member 15 is provided with an annular recess arranged to receive an annular portion 16b of a nozzle element 16. The latter has an outwardly extending annular portion 16a through which the spray delivered upon the depression of valve stem 13 is discharged. Nozzle element 16 has a radially extending flange providing an annular surface 16c which cooperates with a corresponding surface on the portion 15d of member 15. The spray delivered to the passage 15g enters an annular channel 16d, provided in the inner surface of the wall of nozzle 16 which abuts against the end face of portion 15d of member 15. From this annular passage 16d the spray is delivered through a plurality of substantially radial channels 16e, formed in the inner surface of the wall of nozzle element 16 which is engaged with the outer or end face of portion 15d of member 15. These radial channels communicate with the discharge opening of the nozzle shown at 16f. It will be appreciated that the passage thus provided for the delivery of the spray from the valve stem 13 to the nozzle discharge outlet 16f is such that the liquid under its propellant force, is discharged as a fine spray.

The extension 16b of the nozzle element 16 is relatively short and is adapted to cooperate with a vertically elongated opening 14e (FIG. 1) in the cylindrical portion of collar 14. This arrangement is such that the nozzle 16a retains the member 15 in permanently assembled relation to the collar 14, but permits a limited axial movement of the member 15 within the collar 14. The construction is also such that, due to the resilience of the upwardly extending portion of collar 14, the member 15 may readily be pressed into position through the opening at the upper end of collar 14. Extension 16a of the nozzle will flex the cylindrical wall of collar 14 sufficiently to enable this assembly of the parts, but when the extension 16a becomes aligned with the opening 14e the parts will snap back into the position in which collar 14 will permanently retain member 15 in assembled relation. Considerable effort will then be required to disengage extension 16a of the nozzle from the opening 14a.

The upper surface of the member 15 is provided with a circular recess having a bottom surface 17b which is of partial spherical form, so that it is of slightly greater depth at its center than at its peripheral edge. The recess is surrounded by a sloping wall 17c, which slopes inward at a slight angle from its lower to its upper edge. Within this recess there is mounted a circular disc 17. The latter has a base layer formed of a relatively stiff but resilient plastic, which may suitably be polypropylene. Adhesively applied to the upper surface of the plastic disc is a layer of fabric which may be of any suitable character adapted to present an attractive appearance. To insure proper adhesion of the fabric to the upper surface of the plastic disc, the latter is preferably roughened, as by the provision of criss-crossed shallow depressions.

The disc 17 for a number of different containers is provided with fabrics of different colors or designs, each identical with the particular nature of the contents of the bottle to which the closure is applied. Thus, in the use of the invention in connection with the packaging of cologne or perfume, the color or design of the fabric portion of the disc 17 that is used will correspond with the fragrance of the particular cologne or perfume being packaged. In the course of packaging a particular fragrance, bottles 10 may be used which are provided with some indication on their outer surface of the nature of that fragrance. The cap elements 14, 15 applied to the filled bottles may be identical, regardless of the nature of the fragrance being packaged. However, the disc 17 employed in the packaging of a particular cologne or perfume will have a fabric layer of such color or design as to indicate the nature of the particular fragrance. A disc 17 selected for a particular factory of these may be stamped into the recess in the top of a member 15 by pressing downwardly upon the disc in its central region to flex it into a partial spherical form, as permitted by the surface 15b, and the periphery of the plastic portion of the disc, upon release of pressure thereon, will then be permitted to snap into proper engagement with the shoulder 15f for permanent retention thereby. When the complete package has been filled and assembled, the various parts are retained in permanently assembled relation, and can be separated only with considerable difficulty. Thus, the package as a whole is a non-refillable unit, and its nature is such that it is relatively inexpensive so that the container may be discarded when its contents have been exhausted.

It will be seen from the foregoing that the closure cap and the valve actuating means is composed of only four simple elements 14, 15, 16 and 17. The elements 14, 15, 16 and 17 may readily be produced by injection molding, while the element 17 may be stamped from a sheet having a base layer of suitable plastic and a top layer of a suitable fabric.

While a preferred embodiment of the invention has been described in considerable detail, it will be understood that certain modifications may be made within the scope of the appended claims:

What is claimed is:

1. An aerosol package which comprises:
(a) a container for a liquid and a propellant for discharging the same,
(b) said container having a neck provided with an opening into the interior of the container and having an outwardly extending shoulder, and
(c) a valve in said neck provided with a hollow stem projecting outwardly therefrom for operation of the valve;
(d) a collar formed of form-retaining but bendable resilient material surrounding said neck and said valve and extending upwardly from said container,
(e) said collar having at its lower end an inwardly and upwardly extending, integrally connected portion,
(f) said portion having a plurality of vertically extending slots at its upper end and being provided with an inwardly extending shoulder intermediate the ends of said slots adapted to be snapped into engagement with said shoulder on the neck of the container to retain said collar in
fixed axial position as the collar is forced onto the container;
(c) a member slidably mounted in said collar adjacent its outer end,
(i) said member having an opening therein for receiving said stem of the valve and having a passage and a discharge port communicating with the bore of said stem,
(ii) inward sliding of said member serving to operate said valve stem to cause discharge of liquid from the container through the bore of said stem and through said passage and discharge port; and
(d) means for retaining said member within said collar.
2. An aerosol package which comprises:
(a) a container for a liquid and a propellant for discharging the same,
(i) said container having a neck provided with an opening into the interior of the container and having an outwardly extending shoulder, and
(ii) a valve in said neck provided with a hollow stem projecting outwardly therefrom for operation of the valve;
(b) a collar formed of form-retaining but bendable resilient material surrounding said neck and said valve and extending upwardly from said container,
(i) said collar having at its lower end an inwardly and upwardly extending, integrally connected portion, provided with an inwardly extending shoulder adapted to be snapped into engagement with said shoulder on the neck of the container to retain said collar in fixed axial position as the collar is forced onto the container;
(c) a member slidably mounted in said collar adjacent its outer end,
(i) said member having an opening therein for receiving said stem of the valve and having a passage and a discharge port communicating with the bore of said stem,
(ii) inward sliding of said member serving to operate said valve stem to cause discharge of liquid from the container through the bore of said stem and through said passage and discharge port;
(iii) said member having a recess in its upper surface;
(d) a circular disc formed of resilient plastic having a layer of fabric secured thereto, said fabric being correlated with the contents of the container, said disc being snapped into and retained within said recess.
3. In an aerosol package of the character set forth in claim 1,
(a) means for retaining said member slidably mounted in said collar comprising a short nozzle extending laterally outwardly from said member,
(b) said nozzle providing said discharge port,
(c) said collar having a vertically elongated and completely surrounded opening through its wall through which said nozzle extends,
(i) the wall of said collar being adapted to flex sufficiently to permit axial introduction of said member into said collar and said nozzle into said opening through the wall of said collar.
4. In an aerosol package of the character set forth in claim 3:
(a) said nozzle comprising a plug having a hollow shank;
(b) said slidably mounted member having an annular cavity adapted to receive said shank,
(i) said cavity communicating with said passage,
(ii) said passage and said discharge port being out of axial alignment, and
(iii) at least one of the cooperating surfaces between said nozzle and said member being grooved to provide at least one restricted channel for delivery of fluid from said passage to the discharge port of said nozzle.
5. In an aerosol package of the character set forth in claim 1, said collar being formed of polypropylene.

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