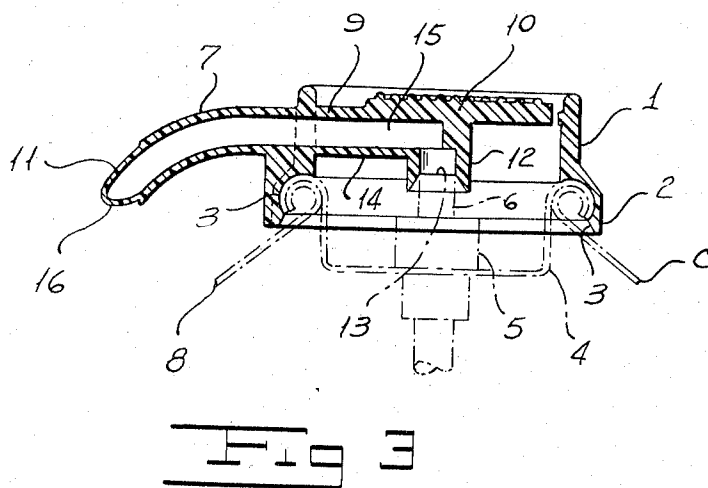
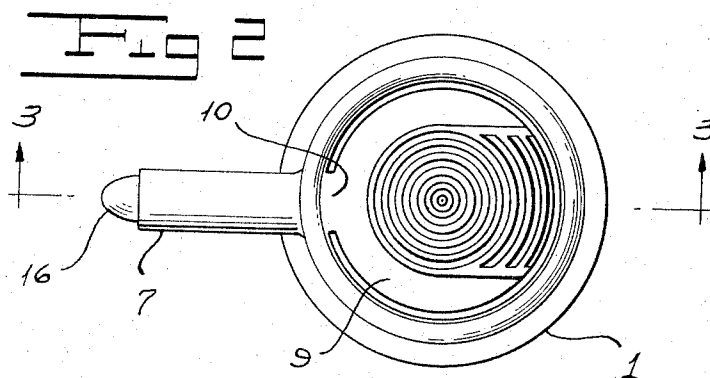


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CAP FOR DISPENSING AEROSOLS

2 Sheets-Sheet 1



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CAP FOR DISPENSING AEROSOLS

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2 Sheets-Sheet 2

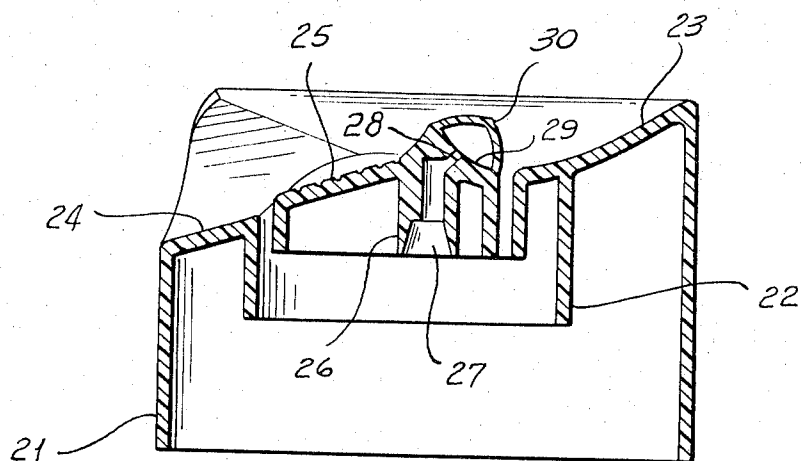
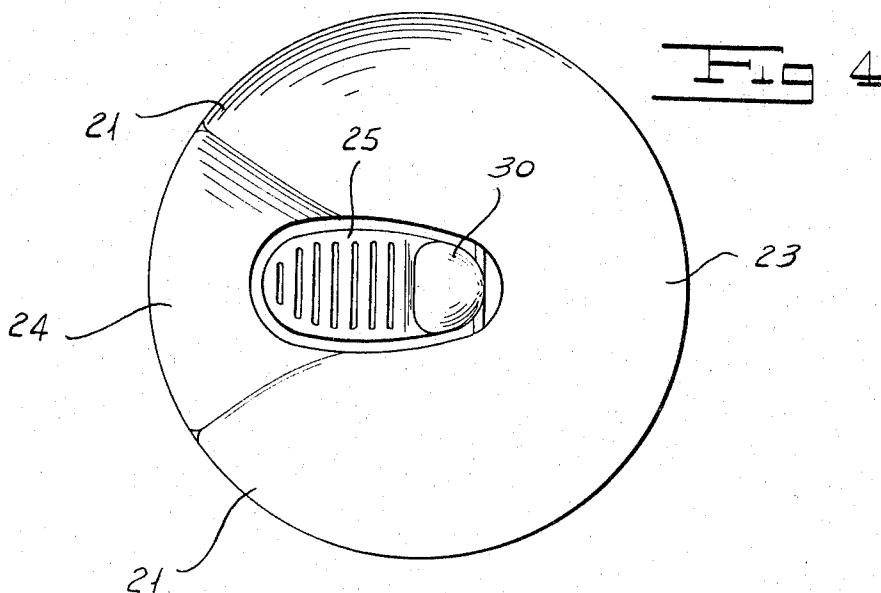


Fig 5

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3,314,576

CAP FOR DISPENSING AEROSOLS

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The present invention relates to an aerosol cap or button having a discharge port and a channel communicating with the discharge orifice at one end and a hollow valve stem at the other. More particularly, this invention relates to an aerosol cap, as generally described above, wherein the discharge port is sealed but in a manner that the seal may be removed or broken away to thereby provide a discharge orifice through which the material in the aerosol container may exit.

In the past, actuation of the valve by intentional or accidental depression of the valve-actuating member, prior to use by the ultimate purchaser or user, has produced a release of the container contents that is undesirable. For example, the problem of pre-actuation manifests itself in the practice conducted by many purchasers of "testing the container," i.e., selecting a container from the display shelf and depressing the actuator. The tendency of the trier, even in the case where a purchase is to be made, is to place the "trial container" back onto the shelf and select another. Obviously, such a practice can and does result in a display shelf having a number of pre-actuated containers. In the instance where the product dispensed is a foam or syrup, for example, the pre-actuation often results in an unsightly container. The above-described practice is commonly referred to as "tampering."

Further, in certain types of aerosol caps, i.e., where the actuator is disposed in the plane of or higher than the surrounding portion of the cap, there is a possibility of pre-actuation during shipping or stacking of the container. Moreover, in positioning the cap on the container and, more particularly, the valve stem, there will be an actuation of the valve if the force exerted to position the actuator or the valve stem exceeds the minimum necessary to open the valve. In any event, with prior caps it is necessary to limit the force to avoid actuation. By so limiting the force, and particularly in the instance where the outside diameter of the specific valve stem is on the large side and the inside diameter of the socket is small, there is a tendency not to properly seat the valve stem within the socket.

The foregoing disadvantages are overcome by providing a cap wherein the discharge orifice is sealed; to be opened by the purchaser at the time of first use.

The objectives of the present invention are to provide a simple and inexpensive positive seal for use on aerosol dispensing caps; eliminate the need for a separate cap; provide a seal which may be readily and conveniently removed by the ultimate consumer; and prevent loss of aerosols during assembly of the cap on the valve stem.

It should be understood that while the invention is described and illustrated by reference to an aerosol cap having the described construction that the invention is equally applicable to what is commonly referred to in the art as an actuating button, mechanical break-up or otherwise. Broadly, the idea of providing a closure of the discharge orifice is useful in any aerosol device wherein the discharge port or orifice communicates with a channel, which channel in turn communicates with a hollow valve stem through which the contents of the container pass as the contents exit into the discharge side of the valve.

A typical cap used presently in the aerosol art is shown in United States Patent Reissue No. 24,555 and United

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States application Ser. No. 298,660, filed July 30, 1963, now Patent No. 3,269,614; a typical button type in United States Patent No. 2,631,814, the disclosures of said patents and applications being incorporated by reference herein.

In the preferred form, the actuating devices of this invention are made of plastic materials such as, high density polyethylene which is molded to the desired shape and functional construction. Broadly stated, this invention comprises providing a seal or closure for the discharge port of an aerosol cap, which seal may be readily removed by the user when it is desired to effect an emergence of the container contents.

In one form of this invention, the seal is formed by extending the wall forming the discharge port, the extension being of a thickness sufficient to maintain the seal should actuation of the valve occur, but preferably of a thickness that the extension may be readily snapped by a shearing force such as is applied by disposing the extension between the cutting surface of a scissor, or the cutting action of an implement such as a sharp kitchen knife.

Alternatively, another form comprises providing an extension such as described above having a weakened portion, which weakened portion may be removed to expose the discharge port by bending or twisting said portion by manual force but which is sufficiently integral to the cap to withstand pressures within the extension and maintain the seal until it is desired to expose the port. The weakened portion may be provided by scoring, partially piercing or embossing the extension; said procedures for providing a weakened portion not forming a part of this invention but being well known.

For example, with caps wherein the contents of the container exit from the container through a spout member, a seal may be provided by molding a tube of relatively thinner diameter than that of the wall thickness of the spout as an extension to the spout, pinching the end of the tube and heat sealing along the pinch line.

Preferably, the tube is integrally molded along with the other portions of the cap and the tube then heat sealed in a separate operation. The seal closes the end of the dispensing tube so that a column of air is formed when the cap is assembled on top of the valve stem. This column of air acts as a back pressure against the release of material from the container and upon accidental actuation of the valve. The consumer, when he is ready to use the aerosol, simply snips off the end of the tube with a scissors or razor.

Other objectives of the present invention will be apparent from the following detailed description of its preferred embodiment taken in conjunction with the accompanying drawing. The accompanying drawing illustrates two embodiments of the invention, but it is understood that these constructions are illustrative only, since the invention may be utilized with other forms of aerosol valve caps.

In the drawing:

FIG. 1 is a plan view of one type of cap embodying the present invention after it has been formed by molding and prior to sealing;

FIGURE 2 is a plan view of the cap of FIGURE 1 after the sealing operation;

FIGURE 3 is a sectional view taken on the line 3—3 of FIGURE 2, showing the parts positioned as they would be with the valve normally closed;

FIGURE 4 is a top plan view of a second type of cap embodying the present invention; and

FIGURE 5 is a sectional view taken along the line 4—4 of FIGURE 3, showing the parts positioned as they would be with the valve normally closed.

As shown in FIGURES 1-3 the cap comprises a body

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having a cylindrical side wall 1. The lower portion 2 of the cylindrical side wall 1 is flared outward and positioned over the top 3 of the aerosol container 8. A cup portion 4 of the aerosol container 8 supports a valve housing 5 having an upper valve stem 6. The valve housing and its accompanying valve is preferably of the type shown in the aforementioned U.S. Patent 2,631,814.

The cap has a top portion 9 which is free of the side wall 1 of the cap except for an integral tab hinge 14. The tab hinge 14 connects the top portion 9 to the cylindrical side walls 1 of the cap. A tubular integral hub 12 is attached to the top portion 9 and has a tube member 15 at right angles to it. The hub 12 forms a socket 13 which fits tightly over the upper end of the valve stem 6. Tube 15 has an integral extension sprout 7. A thin tube or closing flap 11 is molded integral with the sprout 7 at its end. The entire cap, with its integral tube or closing flap 11, is pressure molded from a relatively soft, cuttable and flexible plastic, preferably polyethylene. The tube 11 is closed at its open end 16 by a heat sealing operation subsequent to the molding of the cap, as shown in FIGURES 2 and 3.

The overcap shown in FIGURES 4 and 5 comprises a one-piece molded cap made of relatively rigid plastic material such as, for example, high density polyethylene. The cap has a cylindrical side wall 21 which is adapted to be the same circumference as the side walls of the aerosol can. Inner cylindrical wall 22 is adapted to fit over the top of an aerosol can. In FIGURE 5, the top of the can, the valve and valve stem are omitted, it being understood that the same type of can and valve structure is used in the embodiment of FIGURES 1-3.

The top web portion 23 of the cap has an indentation 24 at one end of its sides to permit access of the pushing finger to the tab portion 25. A hub 26, having a socket portion, is adapted to fit over the upper end of the valve stem. Hub 26 is integral with the tab portion 25. The channel 27 through the hub 26 terminates in a nozzle port 28, which is the exit port for the aerosol material. The nozzle port 28 is at the bottom of a bowl-shaped portion 29.

A tubular member 30 is molded in air-tight relationship onto the upper ends of the nozzle 29. The tubular member 30 is closed by a separate heat sealing operation. As

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in the previous embodiment, the tubular member 30 serves to seal the container during transit and during assembly of the cap onto the valve stem. To operate the container, the customer simply snips off the closed end of tube 30.

It is understood that the invention is not limited to the particular embodiments set forth above. For example, the button member of the aforementioned U.S. Patent 2,631,814 may be formed with an integral thin tube over the nozzle port and the tube heat sealed.

Having fully described the invention, we claim:

1. An actuator for an aerosol container having a hollow valve stem extending from a top opening in the container, said actuator being an integral unitary member and comprising a body having a discharge port, a walled conduit communicating at one end with the discharge port and at its other end forming a socket for receiving the valve stem of an aerosol container, said conduit including an extension protruding outwardly from said discharge port and having a permanently closed end portion effecting closing and sealing of said discharge port, the thickness of said extension being substantially less than the wall thickness of said conduit to facilitate removal of said extension from said conduit whereby, severing of said extension from said conduit adjacent to said discharge port provides direct communication between said socket and the atmosphere.

2. A cap according to claim 1, made from polyethylene.

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