United States Patent

[11] 3,540,624

[72] Inventor **Edward H. Green**
711 Army Trail Road, Addison, Illinois 60101

[21] Appl. No. **782,317**
[22] Filed **Dec. 9, 1968**
[45] Patented **Nov. 17, 1970**

[54] **AEROSOL PACKAGE HAVING A COMBINED ACTUATOR AND OVERCAP CONSTRUCTION AND METHOD FOR MAKING SAID CONSTRUCTION**
19 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **222/108,** 222/153
[51] **Int. Cl.** **B67b 5/00**
[50] **Field of Search** 222/153, 182, 108, 394, 402.13

[56] **References Cited**

UNITED STATES PATENTS

3,209,796	10/1965	Silletti	222/182X
3,223,287	12/1965	Sagarin	222/153
3,269,605	8/1966	Silver	222/182X
3,282,471	11/1966	Lehmann	222/182
3,347,423	10/1967	Rahn et al.	222/153X

Primary Examiner—Stanley H. Tollberg
Attorney—Silverman and Cass

ABSTRACT: An overcap for an aerosol package having a stem valve with a rounded end stem protruding upwardly from the central boss that is coaxial with the conventional well at the top of the package, the overcap being snapped onto the exterior crimped joint of the cannister at its widest diameter. The overcap having a central pushbutton that is normally spaced above the rounded stem end so as not normally to be engaged therewith and the pushbutton having a concave recess in its bottom end forming the entrance to the center passageway of the pushbutton so that when moved into engagement with the stem the recess and stem end will form a cooperating connection. The pushbutton is molded integrally with the top wall of the overcap body and held in properly oriented position by means of small frangible tabs or webs so that during assembly of a conduit member to the overcap and a nosepiece to the conduit member, all of the parts are properly aligned. The first use of the aerosol package by pressing the pushbutton downward will break the pushbutton away from the overcap body due to fracture of the fragile webs or tabs, after which the pushbutton is supported in its proper poised position only by the physical connection thereof through the conduit member with the side wall of the overcap body. A laterally opening socket is molded into the pushbutton and an opening is provided in the side wall of the overcap body, the socket and side wall opening being substantially aligned. During manufacture, the conduit member has its smaller end passed through the side wall opening, is moved radially inward of the overcap body into the entrance of the socket and then is forced into the socket until it bottoms, there being an enlarged head opposite the smaller end which frictionally locks into connection with the side wall of the overcap body. An external metering or atomizing orifice is provided in the head of the conduit member, either by virtue of the construction of the member or through the later introduction of a suitable nosepiece, and a bore in the conduit member connects with the center passageway of the pushbutton. This in turn may be connected with the hollow center bore of the stem when the pushbutton is depressed so that pressurized product released by the valve will be expelled at the external orifice. The flexibility and resilience of the conduit member keeps the pushbutton normally spaced above the stem end so that after a use of the aerosol package the pushbutton will rise and any dribble or oozing from the pushbutton or the stem will flow over the boss into the well.

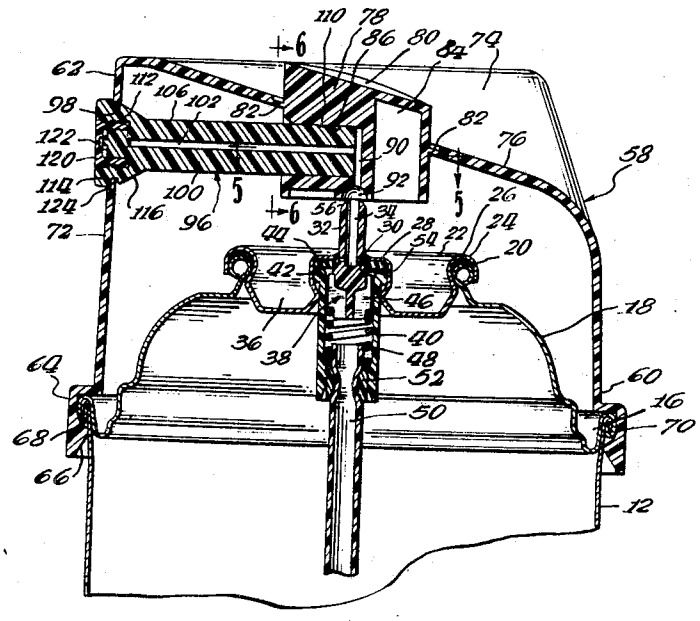


Fig. 1

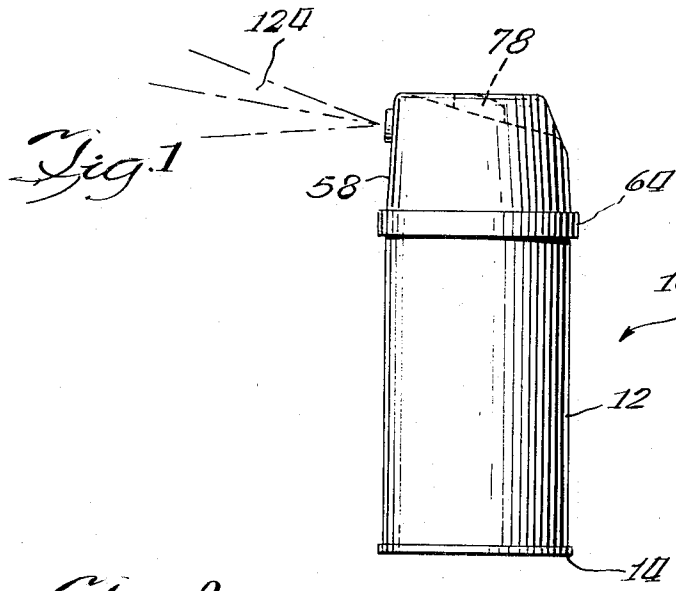
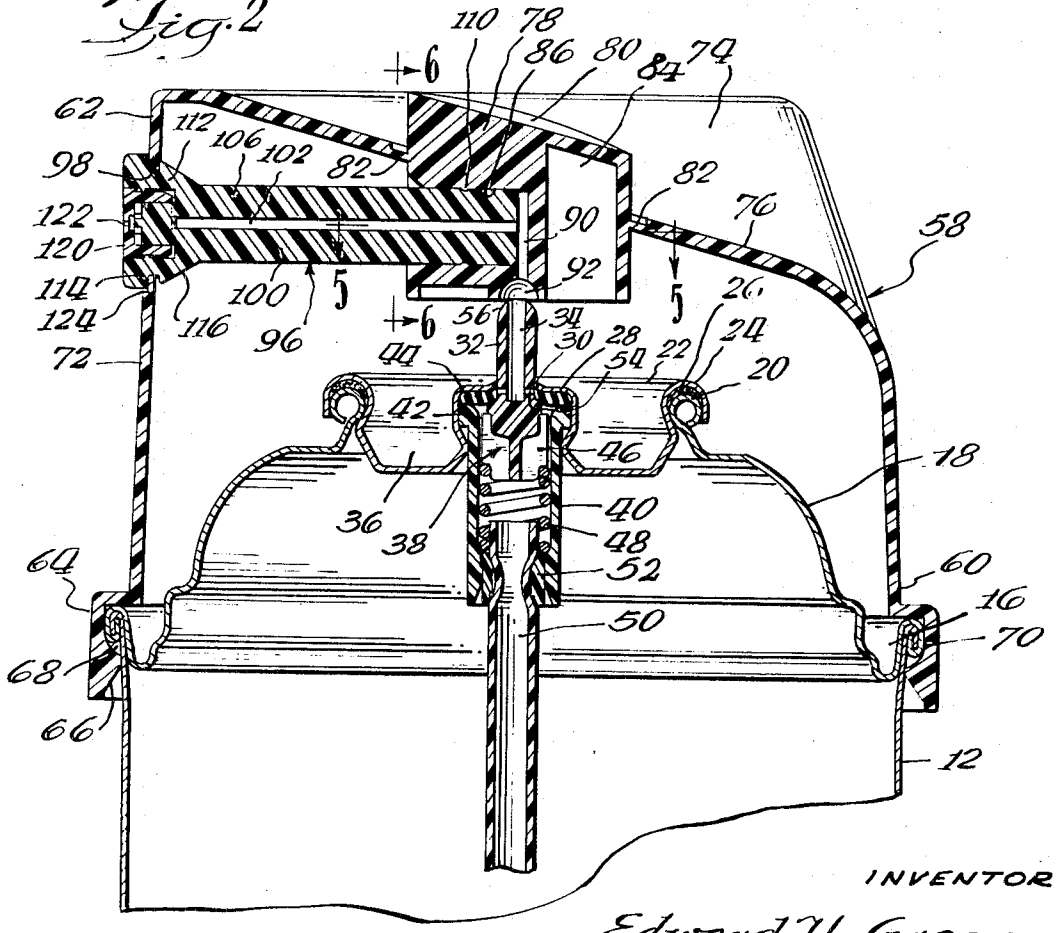


Fig. 2



INVENTOR

Edward H. Green

BY Silverwoy & Cass

ATTORNEYS

Patented Nov. 17, 1970 3,540,624

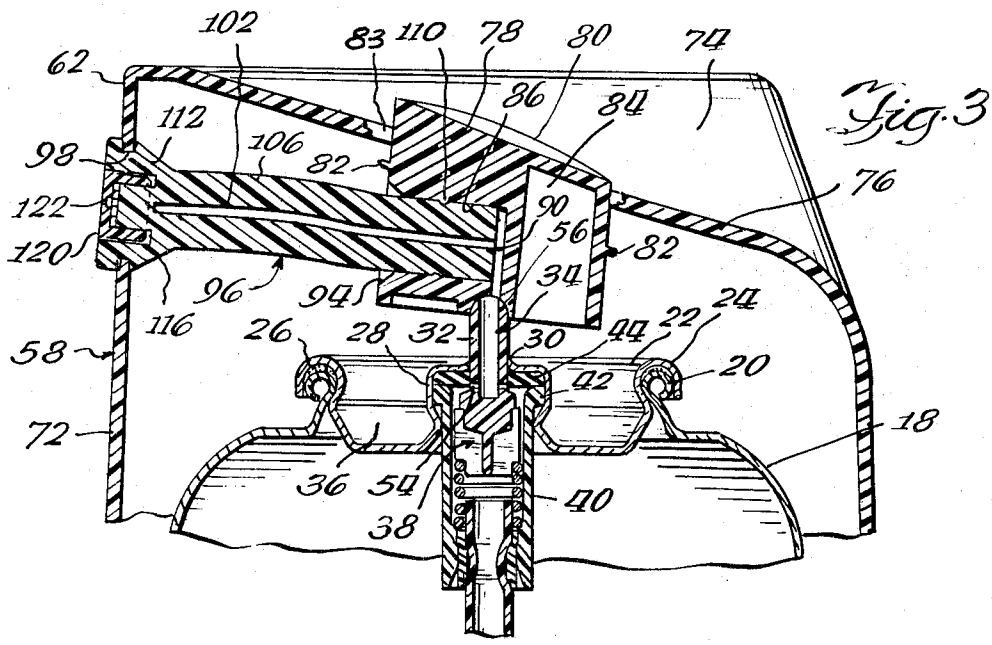


Fig. 3

Fig. 4

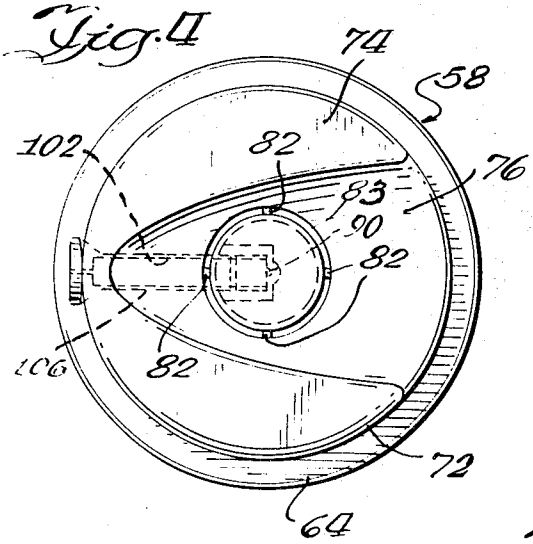


Fig. 5

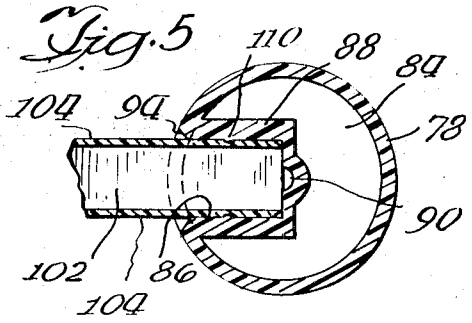
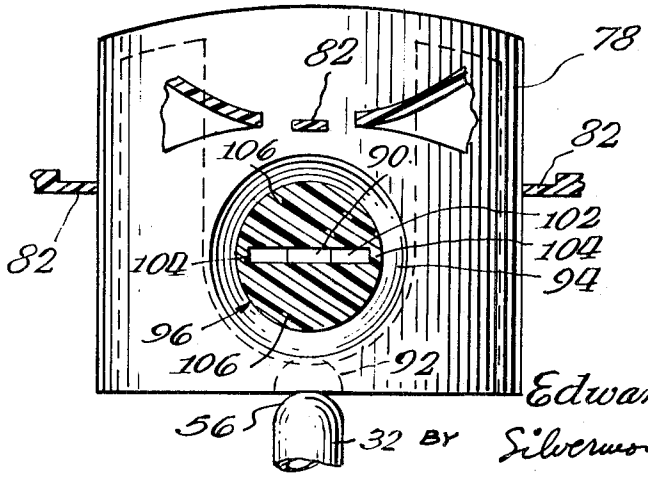


Fig. 6



INVENTOR
Edward H. Green
BY Silverman + Cass
ATTORNEYS

AEROSOL PACKAGE HAVING A COMBINED ACTUATOR AND OVERCAP CONSTRUCTION AND METHOD FOR MAKING SAID CONSTRUCTION

SUMMARY OF THE INVENTION

The invention is principally concerned with the construction of the overcap of two pieces which are independently molded and then assembled to provide an efficient, economical and dependable structure. The invention is directed to the method of assembly. The invention is also concerned with the provision in this type of two-piece structure of a tamper-proof arrangement for the pushbutton and a structure which will enable the dribble to be caught in the well, although both of these latter two features per se are known.

FIELD OF THE INVENTION

The field of the invention is aerosol packages, of the type which primarily is used for dispensing liquids or suspensions. A large majority of the packages heretofore used for dispensing liquids such as paints, insecticides, hair lacquers and the like were of a type in which there was a relatively small pushbutton or sprayhead. This type of structure is disclosed in U.S. Pat. No. 2,777,735, and many millions of these packages have been sold throughout the world.

The older packages were characterized by the provision of a canister of cylindrical configuration having a concave bottom end to withstand the internal pressure, and having a convex dome held to the cylindrical body by a crimped joint forming a shoulder on the widest diameter of the canister. The center of the dome was open when the canister was purchased by the filler, and the valve structure was added afterwards. The method of filling with the product and propellant depended upon the machinery available to the filler. Cold filling could be done before the installation of the valve structure, but the more popular method of filling was by pressure after the valve was in place.

The valve manufacturer furnished the filler with the closure member that capped the opening in the dome, having built the valve into the center boss of the closure member. The conventional valve structure was pinched into the boss which was formed in the center of the closure member, the latter being otherwise cup-shaped. The lip of the cup was engaged over the curled edge of the opening in the dome by the filler and crimped in place with suitable gasket compound to form a pressure tight seal. This construction provided an annular well surrounding the boss.

Two types of valve structures generally were used, these being stem valves in which a portion of the valve protrudes from an opening in the top of the boss as in U.S. Pat. No. 3,348,743, the other type of which U.S. Pat. No. 2,777,735 is an example. In the latter the stem is integral with a sprayhead and is introduced into the opening in the center of the boss. Depressing the sprayhead in a vertically downward movement opens the valve internally of the boss, and the aerosol product comes up the center bore of the stem into the body of the sprayhead and emerges from an external metering orifice which is formed in a lateral side of the sprayhead. This sprayhead with its stem were removable from the opening in the boss.

In the case of the stem valves, the depressing of the stem does the same thing, except in this case the stem cannot be removed from the closure member but is permanently connected therewith. The sprayhead or button which is carried on the stem end is normally smaller than the sprayhead which has an integral depending stem, but like the sprayhead, it has internal passageways to lead the aerosol product to the external orifice in its lateral side.

Aerosol packages with stem valves are of types which permit vertical movement only, lateral tilting movement or combinations of these two.

The invention herein is directed to a structure which uses a stem valve and in which the movement of the pushbutton to open the valve for causing aerosol product to be dispensed is limited to vertical.

In recent years overcaps have become popular for a variety of reasons, probably the most important of which is appearance. An overcap is a structure which fully covers the top of the aerosol package, being secured to the crimped shoulder formed between the cylindrical and dome portions of the canister or in many cases, being secured to the crimped connection formed by the closure member and the rolled edge opening of the dome. Plain overcaps were used with the packages having the small buttons or sprayheads for some time, to provide a neat and pleasant looking package and also, in some measure, to prevent the operation of the valve inadvertently. One had to remove the overcap to obtain access to the sprayhead or button or operate the same.

Later, overcaps were intended to be held substantially permanently upon the package, and the button or sprayhead was actuated through the overcap or by some mechanism provided by the overcap. Other modifications had the overcap itself provided with the button or sprayhead, and many structures have been devised of this type.

According to the invention, the overcap is of the type secured to the large diameter of the canister and has the pushbutton integrally molded therewith, but separable therefrom so that the first use of the package will cause the pushbutton to be broken away from the overcap. Thus a purchaser can ascertain whether the package has been tampered with.

The pushbutton of the invention has a rounded recess in its bottom end which communicates by way of a vertical passageway with a socket formed in the lateral side of the pushbutton. The upper end of the stem is also rounded so that there is a somewhat ball and socket connection between the stem and pushbutton, easily separated, but quite efficiently sealed when engaged. Thus, dribble which occurs after a use of the package and/or which oozes out of the stem is free to flow down the sides of the stem over the boss and into the well of the package. This is of course hidden by the overcap and cannot be seen. Moreover, because the overcap is substantially permanently secured to the outermost shoulder of the canister, any accumulation which does not dry quickly will not leak out unless the user turns the package upside down.

The overcap has a conduit member connected between its side wall and the pushbutton, said conduit member being forced into the socket of the pushbutton during manufacture while at the same time being engaged in a suitable perforation or opening formed in the wall of the overcap. The conduit member carries the aerosol product to the external orifice which is formed in the end of the conduit member or is provided in the end of the conduit member as a mechanical breakup or atomizing device or nose-piece. In manufacturing the overcap, the conduit member and overcap with pushbutton are molded separately and then joined in an assembly operation. Great economies are effected by this arrangement, a more durable and robust structure is assured, a wider variety of external orifices are capable of being installed in the external end of the conduit member, and a structure is provided which can raise the pushbutton off the rounded stem end without the need for biasing means. The construction takes advantage of an additional small force provided by the remaining pressurized product in the upper system at the end of a stroke.

An aspect of the invention is concerned with the method of making the aerosol overcap structure. The fact that the pushbutton is molded integrally with the overcap body and held in perfect relation thereto means that there will be perfect alignment of the socket in the pushbutton and the opening in the side wall of the overcap body. An assembly machine mounts the combined overcap body and pushbutton in a suitable fixture, and a feed device at one station inserts the conduit member automatically. If a nosepiece is to be inserted into the external end or head of the conduit member, the assembly machine merely moves the overcap to a second station and a second feed device inserts the nosepiece. There are no multiple pieces to handle or adjust relative to one another in order to be able to accomplish the assembly, as there are in the case of known overcap structures having pushbuttons formed independently of the overcap bodies.

The advantage of providing for internal capture of afterflow is that the external orifice remains dry and the outside of the package does not get soiled and/or contaminated with the aerosol product.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 is a side elevational view of an aerosol package constructed in accordance with the invention.

FIG. 2 is an enlarged fragmentary median sectional view taken through the aerosol package of FIG. 1, the package being shown before having been used.

FIG. 3 is a view similar to that of FIG. 2 but in this case the pushbutton has been pushed downward to break it away from the upper wall of the overcap, and further has depressed the stem of the valve to cause it to dispense aerosol product.

FIG. 4 is a top plan view of the aerosol package of FIG. 1 illustrating the pushbutton before having been broken away from the upper wall of the overcap.

FIG. 5 is a fragmentary sectional view taken generally along the line 5–5 of FIG. 2 and in the indicated direction.

FIG. 6 is a fragmentary sectional view of an exaggerated scale taken generally along the line 6–6 of FIG. 2 and in the indicated direction.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The package illustrated in FIG. 1 is designated 10 and it comprises a canister 12 of cylindrical configuration having a suitable bottom end 14 soldered or crimped thereto or even formed as a seamless integral structure. The upper end of the cylindrical canister 12 is crimped at 16 to a convex dome 18 that terminates in a rolled edge opening 20. A closure member 22 of cup-shaped configuration has its lip 24 crimped over the rolled edge of the opening 20 and sealed by suitable gasket compound 26. The center of the closure member 22 has an upstanding boss 28 with a central opening 30 in its upper wall through which there protrudes a vertically disposed stem 32 having a hollow bore or expansion chamber 34. The boss 28 is thus surrounded by an annular well 36 that is capable of carrying a fair amount of residual materials which dribble from the end of the stem or ooze out of the pushbutton during use of the package.

The stem 32 is a part of an internal valve designated generally 38, the exact construction being of no importance to the invention other than it is required to have the protruding stem. The stem will be subjected to vertical reciprocation during use so that the valve 38 should be of this type, although even if the valve is of a type which can also operate through lateral tilting movement it will be satisfactory. In any event it must have the faculty of operating when the stem is pushed downward.

As shown, the valve 38 comprises a plastic housing 40 having its upper flanged end 42 pinched into the housing and thereby clamping a sealing gasket 44 of rubber or rubberlike material against the lower surface of the upper wall of the boss 28. There is a central perforation in the gasket 44 which aligns with the hole 30 in the upper wall of the boss 38 and through which the stem 32 passes. The housing 40 carries a valve plunger 46 therein, this plunger being forced upward against the gasket 44 by the helical spring 48 disposed in the housing 40. A dip tube 50 extends downward to the bottom internal end of the canister 12 (not shown) and has its upper end clamped into the lower end of the housing as shown at 52 by a suitable plastic split ring.

The stem 32 and the valve plunger 46 are of unitary construction, integrally molded, if desired, but preferably of the construction disclosed in said U.S. Pat. No. 3,348,743. The particular structure which is illustrated is commonly used, and has the bottom of the bore 34 closed except for a perforation or perforations 54 closed off by the gasket 44 when the package 10 is not being used, but opened to the interior of the housing 40 when the stem 34 is pushed downward as shown in FIG. 3.

As thus far described, the structure is well-known and not consequential to the invention with the exception that the stem valve must be of a type to operate upon vertical reciprocation and the package should provide some form of crimped joint similar to that shown at 16 to enable the overcap to be secured thereto.

The invention may be applied to a structure in which the upper end of the stem 32 is of any suitable type, so long as the socket 92 of the pushbutton matches it, but it is preferred that it be perfectly spherical. Thus, in the views, the upper end of the stem 32 is hemispherical as shown at 56.

The overcap 58 of the invention has a body which is a generally cylindrical hollow member but somewhat tapered from a diameter at its bottom end 60 of such dimension as to fit on top of the crimp 16 to a slightly smaller diameter at its upper end 62. At the bottom end 60 there is provided an outwardly extending flange 64 having an internal tapered surface 66 leading to an undercut groove 68. The crimp 16 forms an exterior shoulder 70 as well-known, and when the overcap 58 is forced down upon the crimp 16, the tapered surface 66 will ride the crimp, spreading the bottom flange 64 outward to accommodate the surface 66, following which the flange 64 will snap inwardly as the shoulder 70 enters the groove 68. This is easily accomplished because the freshly molded plastic from which the overcap 58 is formed is relatively flexible and yields readily while "remembering" its original configuration so that it returns just as readily. The plastic used for the overcap conveniently may be any of the well-known injection molding synthetic resins or polymers.

The body of the overcap 58 comprises a generally cylindrical wall 72 (albeit, slightly tapered upward) with its upper integral end 62 comprising a transverse wall 74 having a concave groove configuration 76 blending in with the remainder of the overcap where it is joined thereto. In the center of the upper wall 74 there is provided a pushbutton 78 which has a substantial vertical dimension so that while a portion thereof protrudes above the surface of the wall 74, an even greater portion extends below this surface. The pushbutton 78 in this case is cylindrical in configuration but has an angled and slightly convex upper surface 80 to fit the user's finger. The entire configuration of the upper wall with its grooved portion is designed for convenience and comfort, as well as for identifying to the user the direction in which the package is to be pointed during use.

When first molded, the body of the overcap 58 has the pushbutton 78 integrally connected thereto by means of small frangible webs 82 circumferentially spaced around the pushbutton and extending across an annular space 83 formed between the pushbutton 78 and the remainder of the wall 74. When first used, the pushbutton 78 will be forced downward and the webs 82 will break as shown in FIG. 3 so that thereafter during the remainder of the life of the package the pushbutton 78 is totally free of the body of the overcap 58 but for another connection which will shortly be described.

The pushbutton 78 has a generally hollow interior as shown at 84 but is provided on one side of its center with an enclosed socket formed in a housing or solid portion 88, the socket 86 opening to a lateral side of the pushbutton 78. A vertical passageway 90 is formed by a vertically transverse groove in the bottom of the socket and a small length of enclosed bore connected therewith, this latter terminating a hemispherical recess 92 which is aligned with the end 56 of the stem 32.

The outer end of the socket 86 has a tapered entrance 94 which serves to pilot the entry of a conduit member 96 therein, in a manner to be described.

The cylindrical wall 72 has an opening 98 formed therein at the side which is effectively the front of the package 10, adjacent the uppermost end of the groove 76. The conduit member 96 is molded separately and independently of the overcap body 58 and it is of elongate hollow construction. It has a shank 100 which is of cylindrical rodlike configuration but has an interior flat rectangular cross section bore 102. The shank 100 has small connecting strips 104 holding the heavier

portions **106** together. This structure results from the use of a strong flat blade to mold the shank **100**, although only a small opening is required. An advantage in the resulting wide bore **102** is freedom from clogging. At its inner end the shank is force fitted into the socket **86** and during assembly is pushed all the way into said socket **86** thereby closing off all but the groove in the inner end wall thereof. The socket may have an annular bead **110** on its interior to bite into the outer surface of the shank so that the connection with the pushbutton is sealed and held very tightly.

At its outer end, the conduit member **96** has an enlarged head **112** provided with an annular groove **114** that is adapted to be engaged in the opening **98** formed in the wall **72**. The head has a tapered lead surface **116** to facilitate the assembly of the conduit **96** to the overcap body. It will be appreciated that after the overcap body has been molded and the conduit member **96** molded, the smaller end of the shank **100** is introduced into the opening **98** through which it readily passes, the diameter of the shank **100** being less than that of the opening **98**. The overcap body and the pushbutton **78** may be held in some kind of fixture or jig for this purpose. The inner end of the shank **100** enters the pilot entrance **94** and is pressed into the socket **86** as far as it can go, and while this is being done, the lead taper **116** is spreading the opening **98** until the groove **114** is reached, at which time the plastic wall surrounding the opening contracts into the groove **114**. Simultaneously the shank **100** has bottomed, or nearly so. In handling freshly molded plastic resins, there are no problems in forcing the opening **98** to increase its diameter and return to its unstrained size after relieved by reaching the groove **114**.

The overcap **58** as formed by this method is to all intents and purposes a unitary construction, the conduit member **96** being permanently secured in place. After the passage of several days, when the plastic has aged even a short while, it is less yielding and the conduit member and overcap body are effectively locked together permanently. The conduit member **96** is seen to bridge the space between the pushbutton **78** and the overcap wall **72** to conduct the aerosol product to the external orifice. This distance is substantial in the construction shown because the overcap body is of a type secured to the outer crimp **16** of the canister.

With respect to the external orifice of the conduit member **96**, any desired construction can be used. If desired, a simple cylindrical bushing or nosepiece having a small opening may be inserted into a suitable socket formed at the end of the bore **102**; or any of the well-known types of inserts or nosepieces forming so-called external metering orifices may be installed at the exterior end of the conduit member **96**. This will be done while the overcap is in the fixture which holds it for insertion of the conduit member **96**. For example, the first station of the assembly line will feed the conduit member into position and push it home. The fixture and overcap will then be moved to a second station at which the nosepiece will be inserted. This completes the overcap **58** and it can be removed from the assembly machine. One of the important advantages of the construction is that the pushbutton is accurately positioned for facilitating assembly of the overcap.

In the illustrations, the head **112** of the conduit member **96** is constructed in accordance with U.S Pat. 3,129,893 to provide an atomizing or mechanical breakup effect to the aerosol materials. This structure is indicated generally at **120**. Reference to external metering orifice shall be taken to mean any kind of opening or variety of openings or swirler outlet or other orifice in a nosepiece or built into the conduit member **96** at the delivery end of the bore **102**, and for reference purposes the opening in the drawings is designated **122**.

When the pushbutton **78** is pressed downward as shown in FIG. **3**, the shank **100** will flex as shown, either by itself or with additional yielding of the front of the wall **72**, until the recess **92** engages upon the rounded end **56**. Further downward movement will open the valve **38**, causing the pressurized material to pass into the bore **34** where some expansion may take place, and from there into the passageway **90**, through the bore **102** and out by way of the opening **122**. When the pushbutton **78** is released, it will rise to the position which it occupies in FIG. **2** after which, if there is any residual material which has oozed out of the stem **32** or dribbled from the pushbutton, it will flow over the surface of the boss **28** and into the well **36** where eventually it will dry up. It cannot reach the outside of the overcap to soil the hands of the user, or become unsightly.

A slight recess **124** may be formed in the surface of the wall **72** to assist in seating the head **112** when in proper connection within the opening **98**, so that the outer configuration of the conduit member **96** may be symmetrical. Otherwise, since there is a slight taper of the wall **72**, the groove **114** would have to be properly oriented to fit a hole **98** in a slanted wall. While it would be preferable for the widest dimension of the bore **102** to be oriented horizontally to give increased flexibility this is not essential. The problem of assembly in this oriented position is difficult, but not insurmountable. The inherent resilience and flexibility of the conduit member shank **100** provides sufficient recovery force, which may be aided by the resilience of the front wall **72**.

The engagement of the stem **32** with the pushbutton **78** occurs as a result of the spherical end **56** of the stem engaging in the spherical recess **92**. This is a type of ball and socket engagement which is quite simple and economical to construct, and nonetheless the engagement is quite effective because the seal is maintained for movement of the pushbutton against the stem at angles which vary quite substantially from perfect alignment. The engagement is also readily separable by means of a minimum of recovery force, such as exerted by the recovery of the conduit member **96** from flexing alone, or in conjunction with a slight recovery force produced by the return of the front wall **72** to normal after being slightly distorted by movement of the pushbutton. The expanding propellant in the aerosol product in the stem and the various passageways between the stem and external orifice also aid in forcing the pushbutton and stem apart.

There are many variations in construction which may be made while still using the benefits of the invention. In the structure illustrated and described, the alignment of the lateral pushbutton socket **86** and the opening **98** is such that an axis through their centers defines a horizontally disposed line when the package is not in use, but in line which is tilted upward and outward of the aerosol package **10** when the package is actually being used. Thus, with the package arranged perfectly vertically, the aerosol will spray upwardly as indicated at **124** in FIG. **1**. This makes for easy assembly of the conduit member **96** to the overcap body, but provides a compensation for the tendency of a user to hold the package tilted slightly downward. Obviously, the alignment of the opening **98** and the socket **86** may be such as to provide any desired angle of spray pattern and any desired orientation of the conduit member **96**.

The particular method of assembling the overcap **58** by inserting the conduit member through a wall of the body and into a socket formed in the side of the pushbutton which has been molded integral with the overcap body lends itself to the manufacture of some of the other types of overcaps with advantages attaching. Thus, for example, one type of aerosol overcap structure has the sprayhead firmly engaged to the valve stem which moves vertically while the outer end of the sprayhead is connected to a nozzle which moves vertically in a path defined by a slot in the overcap wall. Although that type of overcap structure is not as desirable as the one described herein nevertheless, if the opening **98** is in the form of a slot, the head **112** provides no locking arrangement and the pushbutton is mounted for continuous engagement with the stem, certain advantages will be achieved in accordance with the invention.

One important aspect of the construction is to be pointed out. Although the frangible webs **82** have the function of providing a tamper-proof aerosol spray package, they serve the very important additional function of providing accurate

alignment of the socket **86** with the opening **98** during assembly of the overcap **58**. (Reference in the specification to overcap body excludes the conduit **96** but reference to overcap **58** includes the conduit member **96**). Without them, there would be another piece to handle, position and align.

I claim:

1. An aerosol package which comprises:

A. an aerosol container having;

i. means for securing an overcap over the upper end thereof, and;

ii. an internal valve structure including a hollow stem protruding through the top end of the container, said stem being vertically reciprocable to operate said valve to release the aerosol product from the interior of said container through the stem end,

B. an overcap on said container and said overcap including;

i. a hollow cylindrical overcap body with a transverse top wall and a cylindrical side wall, the bottom of the overcap being open and defined by the bottom end of the side wall and being mounted to said securing means;

ii. a pushbutton mounted in the center of the said transverse wall and spaced from the side wall of said overcap body, said pushbutton having a vertical passageway aligned with said stem, a laterally opening socket having said vertical passageway connected to the inner end of said socket, and a structure at the bottom end of the pushbutton cooperating with said hollow stem so that when said pushbutton is moved downward, aerosol product will pass from said hollow stem to said vertical passageway and thence into said socket; and

iii. an independently formed conduit member with a hollow bore having one end engaged sealingly in said laterally opening socket with the vertical passageway communicating with the hollow bore thereof and the other end mounted to the side wall of said overcap body and having an external metering orifice in communication with the bore opening to the exterior of the said side wall.

2. An aerosol package as claimed in claim **1** in which said bore of said conduit member is substantially rectangular in cross-sectional configuration.

3. An aerosol package as claimed in claim **1** in which said pushbutton is disposed in an opening formed in said transverse wall to reciprocate vertically in said opening, but is connected with said opening during molding of said overcap body by means of frangible webs spaced circumferentially about said opening, whereby said pushbutton is accurately positioned as an aid during assembly of said conduit member to said pushbutton but will be broken free of the overcap body with its first use.

4. An aerosol package as claimed in claim **1** in which there is an opening formed in the side wall of said overcap body coaxially aligned with said laterally opening socket and the conduit member includes a head at its outer end, the head being engaged in said opening when the inner end of said conduit member is engaged in said laterally opening socket.

5. An aerosol package as claimed in claim **1** in which the pushbutton is adapted to be engaged and disengaged from said stem end during use of said package and in which said bottom structure of said pushbutton and said stem end provide a readily separable connection, whereby after use of said package any residual aerosol product will flow down onto the top of said container on the interior of said overcap.

6. An aerosol package as claimed in claim **5** in which said readily separable connection is a ball and socket joint.

7. An aerosol package as claimed in claim **3** in which said conduit member is fixed at its point of mounting to said side wall and at least one of said side wall and conduit member is resiliently flexible whereby the pushbutton will be supported and positioned after said frangible webs have been broken, in spaced relation to said stem so that release of the pushbutton after a use thereof will enable the pushbutton to rise off the stem end, whereby after use of the package any residual aerosol product will flow down onto the top of said container on the interior of the overcap.

8. An aerosol package as claimed in claim **3** in which said conduit member is fixed at its point of mounting to said side wall and is resiliently flexible whereby to support and position the pushbutton after said frangible webs have been broken, in spaced relation to said stem so that release of the pushbutton after a use thereof will enable the pushbutton to rise off the stem end, whereby after use of said package any residual aerosol product will flow down onto the top of said container on the interior of said overcap.

9. An aerosol package as claimed in claim **4** in which said head of said conduit member is fixed at its point of engagement with said side wall and is resiliently flexible whereby to support the pushbutton in its vertical movement and to return the same to a position spaced vertically from the stem end after a use of the package, so that any residual aerosol product will flow down onto the top of the container on the interior of said overcap.

10. An aerosol package as claimed in claim **5** in which said conduit member is fixedly secured to said side wall at the point where its said other end is mounted thereto, and said conduit member is flexibly resilient about a horizontal axis so as to raise the pushbutton off the stem end after each use of said package.

11. An aerosol package as claimed in claim **6** in which said conduit member is fixedly secured to said side wall at the point where its said other end is mounted thereto, and said conduit member is flexibly resilient about a horizontal axis so as to raise the pushbutton off the stem end after each use of said package.

12. An aerosol package as claimed in claim **2** in which said pushbutton is disposed in an opening formed in said transverse wall to reciprocate vertically in said opening, but is connected with said opening during molding of said overcap body by means of frangible webs spaced circumferentially about said opening, whereby said pushbutton is accurately positioned as an aid during assembly of said conduit member to said pushbutton but will be broken free of the overcap body with its first use, the conduit member having sufficient resilience to return the pushbutton to a position spaced above the stem end after use of said package.

13. An aerosol package as claimed in claim **12** in which there is an opening formed in the side wall of said overcap body coaxially aligned with said laterally opening socket and the conduit member includes a head at its outer end engaged in said opening when the inner end of the conduit member is engaged in said laterally opening socket.

14. An aerosol package as claimed in claim **13** in which said readily separable connection is a ball and socket joint.

15. An aerosol package as claimed in claim **14** in which said conduit member is fixed at its point of mounting to said side wall and is resiliently flexible whereby to support and position the pushbutton after said frangible webs have been broken, in spaced relation to said stem so that release of the pushbutton after a use thereof will enable the pushbutton to rise off the stem end, whereby after use of the package any residual aerosol product will flow down onto the top of said container on the interior of the overcap.

16. The method of making an overcap for an aerosol product in which the overcap is a generally cylindrical body having a side wall and a transverse top wall, a pushbutton adapted to be vertically reciprocated relative to the top wall, said overcap adapted to be secured to a container having a stem of a stem valve protruding through the top of said container, the overcap including a conduit member connected between the pushbutton and the side wall and bridging the intervening space and adapted to convey aerosol product from the stem through the pushbutton to the exterior of the cylindrical body, said method comprising:

A. molding the overcap body and pushbutton integrally with the pushbutton extending through the transverse wall but held thereto by integral frangible webs spaced about an

opening in which the pushbutton is disposed, said pushbutton having a laterally opening socket in a side thereof and said body having an opening in the side wall thereof, the opening and socket being coaxially aligned;

B. molding a hollow conduit member independently of the overcap body and pushbutton, said conduit member having a shank with one end adapted for force fitting into said socket and a head end with means for fixed engagement with said opening; and

C. installing said conduit member by introducing said one end of said conduit member into said opening and moving the same axially inward of the overcap body until the said one end is forced into the socket and the head end is in engagement with said opening, the pushbutton being secured by said webs in position to receive said conduit member.

17. The method as claimed in claim **16** in which the conduit member head end has means for receiving a nosepiece therein, and a nosepiece is independently molded and inserted into the receiving means following the installation of the said conduit member.

18. The method as claimed in claim **16** in which the overcap body with attached pushbutton is held in a suitable jig or fixture and moved to a station where the conduit member is installed without removing the overcap body and pushbutton from said jig or fixture.

19. The method as claimed in claim **17** in which the overcap body with attached pushbutton is held in a suitable jig or fixture and moved to a first station where the conduit member is installed, and thereafter is moved to a second station where the nosepiece is installed, all without removing the overcap body with attached pushbutton from the jig or fixture.