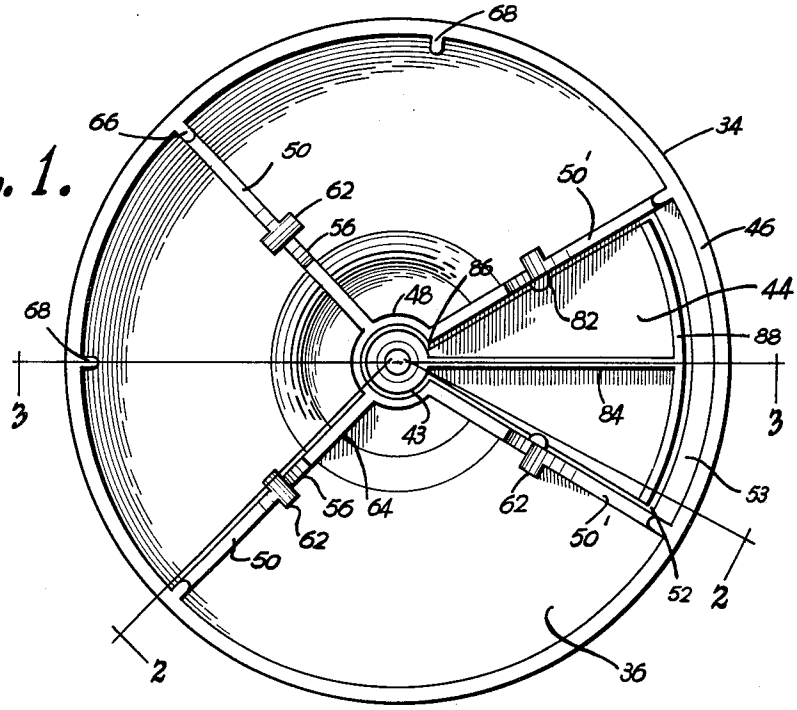
Oct. 19, 1965 P. L. CROWELL ETAL 3,212,680

ACTUATOR OVERCAP FOR PRESSURE PACKAGE

Filed Nov. 20, 1963 2 Sheets-Sheet 1

Fig. 1.



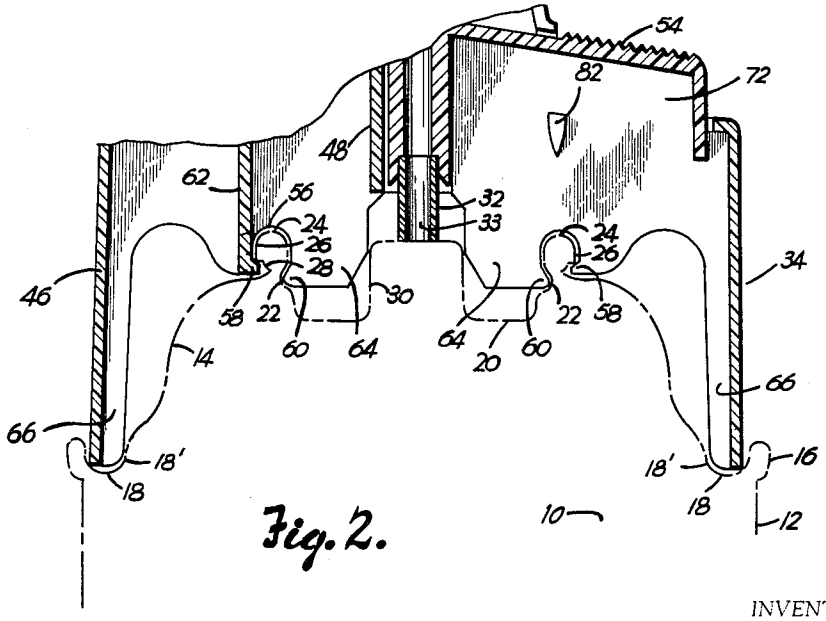


Fig. 2.

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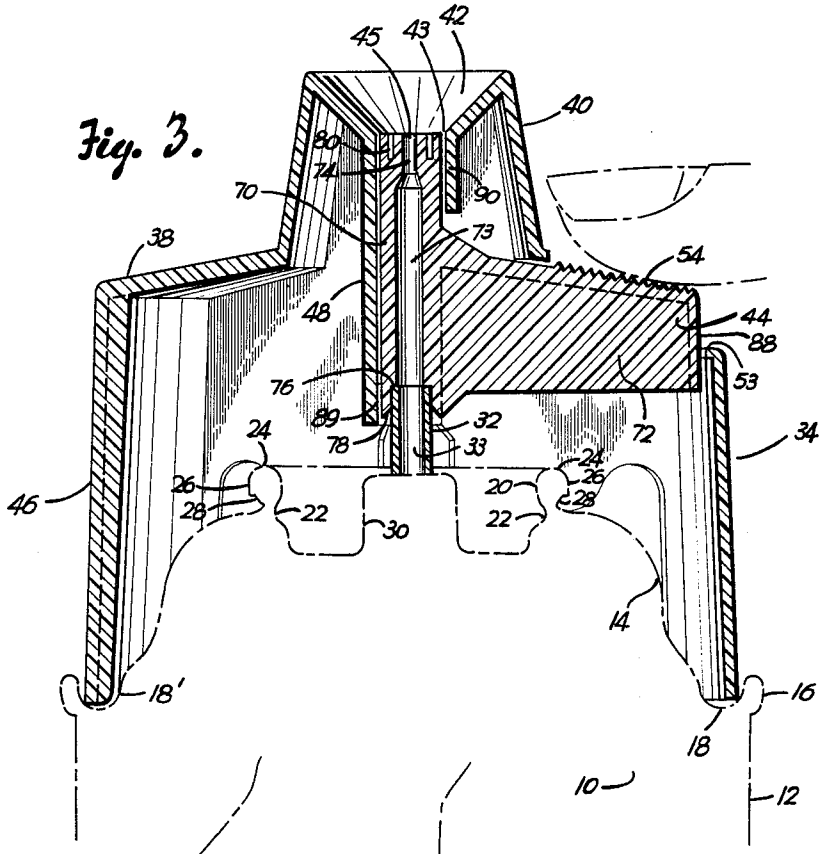
Filed Nov. 20, 1963 2 Sheets-Sheet 2

Fig. 3.



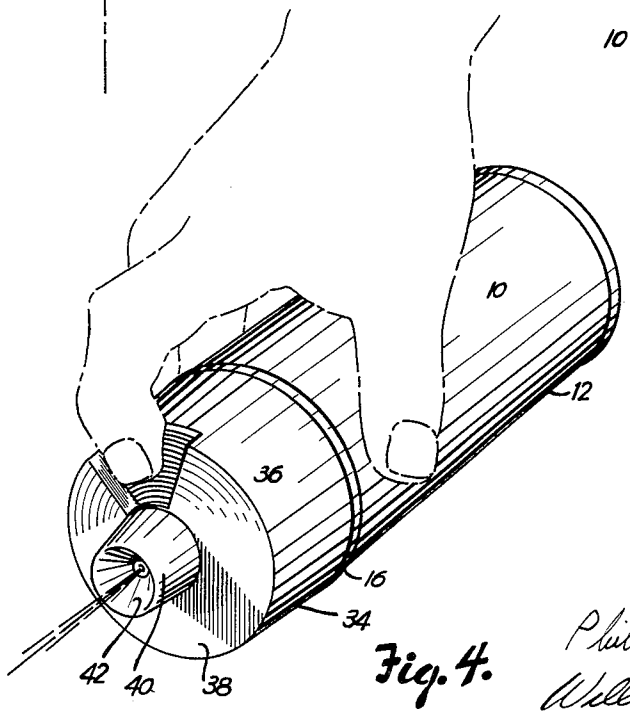


Fig. 4.

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United States Patent Office 3,212,680 Patented Oct. 19, 1965

3,212,680
ACTUATOR OVERCAP FOR PRESSURE PACKAGE

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Filed Nov. 20, 1963, Ser. No. 325,043
9 Claims. (Cl. 222—182)

This invention relates to an actuator overcap for a pressure package and more particularly to an actuator overcap provided with an improved means of attachment.

Although there are only relatively recently available developments in the packaging and dispensing arts, small, portable, pressurized packages and the dispensing from them of a wide variety of fluid or fluidizable household, cosmetic, detergent, medicinal, sanitary, industrial, agricultural and other products are now world wide in extent.

According to conventional practice, the dispensing valve of a pressurized package is supported on a cup permanently secured to the container. The cup has a central pedestal with an opening through which the valve stem projects. A manually operable dispensing button is mounted on the outer end of the valve stem. A wide variety of dispensing valves has been developed to allow convenient and efficient discharge from the package of the mentioned products which are commonly albeit somewhat inaccurately referred to as "aerosols." Among the most efficient, successful and frequently utilized of these valves is that which incorporates a hollow vertical valve stem coaxial with the container and which opens an internal valve passageway when the valve stem is depressed to allow discharge of the contents through the stem under pressure. Several types of caps, adapted to fit on the package, and/or the valve stem have been employed.

Because pressure packages are under pressure and the dispensing valve can be opened with a properly directed actuating force, e.g. depressing, it has been a problem to prevent unintentional actuation of the valve with the resulting accidental loss of pressurized product. In addition to the problem of accidental actuation of the valve, the use of pressurized packages has caused difficulties in accurately dispensing the pressurized contents. Various types of direction means such as arrows, embossed on the overcap, projecting nozzles and the like have been employed. However, failure to discharge the contents in the proper direction and inaccurate dispensing of the contents upon discharging pressure packages still plague the consumer today.

A further difficulty encountered during the assembly of pressurized packages is securing of the actuator overcap on the package. Overcaps while frictionally held on the package are expected to be steady and provide a properly oriented guide means for the valve actuator. In addition, most actuator overcaps are comprised of two or more components and it is therefor necessary to assemble these components prior to securing the overcap to the package. Maintaining the various actuator overcap components in an assembled yet properly oriented condition prior to attachments to the package without resorting to expensive and complicated packaging methods presents a substantial packaging problem.

The present invention is directed to an overcap actuator assembly having an improved means of attachment which prevents accidental discharge of the contents by means of a novel and more useful construction than heretofore known and includes the provision for dispensing the pressurized contents accurately in a direction substantially longitudinal to the axis of the package and provides a means for retaining the valve actuator assembly properly oriented in the overcap prior to assembly on the pressure package.

In accordance with the present invention, an actuator

overcap is provided for discharging the contents of the package in a direction substantially longitudinal to the axis of the package comprising:

(1) A cylindrical overcap having a top wall, and an integral depending side wall, a series of radial ribs depending from said top wall and integral with said side wall with at least some of said ribs provided wiht a primary attaching means in the shape of a cavity which accommodates the valve cup skirt/crimp area of the package, said cavity having opposing lugs which engage the undercut portion of the cup skirt and crimp area producing a grip-like force on the cup curl; providing a means for fixedly securing the overcap to the package; and

(2) An accessible and depressible valve actuator spray tip assembly slidably mounted in said overcap, said assembly comprising: a spray tip component slidably mounted in a spray tip guide means and an integral actuating assembly slidably mounted between two radial ribs of said overcap, said actuating assembly registering with a longitudinal slot provided in the spray tip giude means and with an actuating access in the top wall of the overcap.

More specifically, the actuator overcap of the invention comprises:

(a) A resilient, cylindrical overcap having a top wall and integral depending side wall with:
  (1) an integral annular, coaxial spray tip guide means depending from the top wall and terminating in an opening in a central recessed area of the top wall;
  (2) an actuating access in the top wall which registers with an accessible and depressible valve actuating assembly;
  (3) a series of radial ribs depending from said top wall and integral with the side wall and with the depending spray tip guide means;
  (4) at least some of said radial ribs provided with a primary attaching means for fixedly securing said overcap to the valve cup skirt/crimp area of the package, more specifically said attaching means is a cavity adapted to receive the valve cup curl and is provided with opposing lugs which engage the undercut portions of the cup skirt and crimp areas producing a grip-like force on the cup curl; and

(b) An accessible and depressible valve actuator spray tip assembly having the spray tip portion thereof slidably mounted in said spray tip guide and having an integral actuating assembly slidably mounted between two radial ribs and registering with a longitudinal slot provided in the spray tip guide and with an actuating access in the top wall of said overcap.

In a preferred embodiment of the invention, in addition to the primary attaching means discussed above, supplementary attaching means are provided comprising:

(a) An inner locking lug depending from said radial rib said lug extending between the inner crimp area of the valve cup and the upstanding valve cup pedestal; specifically, this lug comprises that portion of the radial rib extending inwardly from the inner lug of the primary attaching means to the spray tip guide producing a distending-like force bearing against the crimp area and the pedestal; and

(b) An outer locking lug which comprises either a depending extension of the radial rib integral with the side wall and extending the length thereof or a separate depending internal rib integral with the side wall. The outer locking lug snap-locks into the annular groove located between the outermost portion of the raised neck of the package and the outer bead of the package

to produce a spreading type force against the two bearing surfaces. The outer locking lug provides internal support for the overcap and assists in retaining the overcap centered on the package.

In a further preferred embodiment of the invention, the two radial ribs which guide the slidably mounted actuating assembly are each provided with at least one detent means so located that they retain the actuating assembly in a raised position prior to assembly on the package. That is, the valve actuating spray tip assembly can be retained in the overcap in a raised position registering with the actuating access, and will not fall out of the overcap prior to attachment to the package, thus facilitating assembly of the package. The detent means are preferably slightly raised cleats located on the opposing surfaces of the radial guide ribs. If sufficient downward force is applied to the actuating assembly, the valve actuating scrap tip assembly can be readily depressed to actuate the valve button. The assembly will return to the raised position when the downward force is removed therefrom. The detent means are located below the lowest point reached by the actuating assembly when activated. Accordingly, the detent means do not interfere with operation of the actuator overcap.

It will be appreciated by those skilled in the art that the actuator overcap is fixedly secured to the package and although it can be fabricated from resilient plastic, it is extremely steady and stable, and resists distortion. Also the actuator overcap construction provides a novel guide means for the valve actuator spray tip assembly and maintains the same properly oriented at all times. The improved combination valve actuator spray tip assembly and normally-not-removable overcap construction insures easy manipulation of the actuator assembly and accurate dispensing of the contents while at the same time providing protection against inadvertent operation of the spray tip valve actuator assembly, if the package should be accidentally brought in contact with adjoining objects.

The accompanying drawings illustrate one practical embodiment of the invention but the construction therein shown is to be understood as illustrative only, and not as defining the limits of the invention.

FIG. 1 is a bottom view of an actuator overcap with the valve actuator spray tip means assembled in a raised position therein according to the present invention.

FIG. 2 is a partial section through an overcap embodying the present invention with the upper portion of the pressure package shown by dotted lines. This section is taken on the line 2—2 of FIG. 1 and illustrates the manner in which the overcap is secured to the top portion of a pressure package.

FIG. 3 is a vertical sectional view taken substantially along line 3—3 of FIG. 1 and illustrates the manner in which the valve actuator spray tip is assembled in the overcap.

FIG. 4 is a perspective view showing the actuator overcap secured to a package with the valve actuator assembly depressed and the dispensing of the contents in a direction substantially longitudinal to the axis of the package.

Pressure package

In the accompanying drawings, a specific embodiment of this invention is shown in conjunction with a conventional pressurized package generally indicated at **10**. The package **10** may be constructed of a cylindrical body portion **12**, which has its top end covered and tightly sealed by a convex lid member **14** whose peripheral edge is interfolded with the circumferential edge of body portion **12** to form an annular ridge **16**. At the juncture of annular ridge **16** and convex lid member **14** is disposed an annular groove **18**. The center of lid member **14** is provided with a conventional valve cup **20** which is crimped at **22** into a circular opening in the center of lid member **14**. Said valve cup **20** has its peripheral edge

rolled over an annular bead of lid member **14**, forming a shoulder **24** and skirt **26** with an undercut area **28**. Projecting outwardly from the central pedestal **30** of valve cup **20** is a conventional tubular depressible valve stem **32**. Valve stem **32** is connected by passage **33** with a conventional dispensing valve mechanism (not shown) located within the package under valve cup **20**.

Actuator overcap

In accordance with the present invention there is provided for use in conjunction with the pressurized package **10** and operable valve stem **32** a novel and improved combination depressible valve actuator spray tip assembly and overcap construction designated generally by **34**, which has a number of distinctly desirable features and advantages. The actuator overcap assembly **34** provides at its top a positive and at all times reliable indication of the vertical direction of spray, an indication which cannot be mistaken or go unnoticed by the user of the pressure package.

The actuator overcap assembly **34** of the present invention provides for discharging the contents of the pressure package in a direction substantially longitudinal to the axis of the package as illustrated in FIG. 4. Assembly **34** comprises a cylindrical resilient overcap **36** having a top wall **38** with a substantially rigid upstanding spray tip guard **40**, said guard has a recessed area **42** which terminates in a central opening **43** which aligns with the upper end of spray tip assembly **70** of valve actuator spray tip assembly **44**. Spray tip guard **40** and the associated recess area **42** serve to protect spray tip assembly **70** discussed in detail below. The spray tip guard **40** provides protection from inadvertent depressing of spray tip assembly **70** and also provides a measure of protection for orifice **45** of said spray tip assembly. Top wall **38** of overcap **36** has a resilient depending integral side wall **46**.

Depending from top wall **38** of spray tip guard **40** is an integral annular coaxial spray tip guide means **48** which terminates at its upper end in opening **43** of recess area **42**. Spray tip guide means **48** is supported laterally by a series of radial ribs **50**. Radial ribs **50** depend from top wall **38** and are integral with side wall **46** and with spray tip guide means **48** and serve to impart the necessary rigidity and integrity to guide means **48**.

Top wall **38** has a second opening, actuating access **52**, which registers with the serrated finger rest **54** of accessible and depressible actuating assembly **72**. Actuating access **52** is designed to accommodate the forefinger and preferably extends radially from spray tip guard **40** to peripheral wall **46** and extends down peripheral wall **46** a depth substantially equal to the height of finger rest **54**. The radial sides of access **52** are defined by two of the radial ribs **50**. The side wall portion of access **52** adjacent to side wall **46** is provided with a lip **53** which extends to finger rest **54** of depressible actuating assembly **72**.

Primary attaching means

At least some of the radial ribs **50** are provided with a primary attaching means **56** for fixedly securing overcap **36** to the valve cup shoulder **24**, skirt **26**, crimp area **22** and skirt undercut area **28**. Primary attaching means **56** can be defined as a cavity adapted to receive the valve cup curl defined by elements **22**, **24**, **26** and **28**. More specifically, primary attaching means **56** is provided with locking lug **58** which registers with skirt undercut area **28**, and locking lug **60** which registers with crimp area **22**. Attaching means **56** with lugs **58** and **60** produces a grip-like pinching force on the cup curl. Slight radial stress is placed upon attaching means **56** when the overcap is attached to the pressure package, but after the overcap is fixedly secured, this stress is essentially relieved due to the shape of cavity **56** and the manner of engagement with the valve cup curl. In a further preferred embodiment of the invention, the outer locking

lug 58 is provided with additional support such as a thickened area on the radical rib, shown here as 62, depending from top wall 38. It is understood that both lugs 58 and 60 or any portion of the cavity of attaching means 56 could similarly be supported in this manner.

Supplementary attaching means

In a further preferred embodiment of the invention, supplementary attaching means are provided to complement primary attaching means 56.

Supplementary inner locking lug 64 comprises that segment of radial rib 50 extending inwardly from inner locking lug 60 to spray tip guide 48. Supplementary locking lug 64 bears against valve cup crimp area 22, valve cup shoulder 24 and pedestal wall 30 resulting in a distending force which supplements the gripping force of primary attaching means 56 to provide additional securing means. Supplementary locking lug 64 provides additional support and rigidity to resilient actuator overcap assembly 34 and assists in maintaining valve actuator spray tip assembly 44 properly oriented with respect to valve stem 32.

A second supplementary attaching means is provided by outer locking lug 66. Locking lug 66 can be a depending extension of radial rib 50 integral with peripheral wall 46 and extending the length thereof or alternatively, can be a separate internal rib such as rib 68 depending from top wall 38. In either case, depending peripheral wall 46 is an integral part of outer locking lug 66. In a preferred embodiment this second supplementary attaching means is comprised of both types, i.e. lugs 66 and 68. The second supplementary attaching means extends between bead 16 and lid 14 and snaps into the area defined by annular groove 18. By molding overcap 36 of a flexible and resilient plastic the lower portion of overcap, side wall 46, is in the form of a thin depending flexible skirt which may be forced down into groove 18 to effect a secure frictional engagement. This supplementary attaching means is particularly adaptable to "snap-lock" type packages. Lugs 66 and 68 produce a spreading type force bearing against the opposing surfaces 16 and 14 in annular groove 18. This force also complements the primary attaching means and contributes to maintaining the shape of resilient circular side wall 46, thus providing additional stability and rigidity to actuator overcap assembly 34, while assisting in centering the overcap on the package. This supplementary attaching means provides insurance against axial displacement of valve actuator spray tip assembly from valve stem 32. It is understood of course, when less resilient materials are used to fabricate the overcap that the above discussed supplementary attaching means are not as critical and can be excluded without adversely affecting the rigidity of the overcap. When lugs 66 and 68 are fabricated from a resilient plastic material the spreading-type force referred to above will produce a cold flowing effect on the inner leading edge of said lugs resulting in that portion of the lugs being adapted to the shape of lid 14 and particularly the undercut portion 18'. This phenomena also contributes to fixedly securing the overcap on the package.

The unexpected stability and rigidity impaired to actuator overcap assembly 34 provides further advantages heretofore not available in light weight resilient overcaps. For example, a portion of peripheral wall 46 can be provided with an access for a hook or the like from which the package can be hung. The package can thus be suspended on a hook which registers with the access without substantially affecting the rigidity or shape of the overcap.

The overcap of the present invention is preferably manufactured by conventional molding techniques. The walls, radial ribs, lugs, spray tip guide and guard means may be molded the same thickness although in practice, it is preferable to make the top wall and spray tip guide and guard means slightly thicker than the side wall, radial ribs and lugs. All of the latter can be made quite thin. All components of the overcap are substantially thinner than one skilled in the art would expect, particularly when the physical strength, rigidity and stability of the overcap are considered. It is suggested that these advantages are due at least in part to the integral molding of the various attaching means with the top and side walls resulting in a reinforcing type effect.

Valve actuator spray tip assembly

The accessible and depressible valve actuator spray tip assembly 44, comprises a spray tip assembly 70 and integral depressible actuating assembly 72. Spray tip assembly 70 is slidably mounted in spray tip guide 48, and is provided with expansion chamber 73, land 74 and orifice 45 terminating in spray tip guard recess 42. The lower end of spray tip assembly 70 engages valve stem 32 and is provided with shoulder 76 which provides a bearing surface for valve stem 32. Expansion chamber 73 communicates with valve stem passage 33. When spray tip assembly 70 is depressed, shoulder 76 bears against valve stem 32 and depresses same activating the valve allowing the contents of the package to be discharged through passage 33 and into expansion chamber 73, passing through land 74 and finally dispensing through orifice 45. It should be noted that the spray pattern and characteristics are dependent upon the size of the orifice, the depth of the land and the size of the expansion chamber. In a preferred embodiment of the invention, the orifice, land and expansion chamber are made to provide an optimum wet spray for liquids which are to be dispensed onto surfaces such as polishes, weed killers and the like. Of course, the spray tip assembly can also be modified to dispense true aerosol sprays such as space sprays.

In a particularly preferred embodiment, shoulder 76 is provided with an annular chamfered surface 78 disposed at the lower end of spray tip assembly 70. This chamfered surface facilitates assembly of the actuator overcap to the package and particularly to valve stem 32, by camming the leading edge of the valve stem 32 into proper orientation with spray tip assembly 70.

It has been found desirable during molding to provide an annular relief 80 around orifice 45 to insure that the critical dimensions of the orifice and lands are attained without distortion.

The accessible and depressible actuating assembly 72 is integral with the lower portion of spray tip assembly 70 and is slidably mounted between two radial guide ribs 50'. The actuator assembly 72 including integral depending radial support rib 84 registers with longitudinal slot 86, in spray tip guide means 48 and with recess 52 of top wall 38. Therefore, when a depressing force is applied to finger rest means 54, slidable movement of the spray tip assembly 70 and actuating assembly 72 is concurrently produced in spray tip guide means 48 and between radial guide ribs 50' respectively. The actuating assembly 72 is preferably pie shaped. The clearance between the sides of the assembly and the radial guide ribs 50' and between axial rib 88 and lip 53 are preferably small, i.e. on the order of from about 0.15 to about 0.20 inch to avoid unsightly gaps or voids in the overall appearance of the actuator overcap.

A particularly attractive and novel feature of the actuator overcap construction is the means in which the depressing force applied to finger rest 54 is transmitted to depress valve stem 32 through valve actuator spray tip assembly 44. It is readily apparent that a depressing force applied to finger rest 54 would tend to pivot valve actuator spray tip assembly 44 on valve stem 32 at the juncture thereof with shoulder 76, producing a tilting type movement rather than the substantially vertical depressing movement required to activate the valve assembly. The requisite vertical movement is obtained by converting the tilting force into a depressing force. That is,

radial forces which are applied to the lower region of the inner wall of spray tip guide 48, shown here as 89, and the upper opposite wall shown as 90 are transferred into a substantially vertical axial force. This vertical force is provided substantially free from twisting, due to the rigidity of the spray tip guide. In addition, the spray tip guide 48 and the two radial guide ribs 50' restrict any appreciable lateral or angular movement of valve actuator assembly 72.

As seen in FIGS. 3 and 4, the contents of the package are dispensed from the top of the actuator overcap in a direction substantially longitudinal to the axis of the package, with the orifice 45 for dispensing being positioned relatively close to the finger rest assembly 54 of actuator assembly 72. This close relationship between orifice and finger rest contributes substantially to the improved dispensing accuracy and dispensing response obtained with the actuator overcap.

Detent means 82 is provided on opposing walls of radial guide ribs 50'. Detent means 82 are raised cleats which protrude from opposing walls of guide ribs 50' and retain valve actuator spray tip assembly 44 in a raised position in overcap 36. By means of detent means 82 the assembly of actuator overcap 34 on package 10 is facilitated since overcap 34 and associated valve actuator spray tip assembly 44 are retained in an assembled condition prior to attachment to package 10. Detent means 82 are disposed on ribs 50' at point below that obtained by actuating assembly 72 when the latter is depressed and therefore means 82 do not interfere with actuating the valve.

Various resilient plastic materials such as linear polyethylene, polypropylene vinyl, nylon and the like can be employed in fabricating the actuator overcap. In addition, more rigid substances such as various thermosetting phenol/formaldehyde substances and various reinforced plastic compositions can also be used.

It is not necessary to provide the valve assembly of the package with a dip tube and a conventional vapor tap. However, for certain applications the valve would preferably be applied with same. It is understood, of course, that upon inverting to dispense the contents from a package equipped with dip tube and vapor tap that the vapor tap would perform the function of a dip tube providing a passage for liquid while the dip tube would perform as a vapor tap providing a passage for the gas under pressure.

It will be understood by those skilled in the art that various modifications may be made without departing from the spirit and scope of this invention and it is intended to cover all such modifications in the appended claims.

What is claimed is:

1. An actuator overcap for discharging the contents of a pressure package in a direction substantially longitudinal to the axis of the package comprising in combination:

(a) a cylindrical overcap having a top wall, and an integral depending side wall, a series of radial ribs depending from said top wall and integral with said side wall with at least some of said ribs having a primary attaching means in the shape of a cavity which accommodates the valve cup curl area of the package, said cavity having opposing lugs which engage the undercut portions of the cup skirt and crimp area producing a grip-like force on the valve cup curl area fixedly securing the overcap to the package; and,

(b) an accessible and depressible valve actuator spray tip assembly slidably mounted in said overcap comprising a spray tip component and an integral actuating assembly wherein said actuating assembly is positioned lateral to the valve stem of said pressure package.

2. An actuator overcap according to claim 1 having supplementary attaching means comprising an inner locking lug on said radial rib extending between and bearing against the upstanding valve cup pedestal and the crimp area of the valve cup skirt.

3. An actuator overcap according to claim 1 having a supplementary attaching means comprising an outer locking lug integral with and protruding inward from the side wall providing a snap-lock fit into the annular groove formed at the junction of side wall and lid of the package.

4. An actuator overcap for discharging the contents of a pressure package in a direction substantially longitudinal to the axis of the package comprising in combination:

(a) a cylindrical overcap having a top wall, and an integral depending side wall, a series of radial ribs depending from said top wall and integral with said side wall with at least some of said ribs having:

(1) a primary attaching means in the shape of a cavity which accommodates the valve cup curl area of the package, said cavity having opposing lugs which engage the undercut portions of the cup skirt and crimp area producing a grip-like force on the valve cup curl area fixedly securing the overcap to the package;

(2) a supplementary attaching means comprising an inner locking lug on said radial rib extending between and bearing against the upstanding valve cup pedestal and the crimp area of the valve cup skirt;

(3) a supplementary attaching means comprising an outer locking lug integral with and protruding inward from the side wall providing a "snap-lock" fit into the annular groove formed at the junction of side wall and lid of the package; and,

(b) an accessible and depressible valve actuator spray tip assembly slidably mounted in said overcap comprising a spray tip component and an integral actuating assembly wherein said actuating assembly is positioned lateral to the valve stem of said pressure package.

5. An actuator overcap for discharging the contents of a pressure package in a direction substantially longitudinal to the axis of the package comprising:

(a) a cylindrical overcap having a central spray tip guide means and an actuating assembly guide means and,

(b) an accessible and depressible valve actuator spray tip assembly slidably mounted in said overcap comprising: a spray tip component slidably mounted in said spray tip guide means and an integral actuating assembly slidably mounted in said actuating assembly guide means wherein said actuating assembly is positioned lateral to the valve stem of said pressure package.

6. An actuator overcap according to claim 5 wherein the actuating assembly registers with a longitudinal slot provided in the spray tip guide means and with an actuating access in the overcap.

7. An actuator overcap according to claim 6 wherein the actuating assembly guide means is provided with detent means to retain the valve actuator spray tip assembly in the overcap prior to assembly on a package.

8. An actuator overcap for discharging the contents of a pressure package in a direction substantially longitudinal to the axis of the package comprising in combination:

(a) a cylindrical overcap having a top wall, and an integral depending side wall, a series of radial ribs depending from said top wall and integral with said side wall with at least some of said ribs having a primary attaching means in the shape of a cavity which accommodates the valve cup curl area of the package, said cavity having opposing lugs which engage the undercut portions of the cup skirt and crimp area producing a grip-like force on the valve cup

curl area fixedly securing the overcap to the package; and,

(b) an accessible and depressible valve actuator spray tip assembly slidably mounted in said overcap comprising: a spray tip component slidably mounted in said spray tip guide means and an integral actuating assembly slidably mounted in said actuating assembly guide means wherein said actuating assembly is positioned lateral to the valve stem of said pressure package.

9. An actuator overcap for discharging the contents of a pressure package in a direction substantially longitudinal to the axis of the package comprising in combination:

(a) a cylindrical overcap having a top wall, and an integral depending side wall, a series of radial ribs depending from said top wall and integral with said side wall with at least some of said ribs having:

(1) a primary attaching means in the shape of a cavity which accommodates the valve cup curl area of the package, said cavity having opposing lugs which engage the undercut portions of the cup skirt and crimp area producing a grip-like force on the valve cup curl area fixedly securing the overcap to the package;

(2) a supplementary attaching means comprising an inner locking lug on said radial rib extending between and bearing against the upstanding valve cup pedestal and the crimp area of the valve cup skirt;

(3) a supplementary attaching means comprising an outer locking lug integral with and protruding inward from the side wall providing a snap-lock fit into the annular groove formed at the junction of side wall and lid of the package; and,

(b) an accessible and depressible valve actuator spray tip assembly slidably mounted in said overcap comprising: a spray tip component slidably mounted in said spray tip guide means and an integral actuating assembly slidably mounted in said actuating assembly guide means.

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LOUIS J. DEMBO, *Primary Examiner.*