United States Patent

Nigro

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[54] **PACKAGE FOR DISPENSING PRESSURIZED MATERIALS**

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[52] **U.S. Cl.** **141/20,** 222/402.16, 141/348

[51] **Int. Cl.** **B65b 3/10**

[58] **Field of Search** 222/402.11, 402.16; 141/20, 141/3, 348, 349

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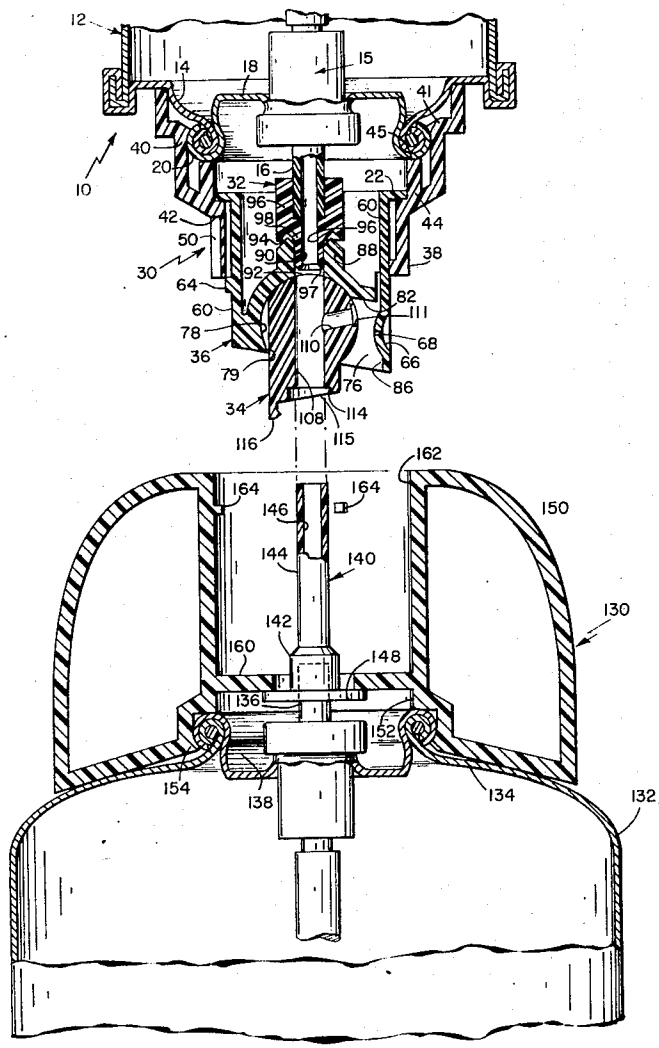
Assistant Examiner—John P. Shannon, Jr.
Attorney—Willis M. Ertman

[57] **ABSTRACT**

A pressurized dispensing package system includes two dispensing packages, each package including a projecting discharge passage structure. One of the packages includes an actuator assembly that includes two structures that are movable relative to each other. One of the structures defines a refill passage and an intersecting dispensing passage. In a first position of the structure a continuous material flow path that includes a discharge passage structure and the dispensing passage is defined and at least one port of the refill passage is closed by a surface of the other structure. In a second position the refill passage is aligned with the discharge passage structure and a continuous material flow path through the refill passage is defined whereby a transfer tube may be introduced into the refill passage to block the dispensing passage at the intersection thereof.

32 Claims, 9 Drawing Figures



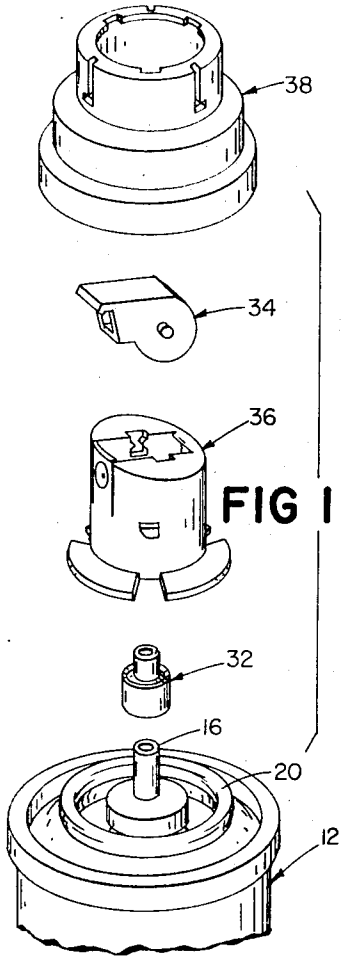


FIG 1

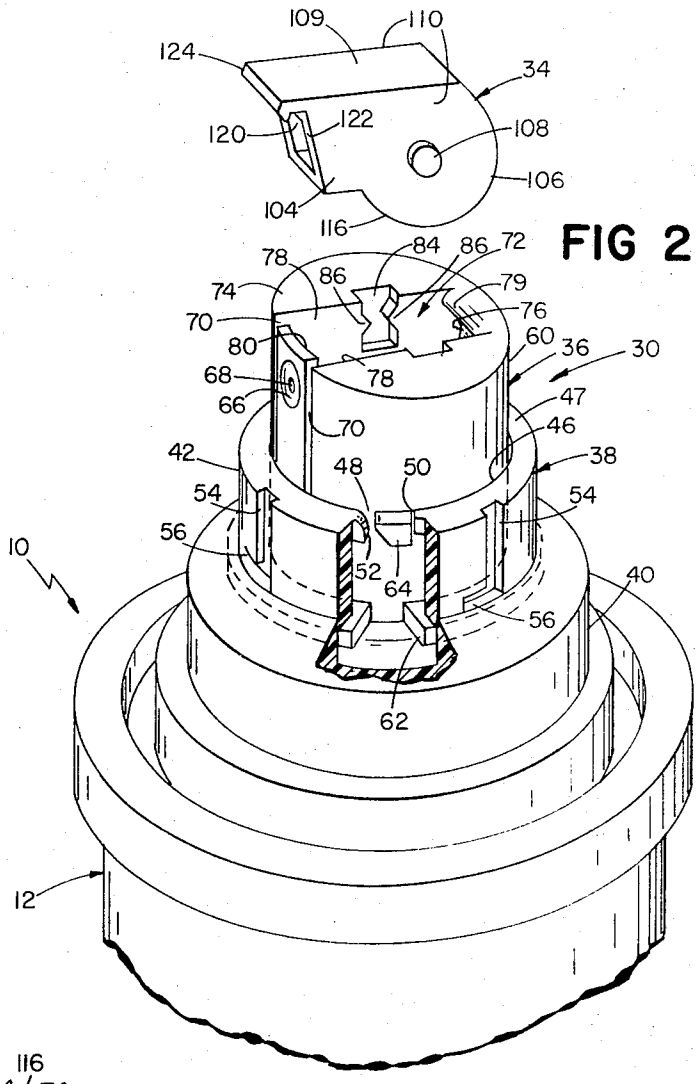


FIG 2

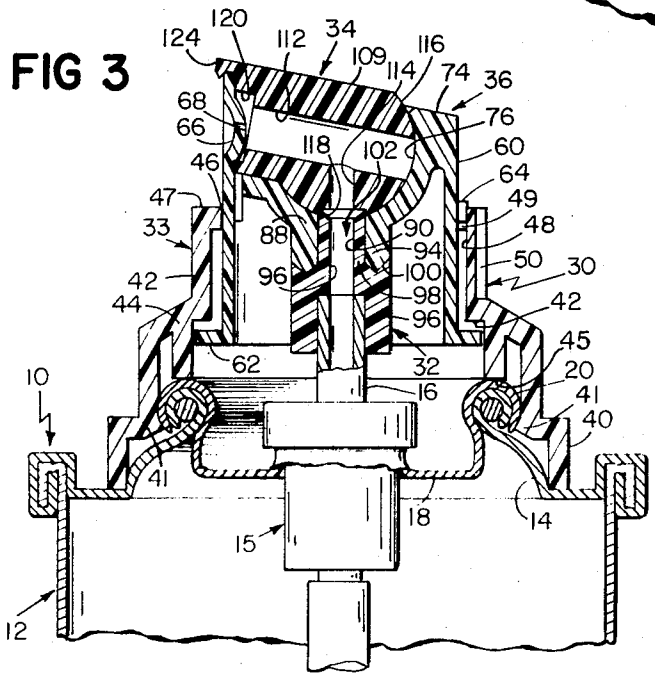


FIG 3

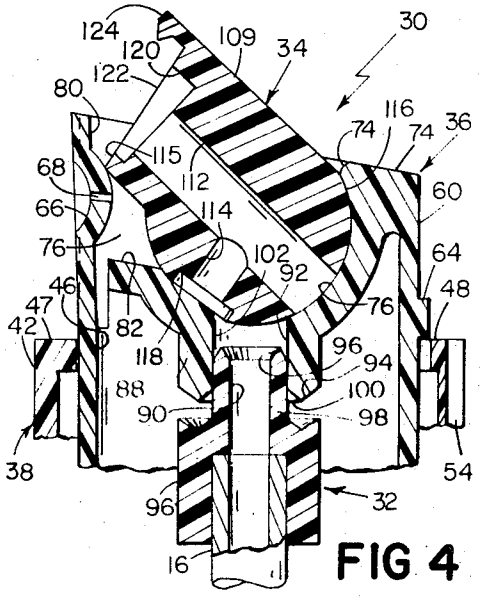


FIG 4

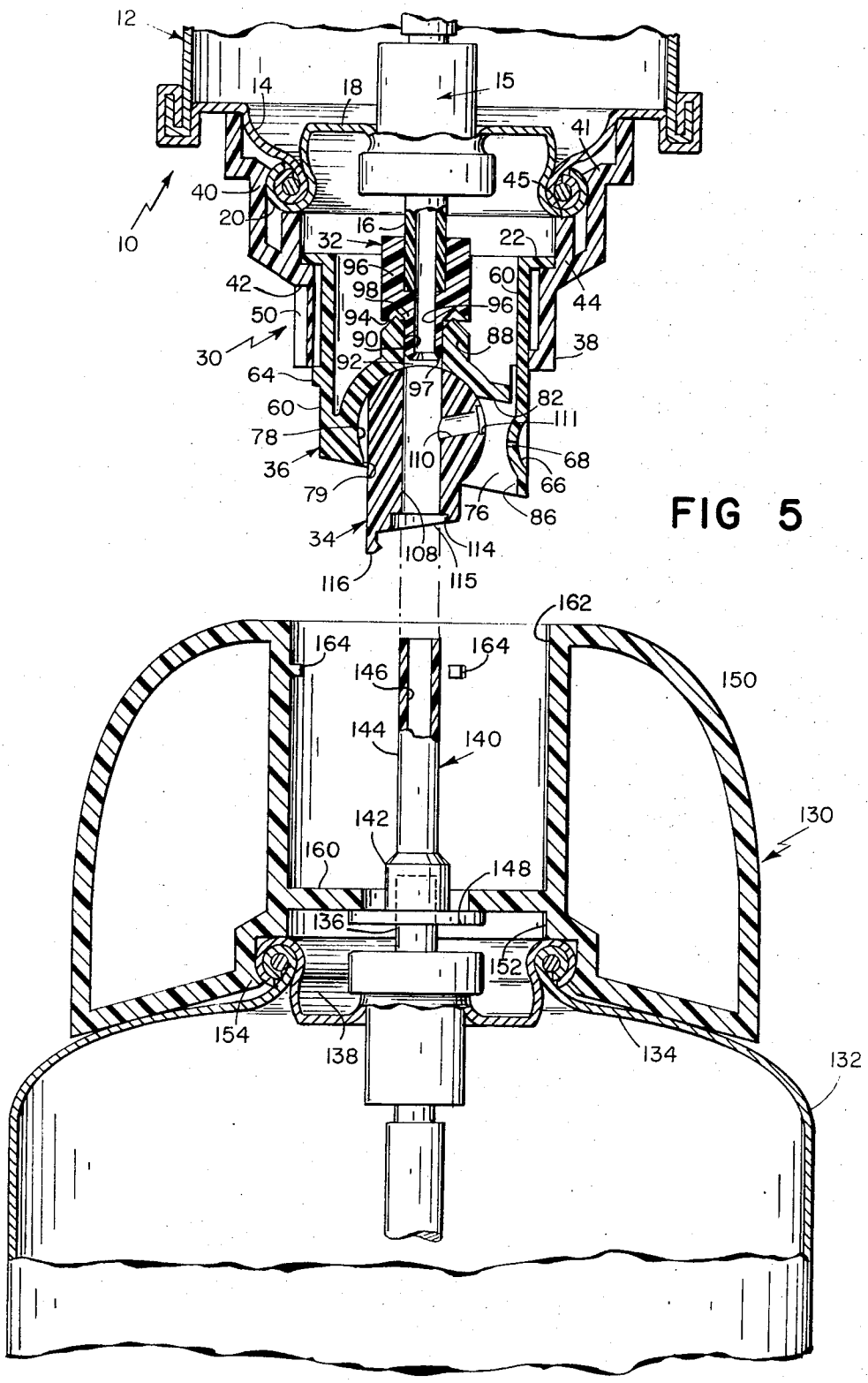

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FIG 5

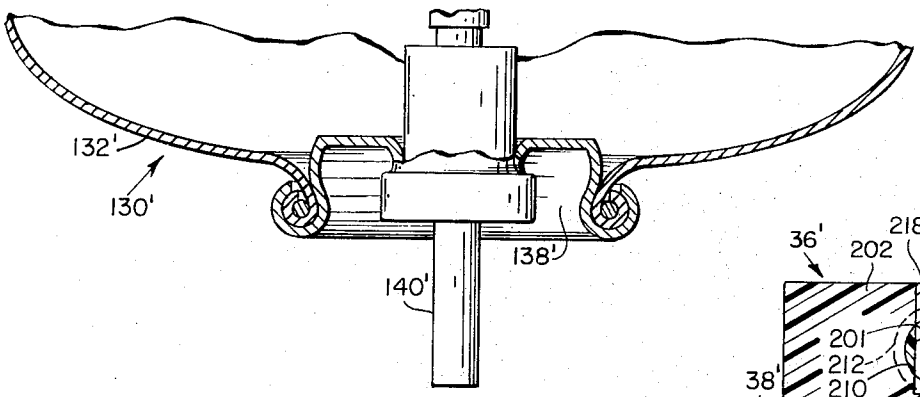
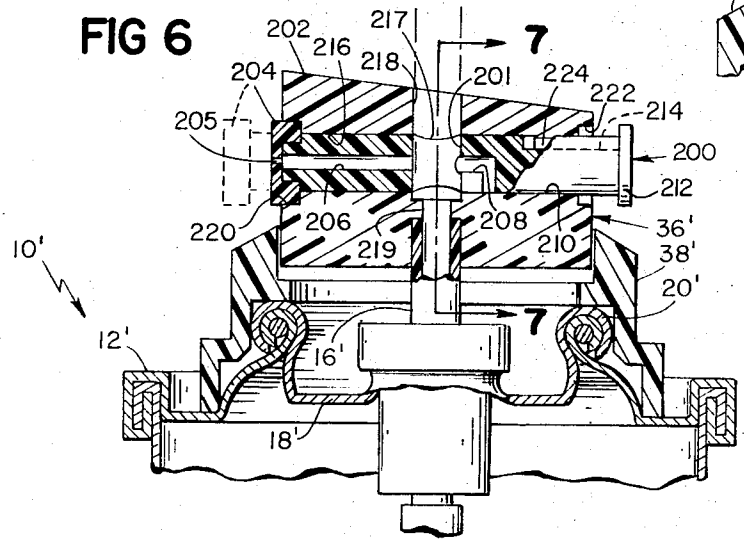


FIG 6



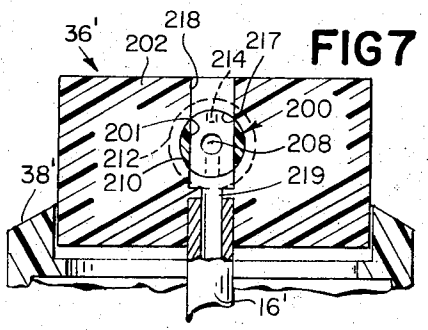
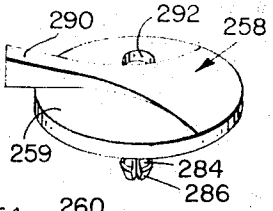


FIG 7



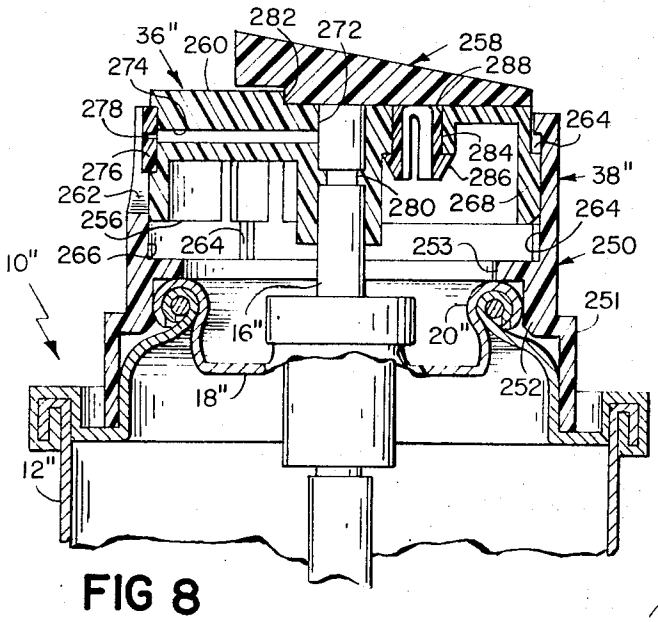


FIG 8

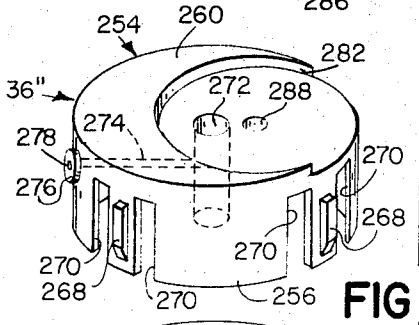
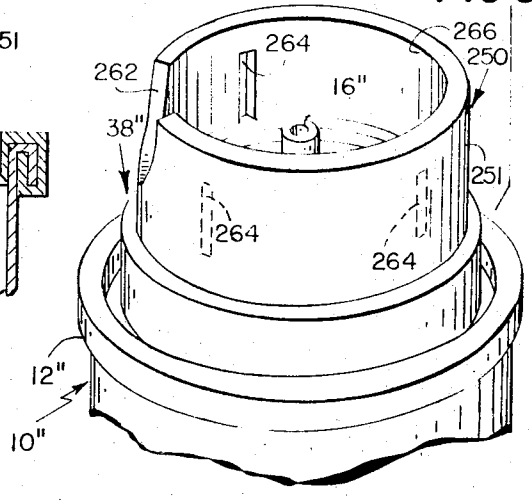


FIG 9



PACKAGE FOR DISPENSING PRESSURIZED MATERIALS

SUMMARY OF INVENTION

This invention relates to pressurized dispensing packages and more particularly to systems that permit the refilling of such pressurized dispensing packages.

Pressurized containers are used for dispensing a wide variety of products including insecticides, deodorants, antiperspirants, shaving preparations, dessert toppings, etc. Conventional pressurized dispensing packages are filled by the manufacturer and are discarded by the consumer after those contents have been dispensed. A relatively large size pressurized dispensing package reduces the cost to the user but such large containers are cumbersome and inconvenient and small size pressurized dispensing packages, while convenient to store and use, are relatively expensive in terms of material dispensed. It has been proposed that the use of pressurized dispensing packages of relatively small size might be extended by arrangements that permit the user to easily and safely refill one relatively small container refilled from a larger sized pressurized dispensing package, thus providing the consumer with greater convenience and reducing his overall cost. Such a system, in addition to making more economical the use of small pressurized dispensing packages, would also increase the flexibility and convenience with which various products packaged in this manner can be used.

It is an object of this invention to provide novel and improved systems permitting the transfer of material from a pressurized dispensing package to a smaller dispensing package in a refilling operation.

Another object of the invention is to provide an actuator assembly for pressurized dispensing package that is adjustable between a normal configuration in which the dispenser valve assembly and discharge port are connected so that the contents of the container may be discharged through the port in response to operation of the valve assembly, and a refill configuration in which the discharge port is disconnected from the valve assembly and a passage is provided through which a transfer tube from a larger supply pressurized package may be connected through the actuator assembly for refilling the smaller container from the larger container.

Other objects of the invention include the provision of actuator assemblies for such systems which are simple and inexpensive in an arrangement which clogging is minimized, arrangements to prevent inadvertent dispensing during the refilling operation, and arrangements which provide positive separation of the dispensing and refilling passages.

In accordance with the invention there is provided a pressurized dispensing package including a container for storing a material to be dispensed under pressure, a discharge passage structure and a valve assembly for controlling the discharge of the material from said container through the discharge passage structure, and an actuator assembly mounted on the discharge passage structure. The actuator assembly includes first structure defining a refill passage extending therethrough with a port at each end and a dispensing passage intersecting the refill passage and extending from said intersection with said refill passage to an exterior surface of

the first structure; and a cooperating second structure. The first and second structures are movable relative to each other between a first position in which a continuous material flow path from the discharge passage structure to the discharge port of the actuator assembly including the dispensing passage is defined and at least one port of the refill passage is closed by a surface of the second structure to prevent material flow through that refill passage port, and a second position in which a continuous material flow path through the refill passage is defined, the refill passage being aligned with the discharge passage structure and the ports of the refill passage being open whereby a transfer tube may be introduced into the refill passage to block the intersection of the dispensing and refill passages so that a direct path is defined for material to flow through the transfer tube, the refill passage and the discharge passage structure into the container in a refilling operation.

In preferred embodiments, the second structure is mounted on the discharge passage structure and the first structure is movable relative thereto; the first structure defines a valving surface that engages a valving surface defined by the second structure, and the refill and dispensing passages each terminate in a port at the valving surface of the first structure, and the refill passage port is sealed by the valving surface of the second structure when the structures are in their first (dispensing) position.

In a particular embodiment, the first structure is a molded organic plastic member that includes a cylindrical knuckle portion mounted within a recess defined by the second structure and a spout portion extending outwardly from the knuckle portion in a direction perpendicular to the axis thereof. The spout portion includes a wiper surface adjacent an end of the refill passage that engages and wipes a surface of the discharge port structure when said assembly is moved between said first and second position. Also in that embodiment, latch means are provided for latching said two actuator members in the dispensing actuator is disposed within the support means.

The support and actuator means further include cooperating portions that are placed in a position preventing movement of the actuator means relative to the support means in a valve operating direction, and in response to placing the support and actuator means in that movement preventing position the latch means is released to permit said actuator members to be moved to the refill position.

The invention thus provides a convenient, reliable and economical system enabling the user to refill a small (daughter) pressurized dispensing package from a larger (mother) dispensing package. The daughter package may be of a size suitable for carrying in a purse, for example, and need not be discarded when the material initially loaded into it has been dispensed. Rather, the daughter container may be readily refilled from the mother package simply through shifting the actuator assembly from dispensing position to refill position and inserting in transfer tube of the mother package into the refill passage and concurrently actuating the valve assemblies of both mother and daughter packages.

Other objects, features and advantages will appear from the following detailed description of preferred embodiments of the invention, taken together with the attached drawings in which:

FIG. 1 is an exploded, perspective view of components of a pressurized dispensing package in accordance with the invention;

FIG. 2 is a perspective view, partially in section, of a pressurized dispensing package including an assembly of the components shown in FIG. 1;

FIG. 3 is a sectional view of the package of FIG. 2 in its dispensing configuration;

FIG. 4 is an enlarged sectional view of portions of the package of FIG. 2 in an intermediate position;

FIG. 5 is a sectional view of the package of FIG. 2 in its refilling configuration and of a cooperating refilling package;

FIG. 6 is a sectional view of a second embodiment, together with a cooperating refilling dispenser;

FIG. 7 is a sectional view of portions of the device of FIG. 6;

FIG. 8 is a sectional view of a third embodiment of the present invention; and

FIG. 9 is an exploded perspective view of components of the device of FIG. 8.

DESCRIPTION OF PARTICULAR EMBODIMENTS

Referring now to the drawings, there is shown in FIGS. 1—5 a pressurized dispensing package of the user or daughter type, generally designated **10**, comprising a cylindrical container **12** having a top portion **14**, the central opening of which is closed by a valve assembly **15** including a tubular valve stem **16** extending upwardly from a closure **18** having an annular rim **20** crimped over the edge of the container opening. Circumferentially spaced serrations (not shown) project radially outwardly from rim **20**.

An actuator assembly, generally designated **30** and including a transfer button **32**, hinge spout **34**, actuator **36** and collar **38**, is mounted on container **10** with collar **38** engaging valve closure **18** and container **12** and transfer button **32** engaging stem **16**. As shown, collar **38** includes a stepped-cylindrical outer wall having a lower portion **40** seated on container top portion **18**, latch rib projection **41** which engages rim **20**, and an upper portion **42** of smaller diameter which defines at its lower edge an interior annular stop surface **43** facing and spaced from closure **18**. The serrations on rim **20** tightly engage projection **41** and prevent relative rotation of collar **38** and container **12**. Collar **38** also includes an interior, axially extending cylindrical wall **44** when axially-facing end surface **45** engages the top of closure **18**.

At the top of collar **38** is an annular inwardly extending rim **46** the inner cylindrical surface **47** of which defines a circular opening **46**. Three cam guide slots **48** are circumferentially-spaced around the inner edge of rim **46** and through the thickness thereof. Each guide slot **48** includes a vertical stop surface **50** at one end thereof and a sloped downwardly curved cam surface **52** at the other end thereof, the stop and cam surfaces of each guide aperture being correspondingly placed. Three vertical key ways **54**, each including at its lower end an offset locking recess **56**, extend downwardly from the top of collar **38** and are equally circumferentially spaced around upper wall portion **42**.

Actuator **36** is mounted partially within collar **38** and has a substantially cylindrical outer wall **60**. The actuator is vertically movable relative to collar **38** and includes an outwardly extending annular collar or flange **62** at the base of wall **60**. Three cams **64**, shaped to fit within cam guides **48**, are spaced around and project outwardly from wall **60**. A concave discharge recess **66** including a central orifice **68** is provided in the upper portion of wall **60**. On either side of the nozzle, are vertical slots **70** through wall **60** that extend downwardly from the top of the wall to approximately midway the wall height.

A recess **72** for receiving spout **34** extends downwardly from the top wall **74** of actuator **36**. The base, and most of the side opposite nozzle **66**, of recess **72** are defined by substantially cylindrical surface **76** extending perpendicularly between a pair of spaced vertical side walls **78**. The fourth side wall of the recess is defined by the portion of the inner surface **80** of wall **60** between cuts **70**. An inclined planar transition surface portion **82** extends between surfaces **80** and **78**. Formed in each side wall **78** adjacent top wall **74** is a rectangular notch **84** that includes projecting retaining lugs **86**.

A cylindrical transfer button member receiving projection **88** (as shown in FIGS. **3** and **4**) extends downwardly from the center of the portion of actuator **36** that defines the base of recess **72**, coaxially with stem **16**. Projection **88** defines a circular-in-cross-section duct **90**, of diameter substantially equal to the outer diameter of stem **16**, that extends from port **92** in the base of recess **72**. The annular lower end **94** of projection **88** is V-shaped in radial cross-section.

Transfer member **32** includes a lower tubular portion **96** mounted coaxially on stem **16** and an upper tubular portion **98** slip-fitted within duct **90** of actuator members **36**. The inner diameter of portion **98** is the same as that of stem **16**. An upwardly facing, annular, V-shaped in cross-section recess **100** is provided at the junction of tubular portions **96** and **98** in position for mating with end **94** of projection **88**. The top of portion **98** terminates in an annular V-shaped rib **102**.

Member **34** is an integral piece of molded plastic including a spout part **104** extending outwardly from a cylindrical knuckle part **106** congruent with and having the same radius and axial length as cylindrical segment **78** of recess **72**. A pair of stub shafts **108**, which snap into notches **84**, extend coaxially outwardly from the opposite planar sides **110** of knuckle **106**. A circular in cross-section main duct **112**, of diameter equal to the outside diameter of transfer button portion **98**, extends through spout part **104** and knuckle **106** midway between sides **110** and perpendicular to the axis of knuckle **106**. A circular-in-cross-section secondary duct **114**; of diameter equal to the inside diameter of transfer button spout **98**, extends from main duct **112** to the cylindrical wall **116** of knuckle **106**, with the axis of secondary duct **114** intersecting the axes of duct **112** and knuckle **106**. The portion of the peripheral wall of knuckle **106** surrounding duct **114** defines an annular flat recessed surface portion **118**, perpendicular to the axis of secondary duct **114**. A rectangular recess **120** is provided in the free end **122** of spout part **104** surrounding duct **112**. The upper portion of spout part **104** includes a gripping lip **124** extending beyond the end of duct **112** which engages the free end of the flexi-

ble portion of wall **60** that includes nozzle recess **66**. As shown, hinge spout **34** is fitted within recess **72** of actuator **36** aith cylindrical surface of knuckle **106** rotatably engaging surface **76** so that the spout **34** is movable between a dispensing position (FIG. **3**) in which main duct **112** and secondary duct **114** are axially aligned with nozzle recess **66** and stem **16**, respectively, and a refill position (FIG. **5**) in which main duct **112** is axially aligned with stem **16**.

Referring now to FIG. **5**, there is shown at the bottom thereof a refill or mother package **130** comprising a cylindrical container **132** having a reduced neck portion **134**, the central opening of which is closed by a valve assembly including a tubular valve stem **136** extending upwardly from a valve cap **138**. A tubular transfer member **140** includes a coaxial mounting portion **142** and cylindrical spout portion **144** and is mounted on stem **136** with the interior duct **146** of member **140** coaxial with the stem **136**. The inside and outside diameters of spout portion **144** are substantially equal to, respectively, the inside diameters of stem **16** and main duct **112**. An annular retaining collar **148** extends radially outwardly from the base of mounting portion **142**.

A housing **150** having a stepped-cylindrical inner wall **152** is mounted on dispenser **130** with the base of wall **152** engaging and an inwardly extending rib **154** on wall **152** snapped over the bead of valve cap **138**. The inclined base portion **156** of housing **150** engages the top of container **132** and an outer wall **158** extends from the top of wall **154** to the outer circumferential edge of wall **154**. An annular flange **160** extends inwardly from wall **152** to capture collar **148** of member **140**. The inside diameter of the portion **162** of wall **152** above flange **160** is substantially equal to the outer diameter of upper wall portion **42** of collar **38**. Three circumferentially-spaced studs or keys **164** project inwardly from wall **152** in position for engaging keyways **54** when housing **150** is fitted over collar **38**.

As previously indicated, actuator assembly **30** of package **10** is operable either to discharge the contents of the package through nozzle **66**, or to permit refilling of the package, from refill package **130**, through stem **16**. In its discharging configuration, shown in FIG. **3**, hinge spout **34** of assembly **30** is positioned with lip **124** engaging actuator wall **60** and actuator cams **64** fitted within collar cam guide slots **48** so that V-shaped lower end **94** of actuator projection **88** seats within transfer button recess **100** and rib **102** engages recessed surface portion **118** in a positive latching position. The end of main duct **112** in knuckle **106** is closed by cylindrical recess wall **76**. The nib end **102** of transfer button **94** sealingly engages flat **118** surrounding the port to secondary duct **114**. When the top of hinge spout **34** is pressed down, valve stem **16** is depressed and material is discharged from within container **12** and passed through valve stem **16**, transfer button **32** and ducts **112** and **114**, to and through nozzle orifice **68**.

For refilling package **10**, actuator **36** (carrying hinge spout **34**) is rotated relative collar **38** and transfer button **32**, the interaction between cams **64** and cam guide surfaces **52** moving the actuator upward so that the cams **64** ride on the upper surface of rim **46** and collar **62** engages stop surface **43**, thereby separating end **94** of projection **88** from groove **100** of transfer button **32** as shown in FIG. **4** and moving surface **118** upward away from rib **102**. Surface **94** of member **36** is also separated from surface **100** of member **32**, thus preventing further accidental depression of valve stem **16**.

The released hinge spout **34** is then rotated (clockwise as viewed in FIGS. **3** through **5**) from its dispensing position until the flat top surface **109** of the spout engages the rear upper edge **79** of surface **76**, in which position (shown in FIG. **5**) main duct **112** is coaxially aligned with spout **98** and stem **16**. During rotation, the lower edge **115** of the forward end of spout part **104** wipes the interior surface of nozzle member **66**.

Keys **164** and keyways **54** are engaged and spout portion **144** of refill dispenser **130** is introduced into main duct **112** of hinge spout **34** and duct **90** until the axial end of the spout portion engages nib **102**. Further movement of dispensers **10** and **130** toward each other opens the valves of each package (by depressing valve stems **16** and **136**) permitting flow of material from refill dispenser **130** through refill stem **140** and transfer button **32** into package **10**. The cylindrical wall of refill stem **140** overlies and thereby seals the end of duct **114** intersecting main duct **112** and prevents material from being discharged through duct **114**. The two containers may be locked together during the transfer by moving keys **164** to the bottom of keyways **54** and then rotating one package relative to the other to move the keys into recesses **56**.

After refilling the two containers are separated, spout **34** is snapped back in position as shown in FIG. **3**, actuator **36** is rotated relative to collar **38** so that cams **64** engage stop surfaces **50** and the actuator is freed for axial movement. Upon downward movement of actuator **36**, rib **102** engages flat **118** and the cooperating V-shaped surfaces **94** and **100** are engaged. In this position the daughter package **10** is ready for normal dispensing operation.

Reference is now made to FIGS. **6** and **7**, wherein is illustrated a push-pull actuator assembly **36'** mounted on the valve stem **16'** of an aerosol dispenser **12'**. As shown, actuator assembly **36'** comprises a ported plug **200** mounted for reciprocal movement in an actuator member **202**. A nozzle **204** having a central spray aperture **205** is fixed in one end of plug **200**.

Plug **200** is substantially cylindrical and includes a refill duct **201** of diameter equal to that of stem **140'** extending diametrically through plug **200** approximately midway the length thereof, and a dispensing passage including a first portion **206** extending coaxially from nozzle **204** to duct **201** and a second, L-shaped portion **208** extending, first, from duct **201** coaxially with portion **206** and then radially to the periphery **210** of the plug. A radially-extending flange **212** is provided at the end of plug **200** most distant from nozzle **204**. Keyway **214** extends axially inwardly from flange **212**.

Actuator member **202** includes two cylindrical passages extending therethrough, transverse passage **216** in which plug **200** is slip-fitted and vertical passage **218** whose axis perpendicularly intersects the axis of passage **216**. Annular recesses **220**, **222** are provided at each end of duct **216** for receiving, respectively, nozzle **204** and flange **212**. A key **224** for fitting keyway **212** is provided at the top of passage **216** adjacent recess **222**.

As shown, valve stem 16' fits snugly within the lower portion of passage 218, with the top of the stem engaging a stop 219 projecting inwardly into passage 218 slightly below passage 216.

For discharging material from dispenser 10', plug 200 is positioned within actuator button 202 with the radially extending part of dispensing passage portion 208 communicating with the lower portion of passage 218. The upper periphery of plug 200 overlies and seals the port 217 where the upper portion of passage 218 intersects passage 216, and flange 212 is disposed in recess 222. The axial ends of duct 201 are sealed by overlying portions of the inner cylindrical wall of passage 216. If actuator button 202 is depressed, opening valve 18', material will be dispensed from valve stem 16' and will flow from the valve stem to nozzle 204 through ducts 208 and 206 and the portion of duct 201 therebetween.

For refilling, plug 200 is moved axially relative to button 202 into the position shown in FIG. 6, with duct 201 axially aligned with passage 218 and the inner cylindrical wall of passage 216 sealing the adjacent end of duct 208. The valve stem 140' of refilling dispenser 130' may now be introduced into passage 218 until the end of stem 140' abuts the upper edge of stop 219. In this position, the outer cylindrical wall of the refill spout will overlie and seal the ports at which dispensing passage portions 204 and 206 intersect duct 201, and further movement of dispenser 10' and the refill dispenser toward each other will open the valves of the respective dispensers, permitting material to flow from the refill dispenser into dispenser 10'. Structure (not shown) similar to that shown in FIGS. 1–5 may be employed to facilitate the proper alignment and latching of the two containers in refilling configuration.

The embodiment illustrated in FIG. 8 and FIG. 9 includes a rotary actuator assembly 36'' mounted on the valve stem 16'' of a pressurized dispensing package 10''. Actuator assembly 36'' comprises a cylindrical collar 250 including a cylindrical wall 251, an inwardly-extending, annular rib 252 snapped over and engaging the rim 20'' of dispenser 10'' so that intermediate annular flange 253 rests on rim 20''; actuator 254 having a vertical cylindrical wall 256 slip-fitted within collar 250 for axial movement relative thereto; and a closure-nozzle member 258 rotatably mounted on the top wall 260 of actuator 254.

A semi-eliptical opening 262 is wall 251 extends downwardly from the top of collar 250. Three vertically extending circumferentially-spaced guide slot 264 are provided in the inner surface 266 of the cylindrical wall 251 of collar 250. Corresponding ribs 268 are provided on the outer surface of wall 256 of actuator 254, wall 256 including a vertical slot 270 on each side of each of ribs 268, permitting the rib-carrying wall portion to flex inwardly when actuator 254 is inserted into collar 250.

The top wall 260 of actuator 254 includes a cylindrical duct 272, of diameter equal to the outer diameter of stem 16 '' extending coaxially therethrough and a smaller diameter duct 274 extending radially from the upper portion of duct 272 to actuator periphery wall 256. A nozzle insert 276 having a nozzle orifice 278 is mounted in a recess in wall 256 that surrounds the end of duct 274. Actuator 254 and collar 250 are assembled with spray button 276 disposed within the bounds of opening 262. As shown, annular flange 280 having an inside diameter equal to that of stem 16'' is provided midway the length of duct 272 and stem 16' is snugly fitted within the lower portion of duct 272 with the top of the stem abutting flange 280.

Closure 258 comprises a circular disc 259 fitted for rotation within a recess 282 in top wall 260 of actuator 254 and secured to the actuator by an integral slotted shaft 284, having a lip 286 at its lower end, extending downwardly through an opening 288 in wall 260. A tapering handle 290 extends upwardly from the top of the disc. A refill opening 292 extends through disc 259 on one side of handle 290. As shown, closure 258 is rotatable on shaft 284 between a dispensing position (FIG. 8) in which a solid portion of disc 259 overlies and seals the top of duct 272, and a refill position (not shown) in which opening 292 is coaxially aligned with duct 272.

When actuator 254 is depressed with closure 258 in its dispensing position, material from within container 10'' passes through valve stem 16'' through ducts 272 and 274, to and through nozzle orifice 278. When closure 258 is in its refill position, the refill spout of a refill dispenser, such as dispenser 130', may be introduced through port 292 into the upper portion of duct 272 until the end of the refill spout engages the upper surface of flange 280. When so introduced, the cylindrical wall of the refill spout will overlie and seal the port at which duct 274 intersects duct 242, and further movement of the refill dispenser and dispenser 10'', toward each other will cause material to be discharged from the refill dispenser into dispenser 10''.

Other embodiments within the scope of the following claims will occur to those skilled in the art.

What is claimed is:

1. In a pressurized dispensing package including a container for storing a material to be dispensed under pressure, a discharge passage structure and a valve assembly for controlling the discharge of said material from said container through said discharge passage structure, an actuator assembly mounted on said discharge passage structure, said actuator assembly including discharge nozzle structure, first structure defining a refill passage extending through said first structure with a port at each end of said refill passage and a dispensing passage intersecting said refill passage and extending from said intersection with said refill passage to an exterior surface of said first structure; and second structure, said first and second structures being movable relative to each other between a first position in which a continuous material flow path including said dispensing passage is defined from said discharge passage structure to said nozzle structure and at least one port of said refill passage is closed by a surface of said second structure to prevent material flow through said one refill passage port, and a second position in which a continuous material flow path through said refill passage is defined, said refill passage is aligned with said discharge passage structure and said one port of said refill passage is open whereby a transfer tube may be introduced into said refill passage to block said intersection of said dispensing passage and said refill passage so that a direct path is defined for material to flow through said transfer tube, said refill passage and

said discharge passage structure into said container in a refilling operation.

2. The assembly of claim 1 wherein said assembly is mounted so that said refill passage extends generally parallel to the discharge passage structure and said dispensing passage extends from said refill passage to said nozzle in a direction generally perpendicular to said refill passage.

3. The assembly of claim 2 wherein said second structure is mounted on said discharge passage structure and said first structure is movable relative thereto in a direction generally perpendicular to said refill passage.

4. The assembly of claim 2 wherein said first structure is mounted on said discharge passage structure and said second structure is rotatable relative to said first structure about an axis generally parallel to said refill passage.

5. The assembly of claim 4 wherein said second structure includes a refill port portion extending therethrough parallel to said axis, said refill port portion being in communication with said refill passage when said structures are in said second position and being spaced from said refill passage when said structures are in said first position.

6. The assembly of claim 1 wherein said first structure defines a valving surface engaging a valving surface defined by said second structure, each of said refill and dispensing passages terminates in a port at said first structure valving surface said ports being spaced from one another and said second structure defines an opening communicating with said discharge passage structure, and said first structure is movable relative to said second structure between said second position wherein said refill passage port communicates with said second structure opening and said first position wherein said dispensing passage port communicates with said second structure opening and refill passage port is sealed by said valving surface of said second structure.

7. The assembly of claim 6 wherein said first structure is mounted on said second structure for movement relative thereto in a direction generally perpendicular to the axis of said second structure passage port.

8. The assembly of claim 7 wherein a first portion of said discharge passage extends from said refill passage to said nozzle in a direction generally parallel to said direction of relative movement and a second portion of said discharge passage extends from said refill passage to said first structure valving surface.

9. The assembly of claim 7 wherein said second structure defines a channel extending therethrough parallel to said direction of relative movement, said first structure is mounted within said channel, and surfaces of said channel overlie and close both ends of said refill passage when said structures are in said first position.

10. The assembly of claim 6 wherein said valving surfaces comprise portions of coaxial cylinders.

11. The assembly of claim 10 wherein said first structure is rotatable relative to said second structure about the axis of said cylinders and said axis is generally perpendicular to the axis of said second structure passage port.

12. The assembly of claim 10 wherein said first structure includes a substantially planar surface portion perpendicular to the axis of and surrounding said dispensing passage port, and further including means for sealingly engaging said surface portion when said structures are in said first position.

13. The assembly of claim 6 wherein said first structure includes a wiper surface adjacent an end of said refill passage, said wiper surface engaging and wiping a surface of said nozzle structure when said assembly is moved between said first and second positions.

14. The Assembly of claim 6 wherein said second structure has an upstanding wall portion including said nozzle structure and said first structure engages a free edge of said wall portion when said structures are in said first position.

15. The assembly of claim 6 wherein said first structure comprises a member of molded organic plastic including a cylindrical knuckle portion mounted within a recess defined by said second structure and a spout portion extending outwardly from said knuckle portion in a direction perpendicular to the axis thereof.

16. The assembly of claim 15 wherein said member includes a first duct extending through said knuckle and said spout portion and a second duct extending from an interior portion of said first duct to the cylindrical surface of said knuckle portion.

17. The assembly of claim 1 and further including a supporting member fixedly mounted on said container, said first and second structures being movable as a unit relative to said supporting member in a direction generally parallel to the axis of said discharge passage structure when said structures are in said first position and said structures and supporting member defining cooperating portions for preventing movement of said structures relative to said supporting member in said direction when said structures are in said second position.

18. The assembly of claim 17 wherein said supporting member includes an exterior surface defining therein a plurality of guides for engaging cooperating guides of a refilling container.

19. The assembly of claim 1 wherein said first structure defines a valving surface engaging a valving surface defined by said second structure, each of said refill and dispensing passages terminates in a port at said first structure valving surface, said ports being spaced from one another and said second structure defines an opening communicating with said discharge passage structure, said first structure is movable relative to said second structure between said second position wherein said refill passage port communicates with said second structure opening and said first position wherein said dispensing passage port communicates with said second structure opening and refill passage port is sealed by said valving surface of said second structure, said first structure further includes a latch surface portion adjacent said dispensing passage port, and further including transfer structure mounted on said discharge passage structure and extending through said second structure opening, said transfer structure engaging said latch surface portion when said structures are in said first position.

20. The assembly of claim 19 wherein said refill passage and said opening of said second structure are of substantially the same diameter, and said transfer structure defines a passage of diameter substantially

equal to the diameters of said discharge passage and said dispensing passage.

21. A pressurized dispensing package adapted to be refilled from a second pressurized dispensing package comprising:

a container adapted to hold a material to be dispensed under pressure,

a structure defining a discharge passage for flow of material from said container,

a valve assembly for controlling the flow of material through said discharge passage,

and an actuator assembly mounted on said container in communication with said discharge passage structure including

discharge nozzle structure, first structure defining a refill passage extending through said first structure with a port at each end of said refill passage and a dispensing passage intersecting said refill passage and extending from said intersection with said refill passage to an exterior surface of said first structure; and second structure, said first and second structures being movable relative to each other between a first position in which a continuous material flow path from said discharge passage structure to said nozzle structure including said dispensing passage is defined and at least one port of said refill passage is closed by a surface of said second structure to prevent material flow through said one refill passage port, and a second position in which a continuous material flow path through said refill passage is defined, said refill passage is aligned with said discharge passage structure and said one port of said refill passage is open whereby a transfer tube coupled to said second pressurized dispensing package may be introduced into said refill passage to block said intersection of said dispensing passage and said refill passage so that a direct path is defined for material to flow from said second package through said transfer tube, said refill passage and said discharge passage structure into said container in a refilling operation.

22. A pressurized dispensing package adapted to be refilled from a second pressurized dispensing package comprising:

a container adapted to hold a material to be dispensed under pressure,

a structure defining a discharge passage for flow of material from said container,

a valve assembly for controlling the flow of material through said discharge passage,

support means mounted on said container and actuator means disposed within said support means and mounted on said container in communication with said discharge passage structure for operation of said valve assembly in a material dispensing operation,

said actuator means including two members movable relative to one another between first and second positions, said members in said first position defining a dispensing passage from said discharge passage to a nozzle and in said second position defining a refill passage in communicating alignment with said discharge passage, and latch means for latching said members in said first position,

said support and actuator means further including cooperating portions movable to a position preventing movement of said actuator means relative to said support means in a valve assembly operating direction,

and means responsive to placing said support and actuator means in said movement preventing position for releasing said latch means to permit said members to be moved to said second position.

23. The package of claim 22 wherein said actuator means further includes a transfer member mounted on said discharge passage structure, one of said members is mounted on said transfer member defining a surface for receiving the other member, and said dispensing passage is of smaller dimension than said refill passage and extends from an intersection with said refill passage to an exterior surface of said other member.

24. The package as claimed in claim 22 wherein said actuator means includes discharge nozzle structure, one of said members defines a refill passage extending through said one member with a port at each end of said refill passage and a dispensing passage intersecting said refill passage and extending from said intersection with said refill passage to an exterior surface of said one member; and a second member, said first and second members being movable relative to each other between a first position in which a continuous material flow path including said dispensing passage is defined from said discharge passage structure to said nozzle structure and at least one port of said refill passage is closed by a surface of said second member to prevent material flow through said one refill passage port, and a second position in which a continuous material flow path through said refill passage is defined, said refill passage is aligned with said discharge passage structure and said one port of said refill passage is open whereby a transfer tube may be introduced into said refill passage to block said intersection of said dispensing passage and said refill passage so that a direct path is defined for material to flow through said transfer tube, said refill passage and said discharge passage structure into said container in a refilling operation.

25. The package of claim 24 wherein said actuator means is mounted so that said refill passage extends generally parallel to the discharge passage structure and said dispensing passage extends from said refill passage to said nozzle in a direction generally perpendicular to said refill passage.

26. The package of claim 25 wherein said second member is mounted on said discharge passage structure and said one member is movable relative thereto in a direction generally perpendicular to said refill passage.

27. The package of claim 25 wherein said one member is mounted on said discharge passage structure and said second member is rotatable relative to said first structure about an axis generally parallel to said refill passage.

28. The package of claim 27 wherein said second member includes a refill port portion extending therethrough parallel to said axis, said refill port portion being in communication with said refill passage when said members are in said second position and being spaced from said refill passage when said members are in said first position.

29. The package of claim 24 wherein said one member defines a valving surface engaging a valving surface defined by said second member, each of said refill and dispensing passages terminates in a port at said one member valving surface said ports being spaced from one another and said second structure defines an opening communicating with said discharge passage structure, and said one member is movable relative to said second member between said second position wherein said refill passage port communicates with said second member opening and said first position wherein said dispensing passage port communicates with said second member opening and refill passage port is sealed by said valving surface of said second member.

30. The package of claim 29 wherein said valving surfaces comprise portions of coaxial cylinders, said one member is rotatable relative to said second member about the axis of said cylinders and said axis is generally perpendicular to the axis of said second member passage port, and said one member includes a substantially planar surface portion perpendicular to the axis of and surrounding said dispensing passage port, and further including means for sealingly engaging said surface portion when said members are in said first position.

31. The package of claim 28 wherein said one member includes a wiper surface adjacent an end of said refill passage, said wiper surface engaging and wiping a surface of said nozzle structure when said assembly is moved between said first and second positions and said second member has an upstanding wall portion including said nozzle structure and said one member engages a free edge of said wall portion when said members are in said first position.

32. The package of claim 22 wherein said support means includes an exterior surface defining therein a plurality of guides for engaging cooperating guides of a refilling container.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,680,605 Dated August 1, 1972

Inventor(s) Louis V. Nigro

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 43, after "dispensing" insert --position, and support means mounted on the container. The--.

Column 7, line 50, change "is" to --in--.

Column 8, line 31, change "242" to --272--.

Signed and sealed this 2nd day of January 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

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