United States Patent [19]

McGhie et al.

[11] **3,795,366**

[45] **Mar. 5, 1974**

[54] **MULTIPLE SPRAY PATTERN DEVICE**

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[73] Assignee: **Colgate-Palmolive Company**, New York, N.Y.

[22] Filed: **May 1, 1972**

[21] Appl. No.: **248,941**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 171,146, Aug. 12, 1971, abandoned.

[52] **U.S. Cl.** **239/397**, 222/402.17, 239/579

[51] **Int. Cl.** **B05b 1/26**

[58] **Field of Search** ... 239/391, 392, 394, 397, 573, 239/579; 222/402.17

[56] **References Cited**

UNITED STATES PATENTS

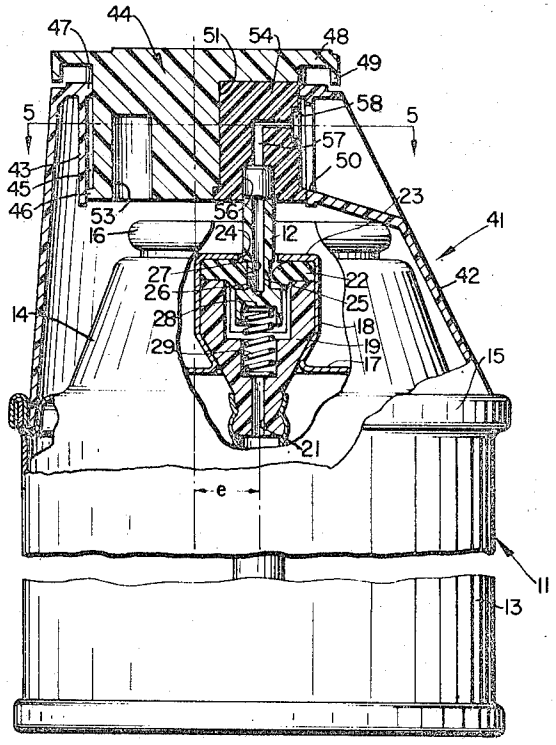
3,711,030	1/1973	Jones	239/397
3,246,850	4/1966	Bourke	239/394
3,083,872	4/1963	Meshberg	239/337 X
3,703,994	11/1972	Nigro	239/397
3,112,885	12/1963	Bell et al.	239/397 X
3,637,142	1/1972	Gassaway	239/397 X
3,642,180	2/1972	Lehmann	239/337 X

Primary Examiner—M. Henson Wood, Jr.
Assistant Examiner—Michael Y. Mar
Attorney, Agent, or Firm—Strauch, Nolan, Neale, Nies & Kurz

[57] **ABSTRACT**

A combination spray pattern selecting and valve operating assembly adapted to be mounted on a pressurized container having a valve comprises cap structure mounting a spray pattern selector member having at least two spaced bores therein containing insert plugs that are formed with through passages providing different spray patterns. The spray pattern selector member is mounted on said cap structure for rotation between positions wherein it may actuate the container valve to discharge container contents through one or the other of the insert passages.

20 Claims, 18 Drawing Figures



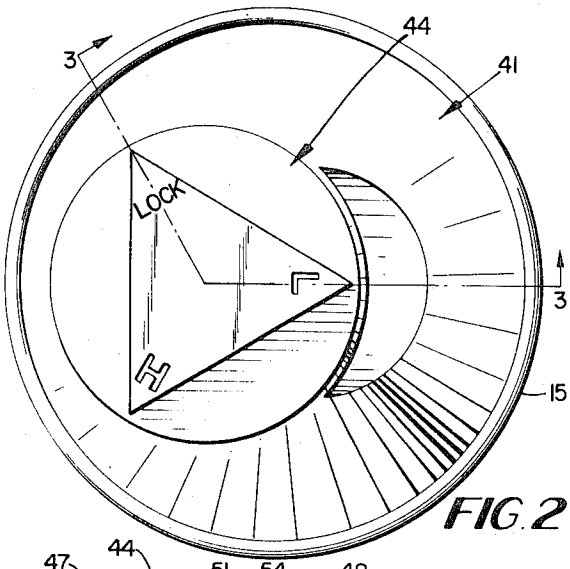


FIG. 2

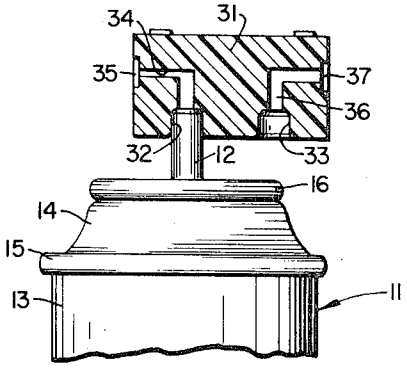


FIG. 1

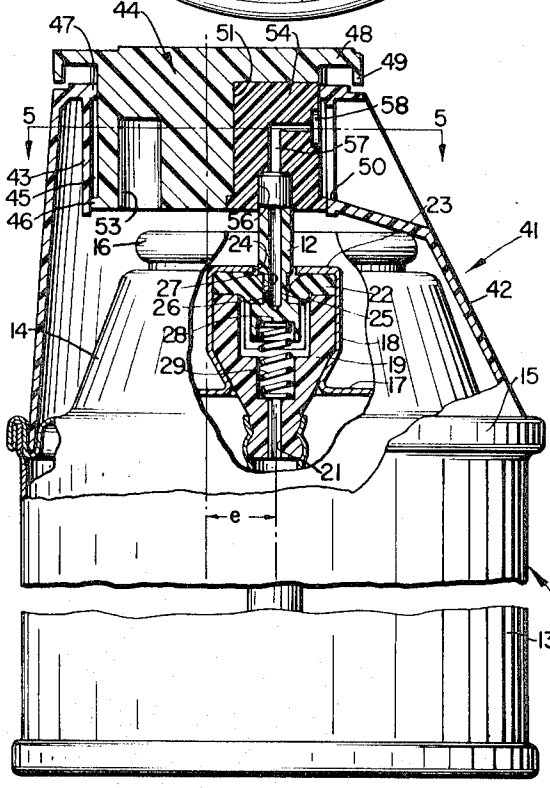


FIG 3

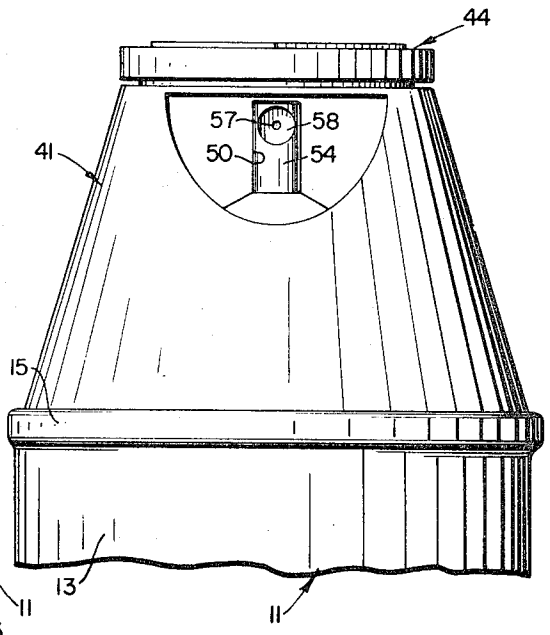


FIG. 4

FIG. 5

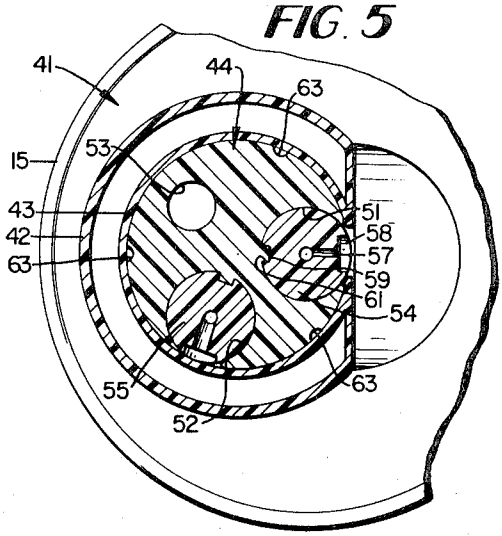


FIG. 6

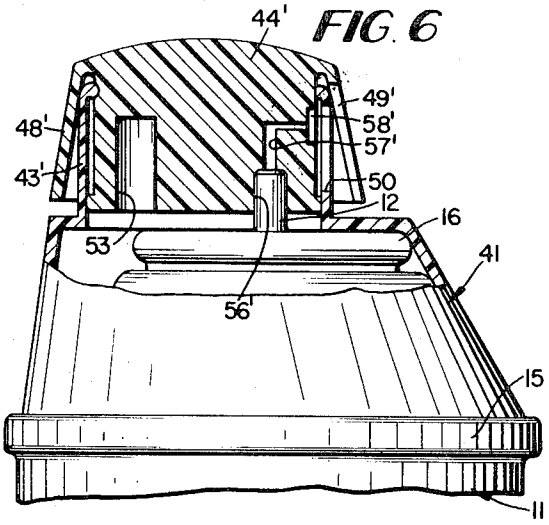
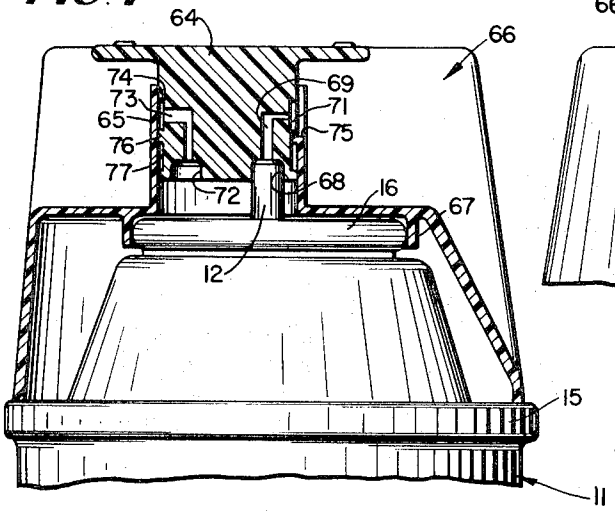


FIG. 7



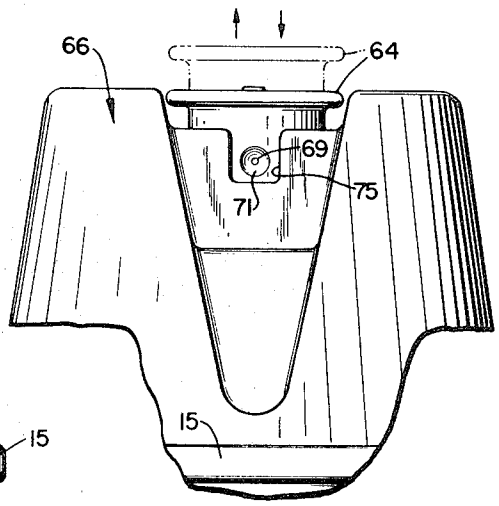


FIG. 8

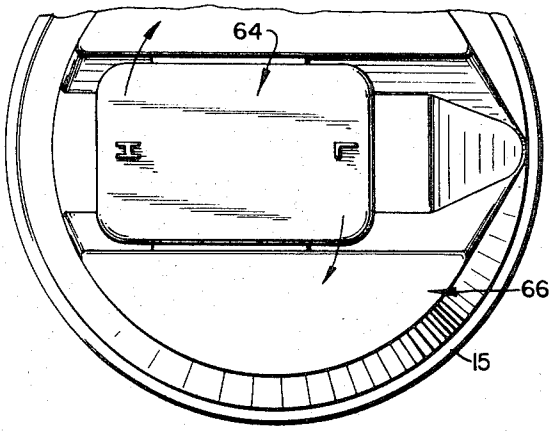


FIG. 9

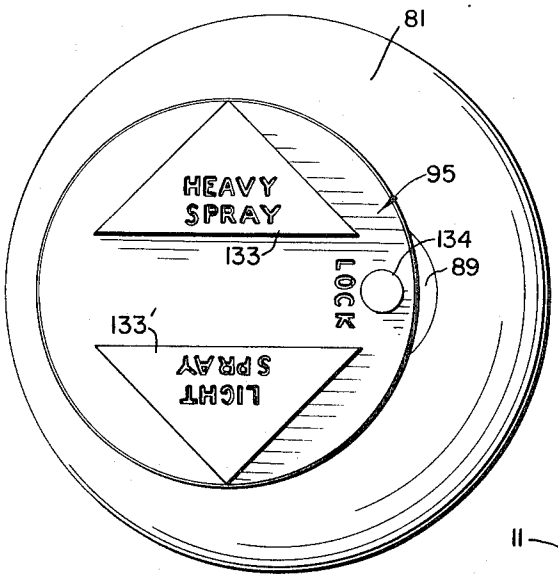


FIG. 10

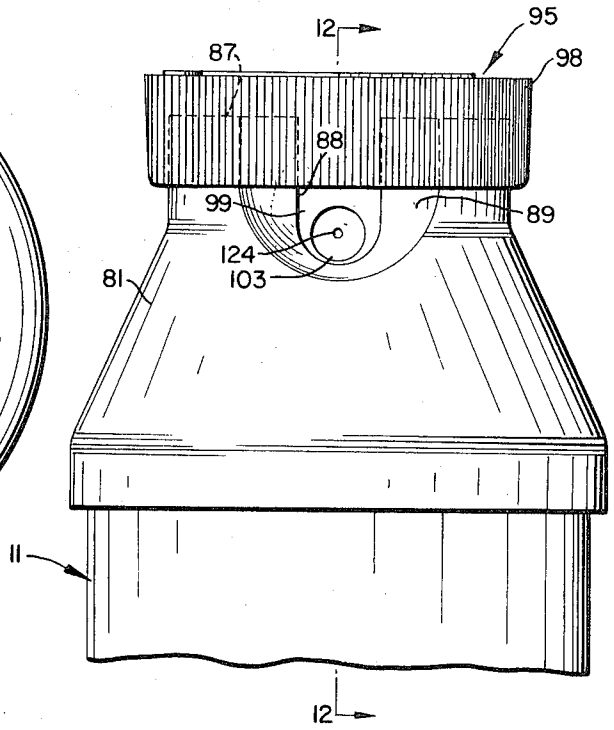


FIG. 11

FIG. 12

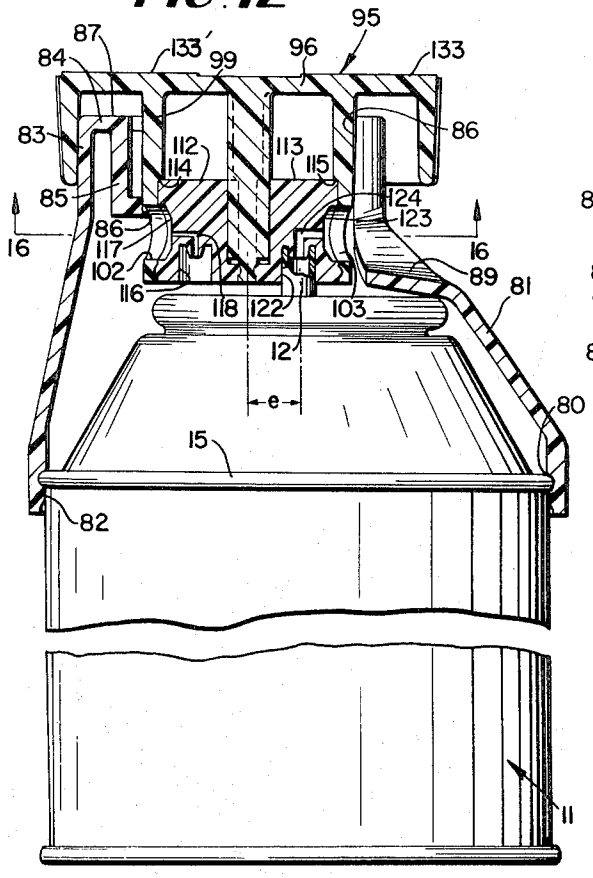
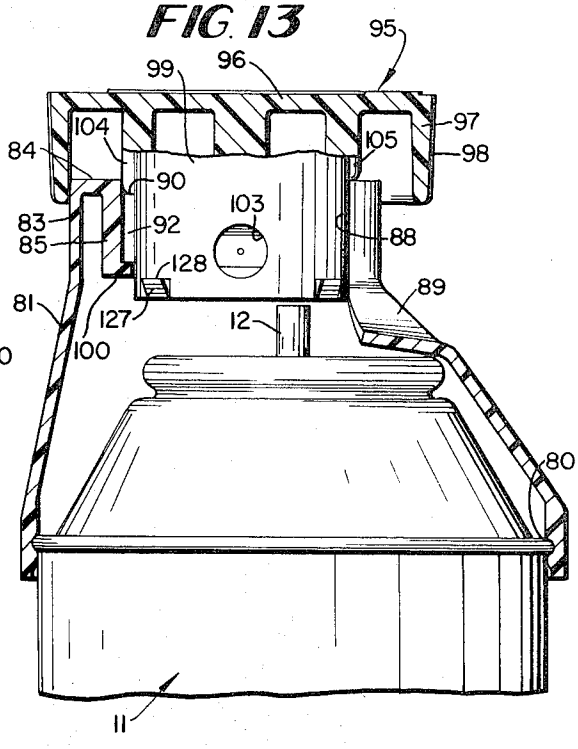


FIG. 13



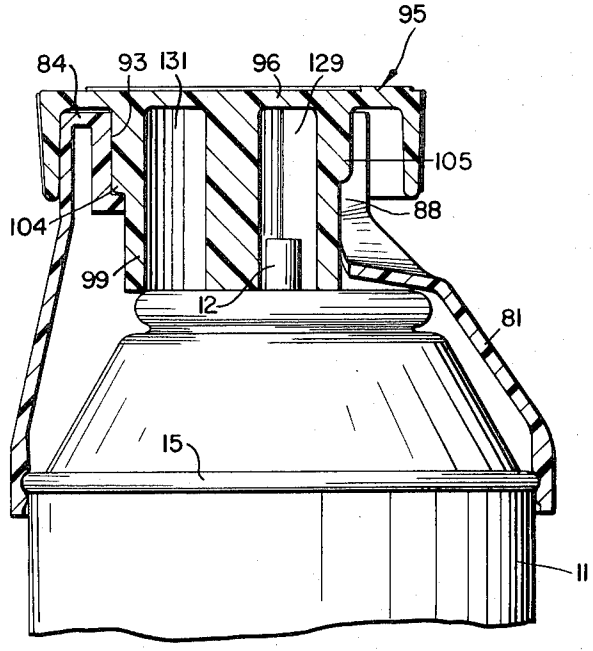


FIG. 14

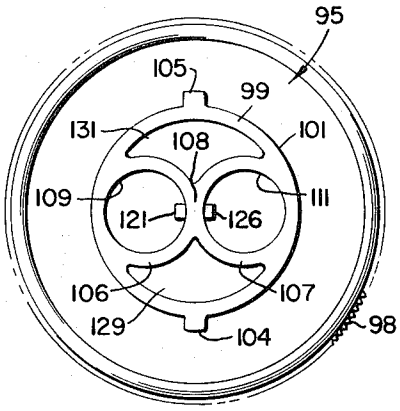


FIG. 15

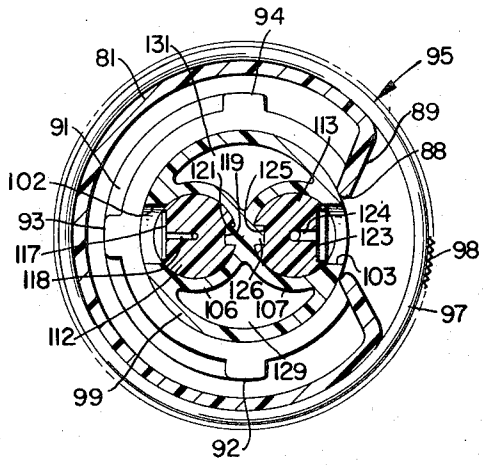


FIG. 16

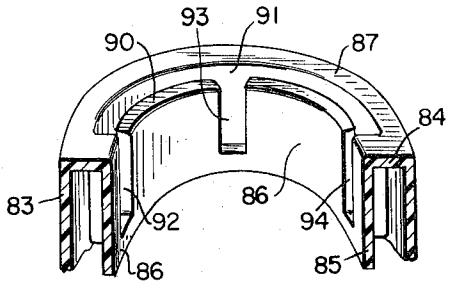


FIG. 17

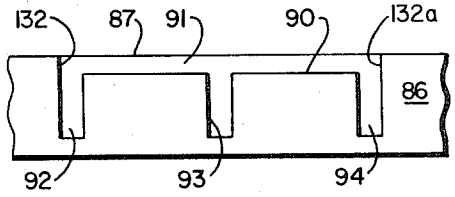


FIG. 18

MULTIPLE SPRAY PATTERN DEVICE

This is a continuation-in-part of our application Ser. No. 171,146 filed Aug. 12, 1971 for Multiple Spray Pattern Device now abandoned.

This invention relates to devices for selectively spraying the contents of an aerosol or like pressurized container in different spray patterns. In its preferred embodiments it will be disclosed as an attachment for mounting upon the discharge end of a more or less conventional pressurized container and including an arrangement for operating the container discharge valve and a readily operable adjustment for selecting a desired pattern of spray. These devices are of particular value for the spraying of hair treatment or holding fluids, liquid starch, paint and other materials where different spray patterns may be desirable or necessary for different conditions of use.

It has been proposed to provide selective spray devices for pressurized containers, as for example those disclosed in Anderson et al. U.S. Pat. No. 2,887,273; Bourke U.S. Pat. No. 3,246,850; McKernan U.S. Pat. No. 2,797,965 and Green U.S. Pats. Nos. 3,209,960 and 3,188,008. Some of these prior devices are concerned mainly with selecting different quantity rather than different pattern sprays, and most comprise fairly complex valving arrangements that are expensive or present assembly problems.

The present invention contemplates an inexpensive reliable multiple spray patter device that is easy to assemble, install and operate and may be used as an attachment for conventional aerosol and like pressurized containers, and such is a major object.

Another object of the invention is to provide a novel combined valve actuating and multiple pattern spray head for a pressurized container wherein the individual different spray pattern passages are formed through insert plugs mounted in a head member that is rotatable for pattern selection.

A further object of the invention is to provide a novel combined valve actuating and multiple spray pattern head for a pressurized container wherein the head embodies a cylindrical pattern selection member preferably in the form of a button peripherally rotatably mounted in a hollow boss in a cap structure adapted for mounting on the container.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is an elevation, partly in section, illustrating the basic concept of the invention;

FIG. 2 is a top plan view of an aerosol type container assembly that includes a preferred embodiment of the invention;

FIG. 3 is a side elevation, partly broken away and in section, showing details of the invention in its preferred embodiment;

FIG. 4 is a partial front elevation of the container assembly of FIGS. 2 and 3 showing a discharge outlet;

FIG. 5 is a section substantially on line 5—5 of FIG. 3;

FIG. 6 is a fragmentary side elevation, partly broken away and in section, showing a further embodiment of the invention;

FIG. 7 is a fragmentary side elevation partly in section showing another embodiment of the invention;

FIG. 8 is a partial front elevation of the embodiment of FIG. 7;

FIG. 9 is a top plan view of the embodiment of FIGS. 7 and 8;

FIG. 10 is a top plan view showing a further embodiment of the invention;

FIG. 11 is a fragmentary front elevation showing the embodiment of FIG. 10;

FIG. 12 is a side elevation partly broken away and in section substantially on line 12—12 of FIG. 11 showing the spray discharge arrangements in the FIG. 10 embodiment;

FIG. 13 is a fragmentary side view partly broken away and in section showing the spray selector member rotated 90 with respect to the FIG. 12 position;

FIG. 14 is a fragmentary side view similar to FIG. 13 but showing the spray selector member fully sectioned;

FIG. 15 is a bottom plan view of the selector member of the FIG. 10–14 embodiment apart from the assembly;

FIG. 16 is a section substantially on line 16—16 of FIG. 12 showing internal details;

FIG. 17 is a fragmentary elevation showing the cap grooves; and

FIG. 18 is a fragmentary development showing the location of the cap grooves and stop shoulders.

PREFERRED EMBODIMENTS

Referring first to FIG. 1, an aerosol type container 11 of a conventional type has a projecting hollow valve stem 12. Container 11 comprises a cylindrical body 13 joined to a top wall 14 by a circumferential seam joint 15. At the upper end of the container a smaller diameter circumferential seam joint 16 secures top wall 14 to an internal wall 17 that, see FIG. 3, has a central upstanding section 18 rigidly securing therewithin a hollow valve part 19 having an inlet bore 21.

A resilient annulus 22 is compressed between valve part 19 and the upper end 23 of wall section 18 is formed with an opening 24 slidably passing a reduced portion 25 of valve stem 12 having a lateral port 26 normally closed by the surrounding bore 27 of annulus 22.

The enlarged lower end 28 of valve stem 12 is axially biased against the lower side of resilient annulus 22 by a compression spring 29, reacting between valve part 19 and the valve stem, to compress the annulus sealingly around the valve stem to close port 26. When valve stem 12 is depressed into the container, port 26 is lowered into communication with fluid under pressure entering bore 21 and the space around the lower end of stem 12 to discharge under pressure through the open end of stem 12.

The foregoing container and valve structure may be the same as that disclosed in U.S. Letters Pat. to Abplanalp No. 2,631,814 to which reference may be made for added detail.

In FIG. 1 a spray pattern selector member in the form of a dual orifice head button 31 is provided at its lower side with downwardly open similar shallow recesses 32 and 33 each adapted to fit snugly upon the upper end of stem 12. Recess 32 communicates with a passage 34 extending to a discharge port 35 at one side of the button, and recess 33 communicates with a passage 36 extending to a discharge port 37 at the other side of the button. Passages 34 and 36 and discharge ports 35 and 37 can be of different size and/or configuration to produce different spray patterns at the discharge ports. The unit is adapted to discharge a different pattern

from that available in the FIG. 1 position merely by axially pulling the button off stem 12 and inserting the stem 12 into recess 33. Button 31 is here wholly supported by the valve stem in either position, and is manually actuated to depress valve stem 12 to discharge contents of the container through the associated button passage.

Referring now to FIGS. 2–4, the container 11 is the same as above-described. A cap structure 41 is removably mounted on the upper end of the container, with the circular lower end of a flexible skirt 42 resiliently seated in the groove around the inside of large diameter container seam 15 in a known manner.

The upper end of the cap structure terminates in an open depending hollow boss 43 surrounding and rotatably mounting a multiple spray pattern selector member in the form of a cylindrical button 44. As shown, button 44 has a peripheral recess 45 at the lower end of which is an external flange 46 in rotative bearing engagement with button 44. Button 44 is axially slidable in boss 43, within limits defined by flanges 46 and 47. At its upper end button 44 has an enlarged portion 48 terminating in a short downwardly extending rim 49.

As shown in FIG. 5, button 44 is formed with three 120° apart cylindrical bores 51, 52 and 53 which open downwardly only. Bores 51 and 52 are of the same size and adapted to tightly receive cylindrical insert plugs 54 and 55 respectively. As shown in FIG. 3, insert plug 54 has a through passage comprising an enlarged downwardly open lower recessed or socket portion 56 providing a valve stem receiving recess of such diameter as to fit slidably snugly on the upper end of valve stem 12, an intermediate portion 57 in communication with the open upper end of valve stem 12 and an enlarged lateral outlet 58 through which the product is discharged when valve stem 12 is depressed.

As shown in FIGS. 3–5, bore 51 is so located adjacent the outer periphery of button 44 as to be substantially tangent thereto, that periphery being moved or recessed so that (see FIG. 4) insert 54 is partly laterally exposed through a side opening 50 in boss 43. Bore 51 (FIG. 5) contains a longitudinal rib 59 that slidably coacts with longitudinal groove 61 on insert 51 to insure that the insert 51 can be mounted in bore 51 only in such position that its discharge outlet 58 faces substantially radially outwardly.

Similarly insert 55 is formed with the same general passage structure as insert 54 except that the intermediate passage diameter and/or the discharge port are different to obtain a desired different spray pattern.

As shown in FIG. 3, the similar enlarged lower ends 56 of the insert passages are deep enough to fully seat the upper end of valve stem 12 which abuts the bottoms thereof. The parts are shown in non-spraying position in FIG. 3, and it will be seen that button rim 49 is spaced above the container upper end sufficiently to permit downward displacement of the button relative to the container. Thus, when button 44 is depressed by the finger of the operator against the top of the button, valve stem 12 will be depressed sufficiently to discharge the product through an insert passage.

Button 44 can be slidably raised to separate valve stem 12 from the passage end 56 of insert 54, rotated to align passage end 56 of insert 55 with the valve stem, and then pushed back toward the container until the FIG. 3 condition is attained, but with a different spray pattern available through insert 55. Flanges 46 and 47 coact to prevent full accidental withdrawal of the button 44 from the cap structure.

The third bore 53 is of appreciably larger diameter than valve stem 12 and is of such depth that full inward depression of button 44 will not inwardly displace valve stem 12. This is in the rotated non-spray position indicated by the designation LOCK in FIG. 2. The two spray positions are indicated by L and H showing the two different spray characteristics. The three different rotative positions of the button 44 may be sensibly determined and held as by a rounded detent on boss 43 coacting with 120° spaced dimples (not shown) in the button 44.

The centers of bores 51, 52 and 53 lie on a common circle the center of which is the axis of rotation of button 44. This axis is displaced relatively to the axis of valve stem by a selected eccentric distance *e* shown in FIG. 3.

FIG. 6 illustrates a form of the invention wherein the head button 44′ which is rotatable within a cap boss 43′ has two different spray pattern discharge passages 56′, 57′, 58′ formed directly therewithin, and not in inserts as in FIGS. 1–5. In this embodiment the button has an overhanging skirt 48′ formed with openings 49′ that align with boss opening 50 in the indexed position.

FIGS. 7–9 illustrate a further embodiment wherein a different spray pattern selector member in the form of a head button 64 is rotatable within the hollow boss 65 of a cap 66 that is mounted on container 11 by a depending internal annulus 67 resiliently gripping the smaller container bead 16.

Head button 64 has one discharge passage consisting of an enlarged lower end 68 fitting on the valve stem 12, an intermediate portion 69 and a lateral outlet 71. A 180° spaced passage consists of an enlarged lower end 72, an intermediate passage portion 73 and an outlet 74 of different spray pattern characteristics. As shown in FIG. 7, outlet 71 is aligned with a cap opening 75 so that depression of the button will displace valve stem 12 and discharge container product through outlet 71 and to the area to be treated.

An internal rib 76 within boss 65 coacts with an annular peripheral recess 77 below the outlets on button 64 to permit raising button 64 sufficiently to disengage it from the valve stem and rotate it 180° to fit it with the other passage end at 72. Rib 76 and recess 77 coact to prevent accidental full withdrawal of button 64 from the cap. Index marks H and L on the top of button 64 indicate which spray pattern passage is aligned with opening 75.

The use of interchangeably selective insert plugs such as shown at 54 and 55 in FIGS. 1–5 is particularly advantageous in that it is less expensive to form the required spray pattern passage configuration in such small plugs that are inserted in proper orientation on the head than to form the passages in accurate selective disposition on a larger solid head such as in FIG. 6. Moreover, this phase of the invention enables production to more efficiently and inexpensively proceed by making all of the head buttons of the same structure, and separately form any desired number of insert plugs with different spray pattern passages, so that the basic head button structure may be assembled with any different combinations of available different spray pattern insert plugs.

FIGS. 10–16 illustrate a further embodiment of the invention which is similar in most respects to that of

FIGS. 2–6 but differs in some detail as will appear, similar parts being indicated by corresponding reference numerals.

A hollow cap structure 81 is detachably mounted upon container 11 by an inturned rim bead 82 sized to snap fit over the rib formed by container seam 15, whereby to detachably support the assembly in the container. An internal shoulder 80 limits axial movement of the cap onto the container.

At its upper end cap 81 has a hollow boss 83 having a reentrant bearing section formed by an inwardly extending annular end flange 84 and an internal wall 85 projecting downwardly from the radially inner edge of the flange. Wall 85 is formed on its inner side with a cylindrical surface 86, and flange 84 has a smooth top surface 87 lying in a plane at right angles to the axis of surface 86.

The cap 81 is formed with a generally U-shaped side opening 88 that extends through boss 83 and opens upwardly through flange 84, the edges of the opening being flared outwardly as indicated at 89.

Opposite opening 88, surface 86 is formed with an upwardly and inwardly open circumferential recess 91 and three axially extending grooves 92, 93 and 94. Recess 91 opens into flange surface 87 and into inner wall surface 86. Recess 91 is 180° in length and its ends 132 and 132*a* as indicated in FIG. 18 serve as stop shoulders limiting rotation of the spray pattern member as will appear. Grooves 92 and 94 are open at their top to opposite ends of recess 91. The other groove 93 is also open at its top to recess 91 midway between the other two grooves, and is located diametrically opposite opening 88. Grooves 92–94 may be of equal length and are closed at their lower ends.

It will be noted as indicated at *e* in FIG. 12 that the axis of surface 86 is eccentric with respect to the axis of valve 12 of the container.

A multiple spray pattern member or button 95 is rotatably mounted concentric with boss 83. Button 95 comprises a flat upper end disc 96 having a downturned annular integral rim 97 around its outer periphery. Rim 97 is sufficiently short that it will not interfere with spray discharged through opening 88 as will appear, and its periphery is knurled at 98 for ease of turning.

Button 95 is centrally formed with a depending integral boss 99 coaxial with rim 97 having a cylindrical outer periphery 101 that fits slidably and rotatably within the reentrant bearing surface 86. Boss 99 is longer than rim 97 and at its lower end below the level of rim 97 is formed with two diametrically opposite circular side openings 102 and 103.

At its upper end boss 99 is formed with two diametrically opposite ribs 104 and 105 depending from the bottom of disc 96. Rib 104 is axially longer than rib 105 for a purpose to appear. Ribs 104 and 105 are both axially shorter than rim 97 and they are sized to fit slidably into grooves 92–94. The lower ends of ribs 104 and 105 are preferably smoothly rounded. Ribs 104, 105 are spaced 90° from adjacent openings 102, 103.

Internally hollow boss 99 is formed with diametrically opposite cylindrical cells 106 and 107, integrally merging into boss 99 at their outer sides and integrally connected at their inner sides 108. These cells provide downwardly open cylindrical bores 109 and 111 of the same size having side apertures opening into boss opening 102 and 103 as shown in FIG. 12.

Cylindrical insert plugs 112 and 113 are tightly thrust into bores 109 and 111 where they seat axially on shoulders 114 and 115 respectively so that the lower ends of the plugs are flush with the lower end of boss 99. Plug 112 has a short central downwardly open socket 116 sized to slidably receive valve stem 12, a circular side recess 117 of the same size as opening 102, and a small diameter passage 118 extending from the socket to open into the center of recess 117.

Diametrically opposite recess 117, plug 112 is formed with an axial groove 119 adapted to slidably fit with an axial internal rib 121 in cell 106. Groove 119 is closed at its lower end. Thus groove 119 and rib 121 accurately locate the outlet end of passage 118 centrally with opening 102.

Similarly plug 113 has a short downwardly open socket 122 (FIG. 12) for slidably receiving valve stem 12, a circular side recess 123 and a small diameter passage 124 between the socket and recess. An axial plug groove 125 slidably fits with internal cell rib 126, and this accurately locates the outer end of passage 124 centrally with opening 103.

Plugs 112 and 113 are preferably identical except that passages 118 and 124 are of different diameter to produce different spray patterns as will appear. Either of these plugs may be removed and replaced with similar plugs having different passages for selecting different spray patterns.

In assembly boss 99 is thrust into the open end of boss 83, this being limited by the abutment of flange 84 with the underside of disc 96. As shown in FIG. 13 a plurality of generally wedge shaped projections 127 are integral with the lower edge of boss 99. Since the cap structure is composed of a relatively resilient plastic, these projections merely temporarily resiliently deform the wall 86 as they pass down, and once they pass the lower edge of wall 86 the projections become effective to provide upwardly facing axial abutments indicated at 128. As will appear projections 127 may abut against the lower end of wall 86 to limit upward axial shift of button 95 during operation.

It will be noted that longitudinal open spaces 129 and 131 are provided within boss 99 at opposite sides of the aligned cells. Also, see FIG. 10, the top of disc 96 is molded with indicators 133′ and 133 above the small and larger spray passage plugs, and a lock or non-spray indicator 134 halfway between them located above space 131.

In the illustrated embodiment, when the button 95 is so mounted on the cap that the ribs 105 and 104 are slidably received in grooves 92 and 94 respectively, the opening 103 will be aligned with cap opening 88 and the socket 122 will be centered with valve stem 12 which it slidably receives when the cap is mounted on the container 11 and button 95 is depressed. This is the heavy spray position and is shown in FIG. 12. When stem 12 bottoms in socket 122, which will take place before disc 96 can contact flange 84, continued downward movement of the button will result in depression of stem 12 to open the container valve and effect a heavy spray discharge pattern through cap opening 88.

Should a lighter spray be desired, the operator pulls upwardly on button 95 until ribs 104 and 105 leave grooves 92 and 94. Upward movement of the button 95 is arrested when projection surfaces 128 engage the lower edge 100 of cap boss wall 85. At this point the shorter rib 105 has moved axially upwardly out of re-

cess **91**, but the longer rib **104** remains in recess **91** in substantial flush abutment with stop shoulder **132***a*. The operation may now rotate the button **95**, counterclockwise in FIG. **10**, through 180°. During this rotation, the lower end of short rib **105** slides along flat surface **87**, and the lower end of rib **104** moves along recess **91** until it abuts stop shoulder **132** where it aligns with groove **92**. At the same time rib **104** is aligned with groove **94**. Now button **95** may be pushed axially downwardly to engage light spray socket **116** with the valve stem **112**. Depression of the button will now produce a light spray pattern through the cap opening **88**.

Should the non-spray position be desired, button **95** is pulled upwardly and rotated clockwise 90° until the indicator **134** is above opening **88**, at which time the long rib **104** will become aligned with groove **93**, and then when the button is pushed down toward the container stem **12** will project into space **131** and will not be activated.

The parts are so dimensioned and arranged that just after the button **95** is pulled out sufficiently to disengage the ribs **104**, **105** from the grooves **92–94**, projections **127** will all solidly abut the lower end of wall **86** to prevent further axial upward movement of the ribs as explained above. Thus, button **95** can be turned only in a direction wherein the lower end of rib **105** may slide along the upwardly facing flat smooth surface **87**, the shoulders **132** and **133** limiting turning movement in the opposite directions.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are theremore intended to be embraced therein.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A combination spray pattern selecting and valve operating assembly adapted to be mounted on a pressurized container having a valve provided with an upstanding reciprocable hollow actuator and product discharge stem comprising cap structure having means for mounting it on such a container, a spray pattern selector member having at least two spaced bores therein containing insert plugs that are formed with through passages, said passages having valve stem receiving recesses at their inlet ends and being so constructed and arranged as to produce different spray patterns at their outlets, and means mounting said member on said cap structure for movement between a position wherein it may actuate the container valve to discharge container contents through one of said insert passages and another position wherein it may actuate the container valve to discharge container contents through the other insert passage.

2. In the assembly defined in claim **1**, said bores and insert plugs being formed with cooperating means providing pre-determined orientation of the outlet of each relative to said selector member.

3. In the assembly defined in claim **1**, said insert plugs each being formed at the inlet end of its through passage with an end socket for slidably receiving said valve when said member is moved to actuate the valve.

4. In the assembly defined in claim **1**, said inserts being substantially identical except for passage characteristics.

5. A combination spray pattern selecting and valve operating assembly adapted to be mounted upon a pressurized container of the type having a projecting movable hollow valve actuating and product dischrage stem and comprising a cap structure having means for mounting it on such a container, a spray pattern selector member mounted on said cap structure for rotation about a fixed axis and for displacement toward and from the container, said member having at its lower end at least two downwardly open recesses each adapted to slidably receive said valve stem when aligned therewith by rotation of said member, and means in said member forming distinct spray pattern passages extending from each recess to a separate lateral discharge outlet, said member and recesses being so constructed and arranged that after rotation of said member to align a selected recess with said valve stem the member may be initially displaced in the direction toward the container to confine the upper end of the valve stem in the selected recess in communication with the adjacent spray pattern passage and establish solid motion transmitting engagement between the member and valve stem whereby further displacement of the member in that direction moves the valve stem to effect discharge of the container contents through the associated spray passage and outlet, said member being formed with downwardly open bores and fixed inserts in said bores that are formed with the respective valve stem receiving recesses and the associated spray pattern passages.

6. In the assembly defined in claim **5**, said bores and inserts being formed with cooperating means providing predetermined orientation of each outlet relative to the member.

7. In the assembly defined in claim **6**, said orientation providing means being interfitting longitudinal rib and groove means on each bore and insert.

8. In the assembly defined in claim **5**, said bores being distributed along the arc of a circle having its center on said axis, and said inserts being unitary slidably introduced plugs each preformed with its recess and passage.

9. In the assembly defined in claim **5**, means for indexing said member in positions of rotation wherein said recesses align with the valve stem.

10. In the assembly defined in claim **5**, said member being formed with a further downwardly open recess spaced from said two recesses and of such depth that when said member is rotated to align said further recess with said stem and the member is displaced toward the container the valve stem is freely received within the further recess and the valve stem is not moved by said member.

11. A combination spray pattern selecting and valve operating assembly adapted to be mounted upon a pressurized container of the type having a projecting hollow valve actuating and product discharge stem and comprising a cap structure having means for mounting it on such a container, an upwardly open hollow boss on the upper end of said cap structure, said boss having a cylindrical inner surface a spray pattern selector member mounted on said boss for rotation about the axis of said boss and for slidable displacement toward and from the container, said member having a depend-

ing cylindrical surface surrounded by, rotatable in and axially slidable on said boss surface, and said member having at its lower end at least two downwardly open sockets each adapted to receive said valve stem when aligned therewith by rotation of said member, and means in said member forming distinct spray pattern passages extending from each socket to a separate lateral discharge outlet, said member and sockets being so constructed and arranged that after rotation of said member to align a selected socket with said valve stem the member may be initially displaced in the direction toward the container to confine the upper end of the valve stem in the selected socket in communication with the adjacent spray pattern passage end and establish solid motion transmitting engagement between the member and valve stem whereby further displacement of the member in that direction moves the valve stem to effect discharge of the container contents through the associated spray passage and outlet, and cooperating means on said boss and member at said surfaces for preventing said motion transmitting engagement except when said member is in one of said valve operating positions.

12. In the assembly defined in claim **11**, said member being a one-piece button and said sockets, passages and outlets being formed directly in said button.

13. In the assembly defined in claim **11**, said cap structure having a circular flexible lower edge portion whereby it is detachably mounted on the container symmetrical about an axis coinciding substantially with the axis of said valve stem, the axis of said boss being eccentric with respect to the axis of said lower edge portion, and said sockets being disposed substantially on a circle having a radius substantially equal to the distance between said axes.

14. In the assembly defined in claim **11**, cooperating axial abutments on said member and boss for limiting sliding movement of the member.

15. A combination spray pattern selecting and valve operating assembly adapted to be mounted upon a pressurized container of the type having a projecting hollow valve actuating and product discharge stem and comprising a cap structure having means for mounting it on such a container, a hollow boss on the upper end of said cap structure, a spray pattern selector member mounted on said boss for rotation about the axis of said boss and for slidable displacement toward and from the container, said member having at its lower end at least two downwardly open sockets each adapted to receive said valve stem when aligned therewith by rotation of said member, and means in said member forming distinct spray pattern passages extending from each socket to a separate lateral discharge outlet, said member and sockets being so constructed and arranged that after rotation of said member to align a selected socket with said valve stem the member may be initially displaced in the direction toward the container to confine the upper end of the valve stem in the selected socket in communication with the adjacent spray pattern passage end and establish solid motion transmitting engagement between the member and valve stem whereby further displacement of the member in that direction moves the valve stem to effect discharge of the container contents through the associated spray passage and outlet, said cap structure boss being an upwardly open boss having a cylindrical inner surface and said member having a depending cylindrical surface rotatable in and axially slidable on said boss surface, and cooperating longitudinal groove and rib means at said surfaces for locating said member in valve operating positions and guiding axial movement thereof relative to the container, said groove and rib means being so disposed and cooperatively formed as to prevent said motion transmitting engagement between said member and the valve stem except when said member is in one of said valve operating positions.

16. In the assembly defined in claim **15**, said ribs being of different length and being formed on said member and said grooves being formed in the boss surface, means providing an upwardly facing recess in said boss surface connecting the upper ends of said grooves after the lower end of the shorter rib has left said recess and while the lower end of the longer rib remains in said recess and having stop shoulders at opposite ends, and cooperating means on said boss and member for preventing axial displacement of said member away from the container whereby said member may be rotated between valve operating positions defined by said stop shoulders.

17. In the assembly defined in claim **16**, said boss having a flat planar top surface slidingly associated with the lower end of said short rib during rotation of said member.

18. A combination spray pattern selecting and valve operating assembly adapted to be mounted on a pressurized container having a valve comprising cap structure having means for mounting it on such a container, a spray pattern selector member having at least two spaced bores therein containing insert plugs that are formed with through passages, said passages being so constructed and arranged as to produce different spray patterns at their outlets, and means mounting said member on said cap structure for movement between a position wherein it may actuate the container valve to discharge container contents through one of said insert passages and another position wherein it may actuate the container valve to discharge container contents through the other insert passage, said bores and insert plugs being formed with cooperating interfitting longitudinal rib and groove means providing predetermined orientation of the outlet of each said passage relative to said selector member.

19. A combination spray pattern selecting and valve operating assembly adapted to be mounted on a pressurized container having a valve comprising cap structure having means for mounting it on such a container, a spray pattern selector member having at least two spaced bores therein containing insert plugs that are formed with through passages, said passages being so constructed and arranged as to produce different spray patterns at their outlets, and means mounting said member on said cap structure for movement between a position wherein it may actuate the container valve to discharge container contents through one of said insert passages and another position wherein it may actuate the container valve to discharge container contents through the other insert passage, said selector member being a head mounted on the cap structure for rotation about an axis parallel to the axis of the container, said bores being downwardly open recesses in said head, and said insert plugs being fixed within said recesses in predetermined positions of orientation.

20. A combination spray pattern selecting and valve operating assembly adapted to be mounted upon a

pressurized container of the type having a projecting hollow valve actuating and product discharge stem and comprising a cap structure having means for mounting it on such a container, a hollow boss on the upper end of said cap structure, a spray pattern selector member mounted on said boss for rotation about the axis of said boss and for slidable displacement toward and from the container, said member having at its lower end at least two downwardly open sockets each adapted to receive said valve stem when aligned therewith by rotation of said member, and means in said member forming distinct spray pattern passages extending from each socket to a separate lateral discharge outlet, said member comprising a one-piece button having downwardly open bores, and said sockets and passages are formed in plug inserts within said bores and said member and sockets being so constructed and arranged that after rotation of said member to align a selected socket with said valve stem the member may be initially displaced in the direction toward the container to confine the upper end of the valve stem in the selected socket in communication with the adjacent spray pattern passage end and establish solid motion transmitting engagement between the member and valve stem whereby further displacement of the member in that direction moves the valve stem to effect discharge of the container contents through the associated spray passage and outlet.

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