

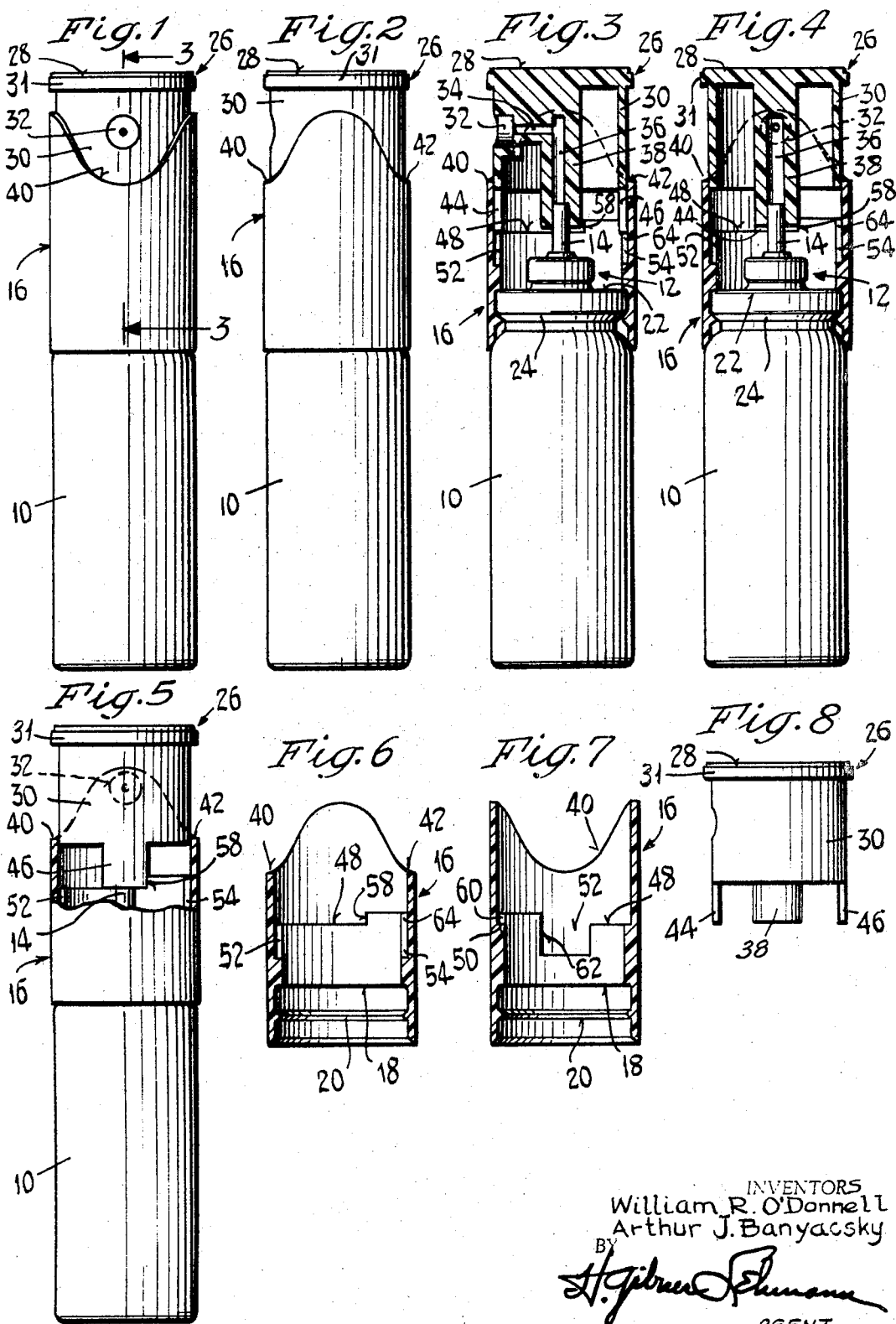
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ROTATE-TO-LOCK ACTUATOR CAP FOR DISPENSERS

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## ROTATE-TO-LOCK ACTUATOR CAP FOR DISPENSERS

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5 Claims

### ABSTRACT OF THE DISCLOSURE

A locking-type actuator cap comprising an outer stationary tubular shell having a deep front notch through which the product is discharged, and comprising a depress button vertically movable in the shell and having a side nozzle for discharging the product. The button is turnable in the shell between on the one hand a discharging position wherein the nozzle is disposed at the said notch and the button can be depressed, and on the other hand a non-discharging position wherein depressing movement of the button is prevented and the nozzle is concealed by being disposed behind the wall of the shell.

### CROSS REFERENCES

- (1) U.S. Patent No. 3,050,219.
- (2) U.S. Patent No. 3,158,292.
- (3) U.S. Patent No. 3,221,950.
- (4) U.S. Patent No. 3,276,641.
- (5) Copending application of Herbert G. Lehmann, Ser. No. 529,705 filed Feb. 24, 1966, now U.S. Pat. No. 3,367,540 and having common ownership with the present application.
- (6) Copending application of Elmer Lipman, Ser. No. 597,050 filed Nov. 25, 1966, now U.S. Pat. No. 3,422,996 and having common ownership with the present application.

### BACKGROUND

This invention relates to actuator caps for dispensers, and more particularly to caps wherein a movable part or button can be releasably locked in its non-discharging position.

Various locking-type actuator caps have been proposed and produced in the past. Some of these prior caps have had tear strips or removable pieces which either were not adapted to replacement after use or else were not convenient to replace from the standpoint of the average user or consumer. Others which did not have removable pieces were more complicated, involving additional parts which undesirably added to the cost, and involving nozzles which were at all times unprotected and exposed, being susceptible to contamination, dirtying, etc.

### SUMMARY

The present invention obviates the above disadvantages, and an object of the invention is to provide a novel and improved locking-type actuator cap for a hand-held dispenser, wherein by the use of but two relatively movable permanently-retained parts the actuator member can be easily and quickly locked or unlocked while at the same time the nozzle is concealed and covered for the locked condition, and is fully and unmistakably in view for the user to see, when the cap is unlocked. This is accomplished by the provision of a tubular stationary outer

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cap member having in its front wall a deep notch through which the product can be discharged, in conjunction with a vertically and turnably movable nozzle carrying member disposed in the outer member. Cooperable lock means are effective to prevent depressing movement of the nozzle member for a given rotative locking position, and to permit depressing movement for another rotative position. For the locking position of the nozzle member the nozzle thereof is disposed behind the wall of the outer member, being thereby concealed and covered thereby, and for the unlocking position the nozzle is centralized in the notch and spaced a substantial distance from the side edges thereof so as to be completely visible.

Other objects of the invention are to provide an improved locking-type dispenser as above set forth, which is small and compact, especially simple and economical to fabricate, is easily assembled, and which is characterized by a reliable and foolproof operation; to provide such an actuator, wherein the mode of operation is quickly grasped and understood by the consumer, and wherein the covering and protecting of the nozzle automatically occurs as the cap is placed in the locking condition; to provide an actuator as above, wherein the parts can be readily molded of plastic material, in simple and inexpensive molds.

Other features and advantages will hereinafter appear.

In the drawings:

FIG. 1 is a front elevational view of a dispenser having a locking-type actuator cap as provided by the invention. The depress button is in its operative position, ready for effecting a discharge.

FIG. 2 is a side elevational view of the dispenser and locking cap of FIG. 1.

FIG. 3 is an axial sectional view of the cap construction, taken on the line 3—3 of FIG. 1.

FIG. 4 is an axial sectional view similar to that of FIG. 3, but showing the depress button in the locked, inoperative position.

FIG. 5 is a view mostly in elevation, of the dispenser with the actuator cap in the locked position of FIG. 4.

FIG. 6 is an axial sectional view of the tubular body part per se of the actuator cap, the view being somewhat similar to the showings of FIGS. 3 and 4.

FIG. 7 is an axial sectional view of the body part of the actuator cap, taken through a sectioning plane which is 90° to the plane of FIGS. 3, 4 and 6.

FIG. 8 is a side elevational view of the depress button of the cap construction.

As shown, the dispenser comprises a pressurized container 10 having a crimped neck portion 12 which contains the discharge-controlling valve mechanism (not illustrated), and having an upstanding hollow depressible valve stem 14 through which the flow of the discharging product passes when the stem is depressed or moved downward. Pressurized containers and valves such as that indicated at 10, 12, 14 are well known to those skilled in the art, and accordingly further details are not given herein. One type of such pressurized container which is suitable for use with the cap construction of the present invention is illustrated and described in U.S. Patent Nos. 3,039,659 and 3,104,034.

The improved locking-type actuator cap construction as provided by the invention comprises essentially an outer stationary tubular shell or body 16 which has means for attaching it endwise to the dispensing container 10. Such means is shown herein as comprising an

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internal annular shoulder 18 and below the same an internal annular bead 20 adapted to respectively engage the upper and lower edge portions 22, 24 of the container neck structure 12. It will be understood that the tubular body 16 may be forced in place over the neck structure 12, so as to be retained thereby in the position illustrated in FIGS. 1-5.

The present improved cap construction further comprises a depress member 26 which is shown as in the form of an inverted hollow cup having a finger engageable top wall 28 and a tubular side wall 30. The member 26 additionally has a finger grip means or rim 31 around its top edge, shown herein as an annular shoulder or bead. Disposed in the tubular side wall 30 is an orifice or nozzle member 32 which communicates with a horizontal bore or passage 34 that in turn communicates with a vertical passage 36 disposed in a depending hollow boss 38 adapted to receive and frictionally grip the valve stem 14. The depress button 26 is vertically movable in the outer body 16 whereby its downward movement will effect a corresponding downward movement of the valve stem 14, resulting in a discharge of the container contents upward through the stem 14, vertical passage 36, and thence horizontally through the passage 34 and out from the nozzle 32.

The depress button 26 is not only vertically movable in the body 16, but also is turnably movable in said body, and in accordance with the invention, novel cooperable abutment means in the form of stops and also shelf members are provided on the button 26 and the body 16 to control both the vertical and the turning movements of the button. Further, the invention provides that the depress button is prevented from having downward movement by such cooperable shelf members when it is in a predetermined raised and turned inoperative position in the body 16, such inoperative position being illustrated in FIGS. 4 and 5, and additionally provides that for such raised inoperative or locked position of the depress button 26 the discharge nozzle 32 thereof is completely covered and concealed by a side wall of the body 16 whereas the nozzle is uncovered and discharges through a front notch in said side wall during the actuating movement of the button.

As shown, the stationary body 16 has a deep rounded front notch 40 which provides the clearance for the nozzle 32 as clearly depicted in FIG. 1, whereby a discharge of the container contents may take place from the nozzle and through the notch 40 as the button 26 is depressed from the shown raised position. This arrangement is clearly understood from an inspection of FIGS. 1 and 3. However, if the depress button or member 26 is turned through approximately 90° from the position of FIGS. 1 and 3, to the position illustrated in FIGS. 4 and 5, the discharge nozzle 32 will be disposed behind and concealed by the side wall of the stationary body 16.

In the illustrated embodiment of the invention, the stationary body 16 also has a deep clearance notch 42 at its rear, diametrically opposite the front notch 40 for the sake of symmetry and for simplicity in the assembly of the button to the body in either of two possible positions, as will be later explained in greater detail.

The positioning or movement limiting abutment means provided on the button 26 and body 16 comprise essentially a depending lug 44 on the button, which extends downward from the outer wall portion 30 of the button as seen in FIGS. 3 and 8. For the purpose of symmetry and to simplify the assembly of the body and button, the latter also has a second or rear depending lug 46 which is diametrically opposite the front lug 44. The front lug 44 is cooperable with a shelf-like formation 48 projecting inward from the inside wall of the body 16, said shelf-like formation being adapted for engagement with the bottom of the lug 44, this being illustrated in FIG. 4. When such engagement occurs, downward movement of the button 26 is prevented. Simultaneously, the second or rear lug

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46 of the button 26 engages an opposite shelf-like formation 50 provided in the body 16 diametrically opposite the formation 48.

Adjoining the shelf-like formation 48, 50 are clearance spaces 52, 54 respectively, which are adapted to accommodate the lugs 44, 46 when the depress button 26 is pressed downward from the raised, operative position illustrated in FIGS. 1, 2 and 3. It will be seen that by the above construction the button 26 may be actuated only while in the discharging position of FIGS. 1-3, wherein the nozzle 32 is aligned with the front notch 40 and has clearance, to effect a discharge of the container contents through the said front notch. If, from the raised operative position of FIGS. 1-3 the button 26 is turned 90° clockwise as viewed from the top, the depending lugs 44, 46 will be engageable respectively with the ledge or shelf formations 48, 50 whereby downward movement of the button is prevented while at the same time and in accordance with the invention the nozzle 32 is covered and concealed by the side wall of the body 16.

Further, in accordance with the invention, the body 16 has stop shoulders projecting inwardly from its inside wall and cooperable with the lugs 44, 46 of the depress member to limit the turning thereof to the two positions illustrated respectively in FIGS. 3 and 4, wherein the lugs are either disengaged from the shelf formations 48, 50 or else engaged with the said shelf formations. The said stop shoulders are indicated respectively by the numerals 58, 60, (see FIGS. 6 and 7). The shoulders 58, 60 are respectively engageable with the side edges of the depending lugs 44, 46 to limit the clockwise turning movement of the button 26 as viewed from the top. To limit the counterclockwise turning movement of the button 26, the lugs 44, 46 engage respectively shoulders 62, 64 disposed on the inside wall of the body 26, as shown in FIGS. 6 and 7. The stop shoulders 58, 60 and 62, 64 restrict the turning movement of the button 26 to approximately 90° from the raised operative position shown in FIGS. 1-3 to the raised inoperative position illustrated in FIGS. 4 and 5.

The front and rear notches 40 and 42 provide the important advantages of symmetry and simplicity in the assembly of the button to the body as already mentioned, yet the user will not be confused as to the direction of the spray by virtue of the fact that the orifice or nozzle 32 is completely centralized and fully in view, being widely spaced from the side edges of the notch for the operative position of the button. Thus, the centralizing of the orifice and the considerable clearance provided facilitate the user's sighting of the orifice to direct it unmistakably in the desired direction.

It will now be seen from the foregoing that we have provided a novel and improved locking type actuator construction for hand-held dispensing devices wherein the locking or unlocking of the depress member is easily and quickly effected by a turning movement of the member, such turning movement also being utilized to cover or conceal the nozzle piece behind the wall of the outer stationary member of the cap construction. Additionally, the movement limiting means for the depress member comprise especially simple abutment or shoulder formations provided on said member and on the inner wall of the outer stationary body member whereby there is eliminated the necessity for additional parts with the consequent assembly operations, and instead extreme simplicity and reliability of operation are had, as well as the advantage that the depress member and body member may be economically molded of plastic substance in simple mold cavities. The covering or concealing of the nozzle member is of special importance where cleanliness is desired. For example, if the dispenser is to be carried in the purse, which is the usual place where the dispenser is used as a breath freshener, the fact that the nozzle 32 is covered and concealed when not in use adds to the cleanliness and utility of the device.

Variations and modifications may be made within the scope of the claims, and portions of the improvement may be used without others.

We claim:

1. A locking-type actuator cap construction for handheld dispensing devices comprising, in combination:

- (a) a tubular stationary body having means for attaching it endwise to a dispensing container of the kind having an upstanding hollow depressible plunger through which the contents are discharged,
- (b) a depress member having an outer wall portion movable and bearing in the tubular body, said member being adapted for connection to the plunger of the container to actuate the same,
- (c) said depress member having means including a side nozzle for discharging into the air the contents of the container which are received from the depressible plunger,
- (d) said depress member being turnable in said body between predetermined operative and inoperative circumferential positions as well as being axially movable in the body between raised and lowered positions,

wherein the improvement comprises:

- (e) said depress member having a lug extending downward from the outer wall portion thereof,
- (f) said body having a shelf-like formation projecting inwardly from its inside wall and adapted for engagement with the bottom of the lug of the depress member to position the same in a raised inoperative position in the body, said member when turned while in said raised position causing the lug thereof to shift out of engagement with the shelf-like formation, thereby to free the member for downward movement to effect depressing of the said plunger for causing a discharge to occur therethrough, and
- (g) said body having stop shoulders projecting inwardly from its inside wall and cooperable with the lug of the depress member to limit turning thereof to positions wherein the lug is either respectively engaged with or disengaged from the shelf-like formation of the body wall.

2. An actuator cap construction as in claim 1 wherein:

- (a) the depress member has a second lug extending downward from the outer wall portion thereof and disposed diametrically opposite the first-mentioned lug,
- (b) said body having a second shelf-like formation projecting inwardly from its inside wall at a point diametrically opposite the first-mentioned formation, said second formation being adapted for engagement with the second lug to position the depress member in said raised inoperative position,
- (c) said body having additional stop shoulders projecting inwardly from its inside wall and cooperable with the second lug to limit turning of the depress member in the same manner as the first-mentioned stop shoulders.

3. An actuator cap construction as in claim 1, wherein:

- (a) said depress member has projecting finger-grip means disposed above the top of the body, said means being readily engageable by the fingers to effect the turning of the member between the said operative and inoperative positions.

4. A locking-type actuator cap construction for handheld dispensing devices comprising, in combination:

- (a) a tubular stationary body having means for attaching it endwise to a dispensing container of the kind having an upstanding hollow depressible plunger through which the contents are discharged,
- (b) a depress member movable in the tubular body and adapted for connection to the plunger of the container to actuate the same,
- (c) said depress member having means including a side nozzle for discharging into the air the contents of

the container which are received from the depressible plunger,

- (d) said body having a deep front notch with which the nozzle is alignable whereby the discharge of the container contents can be effected through said notch,
- (e) said depress member being turnable in said body between predetermined operative and inoperative circumferential positions as well as being axially movable in the body between raised and lowered positions,
- (f) cooperable abutment means on said body and member, limiting turning of the member in the body to and between said predetermined operative and inoperative positions when the member is in its raised position, said abutment means preventing downward movement of the member to the lowered position when the member is in the raised inoperative position,

wherein the improvement comprises:

- (g) said nozzle being disposed behind and being concealed by the wall of the tubular body when the depress member is in the raised and inoperative position,
- (h) said depress member having an outer wall portion,
- (i) said abutment means comprising a lug extending downward from the outer wall portion of the depress member, comprising a shelf-like formation in the body, projecting inwardly from the inside wall thereof, and comprising stop shoulders in the body, engageable with side edges of the lug of the depress member,
- (j) said shelf-like formation being adapted for engagement with the bottom of the lug of the depress member.

5. A locking-type actuator cap construction, for handheld dispensing devices comprising, in combination:

- (a) a tubular stationary body having means for attaching it endwise to a dispensing container of the kind having an upstanding hollow depressible plunger through which the contents are discharged,
- (b) a depress member movable in the tubular body and adapted for connection to the plunger of the container to actuate the same,
- (c) said depress member having means including a side nozzle for discharging into the air the contents of the container which are received from the depressible plunger,
- (d) said body having a deep front notch with which the nozzle is alignable whereby the discharge of the container contents can be effected through said notch,
- (e) said depress member being turnable in said body between predetermined operative and inoperative circumferential positions as well as being axially movable in the body between raised and lowered positions,
- (f) cooperable abutment means on said body and member, limiting turning of the member in the body to and between said predetermined operative and inoperative positions when the member is in its raised position, said abutment means preventing downward movement of the member to the lowered position when the member is in the raised inoperative position,

wherein the improvement comprises:

- (g) said nozzle being disposed behind and being concealed by the wall of the tubular body when the depress member is in the raised and inoperative position,
- (h) said body having a deep back notch disposed opposite and substantially identical to said front notch,
- (i) said body and depress member having additional abutment means similar to said first-mentioned abutment means and located opposite thereto whereby the depress member can be assembled to the body

in either of two different positions disposed 180°  
apart.

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