United States Patent [19]

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[54] **CHILD-RESISTANT ACTUATOR FOR AEROSOL DISPENSER**

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[52] **U.S. Cl.** ..... **222/182;** 220/39 R; 220/85 P; 222/402.11; 222/402.14

[51] **Int. Cl.²** **B65D 83/14**

[58] **Field of Search** . 222/153, 182, 402.11, 402.13, 222/402.14; 220/39 R, 85 P

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[57] **ABSTRACT**

A safety-type, child-resistant actuator comprising a jumbo size, two-piece overcap which is freely turnable on the top of the aerosol container. The overcap has the appearance of a single plastic molding, even though it actually consists of an inverted dome portion which is screwed to an annular collar or base portion, the latter being held captive although it is freely turnable. By grasping and holding the base portion while twisting the dome, the latter can be readily removed, revealing a locking-type actuator button provided with a hook which can be latched under an annular shoulder of the top closure for the container. The latching of the actuator is normally prevented, due to an obstruction provided on the turnable base. However, by aligning an inconspicuous notch of the base with the latching hook of the actuator button, the latter can be deflected or tilted to cause its hook portion to latch under the shoulder of the container closure. The combination of the deceptive "one-piece" appearance of the overcap with the inconspicuous nature of the notch in the turnable base has the net result of presenting considerable difficulty to a child of tender years, if he should endeavor to place the dispenser in use.

10 Claims, 9 Drawing Figures

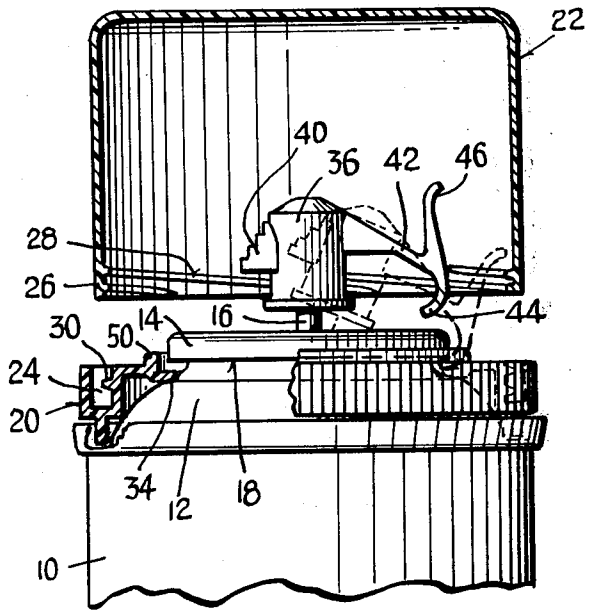


Fig. 1

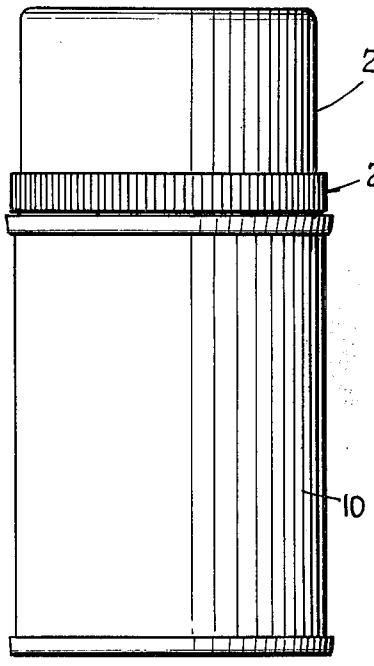


Fig. 2

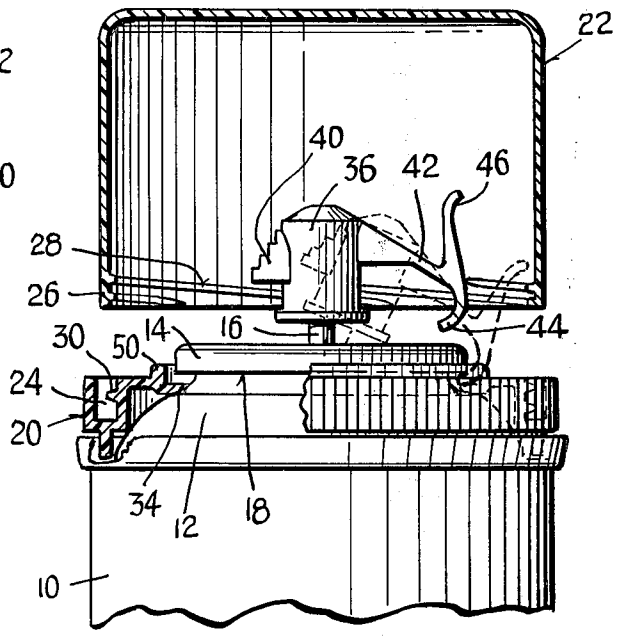


Fig. 3

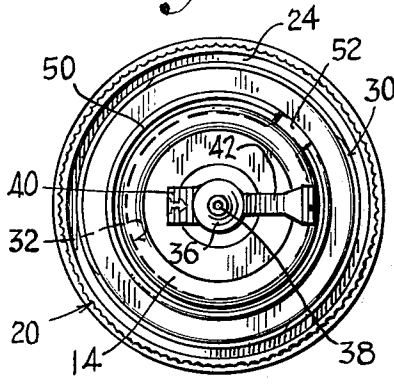


Fig. 4

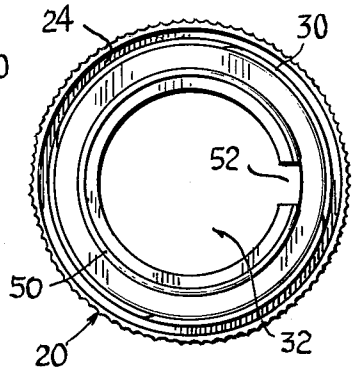


Fig. 5

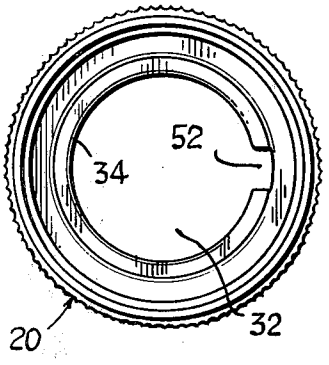


Fig. 6

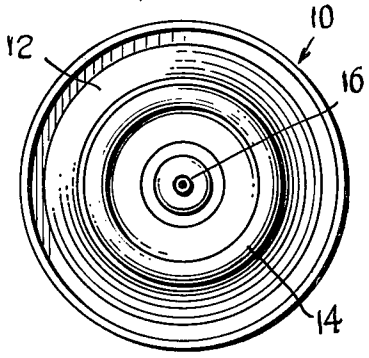


Fig. 7

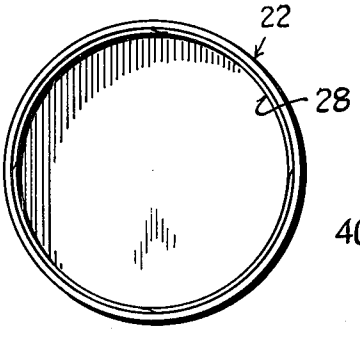


Fig. 8

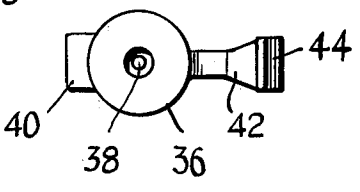
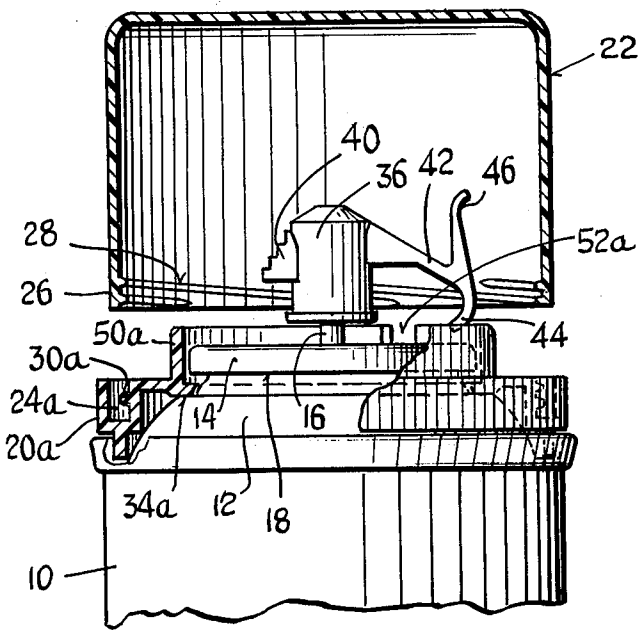


Fig. 9



CHILD-RESISTANT ACTUATOR FOR AEROSOL DISPENSER

NO CROSS REFERENCES TO RELATED APPLICATIONS

BACKGROUND

This invention relates to safety-type childproof or childresistant actuator devices for small hand-held aerosol dispensers. Previously it has been proposed to provide a deceptive-appearing jumbo-type overcap for aerosol dispensers which actually consists of two pieces screwed together, although it normally gives the impression of being but a single molded part. Such overcap, being loosely held captive on the upper portion of the dispenser, quite successfully tends to defeat efforts of young children to actuate the dispenser. Although the dome portion of the overcap can be easily removed by twisting it while grasping the narrow base portion so as to unscrew these from each other, the uninitiated or unknowing person would normally not realize that such unscrewing or separation of the overcap portion is possible. The collar or base portion of the overcap, although loosely held and readily turnable, is so securely mounted that normally the device resists all efforts to remove it, even with the use of prying tools. Such a safety device has proven to be quite effective until the unauthorized person learns the secret of unscrewing the dome portion by first holding the base.

Another prior aerosol actuator involved a locking-type button having a laterally projecting arm with a hook portion that is adapted to latch under the usual annular shoulder surrounding the metal valve mounting cup of the dispenser. A release finger-piece carried by the arm readily enables the button to be returned to its non-discharging condition when so desired. This locking-type actuator button also advantageously presents difficulties to children of tender years or other unauthorized persons, but here again the possibility exists that the child will at sometime or other learn the technique for actuating and latching the button in the operative position.

The foregoing two systems which provide for child resistant characteristics, when utilized together, constitute supplements to each other and increase the required know-how of actuation whereby the likelihood of a child being able to operate the dispenser is further minimized. However, there still remains the distinct possibility that an observant child will, after a while, discover the procedures required to place the combination actuator in operation. Where added safety is a requirement, even the combining of the above systems can be considered as not completely adequate.

SUMMARY

The disadvantages and drawbacks existing with prior child resistant actuators of the kind explained above are obviated by the present invention, which has for one object the provision of a novel and improved child-resistant aerosol dispenser which combines three safety features in one package, thereby to further increase the difficulty of actuation by unauthorized personnel and to additionally reduce the likelihood of such personnel learning how to put the dispenser in operation. A further object of the invention is to provide an improved child-resistant actuator assemblage as above characterized, which is especially simple in its construction, economical to fabricate and assemble, and especially effective in preventing unauthorized operation while at the same time not increasing to any appreciable extent the difficulty which a knowledgeable person would have in actuating the device.

The above objects are accomplished by the provision of a combined, jumbo-type two-piece overcap having the appearance of a single piece while still being capable of separation so as to reveal the actuator button, a latching-type spray button having a lateral arm with a release finger piece and a hook portion adapted to latch over the existing annular shoulder of the aerosol container, together with a notched obstructing portion of the separable base of the overcap which acts to prevent latching of the button for all rotative positions of the base except a single one which requires careful attention to align a notch of the base with the hook portion of the button. When such alignment is effected, the button can be latched and unlatched readily in the usual manner. However, for all other random rotative positions of the screw base, the button cannot be latched in the discharging position. In an alternate embodiment, discharge of the dispenser is completely prevented unless the screw base is first turned to a predetermined rotary "release" position with respect to the actuator button. The captive screw base and the cooperable overcap dome are readily molded of plastic substance without difficulty, it being merely necessary to additionally provide the clearance notch in the base where none previously existed. Fabrication and assembly are thus economical and quick.

Still other features and advantages will hereinafter appear.

In the accompanying drawings, illustrating one embodiment of the invention:

FIG. 1 is a side elevational view of a child resistant aerosol dispenser as provided by the invention.

FIG. 2 is a view partially in vertical axial section and partially in elevation of the upper portion of the dispenser.

FIG. 3 is a top plan view of the dispenser, but with the over-cap dome portion removed.

FIG. 4 is a top plan view of the captive screw collar of the dispenser.

FIG. 5 is a bottom plan view of the captive screw collar.

FIG. 6 is a top plan view of the aerosol container per se.

FIG. 7 is a bottom plan view of the dome portion of the over-cap, and

FIG. 8 is a bottom plan view of the latching type actuator button.

FIG. 9 is a view like FIG. 2, except illustrating a modified child resistant aerosol dispenser constituting another embodiment of the invention.

As shown, the dispenser comprises a pressurized container **10** having a usual type of crowned top closure portion **12** to which there is attached a circular valve mounting cup **14** carrying a discharge valve (not shown) having a projecting valve stem **16**, all of usual construction. The valve mounting cup **14**, when assembled to the crowned closure **12**, results in an annular under shoulder **18** of a well known type.

In accordance with the invention there is provided on the pressurized container above described a novel combination safety jumbo-size overcap, and a latching-type valve actuator button in conjunction with a unique safety-lock or obstruction for the latter, all for the pur-

pose of increasing the difficulty of operation of the dispenser for unauthorized persons, especially children of tender years.

The jumbo-size overcap is constituted of two pieces, a somewhat flat screw base or collar **20** which carries an inverted domelike cap portion **22** in such a manner that these two appear as a single molded piece incapable of separation. The base **20** has an annular, upwardly-facing recess **24** in which the bottom rim **26** of the dome portion **22** is received, and such rim is provided with internal screw threads **28** cooperable with exterior screw threads **30** in the inner wall of the annular recess **24.** By such arrangement, the dome portion **22** can be assembled to the base **20** by screwing it onto the latter or removed from the base by a simple unscrewing operation, both requiring that the base be held against turning while the dome portion is turned or twisted.

The screw base **20** has a large central opening **32** whereby it is in the form of a collar. The lower edge of the opening **32** is rounded as indicated at **34,** so that it can be forced downwardly over and past the flange or periphery of the valve mounting cup **14,** to the position indicated in FIG. **2.** After the collar **20** has been thus assembled, it is held captive on the upper portion of the dispenser while being freely turnable and having a sloppy fit therewith. The sloppy fit and freely-turning nature of the mounting gives persons the impression that there are no cooperable screw threads involved, since normally screw threads do not permit a great deal of slop. Thus, an unauthorized person would be somewhat deceived with respect to the presence of screw threads, due to the extremely loose fit of the base **20.**

The valve stem **16** of the dispenser has a latching-type actuator button **36** provided with a top discharge orifice **38,** and with a sloping projection **40** adapted to have finger pressure applied to it. Opposite the projection **40** the button **36** has a resilient, laterally extending arm **42** provided with downwardly extending hook portion **44** and with a finger piece **46** constituting an upwardly projecting extension of the hook portion **44.**

When the button **36** is dislodged laterally or tilted by pressure applied to the projection **40,** the hook portion **44** is able to latch under the shoulder **18** of the valve mounting cup **14** as illustrated by the broken outline in FIG. **2.** However, in accordance with the present invention such latching is, for most of the rotative positions of the collar **20,** prevented by the provision of an upstanding circular bead **50** on the collar, which extends in close proximity to the outer periphery of the valve mounting cup **14.**

Also, as provided by the invention, the screw collar **20** is provided with a clearance notch **52** in its inner periphery, which is so arranged that when aligned with the arm **42** of the button and the hook portion **44** thereof, no obstruction will be presented to the hook portion and therefore the button **36** can be fully tilted and held in the discharging position by latching of the hook **44** under the annular shoulder **18.** This requirement for turning the collar **20** to align the notch **52** with the latching arm **42** presents additional difficulty to unauthorized persons or young children, while at the same time it represents no increased difficulty whatsoever to a person who is knowledgeable with respect to the function of the notch. The aligning of the notch with the latching arm must be carefully carried out, however, and maintained while the button is being actuated to the latching position, since the width of the notch **52** is not much greater than the width of the hook portion **44** of the button. Thus, there is minimized any incidental alignment of the notch with the hook, which could otherwise defeat the purpose of the collar **20** (as for example, if the notch **52** were appreciably wider than the button hook portion).

From the foregoing it will now be understood that an additional manipulation is required of persons desiring to use the dispenser, such additional manipulation representing increased difficulty if the person is unauthorized or not knowledgeable, as for example, a child of tender years. The first operation requires the grasping of the screw base **20** and the twisting or unscrewing of the dome portion **22** of the overcap. The next operation requires the precise placement or turning of the screw base to align the notch **52** with the latch portion **44** of the button **36.** Finally, the last operation requires holding the very loose collar **20** still so as to maintain such alignment while tilting the button **36** by applying finger pressure to the projection **40** so as to latch the hook **44** under the annular shoulder **18** of the valve mounting cup **14.** All of the foregoing required operations represent obstacles to the operation of the dispenser by a young or unauthorized person, each contributing to the overall difficulty presented the erstwhile user. The fabrication of the two-piece overcap with the notch **52,** and the fabrication of the latching button **36** can be readily, economically carried out in relatively simple molds, and the assemblage of the parts can be easily and quickly effected. The safety value of the combination is greater than that of an assemblage wherein no obstruction is presented to tilting of the button **36,** or wherein there is not required any precise rotative positioning of the screw base **20** to permit tilting of the actuator button.

Another embodiment of the invention is illustrated in FIG. **9,** wherein like reference numerals designate parts similar to those of the first embodiment. A modified collar **20***a* is shown, being turnably carried on the crowned top closure portion **12** of the container **10** and having a central opening with a rounded annular shoulder **34** which is forced past the curl of the valve cup **14** during assembly. The collar **20***a* is thus retained and held captive on the container **10** by means of the under shoulder **18.** An upwardly facing annular recess **24***a* has external screw threads **30***a* which are engaged by the corresponding internal screw threads **28** of the cap portion **22** when the latter is assembled to the container in the manner of FIG. **1.**

As provided by the invention, the collar **20***a* has a relatively high upstanding bead **50***a* surrounding the cup **14,** the bead having a clearance notch **52***a* to receive the hook **44** of the arm or control portion **42** of the actuator button **36** when the collar is properly oriented. It is seen that the bead **50***a* thus constitutes an annular abutment shoulder which, together with the annular surface formed by the top of the valve mounting cup curl **14,** interferes with even slight downward and outward movement of the hook **44** and thus prevents any significant tilting of the button **36** or valve stem **16.** It is noted that the bead **50***a* in FIG. **9** is substantially higher than the bead **50** of FIG. **2.** By such an arrangement, discharge of the dispenser is completely prevented for all rotary positions of the collar **50***a* except where the notch **52***a* is aligned with and can receive the hook **44** when pressure is applied to the finger piece **40** by the user. It has been found that small children are

unlikely to comprehend the combined operations necessary to use this dispenser, namely, first unscrewing the cap with one hand while holding the collar **20***a* stationary with the other, and second, turning the collar to a position wherein the notch **52***a* is aligned with the hook **44.** It is intended that the above construction be employed with a suitable tilt-type valve rather than one of the axial-movement type, for reasons which are readily apparent. With the collar disposed in a suitable position, the button **36** may be tilted a limited extent to effect momentary discharge of the dispenser, or may be latched as illustrated in FIG. **2,** for effecting a continuous or prolonged discharge, as required.

Variations and modifications are possible without departing from the spirit of the invention.

I claim:

1. An aerosol dispenser comprising, in combination:

a. a pressurized container having a tilt-type discharge valve provided with a protruding tiltable valve stem, and having a valve mounting cup carrying said valve and stem,

b. said cup having an annular exterior shoulder provided with an undercut,

c. an annular collar surrounding said cup and turnable thereabout,

d. an orificed actuator button carried by the valve stem,

e. said button having a laterally extending hook which is adapted to latch under the shoulder of the cap when the button is laterally displaced to tilt the valve stem for discharge,

f. said collar having inner peripheral portions adapted to engage and obstruct said hook so as to prevent discharging movement of the button,

g. said collar having a recess in it, adapted to register with and receive said hook when the collar is suitably turned, whereby the obstructing action of the collar is obviated.

2. A dispenser as in claim **1,** and further including:

a. an overcap, and

b. concealed thread means removably mounting the overcap on the collar,

c. said collar having an accessible finger grip adapted to be grasped to prevent its turning when the overcap is unscrewed for removal.

3. A dispenser as in claim **2,** wherein:

a. the collar has a sloppy fit under the shoulder of the cup, enabling it to be canted as well as turned, thereby suggesting removal of the overcap by an action other than turning.

4. A dispenser as in claim **2,** wherein:

a. the collar has an annular groove in its top, extending along the outer periphery of the collar,

b. said overcap having a bottom rim adapted to extend into said groove.

5. A dispenser as in claim **4,** wherein:

a. the concealed thread means comprises internal threads in the bottom rim of the overcap, and external threads disposed in the annular groove of the collar.

6. A dispenser as in claim **5,** wherein:

a. the outer peripheral portion of the collar has knurling and has a smooth circular shoulder disposed above the knurling and adapted to extend closely adjacent the exterior surface of the overcap, thereby to give the appearance of constituting an integral part of the overcap.

7. A dispenser as in claim **1,** and further including:

a. a finger piece on said hook, engageable by the fingers to stress the hook for releasing the latched hook thereof from the shoulder of the cup.

8. A dispenser as in claim **7,** wherein:

a. the finger piece constitutes a continuation of the hook,

b. said hook being resilient whereby pressure applied to said finger piece causes a displacement of the hook from the cup shoulder.

9. A dispenser as in claim **8,** wherein:

a. a thin section is provided adjacent the hook and finger piece, enabling it to bend readily in response to pressure applied to the finger piece.

10. A dispenser as in claim **1,** wherein:

a. the recess in the collar comprises a notch disposed in the inner peripheral portions thereof.

* * * * *