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Gach

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[54] CHILD PROOF OVERCAP AND ACTUATOR FOR AN AEROSOL CAN

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[73] Assignee: **Sunbeam Plastics Corporation**, Evansville, Ind.

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[52] **U.S. Cl.** **222/153**, 222/182, 222/402.11

[51] **Int. Cl.** **B65d 83/14**

[58] **Field of Search**.....222/153, 182, 402.11, 222/402.13, 516

[56] **References Cited**

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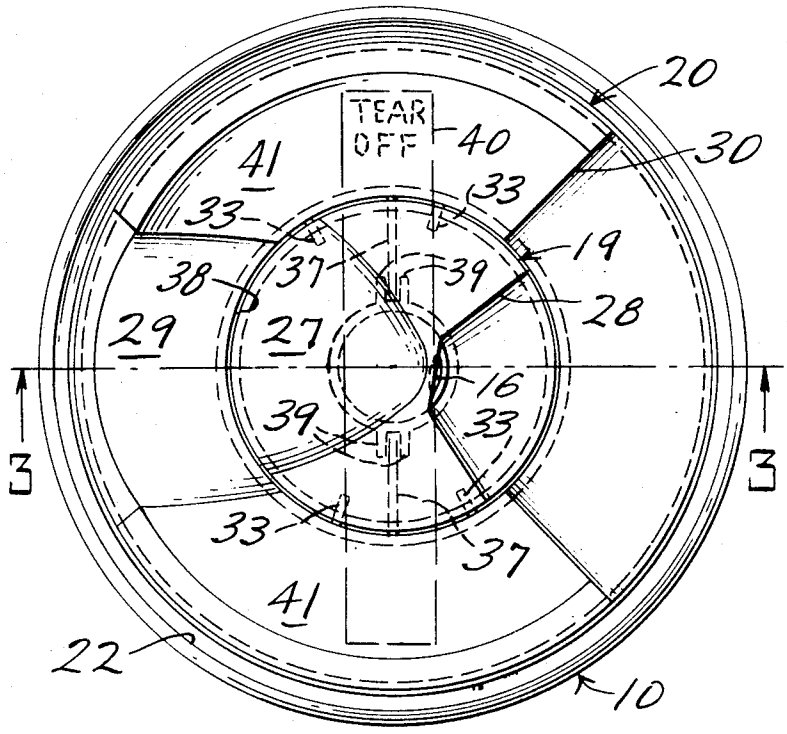
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Assistant Examiner—Larry Martin
Attorney—Carl F. Schaffer, Allen Owen, Henry K. Leonard, et al.

[57] **ABSTRACT**

A child-proof overcap and valve actuator for an aerosol can of the conventional type which has a central valve stem and an annular valve seam at the upper end of the can. The overcap and valve actuator are telescoped and have similarly contoured finger recesses and spray discharge openings extending across their tops. The valve actuator fits over a standard valve button and is rotatable relative to the overcap. The valve can be actuated by pressing down on the actuator to depress the valve button and the valve stem. The actuator and overcap have cooperating elements which prevent depression of the actuator when the two are in one relative angular, "locked" position and resilient means to bias them into the locked position. In order to discharge the contents, the user must rotate the actuator relative to the overcap in order to disengage the cooperating elements. Upon release of the actuator, the resilient means return it to the locked position.

3 Claims, 5 Drawing Figures



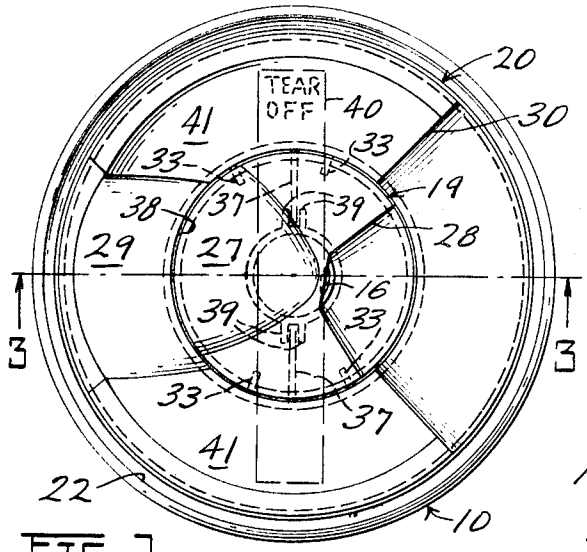


FIG-1-

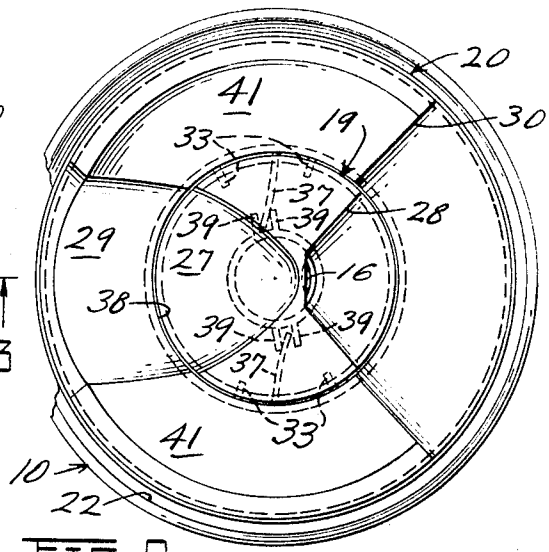


FIG-2-

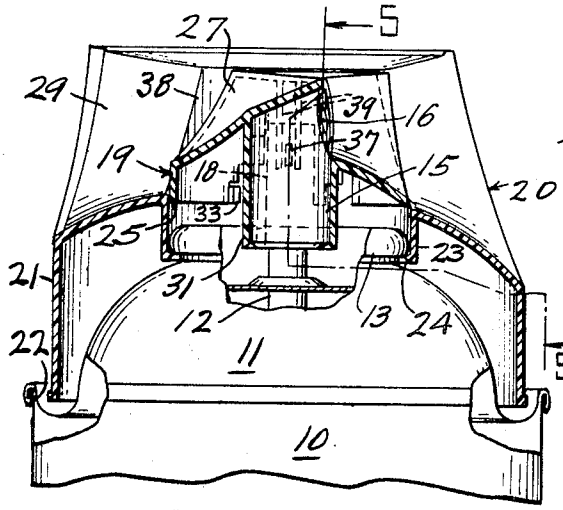


FIG-3-

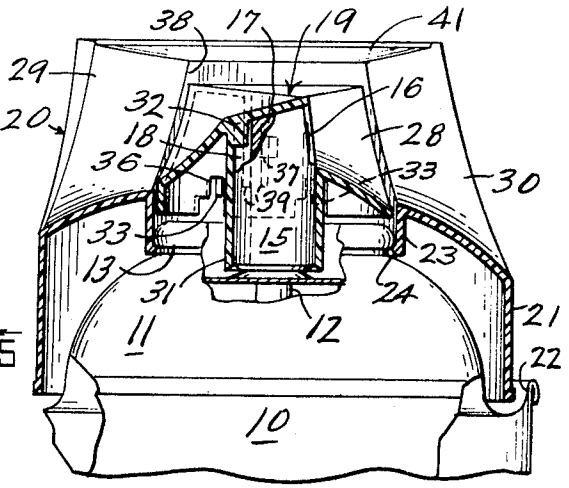


FIG-4-

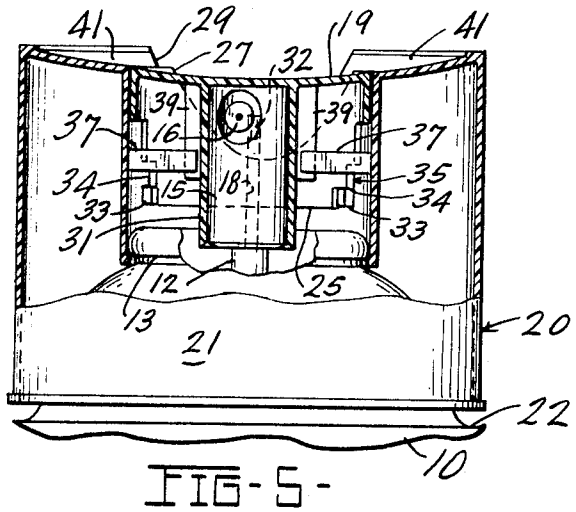


FIG-5-

CHILD PROOF OVERCAP AND ACTUATOR FOR AN AEROSOL CAN

BACKGROUND OF THE INVENTION

Many potentially harmful substances are packaged in pressurized containers, the most common type being the aerosol can which has a central valve stem at its upper end through which the content material is discharged when the valve stem is pressed. The valve is seated in the can by an annular seam concentric with the valve stem. Cans of this type usually are provided with a spray orifice, commonly called a valve button, which the user depresses to allow the contents to be sprayed out of the can, through the valve button and out of a spray orifice at the upper side of the valve button. Some cans have contoured overcaps which cover the valve mechanism and through which the spray button protrudes in order to require that the user's finger be placed in a proper position relative to the valve so that when the discharge takes place, the content material is sprayed away from the user's hand.

Aerosol cans containing harmful materials are particularly dangerous for small children, and for the most part, have not been provided with means which significantly interfere with their actuation by a small child.

Attempts to render aerosol cans child-proof have usually involved the provision of safety overcaps which are difficult to remove and which cover the valve button to prevent discharge of the content when they are in place. However, safety overcaps of this type require that each adult user must be careful to replace the safety overcap in position after each use.

It is therefore the principal object of the instant invention to provide a child-proof overcap and valve actuator for a conventional aerosol can which automatically returns to a locked position after each use and which requires an understanding beyond the capabilities of a small child in order to be put into unlocked position.

It is yet another object of the instant invention to provide a child-proof overcap and actuator for an aerosol can which can be placed upon any conventional aerosol can without requiring either a special design or special manufacturing steps for the can itself or manual assembly of the overcap and actuator on the can.

It is yet a further object of the instant invention to provide a child-proof overcap and valve actuator for a conventional aerosol can which will automatically return to locked position when not in use and which can be simply provided with a removable tape or the like to render the can tamper-proof prior to initial usage.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a horizontal plan view of an overcap and actuator embodying the invention in its "locked" position;

FIG. 2 is a view similar to FIG. 1 but showing the overcap and actuator in "unlocked" position;

FIG. 3 is a fragmentary vertical sectional view taken along the line 3—3 of FIG. 1;

FIG. 4 is a view similar to FIG. 3 but taken along the line 4—4 of FIG. 2; and

FIG. 5 is a fragmentary vertical sectional view taken along the line 5—5 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A conventional aerosol can **10** has a protruding breast portion **11** and a discharge valve **12** which is attached to the breast portion **11** by an annular seam **13.** The valve **12** has a valve stem **14** which extends upwardly in axial relation to the can **10,** the stem **14** being tubular so that when it is depressed, i.e., moved axially relative to the can **10,** the contents of the can are discharged through the stem **14.** In a conventional aerosol can, a valve button **15** is telescoped over the end of the stem **14.** The valve button **15** has a central tubular opening which connects with a horizontal spray orifice **16** out of which the content material is discharged when the button **15** and valve stem **14** are depressed. The valve button **15** has an inclined top **17** and a vertical slot **18** in its body located 180° away from the spray orifice **16.**

According to the invention, the valve button **15** is covered by an actuator generally indicated by the reference number **19** which is vertically movable relative to an overcap generally indicated by the reference number **20.** The overcap **20** has an outer cylindrical skirt **21** which extends into a groove **22** where the breast portion **11** is connected to the can **10.** The overcap **20** also has an inner annular skirt **23** of such size as to be adapted to fit tightly around the annular seam **13** and which has an inwardly extending rim **24** at its lower edge to retain the overcap **20** on the can **10.**

The valve actuator **19** has a circular lower edge **25** of such size as to fit into the overcap skirt **23.** The actuator **19** also has a top **26** in which is molded a finger groove **27** and at one side of which there is provided a flared discharge opening **28.** The finger groove **27** and the discharge opening **28** of the actuator **19** are contoured to blend in with a finger groove **29** and a discharge opening **30** of the overcap **20.**

The actuator **19** also has a central tubular element **31** of such diameter and length as to telescope completely over the valve button **15** so that pressure on the actuator **19** is delivered directly to the valve button **15.** A key **32** (FIG. **4**) is formed at the upper inner corner of the element **31** for engagement in the valve button slot **18** in order to orient the actuator **19** relative to the valve button **15** so that when the actuator **19** is telescoped over the valve button **18,** the finger groove **27** will be at the side of the actuator **19** opposite the discharge orifice **16.**

Referring now to FIGS. **1** and **2** it will be observed that in FIG. **1** the actuator **19** is angularly misaligned with the overcap **20** so that the centerlines of their respective finger grooves **27** and **29,** as well as the centerlines of the respective discharge openings **28** and **30,** are not in alignment. In FIG. **2** however, it will be seen that the centerlines of these respective elements of the actuator **19** and the overcap **20** are aligned with each other. FIG. **1** illustrates the "locked" position and FIG. **2** illustrates the "unlocked" position. Similarly, FIGS. **3** and **4,** respectively, correspond to FIGS. **1** and **2.**

Depression of the actuator **19** is prevented when it is in the position of FIGS. **1** and **3** by the engagement of lugs **33** formed on the inner surface of the inner overcap skirt **23** in lower steps **34** (FIG. **5**) of stepped notches **35** cut or molded into the wall of the actuator **19.** When the actuator **19** and the overcap **20** are positioned as shown in FIGS. **1** and **3,** the engagement of

the lugs 33 and the steps 34 holds the actuator 19 up and it cannot be depressed until the actuator 19 and overcap 20 have been angularly rotated relative to each other into the position illustrated in FIGS. 2 and 4. In this position, the lugs 33 are vertically aligned with upper steps 36 of the notches 35 and the overcap 19 may be depressed to push the valve button 15 downwardly in order to discharge material from the can.

The actuator 19 is biased toward the position of FIGS. 1 and 3, that is toward locked position, by radially inwardly extending leaf springs 37 formed on or secured to the inner sides of a well-like surface 38 above the inner skirt 23 of the overcap 20 and engaged between respective pairs of ribs 39 formed on the outer surface of the tubular element 31 of the actuator 19. The springs 37 are accommodated by the notches 35 so that the actuator 19 may move vertically relative to the overcap 20 when the two are in their aligned position as illustrated in FIGS. 2 and 4.

When an adult or older child observes the actuator and overcap embodying the invention in the position illustrated in FIGS. 1 and 3, it is quite apparent that the finger grooves of both should be aligned in order to discharge content material. This is readily accomplished by an adult or older child who can then depress the actuator 19 because of the disengagement resulting from the angular rotation into alignment. Immediately after release of the actuator 19 from its discharge position as illustrated in FIGS. 2 and 4, the bias of the two leaf springs 37 returns the actuator to the position of FIGS. 1 and 3 and the actuator and overcap are again locked against actuation by a young child.

There is also shown in broken lines in FIG. 1 how an actuator and overcap embodying the invention may be made tamperproof by the mere addition thereto of a restraining strip 40 of strong tape. The tape 40 is laid across the top 26 of the actuator 19 and, at least in part, on adjacent segmental portions 41 of the overcap 20 which lie adjacent corresponding portions of the top 26 of the actuator 19 and at approximately the same level.

The presence of the tape strip 40 prevents a purchaser in a supermarket or the like from rotating the actuator 19 into unlocked position in order to depress it and to "sample" the contents of the aerosol can so equipped.

Having described my invention I claim:

1. A child-proof overcap and valve actuator for an aerosol can having a central valve stem and annular valve retaining seam, in combination,

said actuator having a central tube adapted to telescope over a conventional valve button having a cylindrical exterior and a horizontal discharge orifice,

means on said actuator for engagement with the button for relative angular orientation thereof,

said actuator having a circular base, generally radially extending finger recess in its top and a spray opening in one side radially aligned with said recess and with the discharge orifice of said button, when telescoped thereover,

said overcap having an inverted, generally cup-shaped body with a tubular outer skirt and a concentric central opening defined by a central annular skirt adapted to circumjacently embrace the base of said actuator,

retainer means on said central skirt for engagement with the seam on said can,

said overcap having diametrically aligned finger and spray guide recesses intersecting the central opening therein and of contour blending into the contour of the finger recess and spray opening in said actuator,

means on said overcap and said actuator for retaining said actuator in the central opening of said overcap and providing for relative angular rotation therebetween,

cooperating elements on said overcap and said actuator engageable in one relative angular position thereof for preventing movement of said actuator downwardly relative to said overcap and said can for locking said valve against actuation,

and resilient means operative between said overcap and said actuator biasing said actuator relative to said overcap into such one relative angular position for normally locking said valve.

2. An overcap and actuator according to claim 1 in which the cooperating elements on said overcap and actuator are inwardly extending lugs on the wall of the central opening of said overcap and stepped vertical notches in the edge of the base of said actuator.

3. An overcap and actuator according to claim 1 in which the resilient means are on the concentric inner wall of the central opening of said overcap and outer wall of the central tube of said actuator and comprise at least one, radially extending, spring-like finger on one of said concentric walls and a recess on the other of said concentric walls in which said finger is engaged when said overcap and actuator are in telescoped position.

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