United States Patent [19]

Sette et al.

[11] **3,729,119**

[45] **Apr. 24, 1973**

[54] **CHILDPROOF OVERCAP WITH HORIZONTAL SPRAY**

[75] Inventors: **James J. Sette**, Morristown; **Neil Nix**, River Edge, both of N.J.

[73] Assignee: **Sterling Drug Inc.**, New York, N.Y.

[22] Filed: **May 11, 1971**

[21] Appl. No.: **142,316**

[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

[56] **References Cited**

UNITED STATES PATENTS

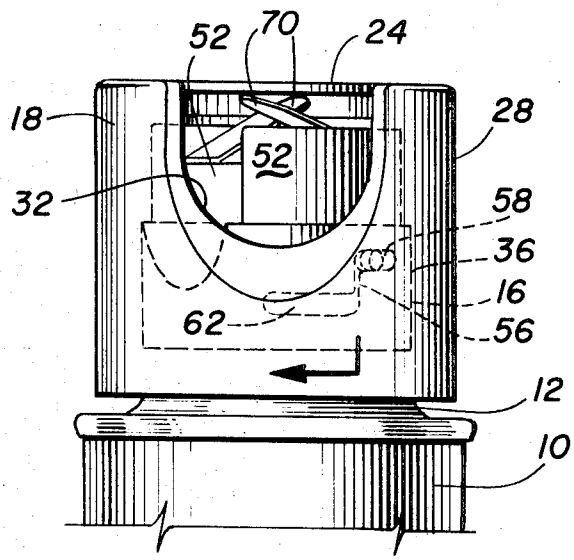
3,185,350	5/1965	Abplanalp	222/402.11
3,305,179	2/1967	Lehmann	222/182 X
2,703,665	3/1955	Soffer et al.	222/402.11

Primary Examiner—Robert B. Reeves
Assistant Examiner—Thomas E. Kocovsky
Attorney—Charles R. Fay

[57] **ABSTRACT**

An aerosol having a captive safety overcap which must be rotated, axially depressed, and once again rotated, with respect to the aerosol, to allow operation of the conventional button for actuating the aerosol valve. The overcap is provided with an opening which in the safety position is misaligned with respect to a button access opening in an inner cap, but when turned, depressed, and turned again, the openings are aligned so that a finger may be inserted and the valve button depressed for operating the aerosol.

10 Claims, 14 Drawing Figures



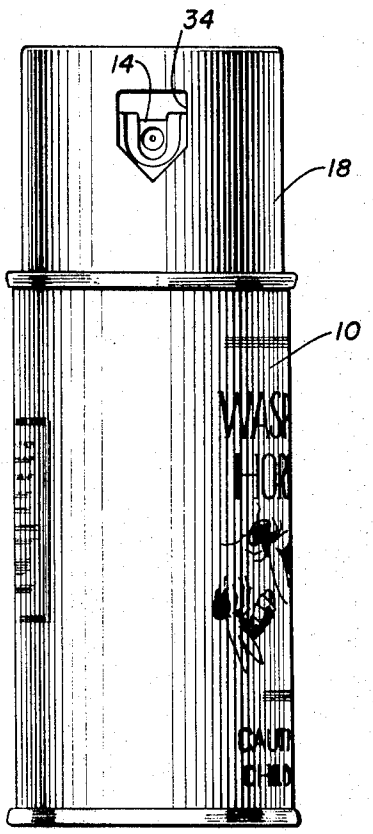


FIG. 1

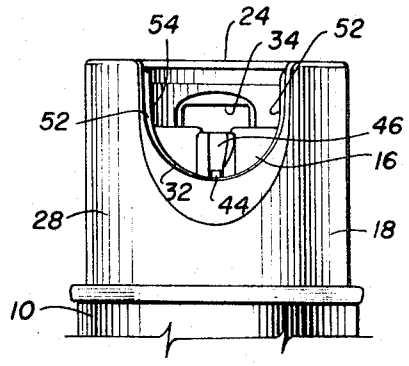


FIG. 2

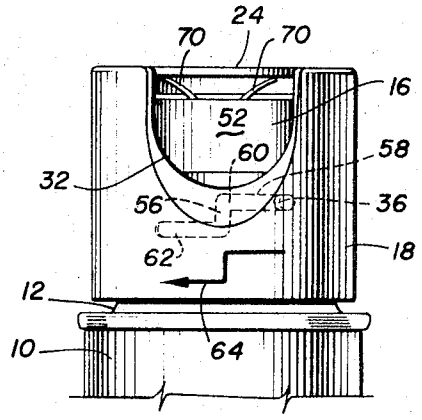


FIG. 3

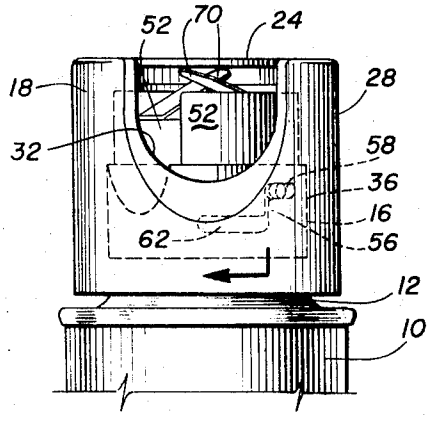


FIG. 4

JAMES J. SETTE
NEIL NIX
INVENTORS.

BY Charles R. Fay, atty.

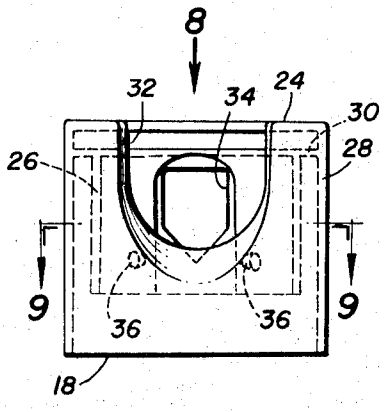


FIG. 5

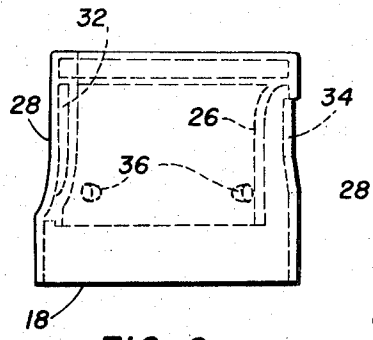


FIG. 6

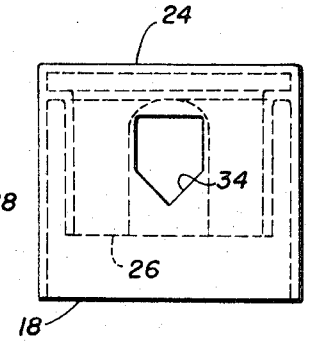


FIG. 7

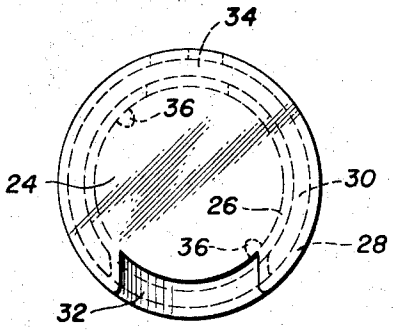


FIG. 8

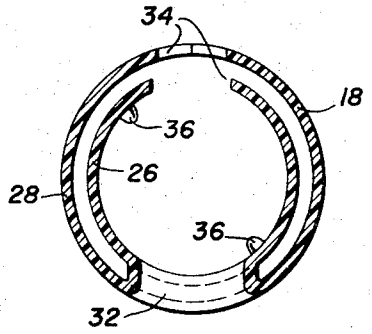


FIG. 9

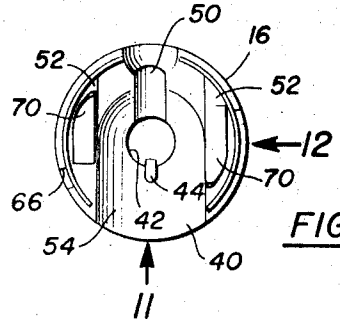


FIG. 10

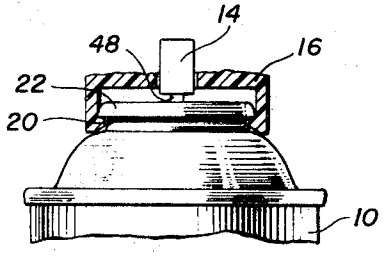


FIG. 14

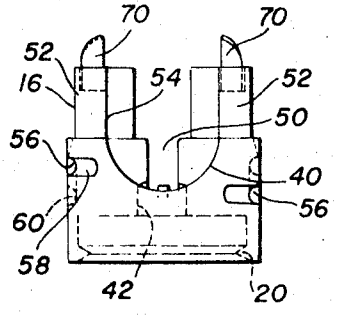


FIG. 11

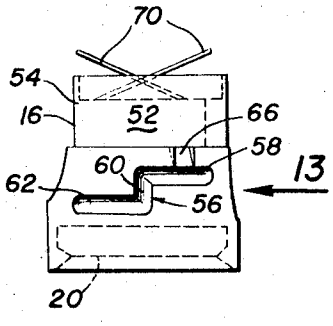


FIG. 12

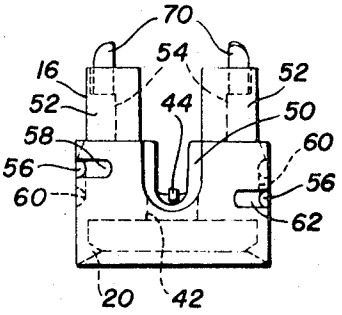


FIG. 13

CHILDPROOF OVERCAP WITH HORIZONTAL SPRAY

BACKGROUND OF THE INVENTION

The need for preventing the accidental or authorized opening of poison bottles by children has long been recognized and many solutions to the problem have been offered. However, in the field of aerosols, the problem is more difficult because aerosols are easily actuated merely upon depressing or tilting a stem or button manually, and this is done by even very young children who may not understand that the aerosol content may be of possible danger. It is the principal object of the present invention to provide an aerosol with a captive safety cap providing barriers to actual digital access to the button unless and until the overcap is manipulated in a certain tortuous manner not easily apparent to children but convenient to operation by older persons.

SUMMARY OF THE INVENTION

An aerosol is provided in which a depressible or tiltable valve actuator button projecting through an inner cap is provided with means to prevent it from rotating so that it will spray in one direction only. To either side of this button, on the inner cap, there is provided an abutment, one at each side of the button. The abutments are spaced and of a shape to allow the insertion of a finger therebetween to actuate the button and they also provide an angled area for the spray to exit from the orifice in the button arranged for this purpose. Each abutment has at its upper portion a spring-like member which bears upon the base of the captive safety overcap and normally holds it in inoperative position. In addition the abutments provide circumferential exterior surfaces for the reception of control slots or grooves each comprising: a first groove portion which is circumferential and terminates in an axial portion which extends a short distance and leads into another circumferential portion.

The overcap itself is provided with inner and outer shells, the inner shell having inwardly directed projections thereon engaging the control slots or grooves and the overcap being thereby made captive to the abutments, the inner cap being in turn captive with respect to the aerosol itself. However the captive safety overcap may be turned as guided by said grooves as above described. The overcap has an opening which is aligned with an abutment at the safety position of the overcap, but upon being turned, depressed, and turned again, is aligned with the space between the abutments in the operational position thereof, wherein a finger can be inserted through the overcap to actuate the button. This is not achieved until the overcap has been turned throughout its entire range as defined by the combination groove.

Therefore it will be seen that in order to operate the aerosol by the finger it is necessary to turn the captive safety overcap through a tortuous path as defined by the control grooves, and this is not within the capability of a small child but is easily accomplished by an older person.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in elevation of the spray aspect of the aerosol in operative condition;

FIG. 2 is a view in elevation of the digital access to the spray button;

FIG. 3 is a view similar to FIG. 2 but showing the aerosol in inoperative position;

FIG. 4 is a view similar to FIG. 3 but showing the safety overcap in an intermediate position of rotation;

FIG. 5 is a view in elevation of the overcap per se looking at the digital access opening;

FIG. 6 is a side view thereof;

FIG. 7 is a view similar to FIG. 5 but looking at the spray opening;

FIG. 8 is a top plan view of the overcap looking in the direction of arrow 8 in FIG. 5;

FIG. 9 is a section on line 9—9 of FIG. 5;

FIG. 10 is a plan view of the inner cap;

FIG. 11 is a view in elevation of the inner cap looking in the direction of arrow 11 in FIG. 10;

FIG. 12 is a similar view looking in the direction of arrow 12 in FIG. 10;

FIG. 13 is a view in elevation of the inner cap showing the spray aspect thereof and looking in the direction of arrow 13 in FIG. 12; and

FIG. 14 is a detail view showing the connection of the inner cap to the dome of the aerosol.

PREFERRED EMBODIMENT OF THE INVENTION

A more or less conventional aerosol container 10 with the usual dome 12 and button 14 for actuating the usual valve is provided with an inner cap 16 and an overcap 18. The inner cap is fixed to the dome by any kind of convenient fastening or may be frictionally held thereto by means of an inwardly directed ridge 20 that snaps over and grips the usual crimp 22 on the dome 12, see FIG. 14.

The overcap has a base 24 and as shown, may consist generally of two concentric spaced shells, an inner shell 26 and an outer shell 28, these shells being interconnected e.g., by an annular ring 30. Both inner and outer shells are interrupted to form a finger access opening 32 at one side and a spray exit opening 34 diametrically opposite. The shells may be joined together also as shown in FIG. 9 as to the finger access opening or they may be separate in these areas if desired, as shown as to the spray opening, also shown in FIG. 9. The inner surface of the inner shell 26 closely approaches the outer surface of the inner cap 16 and this inner shell is of lesser length than the outer shell. At the inner surface of the inner shell there are a pair of diametrically opposite, inwardly directed projections 36, for a purpose to be described. Both the inner and outer caps may be conveniently molded of plastic.

The inner cap 16, FIGS. 10 – 13, is generally cylindrical in its lower portion and is fixed to the crimp 22, as described, and above the ridge 20 it has a floor 40 that may be concave, FIG. 11, with a hole 42 in it through which button 14 projects. A nib 44 on the floor 40 extends into a vertical groove 46 in the button keeping the button from turning on its stem 48, FIG. 14, so that the spray must proceed along an opening or passage 50 between a pair of upright abutments 52, rising from floor 40 and extending almost to the periphery of the inner cap. In the area at 54, these abutments are spaced enough to provide access by a finger to button 14 but diametrically, the abutments may be closer together, forming at least in part, spray opening or passage 50.

At opposite external surfaces in the areas of the abutments, the inner cap has a control guide or cam groove **56** which receives the projections **36**. Each control groove includes a circumferential portion **58**, an axial portion **60** at one end of portion **58**, and another circumferential portion **62**, these three groove portions forming the entire groove **56** in each case. This locks the overcap **18** to the inner cap **16**, and allows a tortuous path, as at **64**, that the overcap may have relative to the inner cap, and the overcap is limited to this path. Small slots **66** may be utilized to assemble the two caps, and these slots may then be treated to prevent disassembly. The overcap can also be snapped over the inner cap when made of material sufficiently resilient.

At their upper ends the abutments mount springs **70** that bear at all times on the undersurface of the overcap base **24**, tending to lift the overcap relative to the inner cap.

FIG. **3** shows the overcap in safety position wherein the aerosol is inoperative because an abutment **52** is aligned with the finger access opening **32** in the overcap. The other abutment is aligned with the spray opening **34**. Projection **36** is at the extreme end of groove portion **58**, but it is possible to rotate the overcap in a clockwise direction until the axial groove portion is reached by the projection. No further rotation may now be made unless and until the overcap is depressed against the action of the springs **70**. FIG. **4** shows the relation of the parts when projection **36** is in the axial groove portion **60**, and it will be seen that the abutment has partially cleared the finger access opening but not nearly enough to allow operation of the button.

Further rotation to substantially fully clear the finger access opening is only possible when the overlap is depressed and projection **36** aligns with groove portion **62**, but upon such depression, the rotary action can be completed and a finger can be inserted between the abutments and the button depressed to actuate the usual valve in dome **12**. At this time the spray openings are also aligned, FIG. **1**. To render the aerosol safe, it is merely necessary to return the overcap to its original position.

We claim:

1. The combination with an aerosol having a movable button for operating the valve thereof and means restricting the direction of the spray,

an inner cap fixed with respect to the aerosol and including a pair of spaced abutments located laterally of and rising outwardly beyond the button in an axial direction, said cap having a limited finger access opening to said button between the abutments,

in combination with a captive safety overcap, spring means exerting a resilient pressure on the overcap in an axial direction, means providing for a partial rotational and axial motion of said overcap relative to said inner cap and the button, said overcap having a finger access opening in a wall thereof and a safety position wherein the overcap covers and protects the finger access opening in the inner cap so that manual access to said button for operating the same is blocked, said overcap having another rotative position wherein said opening aligns with the finger access opening in the inner cap for access to said button for operation thereof,

and means restricting the overcap to the partial rotative and axial path only between said safety position and the operative position.

2. The combination of claim **1** wherein said means providing for a partial rotational and axial motion of the overcap comprises a control groove on one cap and a cooperating projection on the other cap, the projection being in the groove.

3. The combination of claim **1** wherein the means providing rotational and axial motion of the overcap comprises a control groove in one cap including a pair of circumferential groove portions offset from each other axially with respect to the aerosol, and a passage connecting said grooves, and a projection on the other cap in the groove.

4. The combination of claim **1** wherein the means providing rotational and axial motion of the overcap comprises a control groove on the exterior wall of the inner cap including a pair of circumferential groove portions offset from each other axially with respect to the aerosol, and a passage connecting said grooves, and an interior projection on the overcap in the groove.

5. The combination recited in claim **1** wherein the safety overcap is provided with a spray opening in a wall thereof diametrically opposite the finger access opening, the overcap normally blocking the spray opening when the safety cap is in safety position, the spray opening in the safety overcap being aligned with respect to the space between the abutments when the overcap is turned to operative position.

6. The combination of claim **1** wherein the means providing for partial rotational and axial motion of the overcap relative to the inner cap comprises a control groove on one cap and means on the other cap in the groove, said groove comprising:

a. an initial circumferential portion connected to,

b. an axial portion connected to,

c. a final circumferential portion axially spaced from the initial portion.

7. The combination of claim **6** wherein the circumferential portions are parallel.

8. The combination of claim **6** wherein the circumferential portions are in prolongation of each other.

9. In combination with an aerosol having a button actuated valve to release the aerosol contents in spray form in a predetermined direction,

of an inner cap including an abutment at each side of the button, said abutments defining a diametrical opening through which the spray emerges at one end, the finger of the operator being receivable at the other end, a spring on each abutment,

each of said abutments being provided externally with a partial circumferential groove, each groove including portions axially spaced with respect to the overcap and a generally axial passage from one groove portion to the other,

of a safety captive overcap, said overcap having a projection in said groove for guidance and holding of the overcap thereby, said overcap being partially rotatable as limited by the grove,

means on the overcap preventing access to said valve operation button when the overcap is in a rotative position wherein the projection is in one groove portion, and an opening in the overcap providing for digital access to said button at another rotative position of the overcap.

10. The combination recited in claim 9 wherein said safety overcap comprises a cylindrical outer shell and a connected cylindrical inner shell, the projection being on the inner shell, there being means for passage of the spray in both shells and the digital access opening extending through both walls.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,729,119 Dated April 24, 1973

Inventor(s) James J. Sette and Neil Nix

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

The heading should be changed to read as follows:

James J. Sette, Morristown, and Neil Nix, River Edge, both of N. J., said Neil Nix only, assignor to Sterling Drug, Inc., New York, N. Y.

Column 3, line 36 (specification, page 6 line 17), "when the overlap is" should read -- when the overcap is --.

Column 4, line 37 (specification, page 9 line 5), "connected to," should read -- connected to --.

Column 4, line 38 (specification, page 9 line 6), "connected to," should read -- connected to --.

Signed and sealed this 5th day of March 1974.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334

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