

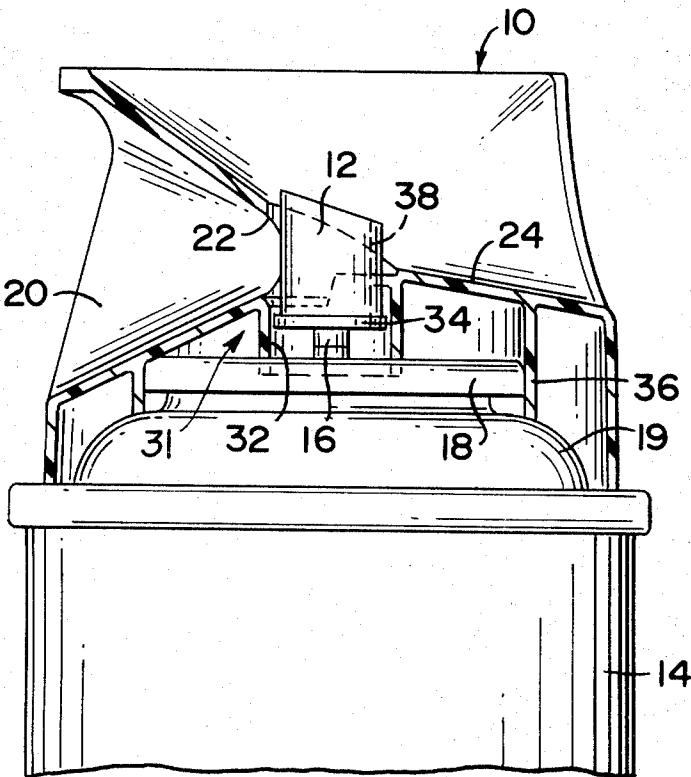
[54] **SPRA-MATE OVERCAP**
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[73] Assignee: **Seaquist Valve Company**, Cary, Ill.
[22] Filed: **Aug. 5, 1971**
[21] Appl. No.: **169,256**
[52] U.S. Cl. **222/402.1**
[51] Int. Cl. **B65d 83/14**
[58] Field of Search 222/153, 182, 402-402.25

[56] **References Cited**
UNITED STATES PATENTS
3,231,142 1/1966 McGhie et al. 222/402.13
3,407,975 10/1968 Schroeder 222/402.13

Primary Examiner—Robert B. Reeves
Assistant Examiner—Larry Martin
Attorney—Stein & Orman

[57] **ABSTRACT**
A self-aligning aerosol overcap wherein the central button-receiving orifice includes a Z-shaped step or protrusion formed on the internal wall to control vertical actuation of the button and to avoid “hang-up” of the button on the spray orifice in the overcap. A key on the wall of the receiving orifice projects into a vertical groove in the button to provide automatic orientation of the terminal orifice of the button and the spray orifice in the overcap. This is accomplished by placing the overcap over the button such that the key rests on the top slanted surface of the button. By gravity, the overcap will thereafter slide and rotate relative to the button until the key drops into the vertical groove formed in the button.

4 Claims, 6 Drawing Figures



PATENTED JUN 12 1973

3,738,541

FIG. 1

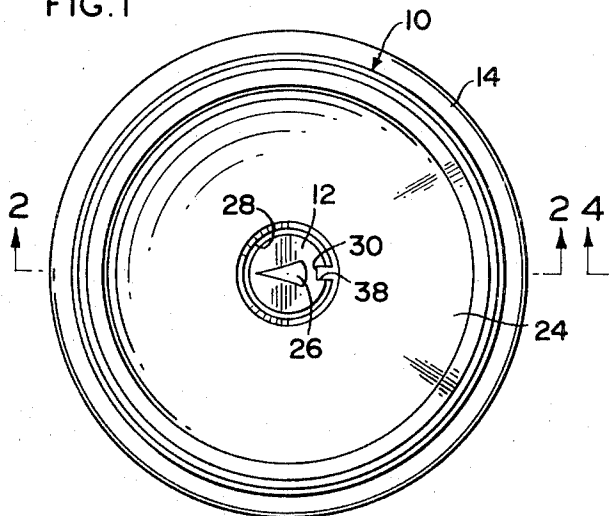


FIG. 3

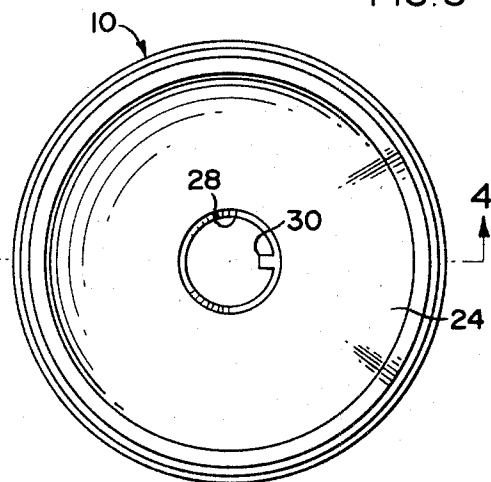


FIG. 4

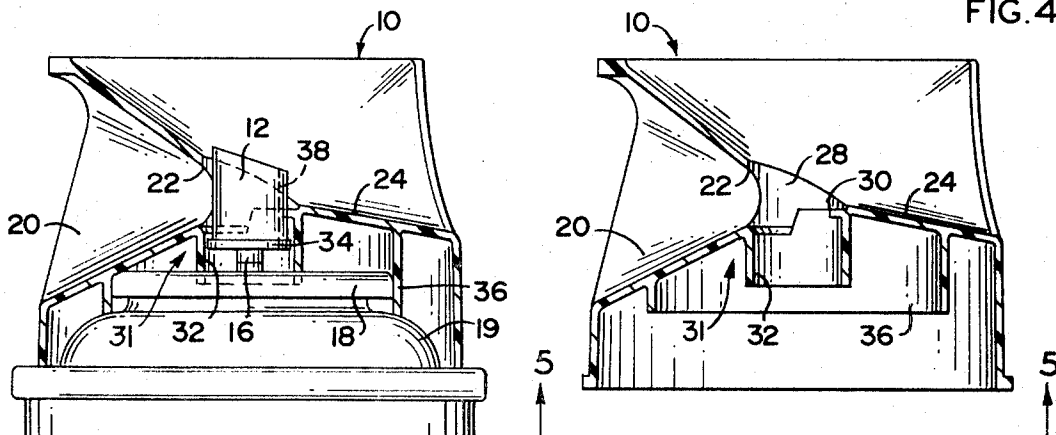


FIG. 2

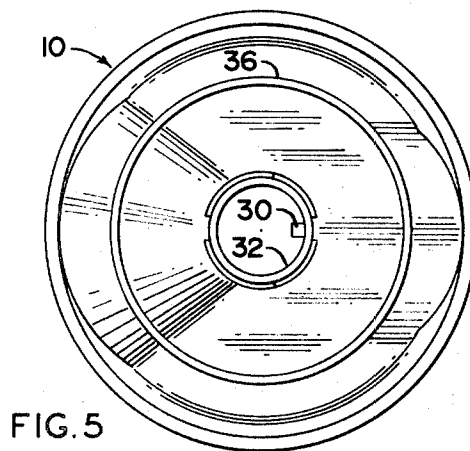
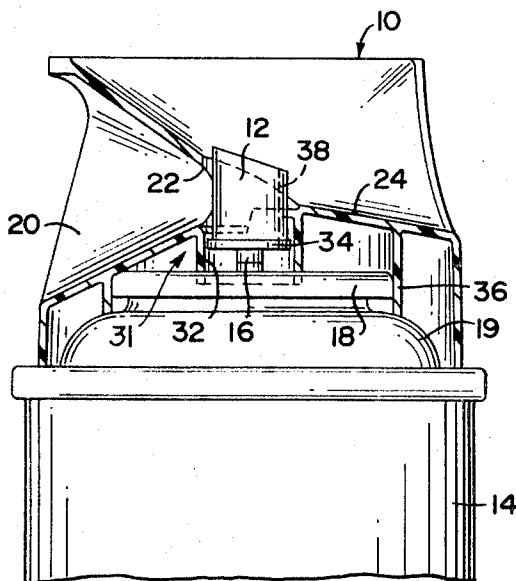


FIG. 5

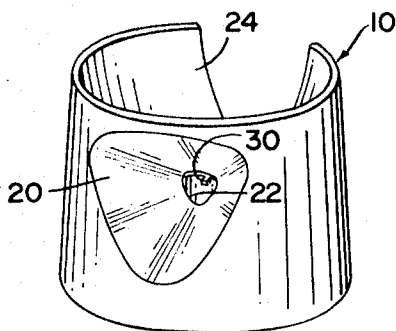


FIG. 6

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SPRA-MATE OVERCAP

BACKGROUND OF THE INVENTION

This invention relates to an overcap-button assembly for an aerosol container and a method of automatic orientation with an added "no-hang-up" feature for the button assembly during its use thereafter.

Recently in aerosol marketing, the use of an overcap with a valve button to improve the appearance of aerosol container to enable stacking, to provide against accidental actuation, to enable the incorporation of pilferproof devices, to guide the consumer in the use of the can and similar reasons, has become quite popular.

While overcaps usually have a configuration which indicates the direction in which the aerosol contents are to be sprayed, they must be aligned with respect to the button. This is usually done prior to being fastened to the container. In the usual method of maintaining alignment, the overcap and button are usually locked together prior to being mounted on the aerosol can.

Techniques for aligning the overcap with the button have been unnecessarily troublesome. They have required integrally molded overcap-button combinations, or extra machinery with attendant increased time to accomplish the alignment. Attempts to improve techniques have been until recently met with little success or substantial benefit. For example, in U.S. Pat. No. 3,407,975 the button has a keyway with an entrance guide and the overcap has a key in its button-receiving opening. When this central opening is placed over the button, the key rests on the top surface of the button. Subsequently, brushes are used to rotate the overcap relative to the button until the key enters the entrance guide which cams the key of the overcap into the keyway aligning and locking the elements together. The overcap is then depressed and clamped to the aerosol container.

If the button of such a structure sprays through the wall of the overcap another problem namely button "hang-up" during assembly or actuation frequently occurs. There seems to be a natural tendency during use to push the button forward as well as downward causing the button to slip forward under the upper edge of the spray orifice. Hence the forward portion of the button "hang-up" causes continued actuation or depression of the button which is obviously undesirable.

SUMMARY OF THE INVENTION

Objectives

An object of this invention is to provide a self-aligning overcap which is quickly aligned with respect to an aerosol dispenser and button without the need of the external rotative forces, such as brushes.

Another object is to provide a self-aligning aerosol overcap in which the cap is automatically aligned to the button without prior pre-orientation.

Still another object is to provide a self-aligning aerosol overcap in which the cap can be quickly and easily aligned merely by placing the cap on the button.

A further object is to provide a self-aligning aerosol overcap which is locked securely to the dispenser when aligned.

A still further object is to provide a self-aligning aerosol overcap wherein the cap may easily be snapped onto the aerosol container after being aligned.

Another object is to provide a self-aligning aerosol overcap wherein the button will not be caught or

"hung-up" on the spray orifice of the overcap during assembly or actuation.

Another object is to provide an economical and highly reliable method of aligning an aerosol overcap and button.

Other objects of the invention will in part appear hereinafter.

Broad Statement of the Invention

In accordance with the previously enumerated objects, the invention comprises an overcap which has a central button receiving opening. A key projects from the upper rear portion of the opening and operatively engages a button having a vertical keyway formed in its side wall. An annular Z-shaped step is formed on the wall of the opening whereby the lower portion thereof maintains cooperative engagement between the keyway and key and the upper portion avoids "hang-up" of the button on a spray orifice in the side wall of the overcap.

In placing the cap on the aerosol container with a valve therein, the cap, without pre-orientation, is placed over the pre-mounted button such that the button is within the central opening. The key rests on the top slanted surface of the button. Because of gravity, the overcap will then slide and rotate down the top surface until the key enters the keyway. The cap and button are then properly aligned. Thereafter, the overcap is depressed, to snap it onto the rim of the mounting cup of the valve of the aerosol container.

In this position the lower portion of the button engages the Z-shaped step preventing wobbling about the vertical axis of the button and at the same time offsetting the forward portion of the button rearward whereby, when actuated, the button will not cross the plane of the spray orifice thereby preventing button "hang-up."

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a top view of the overcap and button of this invention in an aligned position.

FIG. 2 is a cross-sectional view of the overcap and button taken along the lines 2-2 of FIG. 1.

FIG. 3 is a top view of the overcap.

FIG. 4 is a cross-sectional view of the overcap taken along lines 4-4 of FIG. 3.

FIG. 5 is a bottom view of the overcap.

FIG. 6 is a perspective view of the overcap.

Similar reference characters refer to similar parts throughout the several views of the drawing.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings in detail, FIG. 1 illustrates an aerosol cup-shaped overcap 10 and button 12 mounted on an aerosol container 14. Typically the button 12 is shown attached to a valve stem 16 of an aerosol valve. In accord with common practice, it may be removably attached or integral with the valve stem 16. The valve is secured within the mouth of the container

14 by crimped bead 18 on the standard mounting cup 19 usually comprising one part of an aerosol valve.

The face of the overcap contains a spray guide recess 20 with a spray orifice 22 located on the inward end thereof. The top of the overcap contains a finger guide recess 24. The spray guide recess 20 and spray orifice 22 provide an open passageway for dispensed product whereas the finger guide recess provides a saddle support for the finger of the operator, making it easier to depress the aerosol button. This configuration of the spray guide recess 20 and finger guide recess 24 enables a user to quickly ascertain the direction of discharge. To make it even more easy to ascertain this direction, an arrow 26 may be molded on button 12.

To receive the button 12, the overcap 10 is provided with a central button receiving orifice 28. Projecting into the upper end of this orifice is a narrow salient projection defined as key 30 adapted to ride on the top slanted surface of the button. The key 30 is preferably located along the longitudinal center line of the spray guide and finger guide recesses; although it may be located otherwise as should be evident from the description that proceeds. Extending vertically downward from orifice 28 is annular retaining wall 31. A Z-shaped step or protrusion 32 extends inwardly from annular retaining wall 31. Flange 34 annularly disposed on the lower periphery of button 12 operatively engages protrusion 32 such that the forward most portion of button 12 is displaced rearwardly from the vertical plane tangent to the spray orifice 22 thereby offsetting the forward face of button 12 rearward of the spray orifice 22 to prevent the top forward portion of button 12 from engaging the lip of the spray orifice 22 to avoid button hangup.

To insure contact of the key 30 with the button 12 and to prevent the key 30 from falling off due to excess wobbling of the cap 10 during assembly, the diameter of the central opening 28 is made only slightly larger than the diameter of at least a portion of the button 12 and the length of the side wall of the opening is substantially the same as the length of the button 12.

Concentric with the annular side wall of the opening 28 is an annular rim 36 which is slightly smaller in diameter than bead 18 such that when depressed thereon, frictional engagement between the rim and bead securely retain the overcap to the container. The outer wall of the overcap is such that when the cap is depressed, it is either flush with the top of the container or extends inwardly of the rim of the container.

Typically the button 12 is substantially cylindrical and contains the conventional passageway with an orifice for discharging the aerosol contents when the button 12 is depressed. Diametrically opposed to the discharge orifice is a vertical keyway 38 cut into the side wall of the button. As should be evident, other positioning of the keyway is also possible. Keyway 38 is slightly larger than key 30 to mate therewith. To allow the key 30 to slide around the button 12 and enter the keyway 38, regardless of the orientation of the overcap 10 when on the button 12, the top surface of the button 12 is smooth or, at least the rim portion sufficient to accommodate the key 30, is smooth and slants downwardly at an angle of from 10 to 20°. It can be appreciated that the key 30 could slide down the button 12, even more rapidly with a steeper angle. However, with a steeper angle, it is more difficult to depress the button, for the resultant movement will be pressing sub-

stantially forward as well as downward; thus creating a smaller force vector in the vertical direction.

In aligning and assembling the overcap 10 to the button 12, the cap 10 is placed without pre-orientation on the button 12 such that key 30 rides on the top surface of the button. By gravity, without additional rotative forces acting on the overcap 10 or container 14, the overcap 10 will then ride down the upper surface of the button 12 until the key 30 slides into keyway 38. Because of the restricted clearance between the button 12 and the Z-shaped protrusion 32 of the overcap 10 the overcap will not excessively wobble when sliding down the slope. Although not necessary, if desired, the container 14 may be purposely vibrated or vibrated by the action of the filing and assembling machine to accelerate this movement. When key 30 is in keyway 38, the parts are aligned. When so aligned, the discharge orifice is centered with respect to the longitudinal center line of the spray guide 20 with orifice 22 and finger guide recess 24. After being so aligned, the overcap 10 is depressed until rim 36 snaps over bead 18 of the container. This firmly secures the cap 10 to the container 14.

The unique Z-shaped step on protrusion 32 provides a lower diameter in the central orifice 28 small enough to maintain keyway 38 and key 30 in cooperative engagement and an upper diameter sufficiently large to avoid button "hang-up" with the spray orifice 22.

Note when mounted the vertical dimension of the overcap 10 extends above the top of the button 12 thereby protecting the button 12 from accidental actuation.

It should be evident from the above description that a novel self-aligning "no hang-up" aerosol overcap-button assembly has been provided. The overcap is automatically aligned without prior pre-orientation or without additional rotative elements such as brushes. The ease, rapidity, and reliability of the method of alignment make this method particularly economical.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained, and since certain changes may be made in the above construction without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

Now that the invention has been described:

What is claimed is:

1. An overcap assembly for an aerosol dispenser, said overcap comprising a substantially cylindrical body including a central opening having a wall extending vertically therefrom for receiving a button actuator and a spray orifice formed in the side wall of said overcap said spray orifice in operative communication with said button actuator for dispensing products and propellant through said orifice, alignment means formed on said overcap to operatively align said actuator relative to said spray orifice, said overcap, further including an annular step formed in said central opening and extending inwardly from said vertically extending wall, the diameter of said annular step being smaller than the diameter

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of said vertical extending wall to engage the lower portion of said button actuator such that the forward most portion of said button actuator is displaced rearward relative to said spray orifice to prevent said button actuator from engaging the periphery of said spray orifice.

2. The overcap of claim 5 wherein said side wall of said overcap includes a spray guide recess extending from its outer surface inwardly and terminating in said spray orifice immediately adjacent to and aligned with the discharge orifice of said button actuator.

3. The overcap of claim 1 when said annular step comprises a first and second interconnecting ledge disposed about the periphery of said vertical wall, said

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first ledge being formed about the portion of said vertical wall adjacent said spray orifice and said second ledge being formed about the remainder of said vertical wall, said first ledge being disposed on said vertical wall below said second ledge.

4. The overcap of claim 1 wherein said alignment means comprises a key projecting into said central opening which engages a vertical keyway grooved in the side wall of the button, said key of a length slightly smaller than said keyway extending into said keyway to align said overcap and button with respect to each other.

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