

- [54] **APPARATUS FOR DISCHARGING
RESIDUAL GAS IN AEROSOL CANS**

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- [51] **Int. Cl.²**..... **B65D 83/14**

- [58] **Field of Search** 222/402.14, 182; 251/90,
251/111, 89

- [56]
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[57] **ABSTRACT**

A device designed to allow natural release of residual gas in a used aerosol can by keeping the ejection or spray button depressed so as to facilitate disposal of the used can, and more particularly to a cap adapted with a pushrod, for example, for depressing the button to accomplish perfect and sure natural release of residual gas.

5 Claims, 6 Drawing Figures

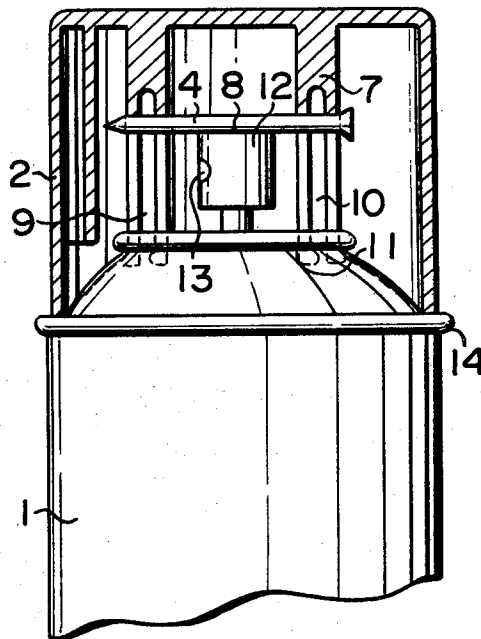


FIG. 1

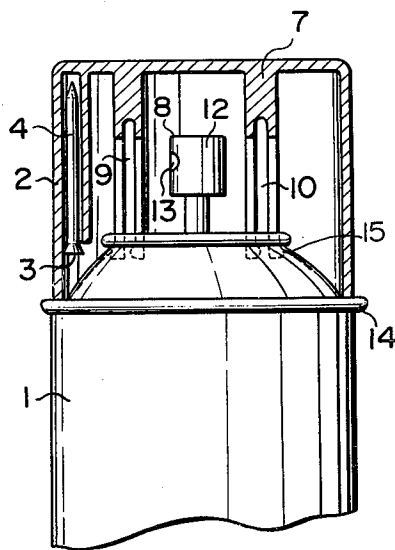


FIG. 2

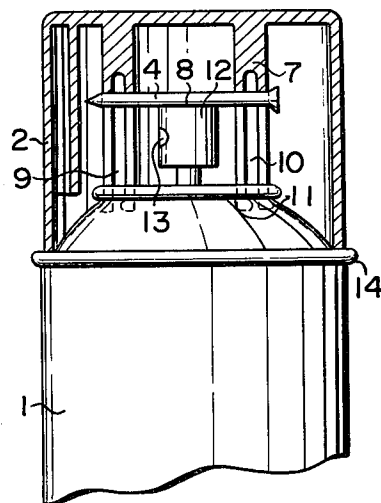


FIG. 3a

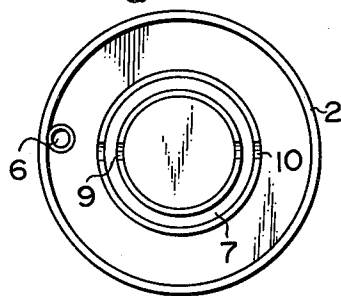


FIG. 4

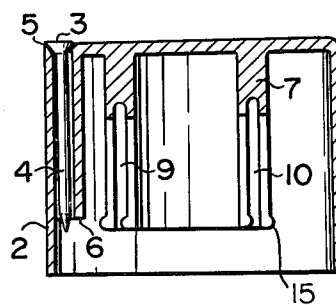
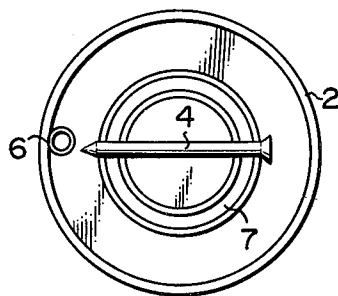


FIG. 3b



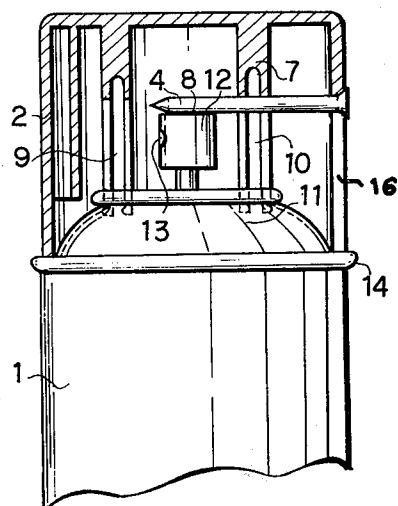


FIG. 5

APPARATUS FOR DISCHARGING RESIDUAL GAS IN AEROSOL CANS

BACKGROUND OF THE INVENTION

Recently, aerosol products are widely used not only in the field of chemicals and sanitation but also in all spheres of industrial and domestic activities, and naturally, aerosol cans are produced in great quantities, posing a serious problem of disposal of the used aerosol cans. The "used" aerosol cans, in most cases, still contain residual gas more or less; there are actually very few in which leftover liquefied gas has perfectly evaporated away. When disposing of the used aerosol cans, such residual gas is not only dangerous but also causes serious trouble in discarding, scrapping and other treatments.

Various methods and means, particularly caps, have been devised to discharge away residual gas in the used aerosol cans to facilitate disposal thereof, but none of these devices were satisfactory because of complicated structure, high manufacturing cost or difficult handling. For instance, there is proposed the attachment of a hooked cap to the can bottom so that when the user pulls the hook strongly, a hole is formed in the can bottom to instantaneously discharge out residual gas in the can. According to this method, however, the junior or women users may be scared by high ejection sound and volume of the ejected gas and become afraid of such gas release.

SUMMARY OF THE INVENTION

The present invention is to solve the above problems accompanying disposal of the used aerosol cans by eliminating the technical defects in release of residual gas in the cans. The first object of the present invention, thereof, is to provide a method whereby such residual gas can be discharged out naturally with very simple, easy, sure and inexpensive means — only pushing a button in the same way as when spraying aerosol. The second object of the invention is to provide a cap attached with means for discharging residual gas according to said method.

Having the above objects, the present invention features provision of a push-rod or bar which is set in the inside of an aerosol cap such that said rod can be removed from the outside or inside of the cap, and when it is desired to discharge out residual gas in the used aerosol can; first the cap is detached from the can body and then the push-rod is removed from the cap and inserted into slots formed in the inner cylinder of the cap at a position lower than the top surface of the button and directed toward the center of the cap, and thereafter, the cap is again mounted on the cap body, whereby the push-rod depresses the button to let residual gas in the can gush out naturally into the cap. The effluent gas will then be dispersed away into the atmosphere from the space between the can body and the cap or from a hole through which the push-rod is inserted into its set position.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings show embodiments of the present invention, and wherein:

FIG. 1 is a sectional view of an aerosol can cap according to the present invention, with the push-rod in its normal inoperative position;

FIG. 2 is a sectional view similar to FIG. 1 showing the push-rod in its operative position;

FIG. 3a is a bottom plan view of the cap according to one embodiment of the present invention;

FIG. 3b is a bottom plan view of the cap showing the push-rod in its operative position;

FIG. 4 is a sectional view of the cap according to another embodiment of the present invention; and

FIG. 5 is a sectional view of the cap according to another embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

It will be seen that a suitable easy-to-handle simple push-rod 4, such as for example a nail, having a removal head 3 at one end is securely set in a push-rod housing 6 formed in and integral with a cap 2 shown mounted on the can body 1. This push-rod 4 may be inserted into said housing 6 from a hole 5 formed at one end of the housing adjacent the top surface of the cap 2 so that said rod may be easily removed from the outside as shown in FIG. 4, or it may be inserted into the housing 6 bottomwise as shown in FIG. 1, for the reasons of external appearance and easiness of operation, so that said push-rod may be removed from the inside of the cap.

When discarding the used aerosol can, first the cap 2 is detached from the can body 1, then the push rod 4 is removed from the housing 6 by pulling the head 3 either from the outside or from the inside of the cap, depending on how the push-rod is mounted in the housing, and then is inserted into and set in the slots 9, 10 formed in the inner cylinder 7 of the cap 2 at the ejecting position lower than the top face 8 of the button 12 at its normal fixed position, the slots extend toward the center of the cap. Finally, the inner cylinder 7 of the cap 2 is securely fastened to the neck portion 11 of the cap by stubs 15. As shown in FIG. 2, the push-rod 4 pushes down the button 12 from its top face 8 and is fixed at its depressed position by the action of stubs 15 on neck 11 causing residual gas in the can to gush out naturally into the cap 2 from the nozzle 13 in the button 12. The thus ejected gas is dispersed away into the atmosphere by passing through the slots 9, 10 in the inner cylinder 7 and then through the space between the outside lower edge of the cap and shoulder 14 of the can body 1 or from the hole 5, shown in FIG. 4, in the top surface of the can. If this situation is left as it is, with the cap being left mounted on the cap body, residual gas in the can is perfectly and surely released out naturally.

According to the present invention as described above, a very simple push-rod 4 such as a nail is set in a suitable place in the cap 2 so that it may be easily pulled out from the outside of the cap 2 or from the inside thereof for maintaining the external appearance or for operation reasons. The ejection button 12 can be fixed in its depressed position by merely inserting the push-rod 4 through the slots 9, 10 formed in the inner cylinder 7 of the cap 2 and again fitting the cap 2 on the can 1, whereby with the cap 2 being left mounted on the can 1, residual gas in the can 1 is completely, surely and naturally discharged. Consequently, disposal of the used aerosol cans can be accomplished with safety and quickly, dispensing with time and labor otherwise required for degassing treatment and care therefor.

In a further embodiment of the present invention the external body of cap 2 may include slotted grooves 16

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(See FIG. 5) similar to and aligned with slotted grooves 9 and 10, and the push-rod 4 may be inserted through these external body grooves and grooves 9 and 10 to effect the removal of residual gas when the cap 2 is mounted on can 1. Additionally in this embodiment inner cylinder 11 may be eliminated and the push-rod 4 inserted through only the external cap grooves to effect removal of residual gas.

The present invention is also advantageous in manufacturing cost as the construction of the cap for the residual gas releasing process is extremely simple.

It will be obvious to those skilled in the art that various changes may be made without departing from the scope of the invention and the invention is not to be considered limited to what is shown in the drawings and described in the specification.

What is claimed is:

1. An apparatus for the discharging of residual gas in a used aerosol can including a cap and an ejection button with a top surface comprising:

a cylindrical extension of the cap extending inside the cap such that when the cap is mounted on the can, said cylindrical extension encloses the ejection button;

first and second slotted grooves in said cylindrical extension which, when the cap is mounted, extend from the bottom of said cylindrical extension to a position below the top surface of the ejection button

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ton in the normal fully extended position of the ejection button; and

a push-rod which, when inserted in said first and second slotted grooves, engages the top surface of the ejection button, and when the cap is mounted and secured on the can, automatically depresses the ejection button causing release of residual gas.

2. Apparatus of claim 1 further including:

first and second grooved slots in the external body of the cap which, when the cap is mounted, extend from the bottom of the cap to a position below the top surface of the ejection button in the normal fully extended position of the ejection button;

said push-rod, when inserted through said slotted grooves in the external body of the cap and said slotted grooves in said cylindrical extension and when the cap is mounted on the can, depresses the ejection button allowing escape of the residual gas.

3. An apparatus according to claim 1 further including a housing integrally connected to said cap, wherein said push-rod is mounted in said housing when not in use.

4. An apparatus according to claim 3 wherein a hole is formed at one end of said housing adjacent to the top outside surface of said cap, whereby said push-rod can be removed from the outside of said can.

5. Apparatus of claim 3 wherein said push-rod is provided with a head at one end thereof for ready removal from said housing.

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