

[54] **CHILD-PROOF OVERCAP FOR AN AEROSOL CAN**

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[58] Field of Search 222/182, 153, 402.11, 222/402.12; 215/9, 44

[56] **References Cited**

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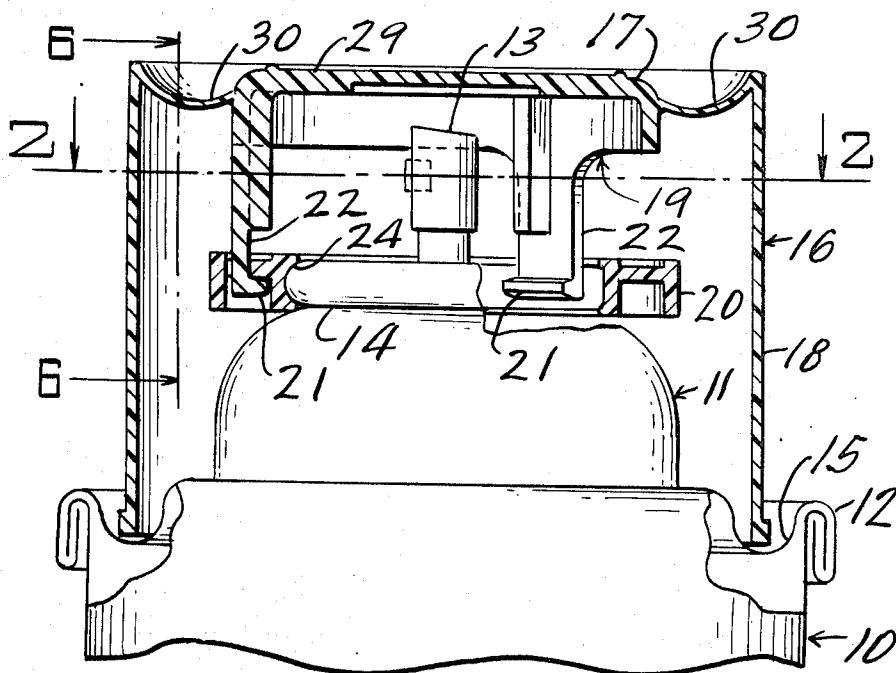
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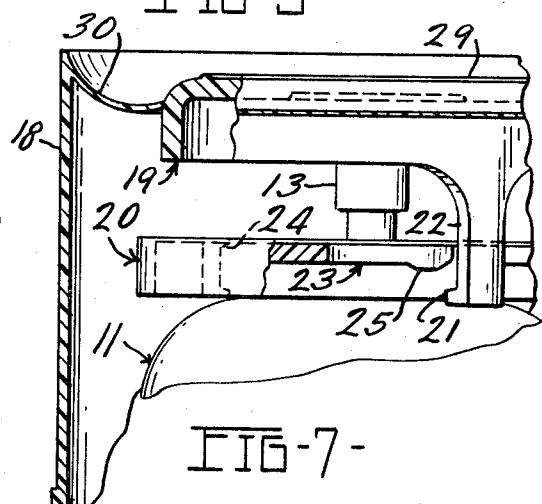
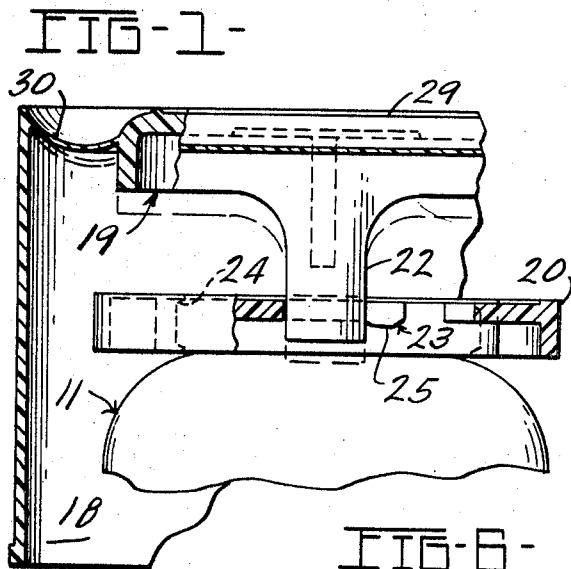
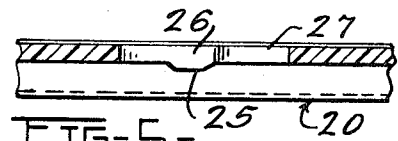
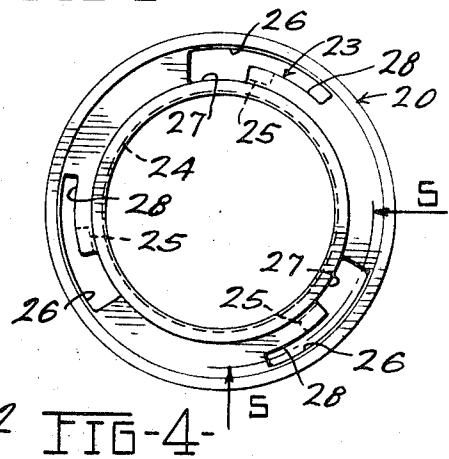
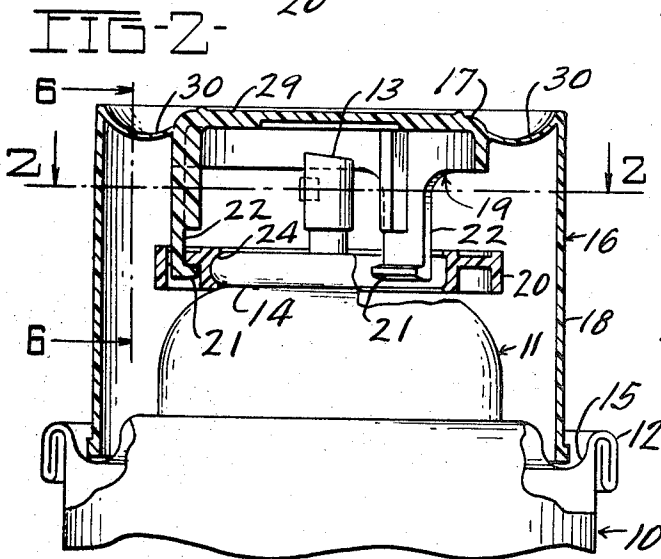
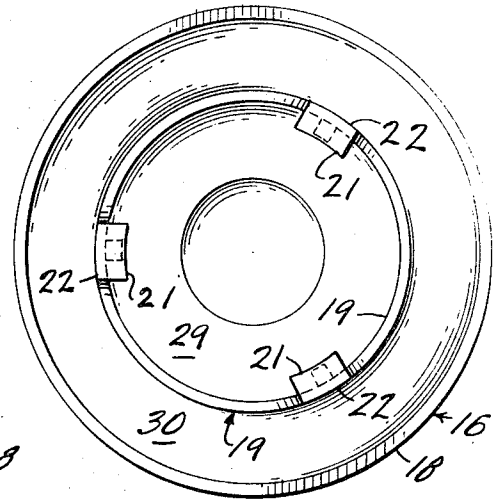
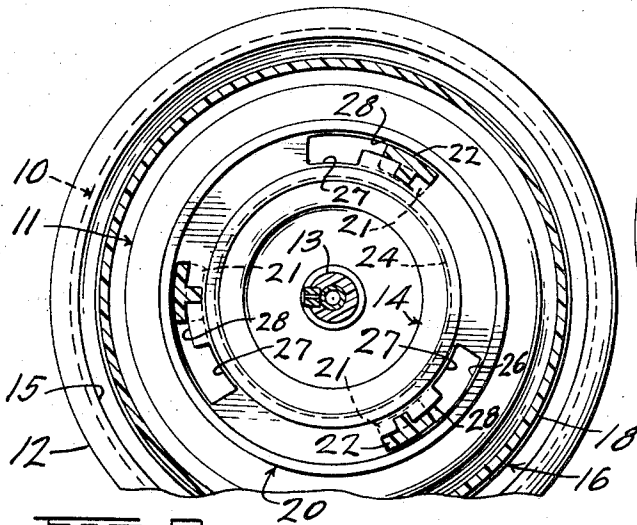
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[57] **ABSTRACT**

A child-proof overcap for an aerosol can. The overcap has a cylindrical outer skirt, a circular top and an inner structure depending from the top. The inner structure carries two or more inwardly protruding lugs which are evenly spaced circumferentially. An annular element on the can has a similar number of outwardly extending lug threads adapted to be engaged by the lugs. The lug threads have downwardly extending bottom surfaces leading to upwardly extending undercut recesses in which the lugs on the overcap may be engaged. The top has a resilient annular portion which is deformed by engagement of the lugs with the lug thread recesses in order to retain the lugs in the recesses to restrain relative rotation of the overcap and can.

1 Claim, 7 Drawing Figures





CHILD-PROOF OVERCAP FOR AN AEROSOL CAN

This application is a continuation-in-part of application Ser. No. 54,925 filed July 15, 1970 now U.S. Pat. No. 3,706,401.

BACKGROUND OF THE INVENTION

Many household products such as insecticides, paint, cleansers, deodorants, disinfectants, and the like, are packaged in the aerosol pressurized cans and the inadvertent discharge of their valves is often prevented by an overcap which snaps over the upper end of the can to cover the discharge valve. Many designs have been suggested in order to make the removal of the overcap difficult or "child-proof," so as to make it significantly difficult for a small child to discharge the contents of the can with injury to itself or damage to furniture, rugs and the like in the household.

Some designs of child-proof overcaps have required the use of a separate tool such as a screw driver in order to remove the overcap. Others have been frictionally retained so tightly as to make it impossible for a very small child to remove the overcap.

It has also been learned in the study of such "child-proof" overcaps, that if a small child is required to make two movements, at least one of which is relatively difficult, the overcap is rendered more nearly "child-proof" than if only one movement is necessary.

It is therefore the principal object of the instant invention to provide a substantially "child-proof" overcap for an aerosol can which covers the discharge valve and which requires both pressure in one direction and movement in another direction in order to remove the overcap.

It is yet another object of the instant invention to provide a substantially "child-proof" overcap for an aerosol can so designed as to enable the overcap to be placed upon a standard aerosol can without the necessity for redesign and without difficulty in the assembly of the components.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary, vertical, sectional view, with parts broken away, of a standard aerosol can equipped with a child-proof overcap according to the invention;

FIG. 2 is a fragmentary, horizontal, sectional view taken along the line 2-2 of FIG. 1;

FIG. 3 is a bottom view of the overcap element;

FIG. 4 is a top view of the annulus element;

FIG. 5 is a fragmentary, projected view taken along the line 5-5 of FIG. 4;

FIG. 6 is a fragmentary, vertical sectional view taken along the line 6-6 of FIG. 1, showing the retaining lugs engaged; and

FIG. 7 is a view similar to FIG. 6, showing the retaining lugs disengaged.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A conventional aerosol can, generally indicated by the reference number 10 in FIG. 1 has a breast portion 11 and an annular seam 12 by which the breast portion is attached to the body of the can 10. At the top center of the breast portion 11 there is located a valve and dispensing nozzle 13 which is secured to the breast portion by an annular seam 14. The aerosol can 10 has an upwardly open groove 15 located just inside the seam 12 and circumjacent the breast portion 11.

Aerosol cans such as the can 10 usually are also provided with an inverted cup-shaped overcap, such as that generally indicated by the reference number 16, which comprises a substantially flat circular top 17 and a downwardly extending outer skirt 18. The lower edge of the outer skirt 18 extends downwardly into the groove 15.

In an overcap according to the invention, an inner structure 19 comprises one of a pair of cooperating annular elements; in this embodiment of the invention the other cooperating annular element being an annulus 20 (see FIG. 3). According to the invention the structure 19 and annulus 20 have cooperating means for retaining the overcap 16 on the can 10 with sufficient force and resistance to removal to provide a substantially child-proof closure for the can. The cooperating means comprise circumferentially spaced downwardly protruding lugs 21 at the lower ends of arms 22 which depend from the top 17 and a similar number of similarly spaced lug threads 23 integral with and at the periphery of the annulus 20. The annulus 20 has an inwardly extending lip 24 of such size that it snaps resiliently and tightly around the valve seam 14 as is most clearly shown in FIG. 1. By thus frictionally engaging the annulus 20 with the valve seam 14, the lug threads 23 are made functionally integral with the can 10.

Each of the lug threads 23, in this case three, has a downwardly protruding detent 25 (see FIGS. 6 and 7). Each of the lug threads 23 is located at the inner side of an arcuate slot 26 which has a wider portion 27 through which the lugs 21 on the arms 22 are pushed to engage the lugs 21 with the lug threads 23. There are three of the lug threads 23 evenly spaced circumferentially around the annulus 20 and thus around the can 10 and, correspondingly, there are three lug arms 22 and lugs 21 also evenly spaced around the structure 19. The wider portions 27 of the slots 26 in the annulus 20 are of such circumferential extent and width that the three lugs 21 can be moved downwardly through the wider portions 27 when the overcap 16 is first moved down onto the can 10. However, narrower portions 28 of the slots 26 are only wide enough to accept the arms 22 above the lugs 21.

The top 17 of the overcap 16 has a stiff center portion 29 from which the structure 19 and arms 22 depend. The perimeter of the center portion 29 is joined to the upper end of the skirt 18 by a resilient annular web 30.

In order to place the overcap 16 on the can 10, the user pushes the overcap 16 downwardly until the lower edge of the skirt 18 "bottoms out" in the groove 15. He then presses downwardly on the cap center portion 29 flexing the web 30, while rotating the overcap 16 (clockwise in FIG. 2) until the lugs 21 align with and pass through the wider portions 27 of the slots 26 in the annulus 20, as shown in FIG. 7. Further rotation of the overcap 16 moves the arms 22 into the narrower portions 28 of the slots 26 until they strike the ends of the slots 26 as shown in FIG. 6. The user then removes the downward pressure on the center portion 29 and the resiliency of the web 30 pulls the lugs 21 upwardly into engagement with the flat undersides of the lug threads 23. This engages the lugs 21 "beyond" the detents 25 so that the overcap 16 cannot merely be rotated in a counterclockwise direction. When the overcap 16 is in place, the web 30 is not relaxed but is still flexed in order to retain the lugs 21 in place.

In order to remove the overcap 16, a user must first depress the center 29 of the top 17 to move the lugs 21 downwardly a distance sufficient to lie below the lowermost portion of the detents 25. The user then can rotate the overcap 16 to move the lugs 21 a sufficient distance so that they can be again pulled upwardly through the wider portions 27 of the slots 26. This eliminates the danger that a small child may gain access to the dispensing valve 13 but still provides relatively easy access for an older child or an adult.

Because the valve seams 14 on most aerosol cans are of standard size and the upward extent of the valve 13 usually is uniform, it can be seen that the utilization of an annulus 20 with an overcap 16 according to the invention results in making the overcap 16 substantially child-proof without requiring special designs or shapes in the can 10, itself.

Having described my invention, I claim:

1. A child-proof overcap for an aerosol can having a discharge valve at its upper end and an annular seam concentric with the valve comprising, in combination, an annular element engageable with the annular

seam on the can, said annular element defining a plurality of circumferentially spaced slots adjacent its outer periphery,

a plurality of lug threads on said annular element adjacent said openings, each of said lug threads having an under surface and an upwardly undercut recess,

said overcap including a top, an outer skirt depending from said top, an inner structure depending from said top and an annular resilient web connecting said structure to said skirt,

a plurality of circumferentially spaced arms depending from said structure,

and a lug on the lower end of each of said arms, said lugs protruding radially toward said lug threads and being engageable beneath said lug threads upon relative rotation of said can and said overcap, said annular web biasing said structure and said lugs upwardly relative to said can, whereby said lugs are retained and relative rotary motion of said annular element and said inner skirt is restrained.

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