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LEVER TYPE DISPENSER SYSTEM FOR PRESSURIZED CONTAINERS

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FIG_1

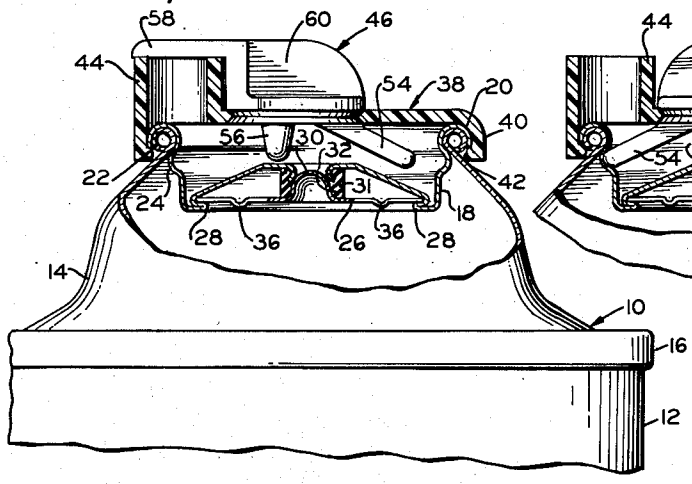


FIG_2

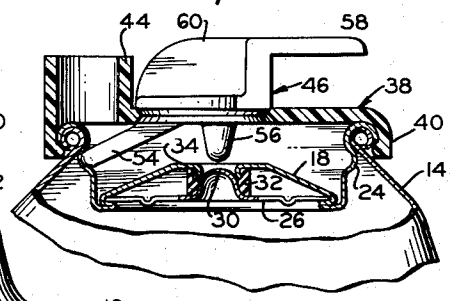


FIG_3

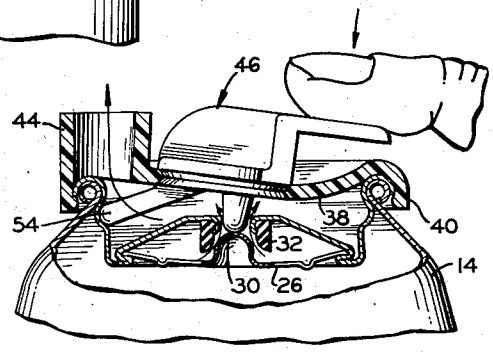


FIG_5

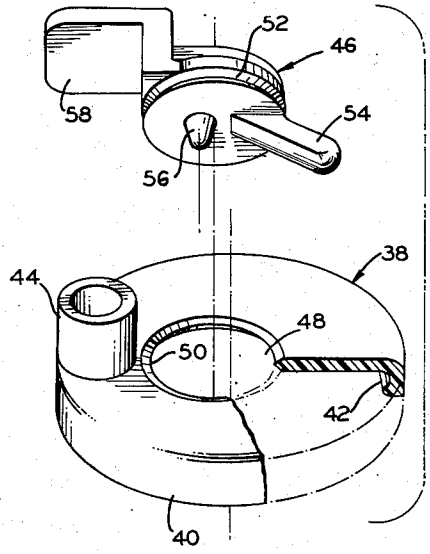
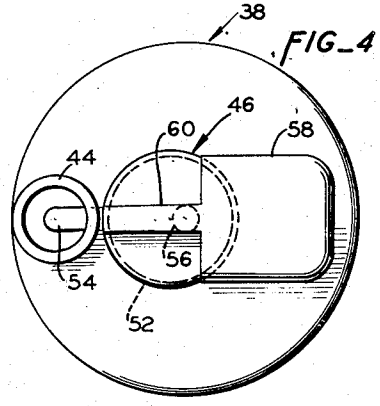


FIG_4



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LEVER TYPE DISPENSER SYSTEM FOR PRESSURIZED CONTAINERS

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6 Claims. (Cl. 222—394)

This invention relates to the pressurized container art wherein products such as whipping cream, and the like, are sealed within containers in a fluid pressure atmosphere and released therefrom, as by inverting the container and then yieldingly depressing a valve element downwardly and away from a normally sealed discharge opening, and more particularly to an improved lever type valve control member and an auxiliary removable closure cap for the container serving as a carrier for the lever member.

An object of the invention is to provide an auxiliary closure cap and lever member combination for a pressurized container adapted to be removably connected to the upper end of the container.

A further object of the invention is to provide such a cap and lever member combination in which the lever member is supported by the cap for rotation about a vertical axis and adapted to be selectively rotated into and out of valve controlling position.

Still a further object of the invention is to provide such a lever member and cap carrier combination in which the cap is provided with a discharge spout adapted to be closed by a portion of the lever member when the latter is selectively disposed out of a valve controlling position and adapted to be opened when the lever member is rotated into a valve controlling position.

And yet a further object of the invention is to provide such a closure gap and lever member combination in which the cap is yieldingly deformable to allow the valve actuating portion of the lever member to engage and operate the valve, with said cap serving to urge the lever member out of valve operating position when the lever member is manually released.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the drawing forming part of this specification, and in which:

Figure 1 is a view partly in vertical section and partly in elevation of the upper end of a container having attached thereto the closure cap and lever member combination of the invention, with the lever member being shown in a position where it is disposed out of control relation with the dispensing valve of the container;

Figure 2 is a view similar to that of Figure 1, but showing the lever member disposed in a position where it is in control relation with the dispensing valve;

Figure 3 is a view similar to Figures 1 and 2, but showing the lever member as being manually operated to open the dispensing valve;

Figure 4 is a top plan view of the closure cap and lever member combination; and

Figure 5 is a view in perspective of the closure cap and lever member combination, with the cap being broken away to illustrate the cross sectional form thereof.

With reference to the drawing, the container, or can, 10 is comprised of a cylindrical body 12, a top 14 having a sealed beam connection 16 with body 12, an annular member 18 having its upper rolled end 20 disposed over

the rolled edge 22 of can top 14 and being secured to the can top against removal therefrom by an annular swaged bead 24, and a metal strap 26 supported by an inwardly directed flange 28 formed on member 18, said strap 26 having a ball face portion 30 normally disposed within and against a resilient sealing grommet 31 secured to the underside of member 18 and around the discharge opening 32 formed therein by the annular inturned edge 34 of said member. The valve strap 26, which is under tension adapted to normally maintain it in sealing engagement with grommet 31, is provided with transversely disposed reinforcement corrugations 36. The container and closure valve arrangement, as thus far described, are well known in the art.

Removably secured to the upper end of container 10 is the lever member and auxiliary closure cap combination of the invention. The auxiliary closure cap 38, which is formed of resilient material, such as polyethylene, is provided with a peripheral skirt portion 40 provided with an inwardly directed annular bead 42 adapting the cap to be secured to the can against accidental removal therefrom, and the cap is further provided with a vertically directed discharge spout 44. The lever member 46 is rotatably disposed within a circular cap opening 48, the latter being provided with a wedge shaped edge 50 which is complemental to an annular wedge shaped groove 52 formed in the lever member 46.

Lever member 46 is preferably a one piece molded member comprising a downwardly and forwardly inclined arm or toe portion 54, a downwardly extending valve actuating pin 56, and a horizontally extending lever arm 58. A rib 60 constitutes reinforcement means for the lever member.

The horizontal distance between the longitudinal axis of lever pin 56 and the axis of rotation of the lever member is equal to the horizontal distance between the center axis of discharge opening 32 and the axis of rotation of the lever member. Thus, when the lever member is in the position shown in Figure 1, the pin 56 is laterally offset with respect to the ball face valve closure 30, and when the lever member is rotated 180° to the position shown in Figure 2 the longitudinal axis of pin 56 and the center axis of vent opening 32 are in alignment.

It will be further be apparent, with particular reference to Figure 5, that the center axis of cap opening 48 and the rotational axis of lever member 46 are offset with respect to the geometrical center of the cap. Thus, when the lever member is in the position of Figure 1, the end of the toe portion 54 of the lever member is disposed in horizontally spaced relation to the annular can closing member 18, whereas, when the lever is disposed in the position of Figure 3, the free end of the toe portion 54 engages within the annular swaged bead 24 of can closing member 18. The end of the toe portion 54 is thus secured against vertical movement by the bead 24 in the Figure 2 position, and this bead and toe connection constitutes the fulcrum point for actuation of the lever member, such actuation being effected, as illustrated in Figure 3, by pressing downwardly on the lever arm 58 to yieldingly depress the closure cap 38 and cause pin 56 to urge the ball face valve closure 30 out of engagement with the sealing grommet 31. The pressurized contents of the can are thus emitted through the opening 32 into the space defined between the can closing member 18 and cap 38, and when this space becomes filled with discharged material the material is finally dispensed through the discharge spout 44 of the cap. When the manual pressure is released, the resilience of the cap 38 raises the lever member out of engagement with the valve closure element and into the Figure 2 position, thereby allowing the valve closure strap 26 to spring back and dispose the

ball face portion 30 thereof in sealing relation with grommet 31.

Thereafter, the lever member is rotated 180° from the position of Figure 2 to that of Figure 1, wherein the flat underside of lever arm 58 frictionally engages the top of discharge spout 44 and serves to close this spout against further discharge and to prevent dust, etc. from getting into the spout when the container is not being used. It will be appreciated that, even if the material forming cap 38 were sufficiently resilient and light in body to enable the lever arm 58 to be forced downwardly in the Figure 1 position to deform the discharge spout 44, the dispensing valve would not be opened because the valve opening pin 56 would engage the valve body, or can closing member, 18. Also, no pivotal lever action of the lever member 46 can be obtained when the lever member is in the Figure 1 position because the pivot toe 54 is not in engagement with the fulcrum bead 24.

It will further be appreciated that the second class lever form of lever member 46 provides for a force multiplication which enables the can valve to be opened with a manual pressure which is only a fraction of that which would be required were the valve being opened by manual force applied directly downwardly to the same. That is to say, the valve opening force applied by pin 56 is to the manual pressure required to be applied to lever arm 58 as the horizontal distance between the center point of force application to lever arm 58 and the end of the pivot toe 54 is to the horizontal distance between the longitudinal axis of pin 56 and the end of the pivot toe.

When desired, the auxiliary closure cap and the associated lever member may be pulled free of the can, as, for example, when the immediate can becomes empty and it is desired to transfer the cap and lever member to a filled can.

While a specific embodiment of the invention has been shown and described, it is to be understood that all substantial equivalents thereof are considered to be within the spirit and scope of the invention.

What is claimed is:

1. In combination with a container for pressurized material, said container having a fixed top closure member provided with an upwardly directed discharge opening, and a yieldingly depressable and accessible valve closure element normally disposed in closing relation to said opening: a resilient cap attached to the upper end of said container, said cap having a discharge spout, a lever member carried by said cap and journalled for rotation about a vertical axis in said cap, a valve operating pin depending from said lever member, an arm formed on said lever member and disposed above said cap, said lever member and said opening being out of axial alignment whereby said lever member may be selectively rotated to bring said pin into and out of alignment with said opening, a pivot toe formed on said lever member and disposed within said cap, and pivot toe engaging means formed in said closure member adapted to receive said pivot toe and hold the toe against vertical movement when said lever member is rotated to bring said pin into alignment with said opening, whereby said arm may be depressed to yieldingly depress said cap and cause said pin to depress said valve closure element out of closing relation with respect to said opening.

2. The combination set forth in claim 1, the discharge spout of said cap being upwardly extending, said arm being adapted to contactually overlay the upper end of said spout and close the spout when said pin is out of alignment with said opening.

3. In combination with a container for pressurized material having an upper annular inset closure member provided with a centrally disposed discharge opening and having a yieldingly depressable valve closure element disposed at the underside of said closure member normally disposed in closing relation to said opening: a cap

formed of resilient material adapted to be snapped into and out of engagement with the upper end of said container, said cap having a discharge passageway extending therethrough, a control element for said valve closure element having a circular body portion extending through and rotatably fitted within a circular aperture formed in the top of said cap, a vertically disposed pin carried by said body portion and extending therebeneath into close proximity to said closure member, said body portion and said opening being axially offset a distance substantially equal to the distance between the axis of said body portion and the longitudinal axis of said pin whereby rotation of said body portion through 180° of arc will move said pin from a position of alignment with said opening to a position of maximum misalignment therewith, an annular swaged bead formed in said closure member adapted to secure said closure mmeber to said container, an arm carried by said body portion inclined downwardly and away therefrom and terminating at the level of said bead, said pin and said arm being diametrally aligned with respect to said body portion, said arm being adapted to be engaged within said bead when said pin is aligned with said opening and to be spaced a maximum distance from said bead when said pin is in its position of maximum misalignment with respect to said opening, and another arm carried by said body portion disposed above said cap and in spaced relation thereto and extending in a direction opposite to the direction of extension of said first mentioned arm.

4. The combination set forth in claim 3, said discharge passageway of said cap being defined by a vertically disposed cylindrical spout, said other arm having a horizontally disposed planar under surface adapted to contactually overlay the upper end of said spout and close the spout when said pin is in maximum misalignment with said opening.

5. In combination with a container for pressurized material having an upper annular inset closure member provided with a centrally disposed discharge opening and having a yieldingly depressable valve closure element disposed at the underside of said closure member normally disposed in closing relation to said opening: a member for controlling said valve closure element, means supporting said member over said closure member for rotative movement about a vertical axis, said means comprising a resilient cap fitted over the upper end of said container, said cap having a discharge passageway extending therethrough, said valve controlling member being a lever of the second class having one end thereof disposed above said cap and the other end thereof disposed beneath said cap, said latter end being adapted to have a fulcrum engagement with said closure member when said controlling member is selectively rotatably positioned whereby said controlling member may be pivotally depressed, and means carried at the underside of said controlling member between said ends thereof operable when said member is pivotally depressed to move said closure element away from said opening, said means being rendered inoperative to move said closure element when said controlling member is rotated to move said other end thereof out of fulcrum engagement with said closure member.

6. Apparatus of the type described adapted to be detachably connected to the upper end of a container having an upwardly directed valve-controlled discharge opening, said apparatus comprising a resilient cap, a lever member journalled for rotation in said cap about a vertical axis which is laterally offset from the center of said cap, said lever member having an end for finger engagement disposed above said cap and a fulcrum end disposed beneath said cap, and a vertically disposed valve actuating pin extending downwardly from said member between the ends thereof, said pin being laterally offset from the axis of rotation of said lever member a distance substantially

equal to the distance of lateral offset between the center of said cap and the axis of rotation of said lever member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,169,779 Loewe ---------- Aug. 15, 1939
2,596,414 Knapp ---------- May 13, 1952
2,646,192 Gronemeyer ---------- July 21, 1953
2,685,989 Samuels ---------- Aug. 10, 1954