

Jan. 3, 1956

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2,729,368

TILT-RESTRICTOR AND MECHANISM COVER FOR TILTABLE SPOUTS

Filed Sept. 23, 1950

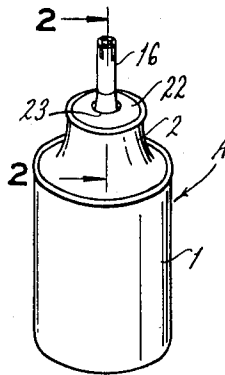


FIG. 1.

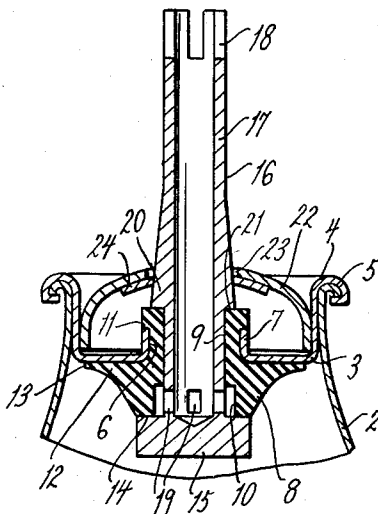


FIG. 2.

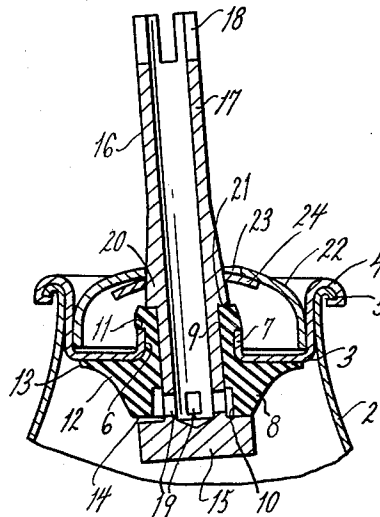


FIG. 3.

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1

2,729,368

TILT-RESTRICTOR AND MECHANISM COVER FOR TILTABLE SPOUTS

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Application September 23, 1950, Serial No. 186,351

5 Claims. (Cl. 222—394)

This invention relates in general to valves and, more particularly, to certain new and useful improvements in means for limiting the opening movement of valves operated by tilting through the application of laterally directed pressure thereon, such valves being of the type disclosed in the co-pending application of Aaron S. Lapin, Serial No. 90,807, filed May 2, 1949, now Patent No. 2,704,172, for Dispensing Containers.

It is the primary object of the present invention to provide a valve restrictor member for preventing excessive opening of valves of the character commonly utilized with containers for dispensing materials under gas pressures, such as whipped cream, which member incorporates a wall or surface-forming portion spaced a predetermined distance from the valve stem for stop-wise engagement therewith, regardless of the direction of movement of the stem, to avert leakage around the valve.

It is a further object of the present invention to provide a device of the character stated which includes a disk member adapted for engagement about the valve stem for co-operative relationship with the valve restrictor member to provide an attractive, decorative effect to the container.

It is an additional object of the present invention to provide a valve restrictor member which is economically fabricated; so adapted for engagement upon a container as to be substantially rigid thereon; and is durable and reliable in usage.

With the above and other objects in view, our invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing—

Figure 1 is a perspective view of a dispensing container having engaged thereon a valve restrictor member constructed in accordance with and embodying the present invention;

Figure 2 is a transverse sectional view taken along line 2—2 of Figure 1; and

Figure 3 is a transverse sectional view taken substantially along line 2—2 of Figure 1 illustrating the valve in open position.

Referring now by reference characters to the drawing which illustrates a preferred embodiment of the present invention, A designates a container of the type disclosed in the aforementioned co-pending application which is adapted to discharge its contents by gas pressure, such as whipped cream, lathered soap, and the like. Said container A comprises a body portion 1 and a neck 2. Disposed snugly within the neck 2 downwardly from the upper margin thereof is a cover plate 3 integrally having an upstanding peripheral flange 4 in tight surface-wise abutment against the inner adjacent face of the neck 2 which is out-turned at its upper end for overlapping engagement with the corresponding margin of the neck 2 to form a pressure-tight joint designated 5. The cover plate 3 is centrally drilled to provide an aperture 6 circumscribed by a relatively short, upstanding rim 7. Pro-

2

jecting through the aperture 6 is a sealing member or grommet 8, fabricated preferably of resilient, non-reactive material, such as a thermoplastic resin or synthetic rubber, and having an axial bore 9 which is counter-bored at its lower end, as at 10. The upwardly projecting portion of the grommet 8 is of sleeve form in tight engagement with the inner surface of the rim 7 and is diametrically increased to provide a shoulder 11, against which the top margin of the rim 7 abuts. The portion of the grommet 8 immediately beneath the cover plate 3 is enlarged, as at 12, for engagement with substantially the entire under face of the cover plate 3 to form a positive seal about the aperture 6, and peripherally tapers downwardly to provide a relatively thin, flexible sealing edge 13 about the outer margin of the enlarged section 12 and to provide at its lower end a seat 14 for the head 15 of a valve member 16. Said valve member 16 embodies a tubular stem 17 which projects upwardly through the axial bore 9 of the grommet 8 and extends beyond the sleeve portion thereof, terminating in a slotted discharge end 18 forming a "confectioner's tip." In its bottom portion, immediately superjacent the head 15, the valve 16 is provided with a plurality of radially presented orifices 19 which permit communication between the bore of the stem 17 and the counter-bore 10 of the grommet 8. Externally, the valve stem 17 is contoured to form a downwardly and outwardly flared portion 20 culminating in a shoulder 21 against which the upper margin of the grommet 8 bears.

In operation, the application of laterally-directed pressure upon the valve stem 17 will cause the same to be tilted through resiliency of the grommet 8 thereby unseating the head 15 of the valve 16 to permit the contents of the container A to be discharged under the internal gas pressure into the orifices 19, thence through the valve stem 17 and out the discharge end 18. Upon release of the applied pressure, the valve 16 will return to vertical, closed position by the elasticity of the grommet 8. It is to be particularly noted that, absent the additional structure to be described hereinafter, if the valve stem 17 is caused to be canted at a relatively large angle from the vertical, the grommet 8 will be distorted to such an extent that the tight, seal-like engagement between the inner walls of the bore 9 of the grommet 8 and the adjacent portions of the valve stem 17 is lost, and a separation effected between the sealing edge 13 and the cover plate 3. Thus, such excessive canting of the valve stem 17 creates a parting of the grommet 8, the valve stem 17, and the rim 7 permitting leakage of the contents and thereby causes a partial waste of contents.

Therefore, to prevent excessive rocking of a valve 16 there is provided in substantially concealing relation to the cover plate 3 a dome or hollow hemispherical member 22 fabricated preferably of suitable thermoplastic material such as a polyvinyl resin, and having the diameter of its bottom portion substantially equivalent to that of the cover plate 3 so that said dome member 22 may be tightly superposed thereon by jam fitting within the flange 4 with its bottom edge portions snugly abutting against the adjacent surfaces of the cover plate 3 and the said flange 4. At its summit, the dome 22 is provided with an aperture 23 of greater diameter than that of the valve stem 17 which projects therethrough and is axially aligned with the central opening 6 in the cover plate 3. The diameter of the aperture 23 is of predetermined length whereby upon tilting of the valve stem 17 the same will come into stop-wise contact with the inner face of the aperture 23 for inhibiting any further canting thereof. It is, of course, apparent that, regardless of the direction in which the tilting pressure is applied, the valve stem 17 will be accordingly restricted in its angular disposition to the vertical. With reference

3

to Figure 3, it will be noted when the valve stem 17 is in contact with the dome 22 the valve head 15 will have been unseated a sufficient distance to permit proper discharge of the contents without breaking the sealing engagement between the valve stem 17 and the grommet 8 whereby any untoward escape of gas or of the contents is prevented. Thus, the dome 22 serves to counter excessive valve-opening pressures that may be applied to the valve stem 17 by providing positive detent means. Additionally, the dome 22 may be of any desired color to provide a pleasing decorative effect for enhancing the attractiveness of the container A.

Frictionally engaged upon the flared portion 20 of the valve stem 17 immediately beneath the aperture 23 of the dome 22 is a disk member 24 having a diameter increased over that of the aperture 23 and being arcuate in cross section with the degree of curvature being substantially the same as that of the dome 22. Said disk 24 is designed to provide an under-screen for the aperture 23 to deny exposure of the grommet 8 and the lower portion of the valve stem 17, thereby supplementing the overall decorative appearance provided by the dome 22. The disk 24 may likewise be fabricated of a thermoplastic material and have, optionally, a color matching that of the dome 22 or one attractively combinative therewith. With reference to Figure 3, it will be seen that when the valve 16 is in tilted-open position, the disk 24 will adequately cover the particular portion of the opening 23 as may be presented by such movement with the curvature of the disk 24 obviating the possibility of any obstructive engagement with the dome 22.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the valve restrictor member may be made and substituted for those herein shown and described without departing from the nature and principle of the present invention.

Having thus described our invention what we claim and desire to secure by Letters Patent is:

1. For use with a dispenser having a tiltable discharge spout including a dispensing tip at its outer end and a tilt-permitting mechanism inward of such tip, a tilt restrictor and mechanism cover comprising a washer-like disk secured to such spout between its dispensing tip and its tilt-permitting mechanism and having an unsecured outer edge, said disk having a width, measured radially from the wall of such spout, greater than the arc of greatest intended tilt of such spout, together with a domed annulus, bounded by a circumferential edge adapted for mounting to such dispenser and an inner edge presented spacedly around such spout and adjacent the surface of said disk, the width of space between said inner edge and such spout in untilted position being less than the radial width of said disk.

2. For use with a dispenser having a tiltable discharge spout including a dispensing tip at its outer end and a tilt-permitting mechanism inward of such tip, a tilt restrictor and mechanism cover comprising a washer-like disk secured to such spout between its dispensing tip and its tilt-permitting mechanism and having an unsecured

4

outer edge, said disk having a width, measured radially from the wall of such spout, greater than the arc of greatest intended tilt of such spout, together with a domed annulus, bounded by a circumferential edge adapted for mounting to such dispenser and an inner edge presented spacedly around such spout and adjacent the surface of said disk, the width of space between said inner edge and such spout in untilted position delimiting the tilting arc of such spout.

3. For use with a dispenser having a tiltable discharge spout including a dispensing tip at its outer end and a tilt-permitting mechanism inward of such tip, a tilt restrictor and mechanism cover comprising a washer-like disk secured to such spout between its dispensing tip and its tilt-permitting mechanism and having an unsecured outer edge, together with a hollow domed annulus, bounded by a circumferential edge adapted for mounting to such dispenser and an inner edge presented spacedly around such spout and outwardly adjacent the outer surface of said disk, the width of space between said inner edge and such spout in untilted position being less than the width of said disk.

4. For use with a dispenser having a tiltable discharge spout including a dispensing tip at its outer end and a tilt-permitting mechanism inward of such tip, a tilt restrictor and mechanism cover comprising a washer-like disk having a convex outer surface and an unsecured outer edge, said disk being secured to such spout between its dispensing tip and its tilt-permitting mechanism, together with an annulus adapted for mounting to such dispenser, said annulus having an inner edge presented spacedly around such spout and outwardly adjacent the convex outer surface of said disk, the width of space between said inner edge and said spout in untilted position being less than the width of said disk.

5. For use with a dispenser having a tiltable discharge spout including a dispensing tip at its outer end and a tilt-permitting mechanism inward of such tip, a tilt restrictor and mechanism cover comprising a washer-like disk secured to such spout between its dispensing spout and its tilt-permitting mechanism and having an unsecured outer edge, together with a domed annulus bounded by a circumferential edge adapted for mounting to such dispenser and an inner edge presented spacedly around such spout and adjacent the surface of said disk, the surface of said disk adjacent the domed annulus being curved to fit close to the inner edge of said annulus throughout the range of tilt of such spout.

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