

[54] COLLAPSIBLE DISPENSING CONTAINER	3,456,650	7/1969	Schwartzman.....	222/205 X
[75] Inventor: Isral J. Markowitz, Closter, N.J.	3,587,937	6/1971	Childs.....	222/213
[73] Assignee: Stem Development Corp., New York, N.Y.	3,613,720	10/1971	Welch.....	137/527 X
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Primary Examiner—Robert B. Reeves
 Assistant Examiner—Francis J. Bartuska
 Attorney, Agent, or Firm—Lilling & Siegel

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 [51] Int. Cl..... B65d 37/00
 [58] Field of Search 222/92, 95, 96, 107, 205, 222/206, 207, 212, 213, 215, 490, 491, 494, 517, 568; 137/527, 527.2-527.8, 525.3, 525.7

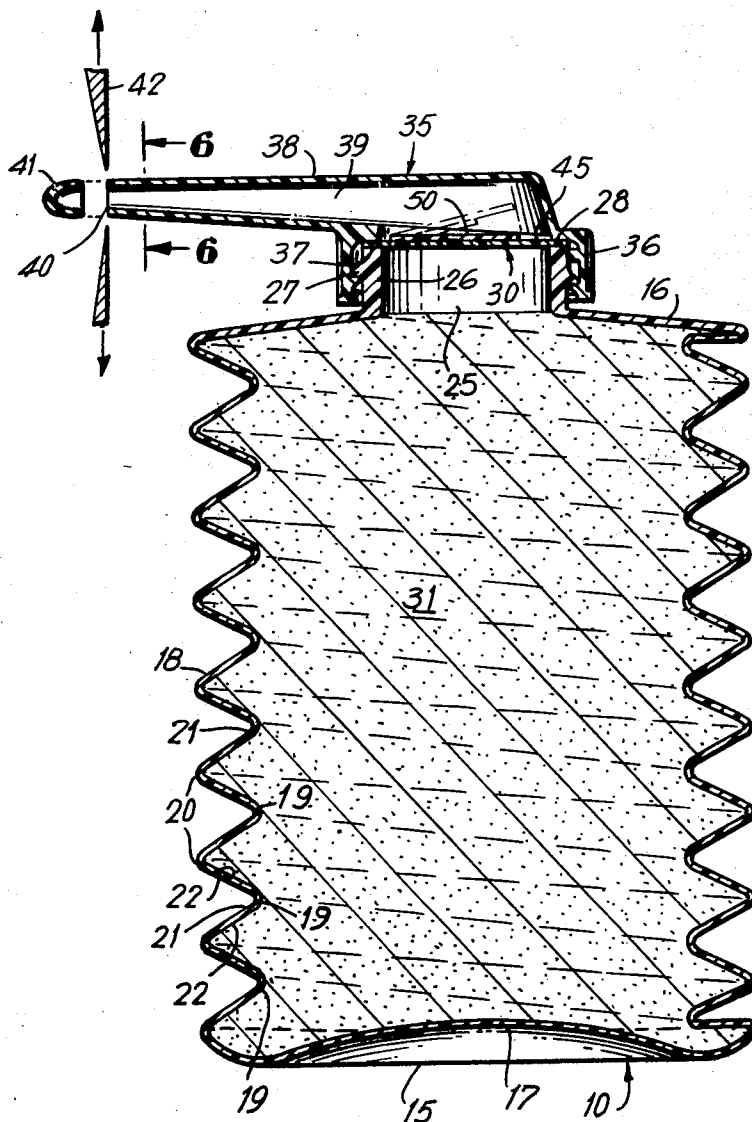
[57] ABSTRACT

A collapsible dispensing container wherein a container body is provided with an opening having a discharge member engaged over the opening, and in the opening is a one-way valve resiliently biased to permit fluent material movement outwardly upon collapse of the container body and prevent fluent material entry to the body.

[56] References Cited
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8 Claims, 8 Drawing Figures



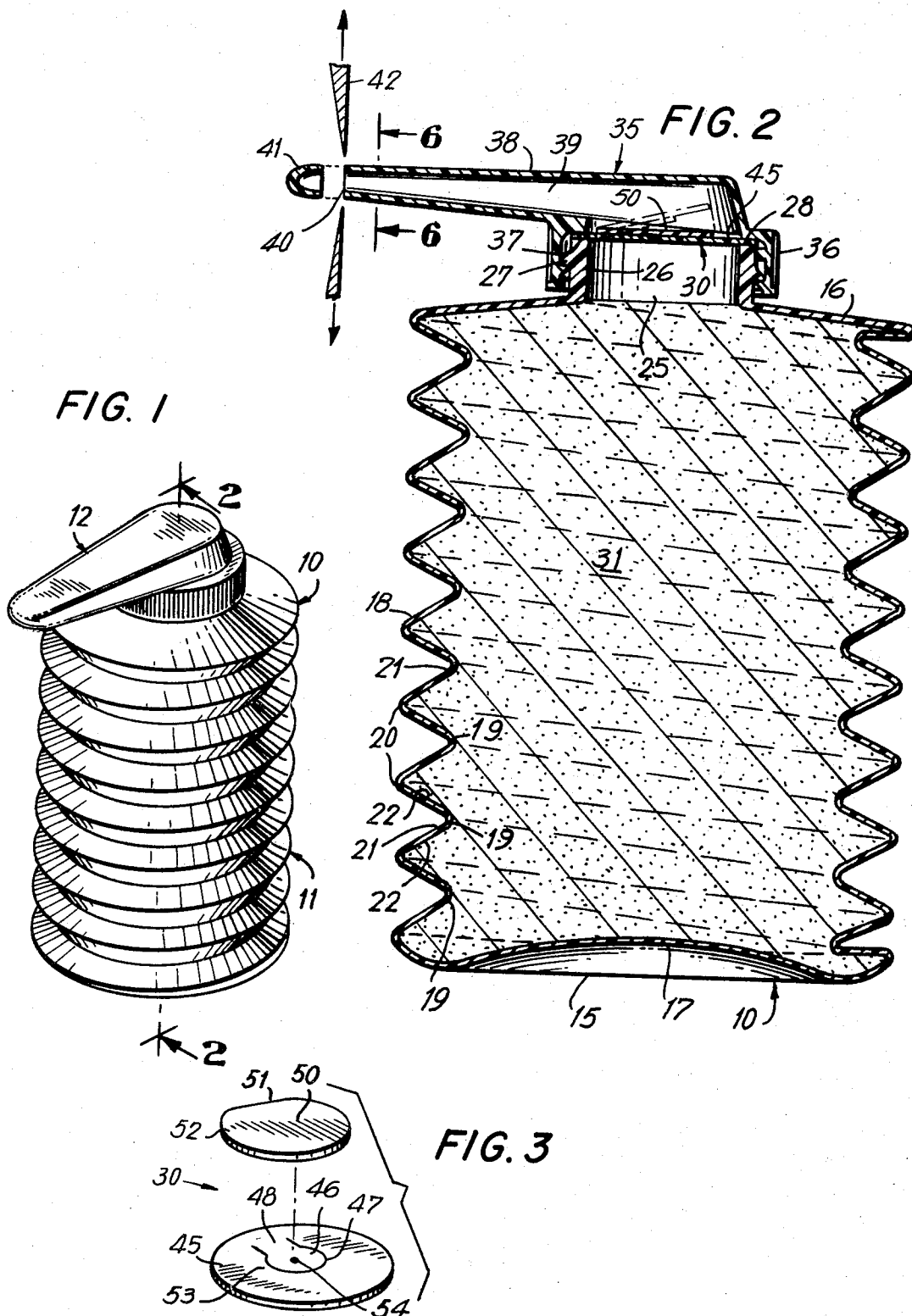


FIG. 4

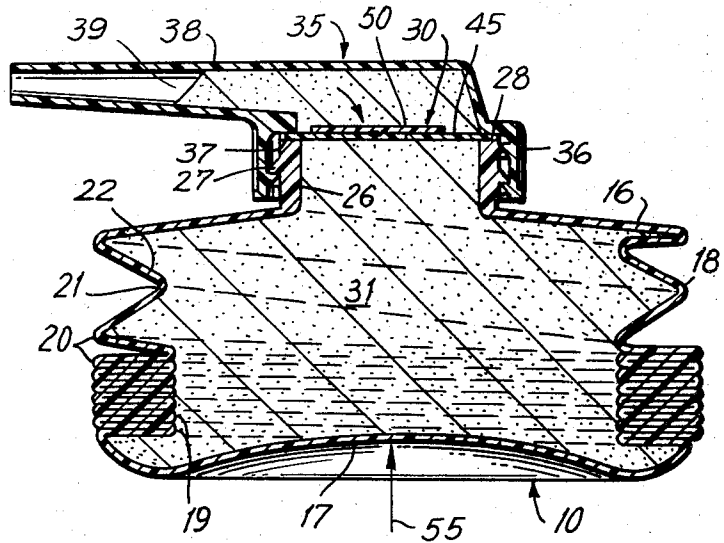


FIG. 5

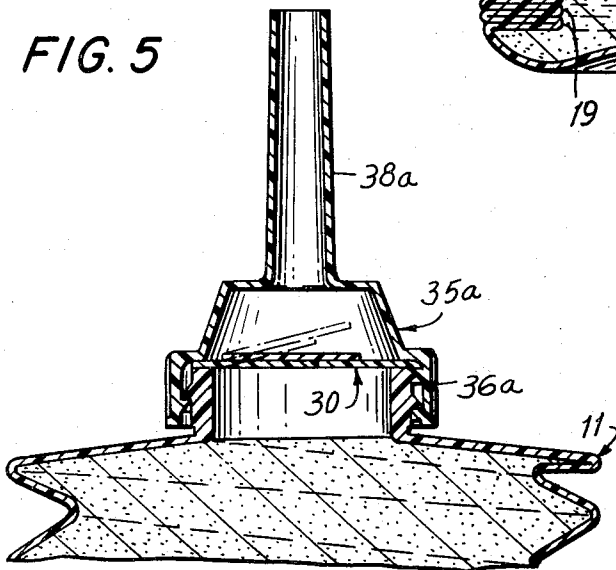


FIG. 6

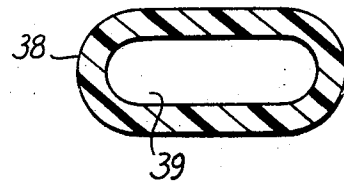


FIG. 7

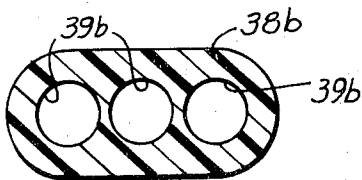


FIG. 8



COLLAPSIBLE DISPENSING CONTAINER

BACKGROUND OF THE INVENTION

As is well known to those versed in the art, there has been considerable development in the area of collapsible containers, such as squeeze bottles and the like. However, certain difficulties with collapsible containers or squeeze bottles have remained, for example the need for losing a substantial portion of the container contents as being incapable of discharge from the container. Additional difficulties have been in the provision of effective one-way valve means easily permitting dispensing of the contents while effectively precluding the entry of air or possible contaminants.

SUMMARY OF THE INVENTION

It is, therefore, an important object of the present invention to provide a dispensing container of the collapsible body type which overcomes the above-mentioned difficulties, being capable of dispensing a relatively high proportion of the contents by simple manual actuation, and which further effectively insures against the entry of air or contaminants into the container throughout the period of use.

It is still a further object of the present invention to provide a collapsible dispensing container of the type described which includes a unique construction of one-way outlet valve which is highly effective in operation, being entirely automatic to permit the egress of contents when desired while preventing the entry of air or other undesirable material, and being capable of economic manufacture to effect substantial savings in cost.

It is still another object of the present invention to provide a collapsible dispensing container of the type described which utilizes a unique combination of spiral bellows having generally cylindrical or substantially constant diameter, for substantially complete collapse of the bellows to dispense a high proportion of the fluent containers.

It is a further object of the present invention to provide a collapsible dispensing container having the advantageous characteristics mentioned in the preceding paragraph, which is admirably well suited for dispensing comestibles of flowable nature, such as whipped cream, and has been particularly developed and employed for use in connection therewith. However, it is understood that the instant device is capable of containing and dispensing a wide variety of fluent materials, without limitation thereto.

In particular, the instant invention includes a hollow collapsible body having an opening provided with a one-way valve for dispensing fluent contents, and a discharge member for passing and directing the discharged contents.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top perspective view showing a dispensing

container constructed in accordance with the teachings of the present invention, prior to use.

FIG. 2 is a sectional view taken generally along the line 2—2 of FIG. 1, and illustrating preparation for use.

FIG. 3 is an exploded perspective view showing a one way valve of the present invention apart from the container.

FIG. 4 is a sectional view similar to FIG. 2, but showing an intermediate condition of use.

FIG. 5 is a sectional view similar to FIG. 4, but showing a slightly modified embodiment.

FIG. 6, 7 and 8 are sectional views taken generally along the line 6—6 of FIG. 2 showing different embodiments of discharge configuration.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now more particularly to the drawings, and specifically to FIGS. 1 and 2 thereof, a dispenser container of the present invention is there generally designated 10, and includes a hollow collapsible container body 11 provided at one end with a discharge member 12.

The collapsible body 11 may include a pair of generally circular end walls, being a lower end wall 15 and an upper end wall 16. The lower end wall 15 may have its central region upwardly dished or externally concave, as at 17, so as to extend inwardly or upwardly toward the upper end wall 16. A circumferential or peripheral body wall 18 extends between the lower and upper wall 15 and 16, and peripherally about the lower and upper walls, being generally cylindrical and of substantially constant diameter throughout its vertical extent. That is, the circumferential or peripheral side wall 18 is formed with spirally extending fluting or corrugations, so as to form alternately internal and external ribs, ridges or crests 19 and 20, which, respectively form on their opposite sides external and internal grooves or flutes 21 and 22, all best seen in FIG. 2.

The peripheral side wall 18 is fabricated of resiliently flexible material, so that the corrugations or fluting define collapsible bellows. That the spiral conformation of the bellows configured side wall 18 is generally cylindrical insures enhanced compression of the bellow wall portions into relatively flat, facing engagement with each other, see FIG. 4, to exclude contents material from collapsed bellows formations.

The generally circular upper end wall 16 may be substantially flat, and is provided centrally thereof with an opening 25 communicating between the interior and exterior of the hollow body 11. More specifically, an annular, or open-ended cylindrical neck 26 may be formed centrally on the upper end wall 16, projecting externally therefrom, and serve to define therewithin the fluid passageway or opening 25.

In practice, the container body 11, including the lower end or bottom wall 15, circumferential or peripheral side wall 18, upper end or top wall 16 and annular neck 26, may all be integrally fabricated of suitable material, such as plastic, say by blowmolding, or other suitable mass production technique.

The annular neck 25 may be of sufficient thickness to afford relative stiffness or rigidity, and provided exteriorly thereabout with fastener elements or screw threads, as at 27. Further, the outer end of the neck 26, as at 28, may define an annular, outwardly facing end

surface or shoulder on the neck, for purposes appearing more fully hereinafter.

A one-way or outlet valve is generally designated 30 and located in position extending across the opening 25 defined by neck 26, so as to pass the fluent contents 31 in one direction (outwardly) only, and automatically close to effectively prevent entry into the body 11 of air, or other material, including possible contaminants.

A discharge member is generally designated 35, and engaged over the outer end of neck 26, to control discharge of fluent material 31 from the body 11. More specifically, the discharge member 35 may include an engaging part 36, generally in the form of an internally threaded annular configuration or nut, for circumposition about the neck 26 in threaded engagement therewith. Internally of the engagement member 36 is located a downwardly facing, internal shoulder 37 for clamping engagement with the valve 30. That is, the downwardly or inwardly facing shoulder 37 of engagement member 36 serves to bear against and clamp the valve 30 in position on the upwardly or outwardly facing shoulder 28 of the neck 26.

In addition, the discharge member 35 is provided on the outer end of the engagement member 36 with a fluid passageway, nozzle or spout 38. That is, the spout 38 has an elongate hollow interior 39 communicating at one end with the interior of engagement member 36, and has its other end, as at 40, remote from the body 11 and provided with a removable closure 41. That is, the closure 41 may be severed, as by severance means 42 when the container 10 is ready for use.

The valve 30 is best seen in FIG. 3 as including a generally flat, substantially circular plate or valve wall 45, formed of a suitable stiff, resiliently flexible material, such as plastic, or the like. The valve wall 45 is formed centrally thereof with a tab, flap or tag, as at 46. The tab or flap 46 is formed out of the central portion of the material of wall 45, as by a generally U-shaped cut 47 which severs the tab from the wall 45 except at a radially outward attachment region 48. By the resilience of the material of the valve wall 45, the central tab or flap 46 is flexible about the attached portion 48 to swing out of the plane of the wall 45, and releasable for resilient swinging movement to return to the plane of the wall.

The valve 30 further includes a generally flat, disc-like valve element 50 which may be generally circular, or circular with a chordal edge 51, as in the illustrated embodiment, and secured in facing engagement with one side, the outer side of the resiliently swingable flap 46, as by a weld 52, or other suitable securement means. In the assembled condition of valve element 50 with wall 45, the peripheral marginal region 52 of the valve element overlies the intermediate region of valve wall 45 bounding the cut 47, as at 53. In the normal, closed condition of the valve 30, the tab or flap 46 lying coplanar with the remainder of wall 45, the valve element 50 is in closely facing and sealing engagement with the intermediate bounding region 53 of the valve wall, the solid line condition shown in FIGS. 2 and 4.

Upon collapse of the container 11, as by manual squeezing, say in the direction of arrow 55 in FIG. 4, the valve element 50 swings, together with the flap 46, upwardly or outwardly and away from the wall 45, to open the valve 30 within the cut 47 and pass contents

31 through the valve and outwardly through the spout 38 of the discharge member. Immediately upon release of squeezing or collapsing pressure, the valve 30 resiliently returns to its closed position, and the hollow container body 11 tends to expand, which tends to reduce fluid pressure internally of the body and further insure closing and effective sealing by the valve 30. This condition is shown in FIG. 4. Thus, discharge of the contents 31 may be accomplished selectively, when and where desired by the user.

In the embodiment shown in FIG. 5, the container 11 may be identical to that of FIGS. 1-4, as may be the valve 30.

However, the discharge member 35a may differ in certain respects. Thus, while the discharge member 35a may include an engagement member 36a which may be generally similar to the engagement member 36 of the first described embodiment, the outlet passage means or spout 38a differs from that of the first described embodiment in extending generally upwardly, longitudinally, or coaxially or the body 11. Of course, other spout configurations may be employed.

In FIG. 6 is shown the spout 38 having a generally ovaloid internal passageway 39.

The embodiment of FIG. 7 shows a spout 38b having a plurality of separate discharge passageways 39b, each of which may be generally circular in cross-section, for dispensing a plurality of streams of effluent.

Further, the discharge spout 38c of FIG. 8 illustrates an internal passageway 39c of corrugated cross-sectional configuration. Of course, many different spout configurations may be employed, to achieve a wide variety of artistic effects, as desired.

From the foregoing, it will be appreciated that the device of the present invention provides a dispensing container of the collapsible body type which is substantially automatic in operation, requiring only manual squeezing for discharge, is highly efficient in permitting recovery of a relatively high proportion of the contents, is well adapted for economical manufacture and filling by mass production techniques, being substantially foolproof in operation and durable and dependable throughout a long useful life.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention.

What is claimed is:

1. A dispensing container comprising a hollow collapsible body having an opening, a discharge member over said opening for discharging contents from said body, a normally closed one-way valve in said opening for passing contents outwardly only, said valve being normally resiliently biased to closed position and yieldable to open under pressure of fluid contents on application of external forces tending to collapse said body; and said valve comprising a valve wall of resiliently flexible material extending across said opening, a tab formed of a central wall region and resiliently flexible out of the plane of said valve wall and lying coplanar with the remainder of said valve wall when in a normally closed position, and a valve element carried by said tab on one side thereof for movement with said tab into and out of overlapping closing relation with an intermediate wall region adjacent to said central wall region; said tab forming a tongue-like member and hav-

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ing a portion thereof connected to said valve wall so as to be substantially pivotable about said portion upon flexing out of the plane of said valve wall.

2. A dispensing container according to claim 1, in combination with a hollow neck on said body communicating between the interior and exterior thereof, the hollow of said neck defining said opening, and a shoulder of closed outline configuration extending about said neck, said valve wall being seated on said shoulder.

3. A dispensing container according to claim 2, said discharge member comprising an engagement portion engaged over the outer end of said neck, the outer end of said neck defining said shoulder, and said valve wall being clamped in position on said shoulder by said engagement portion.

4. A dispensing container according to claim 3, said discharge member comprising a spout extending from said engagement member for passing and directing fluid contents from said body.

5. A dispensing container according to claim 1, said body being integrally fabricated of stiff resilient material

and comprising a pair of spaced end walls, and a circumferential side wall extending about the peripheries of and between said end walls, said side wall being formed to define a spirally configured bellows.

5 6. A dispensing container according to claim 5, the spiral configuration of said bellows extending continuously between said end walls.

7. A dispensing container according to claim 5, in combination with a hollow neck on one of said end walls communicating between the interior and exterior of said body and defining said opening, and a shoulder of closed outline configuration extending about said neck, and said valve being seated in sealing relation on said shoulder, and said tab flexing out of the plane of said valve wall upon the collapse of said body whereby said contents is discharged from said body through said valve.

8. The dispensing container according to claim 1, wherein said tab is partially detached from said valve wall and integrally formed therewith.

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