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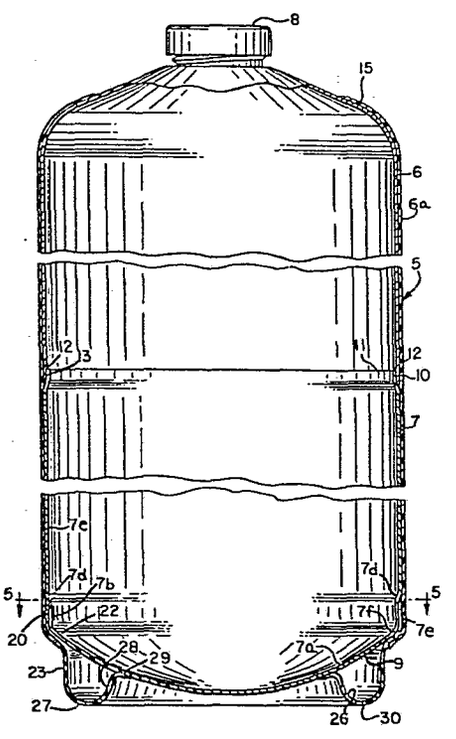
(54) A container.

(57) A container for pressurized products formed of axially telescoped upper and lower container halves (6, 7) joined in a generally peripheral mid-seam 10. The upper half 6 has an upper end portion 16 with a pour opening to which a closure 8 is applied and the bottom half 7 has a pressure-dispersing outwardly convexed bottom end portion 9. A support base 21 is fitted onto the bottom end portion 9 to provide a stable base for the container to support it in upright position. A sleeve 14 of plastics material film is shrink wrapped about the central portion of the container and also over part of the upper end portion 16 and about and under a shoulder of the base 21 and holds the two halves (6, 7) together and retains the support base 21 in association with the bottom end portion 9 of the bottom half 7. The plastic sleeve 14 is flexible and allows the support base 21 to cant about the bottom portion 9 if the can should be dropped on edge to cushion the fall and after the fall, the stretched plastic retracts and pulls the support 21 to its normal position on the lower end portion 9 to properly support the can.

FIG. 2



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A CONTAINER

This invention relates to a thin-walled container for pressurized fluid products.

A new development in the packaging of beverages is a high demand for larger containers of a size on the order of two liters and larger. It has been proposed to form such containers of two container halves, preferably made of thin metal such as steel or aluminum, although plastic is also contemplated, which may be readily formed and wherein the two container halves are joined by a single peripheral seam disposed generally mid-height of the container. Such peripheral seam is most easily formed by merely telescoping preformed interfitting free ends of the container halves and bonding the overlapped container half portions together preferably by adhesives such as disclosed in U.S. Patent No. 4,034,132. The resultant seam is more than adequate to maintain the internal pressure. However, it will be apparent that when such a container is struck or is dropped so as to strike some surface under abnormal conditions, there could be a failure of the container in the peripheral seam area so that a leak would develop or the two halves would separate.

The object of the present invention is to provide means for minimizing failure when such containers are dropped.

Accordingly, the present invention provides a thin-walled container for pressurized fluid products, said container comprising a body and upper and lower end por-

tions, said lower end portion having a pressure-resistant configuration, a thin resilient plastic film sleeve tightly encircling said container, a flexible support base for the container having a universal tiltable slidable fit with said lower end portion and having normal position in axial alignment with the container, said sleeve extending under at least a portion of the base and securing said base to said container and being stretchable to accommodate limited tilting movement of said base with respect to said container.

When a container is dropped the sleeve will expand under pressure and effect a controlled venting of the interior of the container and in the event of seam failure and will controllably resist endwise separation of the two halves and will also hold the base in place.

The sleeve has other advantageous functions in that the sleeve may be in the form of a label, thereby eliminating either the provision of a separate label or decoration of the container and being resilient flexes with the container.

In the drawings:

Figure 1 is a perspective view of a container formed in accordance with this invention;

Figure 2 is an enlarged fragmentary vertical sectional view taken along the line 2-2 of Figure 1, and shows the details of the container peripheral seam and the security label overlying the same, and attachment of the support base;

Figure 3 is a top end view taken substantially on line 3-3 of Fig.1;

Figure 4 is a bottom end view taken substantially on line 4-4 of Fig. 1, and

Figure 5 is a reduced cross-sectional view taken substantially on line 5-5 of Fig. 2.

Referring now to the drawings in detail, it will be seen that there is illustrated in Figure 1 a container formed in accordance with this invention, the container being generally identified by the numeral 5. The container

is simply formed of two container halves 6 and 7, each of which is of a cup-shaped configuration and may be readily formed. The container upper half 6 is disposed uppermost and is provided with a suitable dispensing fitting and closure 8. The container lower half 7 has a bottom construction 9 which is of a configuration to resist the internal pressure within the container 5 and still provide an adequate supporting base and comprises a bottom wall 7a outwardly convexed somewhat of spherical section on the bottom portion 7b. The bottom portion 7b comprises an inset annulus or side wall portion 7c which merges at its lower edge with the periphery of the bottom wall 7a and at its upper edge merges into the lower edge of shoulder 7d which flares outwardly into the lower edge of the cylindrical side wall 7c of the bottom half 7 of the container.

Referring now to Figure 2, it will be seen that the container half 6 is joined to the container half 7 by a peripheral seam 10. The peripheral seam 10 is of a simple construction and includes an upper end portion 11 of the side wall 7c of container half 7 telescoped within the lower end portion 12 of the side wall 6a of container half 6. A suitable bonding material 13 seals the container portions 11 and 12 against leakage and separation due to high internal pressures.

It is to be understood that the container halves 6, 7 may be formed of suitable materials which, if not metal, cannot be secured together in a conventional manner such as by welding or by soldering, and accordingly the bonding material could be suitable adhesives as hereinbefore noted.

It is to be understood that in the peripheral seam 10 the bonding material is loaded in shear and is more than adequate to prevent separation of the container halves 6, 7 due to internal pressures within the container 5, it being the intended use of the container 5 to package liquids, preferably beverages, under high internal pressures. The internal pressures under certain conditions may exceed 100

p.s.i. Further, the peripheral seam 10 is of a construction normally to be shock resistant in the event of droppage of the container or other rough handling and will within limits resist collapse when the container is momentarily subjected to vacuum preparatory to filling. On the other hand, it will be apparent that should the container 5 be unduly abused, there could be failure. Normally the failure will be by way of rupture of the seam 10 only sufficient to effect leakage or rapid expulsion of the packaged product. On the other hand, the failure of the seam 10 could be effected to the extent that the two container halves 6, 7 would separate.

In accordance with this invention, it is proposed to provide the container 5 with a sleeve, generally identified by the numeral 14, which will have several functions. The sleeve 14 may, of course, carry suitable indicia to serve its function as a label. Secondly, the sleeve 14 will be formed of a heat shrinkable plastics material film such as Polyvinyl Chloride which may be readily shrunk into place with the film having sufficient strength to prevent rupture upon failure of the seams 10.

It is to be noted that the label sleeve 14 has an upper end portion 15 which engages around a corresponding upper end portion 16 of the container half 6. In a like manner, the label sleeve 14 will have a lower end portion 17 which engages peripherally around a collar 20 of a support base 21.

The support base 21 has an inwardly stepped shoulder 22 which fits complementally against the underside of the peripheral edge portion 7f of the bottom wall 7a of the bottom half section 7. The lower edge of shoulder 22 merges into the upper end of a generally vertical outer wall 23 of a cushion ring 25 which is generally of U-shape in cross-section. The base further comprises a downwardly convexed heel wall 26 which is adapted to provide a seat at its crest 27 upon any supporting surface such as a table top or the like. The wall 26 merges at its inner edge with the

lower edge of an inner frusto-conical wall 28 which at its upper edge is provided with an outturned flange 29 which is cupped beneath the adjacent portion of the bottom wall 7a of the container. A plurality of vent holes 30, 30 extend through the heel wall 26.

As best seen in Fig. 2, the plastic overwrap or sleeve 14 has a corner end portion 32 which is shrunk tightly under the shoulder 22 and, if desired, may additionally be adhesively bonded thereto or integrated therewith. The support base may be of preferably plastic material such as polyethylene and is distortable so that upon the container being dropped at an angle to the ground or floor, the base can cant slightly upon striking the ground and thereupon will stretch the sleeve on one side and fold it on the other. After the container comes to rest, the base will reposition itself being urged by the bias in the stretched portion of the sleeve.

In addition, the hollow construction of the base will, upon its collapse, cushion the fall. The collapse of the base is controlled by the resilience of the material as well as the metering of the air from the chamber 35 through the vent or metering holes 30.

Thus, the label 14 is both generally tightly sealed with respect to the exterior of the container 5 and is interlocked with the upper ends of the container 5 in a manner to resist separation of the container halves 6, 7.

In the event the pressurized container 5 is damaged to the extent that there is any peripheral rupture of the seam 10, the label 14 will serve to prevent an immediate venting of the contents to the atmosphere and will function as a valve to allow the gradual venting of the container. On the other hand, should the rupture of the seam 10 be to the extent that the container halves 6, 7 begin to separate at the seam 10, the anchoring of the opposite ends of the label 14 to the container halves 6, 7 will prevent immediate separation of the container halves and will also function as a valve to vent the pressure from within

the container, thereby eliminating the force which would effect separation of the container halves.

It is to be understood that the label 14 may be provided as a pre-printed sleeve which may be readily telescoped over the container 5 and then heat shrunk in place in a conventional manner. If added strength is desired, the sleeve may be of a seamless construction.

CLAIMS

1. A thin-walled container for pressurized fluid products, said container comprising a body and upper and lower end portions, said lower end portion having a pressure-resistant configuration, and a thin resilient plastic film sleeve tightly encircling said container, characterized by a flexible support base for the container having a universal tiltable slidable fit with said lower end portion and having normal position in axial alignment with the container, said sleeve extending under at least a portion of the base and securing said base to said container and being stretchanble to accommodate limited tilting movement of said base with respect to said container.

2. A container according to claim 1, characterized in that said base is formed of distortable plastic material, said lower end portion having a convex shape and said base complementally engaging said end and upon impact said base canting by sliding on the bottom end with respect to the container to cushion impact loads.

3. A container according to claim 1 or 2, characterized in that said base and lower end portion of the container have abutting shoulders and said sleeve extends uner the shoulder on said base, and the base has a support in slidable engagement with the bottom of the container.

4. A container according to claim 1, 2 or 3 wherein said container is formed of two halves joined in a peripheral seam defined by telescoped portions of said container halves and being adhesively bonded together, characterized by said sleeve extending completely about said body and in part about the upper end portion thereof and in addition to providing securement means for the base to the container providing means for controlling venting of the container in the event of a leak in the seam.

5. A container according to any of claims 1 to 4, wherein said container is formed of adhesively joined halves which have oppositely facing end portions, characterized in that said sleeve also engages the upper end

portion and resiliently restrains said container halves against axial separation.

6. A container according to any of claims 1 to 5, characterized in that said film sleeve is heat shrunk in situ.

FIG_1

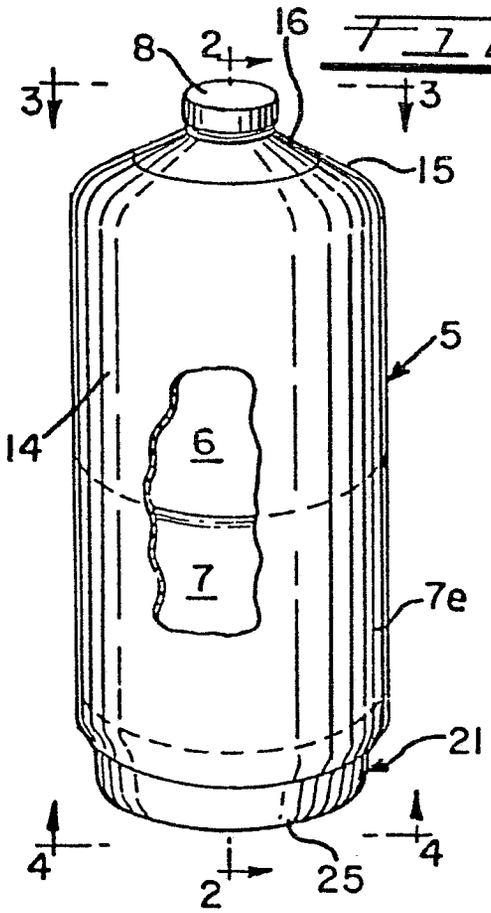


FIG_3

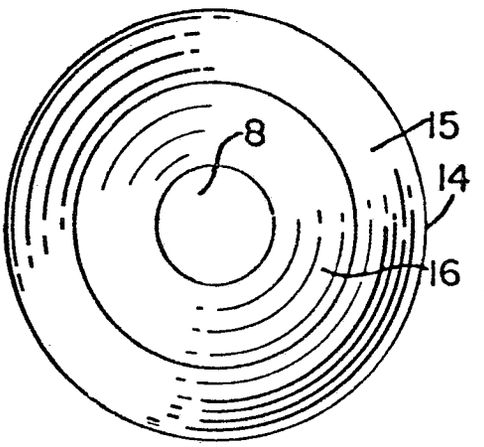


FIG_4

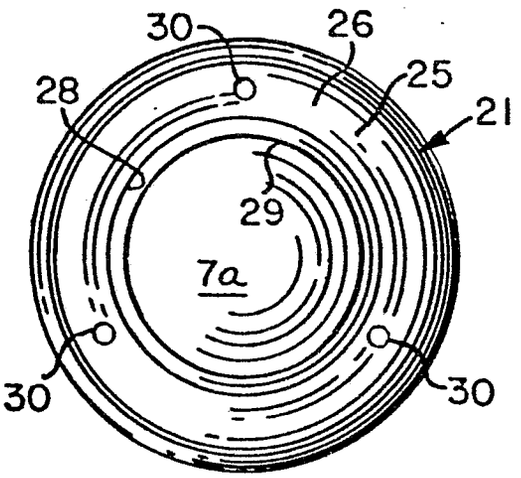


FIG_5

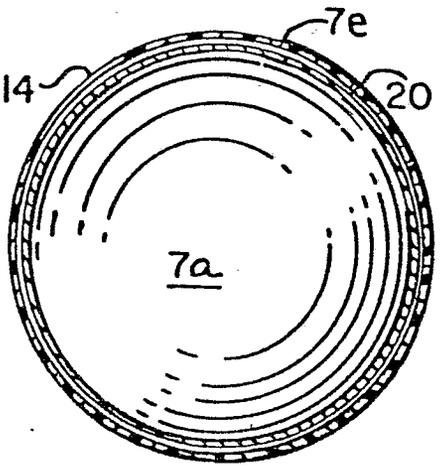
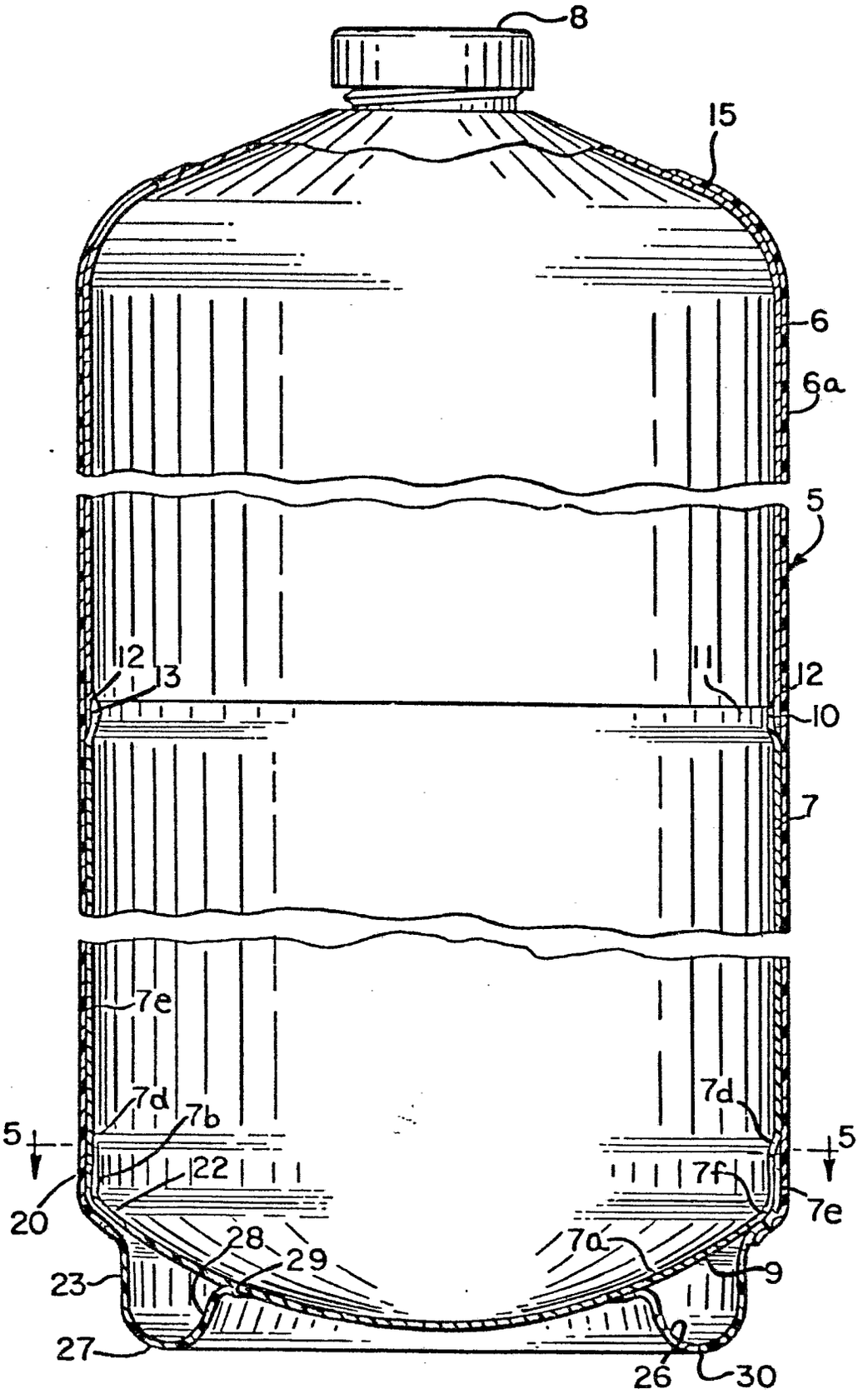


Fig. 2



European Patent Office

EUROPEAN SEARCH REPORT

0040269

Application number

EP 80 30 1490

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	US - A - 4 187 276 (OWENS-ILLINOIS) * Column 5, lines 65-68; column 6, lines 1-68; column 7, lines 1-68; column 8, lines 1-7; figures 1,2,4 *	1,2,3, 6	B 65 D 25/24 23/08
X	US - A - 4 138 026 (OWENS-ILLINOIS) * Column 5, lines 31-68; column 6, lines 1-68; column 7, lines 1-2; figures 1,2,4-9 *	1,2,3, 6	
A	EP - A - 0 007 216 (THE CONTINENTAL GROUP) * The whole document *	1,4,5, 6	TECHNICAL FIELDS SEARCHED (Int. Cl.³) B 65 D
	US - A - 3 927 782 (ILLINOIS TOOL WORKS) * The whole document *	1,2,3	
	US - A - 3 722 725 (MONSANTO COMPANY) * The whole document *	1,2,3	
	US - A - 4 082 200 (OWENS-ILLINOIS) * The whole document *	1,2,3	
D	US - A - 4 034 132 (THE CONTINENTAL GROUP)		

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	07-01-1981	BAERT