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[54] **DISPOSABLE PRESSURE CONTAINER**
5 Claims, 11 Drawing Figs.

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220/24.5, 220/42 ES, 222/541, 229/3.5 R, 229/5.5

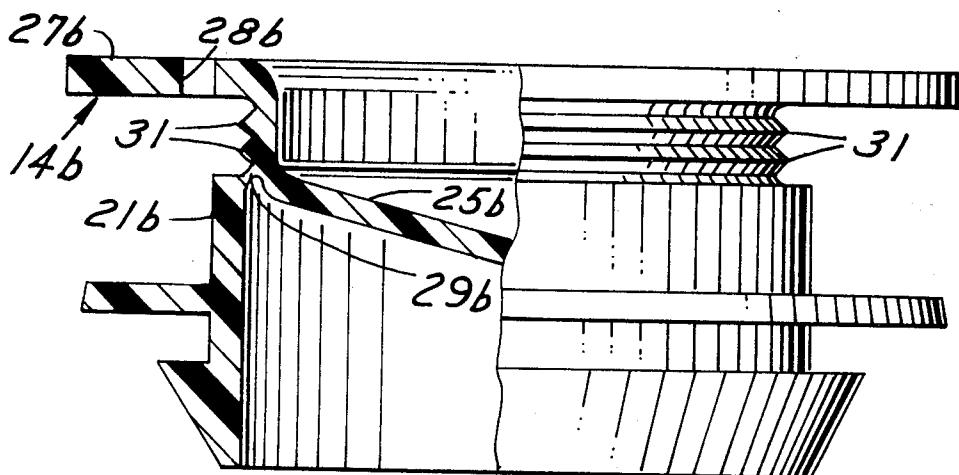
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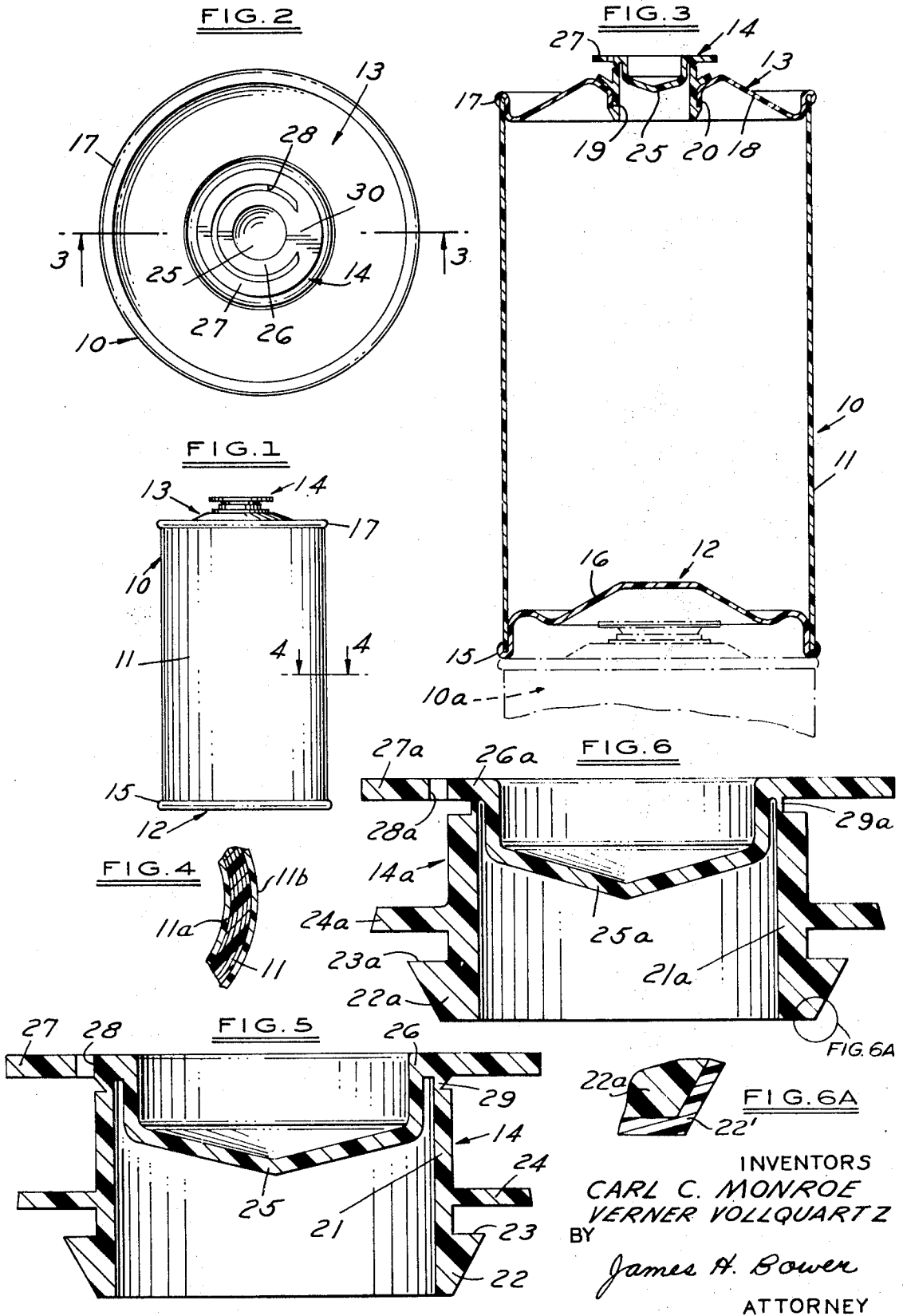
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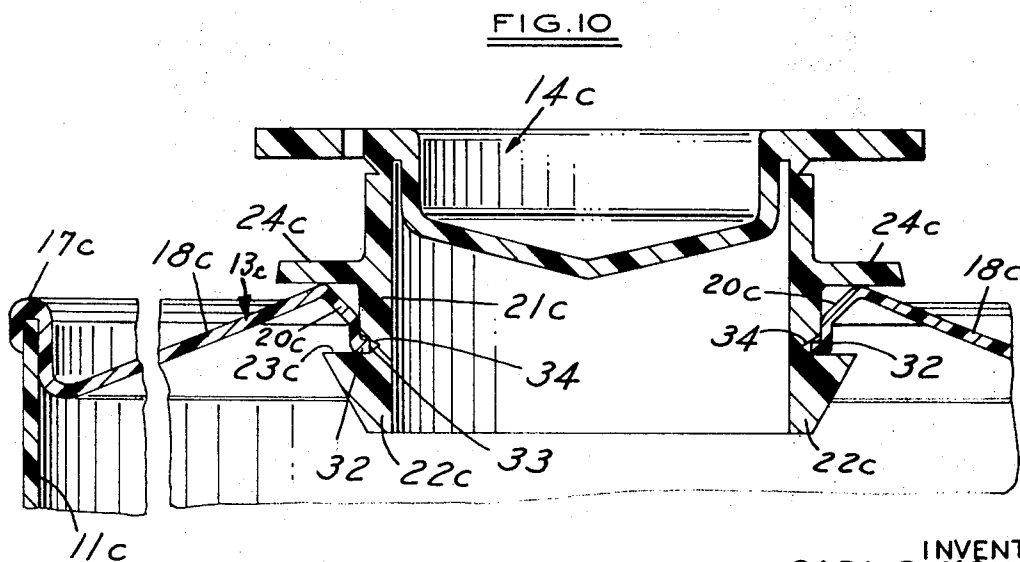
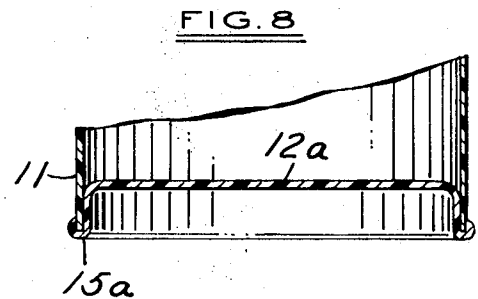
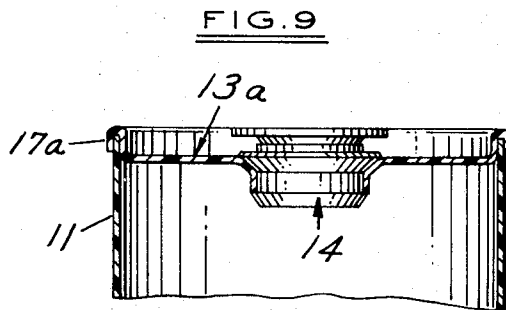
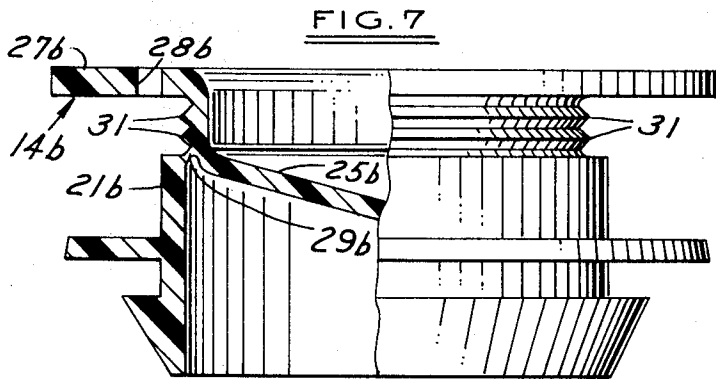
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ABSTRACT: A disposable, self-destruct, composite container for liquid goods, and in particular, liquid goods having internal pressures, such as beer and carbonated soft drinks. The container includes an elongated body member comprising a paperboard cylinder which is provided with a plastic film on its internal surface for restricting gas permeability and sealing of liquid. The paperboard body member is provided with an exterior coating of thermoplastic to provide a moisture barrier, and for cosmetic appearance purposes. The paperboard body member is closed at each of the top and bottom ends thereof by a circular-shaped disc. The top disc has an opening which is enclosed by a sealing plug means that includes an integral tear-off tubular cap portion that is provided with an integrally molded pull ring for detaching the tubular cap portion.





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DISPOSABLE PRESSURE CONTAINER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to disposable, paperboard containers, and more particularly to a disposable, self-destruct paperboard container for goods having internal pressures to be retained and restricted therein.

2. Description of the Prior Art

Disposable pressure containers are well known in the art. One example of the prior art disposable pressure containers is the conventional metal container used for beer, carbonated soft drinks, and like. A disadvantage of the prior art disposable pressure metal containers is that they are costly and present a disposal problem.

Heretofore, attempts have also been made to provide disposable paperboard pressure containers. A disadvantage of the prior art disposable paperboard pressure containers is that they have not been capable of retaining internal pressures for any length of time whereby such containers have minimum shelf life. Another disadvantage of the prior art disposable paperboard pressure containers is that they are costly to manufacture, and due to their construction, they cannot be stacked easily.

SUMMARY OF THE INVENTION

The present invention relates generally to disposable pressure containers, and more particularly to a novel and improved disposable, self-destruct paperboard pressure container for goods having internal pressures to be retained and restricted therein.

The disposable pressure container of the present invention includes an elongated body member comprising a paperboard cylinder which is provided with a plastic film on its internal surface for the restriction of gas permeability and the sealing of liquid. The paperboard body member is provided with an exterior coating of thermoplastic to form an exterior moisture barrier and for cosmetic appearance purposes. The body member is closed at each of the top and bottom ends thereof by a closure means formed as a circular-shaped disc. The top disc is provided with an opening which is enclosed by a sealing plug means that is provided with an integrally molded tear-off tubular cap portion which is provided with an integrally molded pull ring for detaching the tubular cap portion.

It is an important object of the present invention to provide a novel and improved disposable paperboard pressure container which overcomes the aforementioned disadvantages of the prior art disposable pressure containers.

It is another object of the present invention to provide a novel and improved disposable paperboard pressure container which includes a cylindrical paperboard body member that is coated on the inside thereof with a plastic film that retains a pressure inside of the container so as to provide a disposable paperboard pressure container having long shelf life.

It is still another object of the present invention to provide a novel and improved disposable paperboard pressure container which includes a cylindrical paper body member that may be made by conventional paperboard forming and sealing machines, and which may be filled by conventional pressure fluid filling and capping machines.

It is still another object of the present invention to provide a novel and improved disposable paperboard pressure container which includes a plastic-coated paperboard body member that is provided with shaped top and bottom circular discs which permit the containers to be easily stacked, one on top of the other.

It is still another object of the present invention to provide a novel and improved disposable paperboard pressure container which includes a coated cylindrical paperboard body member and a top end closure disc having a sealing plug means which includes a reusable, tear-off cap portion that can be snapped back into place for recapping purposes.

It is still a further object of the present invention to provide a novel and improved disposable paperboard pressure container which is simple and compact in construction, economical to manufacture and efficient in use.

It is still another object of the present invention to provide a novel and improved disposable paperboard pressure container which includes a cylindrical paperboard body member, a shaped bottom closure means enclosing the bottom end of the body member, a shaped top closure means enclosing the top end of the body member, said top closure means having an opening which is enclosed by a sealing plug means provided with an integrally molded tubular tear-off cap portion which is provided with an integrally molded tear-off pull ring. The tubular cap portion may be provided with external ring means so that it may function as a reusable type of cap.

Other objects, features and advantages of this invention will be apparent from the following detailed description, appended claims, and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an elevational view of a disposable pressure container made in accordance with the principles of the invention.

FIG. 2 is an enlarged, top plan view of the disposable pressure container illustrated in FIG. 1.

FIG. 3 is an enlarged, elevational section view of the disposable pressure container illustrated in FIG. 2, taken along the line 3—3 thereof, and looking in the direction of the arrows.

FIG. 4 is a fragmentary, enlarged, horizontal section view of the container paperboard body illustrated in FIG. 1, taken along the line 4—4 thereof, and looking the direction of the arrows.

FIG. 5 is an enlarged section view of the sealing plug means illustrated in FIG. 3.

FIG. 6 is an elevational section view, similar to that of FIG. 5, and showing a second embodiment of a sealing plug means employed in the invention.

FIG. 6A is an enlarged portion of the cross-sectional surface of the sealing plug illustrating an inside surface coating.

FIG. 7 is a fragmentary, elevational section view of a third embodiment of a sealing plug means employed in the invention.

FIG. 8 is a fragmentary, elevational section view of a container provided with a modified bottom closure member.

FIG. 9 is a fragmentary, elevational section view of a container provided with a modified top closure member.

FIG. 10 is a fragmentary, elevational section view of a container provided with another modified top closure member.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, and in particular to FIGS. 1 and 2, the numeral 10 generally indicates a disposable paperboard pressure container made in accordance with the principles of the present invention. The container 10 includes a body member 11 which is formed as a paperboard cylinder that is illustrated in FIG. 4 as being spirally wound. It will be understood that the paperboard cylindrical body member 11 may be made in one piece with an overlaid seam, or by any other method of forming a paperboard cylinder. Any interior cut edges of the paperboard cylindrical body member 11 may be sealed by any conventional method of sealing paperboard containers to make such edges impervious to moisture and wicking.

The body member 11 is provided on the inner surface, indicated generally by numeral 11a FIG. 4, thereof with a suitable plastic film for the restriction of gas permeability and to seal liquids within the container. A preferable plastic film for this purpose is one known and available on the market as "Saran," which is a polyvinyl-chloride plastic. The body member 11 is provided with an exterior coating of suitable plastic, indicated generally by numeral in FIG. 4, such as

polyethylene plastic, or any similar material to provide an exterior moisture barrier. In order to provide a self-destruct container, a short-life plastic would be used. The exterior plastic coating also enhances the exterior qualities of the container for cosmetic appearance purposes. FIG. 4 is not in accurate portion in reference to the various layers, typical dimensions for the layers would be for the layers of 11a and 11b would be 0.001 and 0.002 of an inch and layer 11 to be 0.022 of an inch.

The disposable pressure container 10 is closed at the bottom end thereof a closure means generally indicate by the numeral 12 and at the bottom thereof by a top closure means generally indicated by the numeral 13. The top closure means 13 carries a sealing plug means generally indicated by the numeral 14.

The bottom closure means 12 is an integral part of the assembled composite container 10 and it is formed as a disc. The disc forming the bottom closure means 12 may be shaped and formed by any suitable process, as for example, by a cold stamping process. The bottom closure means 12 is preferably made from a suitable plastic material having the proper characteristics necessary for a cold stamping process. The bottom closure means 12 is preferably provided with a thin coating of the aforementioned "Saran" film to decrease permeability.

The outer circumference of the bottom closure disc 12 is channel-shaped shaped as indicated by the numeral 15 to provide a seal when the bottom disc is assembled on the lower end of the paperboard body member 11 so as to prevent any moisture penetration by wicking into the substrate of the body member 11. The illustrated bottom disc 12 is provided with a conical shape 16 which extends inwardly of the body member 11 so as to afford a mechanical deflection of the body disc 12 when the container is filled with liquid under pressure. The pressure inside of the container 10 will provide a deflection or lengthening of the bottom disc 12 downwardly to allow an increase in volume and a corresponding decrease in internal pressure. The flexing of the bottom disc 12 also provides a secondary function of acting as an internal type of spring or shock-absorbing means in case the container 10 is dropped.

It will be understood that the bottom disc 12 may be made in a variety of basic shapes. The geometrical design of the bottom disc 12 may mate with the design of the top disc 13 so as to permit upward protrusion of the top disc 13 of one container into the bottom disc 12 of another container for perfect nesting vertically of the containers 10 at points of goods distribution or sale, as illustrated in FIG. 3.

It will be understood that the bottom disc 12 may be formed flat as illustrated in FIG. 8, wherein the parts of the container corresponding to the parts of the embodiment of FIG. 3 are marked with the same reference numerals followed by the small letter "a."

The top closure means 13 is also illustrated as being in the form of a shaped disc. The disc 13 may be formed in the same manner as described hereinbefore for the forming of the bottom disc 12. It may also be provided with a thin plastic film in the same manner as the bottom disc 12 to lessen gas permeability. The outer circumference of the top disc 13 is provided with a channel 17 to provide a seal when assembled on the upper end of the paperboard body member 11 to prevent any moisture penetration by wicking into the end of the paperboard body member 11. The top disc 13 is illustrated as being provided with an outwardly extended conical shape 18 to enhance the pourability function of the top disc 13 and for optimum accessibility for purposes of oral consumption of the liquid within the container 10. The top disc 13 is provided with an opening 19 which is formed by a vertically disposed sleeve or neck 20 that receives the plug means 14.

It will be understood that the top disc 13 may also be formed flat as illustrated in FIG. 9. The parts of the embodiment of FIG. 9 which correspond to the embodiments of FIG. 3 have been marked with the same reference numerals followed by the small letter "a."

The sealing plug means 14 is constructed from any suitable flexible or nonflexible material. It is preferably formed from a suitable plastic material and coated on the inside thereof with a film of the aforementioned plastic "Saran." FIG. 6A illustrates the "Saran" as 22', the thickness of the layer 22' would be, for example, 0.001 to 0.002 of an inch. As best seen in FIG. 5, the sealing plug means 14 includes a cylindrical plug body 21 which is adapted to be inserted into the opening 19 in the top disc 13 and sealed in place by any suitable means. The plug body 21 is provided on the lower end thereof with an integral, outwardly extended circumferential flange 22 on which is formed a shoulder 23. The plug body 21 is provided with a second circumferential, outwardly extended integral flange 24. As shown in FIG. 3, the neck 20 of the top disc 13 is adapted to be received between the two flanges 22 and 24 when the plug means 14 is snapped in place in the opening 19. The outer periphery of the flange 22 is tapered inward downwardly, as for example 30°, to assist in snapping the plug means 14 in the opening 19. The outer periphery of the flange 24 is tapered inward upwardly, as for example 15°, for appearance purposes after assembly. The lower end of the neck 20 seats on the shoulder 23.

As best seen in FIG. 5, the sealing plug means 14 further includes the integrally molded tubular cap portion 25 which is provided with an integral circumferential flange 26 at the outer end thereof. The cap 25 is extended inwardly in a conical shape, with any desired angle being employed, as for example an angle of 15°. The flange 26 is connected by an integrally molded tear portion 29 which is molded to the top of the plug body 21. Integrally molded to the cap flange 26 is a pull ring 27 that is spaced from the flange 26 by an arcuate slot 28. As shown in FIG. 2, the pull ring 27 is integrally molded at the point 30 to the cap flange 26. The tear portion 29 of the sealing plug means 14 is formed by a thin or reduced wall portion in the plug body 21. The tear portion 29 is created by a V-shaped groove formed in the plug body 21 at the upper end thereof to provide a desired reduced wall thickness, as for example a wall portion of 0.009 inch thickness.

It will be seen that when the pull ring 27 is lifted and pulled in an axial direction, the portion of the pull ring that is connected to the detachable cap portion 25 will form a mechanical leverage, thereby reducing the pull force necessary for rupturing the tear portion 29 for removal of the detachable cap portion 25. The pull ring 27 is made to a geometrical design for enveloping the plug means 14 to decrease any overhanging tab, and also for cosmetic appearance purposes. The illustrated design of the pull ring 27 also provides for easy stacking of the containers.

It will be understood that the body member 11 may be sealed to the bottom and top discs 12 and 13, respectively, in any suitable manner as for example, by any conventional heat sealing process spin welding process, and the like. It will also be understood that suitable adhesives or sealants may be used, if desired, at the contacting points of these container parts. The bottom and top discs 12 and 13, respectively, and the plug means 14 may also be made from a suitable short-life plastic, if desired, to provide a self-destruct container. It will be seen, that if the various parts of the container 10 are made from a suitable short-life plastic, the container will have the ability to self-destruct when left to natural environmental forces.

FIG. 6 illustrates a second embodiment of a sealing plug means adapted for employment in a container 10 made in accordance with the principles of the present invention. The only difference between the embodiment of FIG. 5 and that of FIG. 6 is that the tear-off portion 29a in FIG. 6 is shown as being disposed and elongated in the vertical or axial direction and formed as a thin wall portion. The tear-off portion 29a may be made to any desired operative thickness, as for example 0.009 inch. The parts of the embodiment of FIG. 6 which correspond to the parts of the embodiment of FIG. 5 are marked with the same reference numerals followed by the small letter "a."

FIG. 7 illustrates a third embodiment of a sealing plug means made in accordance with the principles of the present invention. The parts of the sealing plug embodiment 14b of FIG. 7 which are the same as the sealing plug embodiment 14 of FIG. 5, are marked with the same reference numerals followed by the small letter "b." In the embodiment of FIG. 7, the tear portion 29b is formed horizontally, on the inner surface of the plug body 21, at the upper end thereof, so as to extend inward transversely of the body member 11. Integrally formed on the outer periphery of the cap member 11 is at least one V-shaped ring 31. It will be understood that a plurality of V-shaped rings 31 may be employed, as illustrated in FIG. 7, and that the rings 31 may be formed as continuous spiral threads, or as individual annular V-rings. The cap 25b illustrated in FIG. 7 may be reused by merely pushing it into the plug body 21b, whereby the V-rings 31 will form a mechanical seal with the plug body 21b for recapping purposes. The V-rings 31 will snap under the internal horizontal ring which will be left on the upper end of the plug body 21b when the cap 25b is initially removed from the body 21b. If the V-rings 31 are formed as a continuous thread, the cap 25b may be screwed back into place for a recapping operation.

FIG. 10 illustrates a modified embodiment of a top closure means 13c and sealing plug means 14c. The parts of the top closure means 13c and the sealing plug which are the same as the corresponding parts of the embodiment of FIGS. 1 through 5, have been marked with the same reference numerals followed by the small letter "c." In the embodiment of FIG. 10, the central portion of the disc has been changed to provide a differently shaped neck portion 20c. The neck portion 20c is provided on the lower end thereof with an inwardly extended flange 32 through which is formed an opening 33 for the reception of the sealing plug means 14c. The sealing plug means 14c is provided with an annular groove 34 around the lower end of the body 21c, on the outer surface thereof, and at a point adjacent to the shoulder 23c. The groove 34 is illustrated as being V-shaped in cross section, however, it will be understood that this groove may be formed with any desired cross-sectional shape.

The angular groove 34 is adapted to be filled with a flexible sealing material so as to form a flexible O-ring at the peripheral surface of the opening 33 formed through the flange 32 as to seal the raw edge of the flange 32. It will be understood that the opening 33 is formed through the flange 32 by any suitable means, as by a suitable punching operation. As shown in FIG. 10, when the sealing plug means 14c is snapped into the opening 33, the lower face of the flange 32 will seat on the shoulder 23c and the apex portion of the disc 18c will abut the underside of the flange 24c. It will also be understood that a suitable flexible sealing material may be applied to the underside of the flange 24c and to the shoulder 23c to provide a flexible seal between the top disc portions 18c and 32, and the sealing plug means 14c. The sealing plug means 14c may be provided with any of the aforescribed tear portions 29, 29a or 29b.

It will be seen that the disposable pressure container of the present invention provides an efficient and economical container for liquids under pressure as for example, beer and carbonated pop. The user may quickly and easily remove the cap 25 by pulling axially outward on the pull ring 27 to rupture the tear portion 29 and remove the cap 25 from the container 10.

While it will be apparent that the preferred embodiments of the invention herein disclosed are well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change.

What we claim is:

1. In a disposable pressure container for holding a liquid under pressure, the combination comprising:
 - a. paperboard body member having an open top end and an open bottom end;
 - b. a bottom closure means sealably attached to the bottom end of said body member for enclosing said open bottom

- end;
- c. a top closure means sealably attached to the top end of said body member for enclosing said open top end;
- d. said body member being coated on the inner surface thereof with a film of gas impervious plastic material;
- e. a sealing plug means sealably mounted in said opening in the top closure means;
- f. said sealing plug means including an integrally molded tear-off cap portion;
- g. said body member is coated on its outer surface with a moisture impervious plastic material;
- h. a cylindrical plug body inserted in said opening;
- i. a tear portion integrally connecting said plug body to said tear-off cap portion;
- j. a thin integral, radially inward-extended projection on the inner surface of the plug body, at the outer end thereof, and between the plug body and the cap portion; and
- k. said cap portion is provided on the external surface with at least one integral, outwardly extended peripheral projection at a position axially outward of said tear portion, whereby the cap portion may be inserted into the body member with the projection on the cap member passing over the projection on the plug body to recap the container.
2. In a disposable pressure container for holding a liquid under pressure, the combination comprising:
 - a. a paperboard body member having an open top end and an open bottom end;
 - b. a bottom closure means sealably attached to the bottom end of said body member for enclosing said open bottom end;
 - c. a top closure means sealably attached to the top end of said body member for enclosing said open top end;
 - d. said body member being coated on the inner surface thereof with a film of gas impervious plastic material;
 - e. a sealing plug means sealably mounted in said opening in the top closure means;
 - f. said sealing plug means including an integrally molded tear-off cap portion;
 - g. said body member is coated on its outer surface with a moisture impervious plastic material;
 - h. a cylindrical plug body inserted in said opening;
 - i. a tear portion integrally connecting said plug body to said tear-off cap portion;
 - j. a thin integral, radially inward-extended projection on the inner surface of the plug body, at the outer end thereof, and between the plug body and the cap portion;
 - k. the radial projection on the plug body is shaped as a ring; and
 - l. said cap portion is formed with a cylindrical external surface and is provided on the external surface with a least one integral, outwardly extended circumferential projection at a position axially outward of said tear portion, whereby the cap portion may be inserted into the body member with the projection on the cap member passing over the projection on the plug body to recap the container.
3. A disposable pressure container as defined in claim 2, wherein:
 - a. each of said projections on the cap portion comprises a single ring.
4. A disposable pressure container as defined in claim 2, wherein:
 - a. each of said projections on the cap portion comprises a portion of a continuous thread configuration that extends continuously around the cap portion for a number of turns.
5. A disposable pressure container as defined in claim 2, wherein:
 - a. each of said projections on the cap portion is V-shaped in cross section.