

[54] **CONTAINER WITH LID FOR LIQUIDS**

[75] Inventor: **Uno Wingardh, Morarp, Sweden**

[73] Assignee: **Sprinter Pack AB, Halmstad, Sweden**

[22] Filed: **Sept. 18, 1970**

[21] Appl. No.: **73,298**

[30] **Foreign Application Priority Data**

Sept. 30, 1969 Sweden13453/69

[52] U.S. Cl.**215/1 C, 150/.5, 220/67, 220/63**

[51] Int. Cl.**B65d 23/00**

[58] Field of Search.....215/1 C, 42; 150/.5; 220/66, 220/67, 54, 63

[56]

References Cited

UNITED STATES PATENTS

3,480,168	11/1969	Lee	150/.5
3,529,647	9/1970	Ignell.....	215/1 C
3,491,936	1/1970	Fox.....	220/67 X

Primary Examiner—George T. Hall

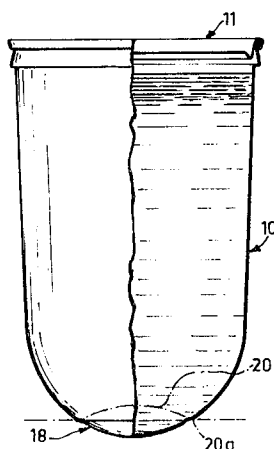
Attorney—Ostrolenk, Faber, Gerb & Soffen

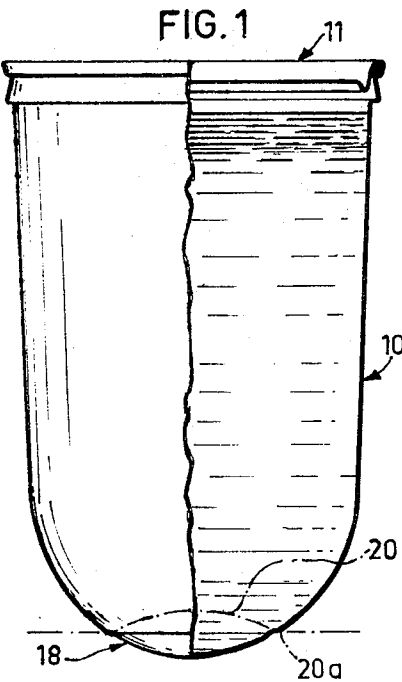
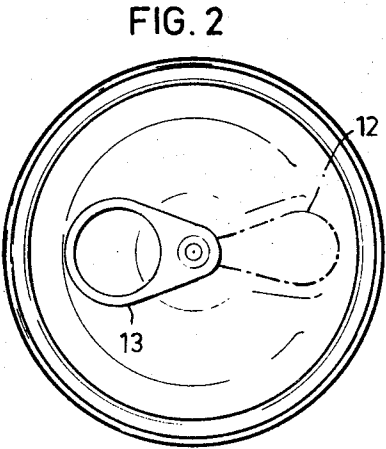
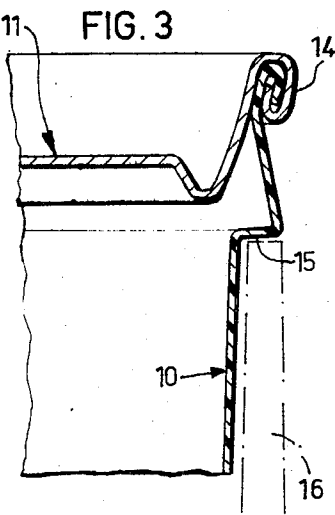
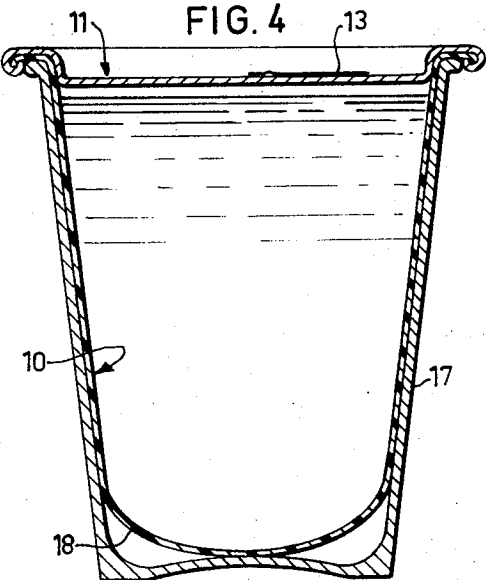
[57]

ABSTRACT

A liquid container, particularly containing carbonized drinks, comprising a conical thin-walled plastic container with a bottom formed substantially as part of a sphere having its central portion selectively deformable, and a plane metal sheet lid secured by a folded edge or seal to the edge of the container and provided with a tear-away tongue to provide a pouring opening when tearing off the tongue.

2 Claims, 4 Drawing Figures





INVENTOR.
UNO WINGÄRDH

BY
Ostrolen M. Faber, Gerb & Soffen

ATTORNEYS

CONTAINER WITH LID FOR LIQUIDS

The present invention relates to a liquid container which is provided with a lid, and is primarily intended for carbonized drinks such as beer or the like.

Such a liquid container shall, to the greatest possible extent, fulfill a number of desiderata with regard to manufacturing, filling, sealing, transporting, storing, use and destruction. The question of costs is, in all these cases, a decisive factor.

According to the invention, the desiderata in question could be fulfilled to a high degree with a liquid container which is characterized by a thin-walled plastic container conically tapered at its bottom end which, when the container is filled, constitutes a part of an essentially spherical surface, and an essentially plane metal sheet lid being secured at the edge of the container's open end by means of a folded edge or seam, and provided with a tear-away tongue or the like to form an outlet opening in the lid after the tongue has been torn away.

The invention is based on the principle that by using a special selection of known per se details in the large number of already known liquid containers, a new and satisfactory liquid container can be obtained less expensively.

Making of the thin-walled plastic container does not give rise to any difficulties, because it can be effected with conventional heat forming methods to form plastic foils. The container consists preferably of PVC which can possibly be coated with PVdC to increase, in a known way, the barrier properties of the plastic and thereby prevent pressure gas from diffusing through the plastic wall of the container. The conical containers are stacked fitting into each other and are delivered first for filling with a liquid, such as carbonized drink, and then for affixing of the lid. This procedure can take place e.g. in a brewery.

Breweries already have machines for affixing metal sheet lids on tin cans. Thus, in order to seal the containers according to the present invention, simple supports in the shape of vertical supporting sleeves are all that is needed to support the plastic containers during filling and to absorb the forces exerted when the lid is set on and sealed. The metal sheet lid is preferably in the standard design used in cans for beer and similar drinks.

During transport, the filled containers can preferably lie in cartons. The metal sheet lid assumes a position whereby it stands on edge thus forming a rigid element which can absorb considerable compressive forces that can arise when a large number of cartons with filled containers are stacked on top of each other.

If so desired, each container can be detachably placed in a drinking cup into which the drink in the container can be poured after the container has been opened. This drinking cup forms a protection for the container during the container's transportation and storage.

The plastic wall of the container is so thin that after the container has been emptied, it can be easily crushed by hand to a relatively small object which takes up little space in waste paper baskets, garbage bags, or the like. Because the container has such a thin wall, only a small amount of plastic is used. This results in a decrease of the amount of harmful substances formed when the used container is burned, e.g. in a garbage incinerator.

These and other characteristic details and advantages of the present invention are explained further with reference to an enclosed drawing illustrating a preferred embodiment of a liquid holding container according to the invention.

FIG. 1 shows partly in section a container according to the invention filled with liquid.

FIG. 2 is a view from above showing a lid with the tear-away tongue.

FIG. 3 is an enlarged section of the edge part of the container in FIG. 1.

FIG. 4 schematically shows a container according to the invention placed in a drinking cup.

The liquid holding container consists of the container itself 10 and an essentially plane lid 11 made of aluminum sheet. The sheet lid 11 is of the standard design used in e.g. beer cans and is provided with a fracturable impression which demarcates a tongue 12 indicated by broken lines. A ring 13 is fastened at the inner end of the tongue 12. By bending up the ring 13 and pulling it inwards, the tongue is torn away in such a manner that an outlet is formed in the lid.

The lid is secured at the edge of the container 10 by means of folding 14 in the manner shown in FIG. 3.

In the vicinity of the lid, the container has an annular collar with a supporting surface 15 facing from the lid. This collar has served as a support against a supporting sleeve 16 in which the container rests while being filled with liquid, and while the lid is sealed to the container's edge. The supporting sleeve is indicated by the broken lines in FIG. 3. This collar can also serve as a support to bear against the edge of a drinking cup 17 in which the container can be placed in the manner shown schematically in FIG. 4 where the container does not, however, have any collar but is instead provided with an edge flange as support.

As is evident from FIG. 1, the container tapers conically at its bottom end 18 in order to facilitate the stacking of the containers inside of each other during the conveying to the filling station. The thickness of the wall is made as little as possible and has about the same wall thickness common for plastic foil drinking cups which are designed to be used only once. However, the thickness of the wall in the container according to the invention may advantageously be considerably smaller.

To reduce the deformation of the container during the influence of the inner overpressure present in carbonized drinks, it is preferable to make the bottom end 19 of the container so that it assumes a semi-spherical shape as shown in FIG. 1, or with another cupped shape constituting a part of an essentially spherical surface.

In certain applications the container may advantageously be provided with a substantially flat or concave bottom portion as indicated by curved dotted lines 20 in FIG. 1. This concave bottom portion has an outer edge which is defined by a small permanent deformation 20a in the wall of the container and which forms a circular ring concentric with the center axis of the container. The concave bottom portion 20 is thus accurately defined and may readily be pressed to bulge outwardly to the shape shown in solid lines in FIG. 1 when the container is sealed and the gas pressure is acting on the bottom portion 20. If the gas pressure for some reason should sink below its predetermined value, this will enable the bottom portion 20 to be pressed inwardly as an indication of the low gas pres-

sure in the container. In some instances, the bottom will automatically return to this shape. Thus it will be possible, for instance after some time of storing the container, to check in a simple manner whether the gas pressure in the container is satisfactory. When the container has been opened by tearing off the tongue 12, the convex bottom portion 20 may be returned to its original concave shape for placing the container in a standing position on a flat horizontal supporting surface which is indicated by a straight dotted line in FIG. 1. When the bottom portion 20 is slightly pressed against the flat supporting surface, the convex bottom portion 20 will snap over to form the concave bottom portion 20.

Due to the fact that the bottom portion 20 is concave upon filling the container with a carbonized liquid and will expand to the convex form not until the container has been sealed with the lid, an increase of the volume of the container will be obtained after its sealing. This is of particular importance in connection with the filling which may be carried out so that the liquid level will lie adjacent the upper edge of the container to obtain a small free space between the liquid level and the lid when sealed. Thus there will be a little amount of air enclosed in the container. This air may alternatively be removed by conventional methods. However, there is also a desire to have a sufficiently free space for receiving some of the gas contained in the liquid. This required free space will be obtained automatically when the lid has been sealed, because the gas pressure will press out the bottom portion 20 to its convex form, thereby increasing the volume of the container and the free space above the liquid level. This increased space will reduce the gas pressure in the container and thus the gas pressure load on the walls of the container.

What I claim is:

1. A container assembly for carbonated beverages comprising:

A thin walled plastic cup-like portion having a con-

cally tapered side wall open at its upper wide end and integrally joined to a hemispherical shaped thin walled closure portion to define a convex outer surface at its bottom narrow end;

the upper end of said side wall having a continuous edge extending outwardly and downwardly from the upper end thereof to form a sealing lip;

a flat circular shaped metallic cover positioned upon said upper end and having its marginal portion folded over and around said sealing lip to provide an air-tightly sealed container assembly;

said cover having a tear-away tongue portion for forming an outlet for the container assembly when the tongue is removed;

a gripping ring secured to the tongue portion of said cover to facilitate removal of said tongue portion; said hemispherical closure portion having a circular shaped deformation surrounding a center portion of said closure portion;

said center portion being collapsible either prior to closure of the container assembly or subsequent to the opening of said container assembly to form a concave outer surface enabling said circular shaped deformation to serve as a surface for supporting said container assembly;

said center portion being further deformable upon closure of said container assembly to bulge outwardly and collectively define said convex outer surface with the remainder of the hemispherical closure portion surrounding said circular shaped deformation to provide increased volume for the carbonated contents when the container assembly is filled and sealed to reduce the gas pressure in said assembly.

2. The container assembly of claim 1 wherein the upper end of said side wall is abruptly enlarged just below said lip to form an annular collar for supporting said cup-like portion during filling or use.

* * * * *