

[54] CONTAINER WITH LID

3,642,166 2/1972 Starr 220/59

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[21] Appl. No.: 322,845

[57] ABSTRACT

A container having a lid which extends, with a reversed, channel-shaped edge, over the upper edge of the container which is open at the top, and is attached to the outer wall of the container with the outer leg of the reversed, channel-shaped edge. The outer leg is provided with a number of peripheral openings which fit over a number of radially extending projections of the upper edge of the container. The outer leg is radially confined by a thickened portion, ridge or similar projecting part on each projection and axially by the projection themselves. Both the lid and container are made of a synthetic material.

[30] Foreign Application Priority Data

Jan. 11, 1972 Switzerland..... 00403/72

[52] U.S. Cl..... 220/59, 220/49, 150/5

[51] Int. Cl. A47j 27/08, B65d 45/00

[58] Field of Search 220/59, 60, 47, 49; 215/41, 46 R; 150/5

[56] References Cited

UNITED STATES PATENTS

3,510,023 5/1970 Ullman et al. 220/60 R

5 Claims, 12 Drawing Figures

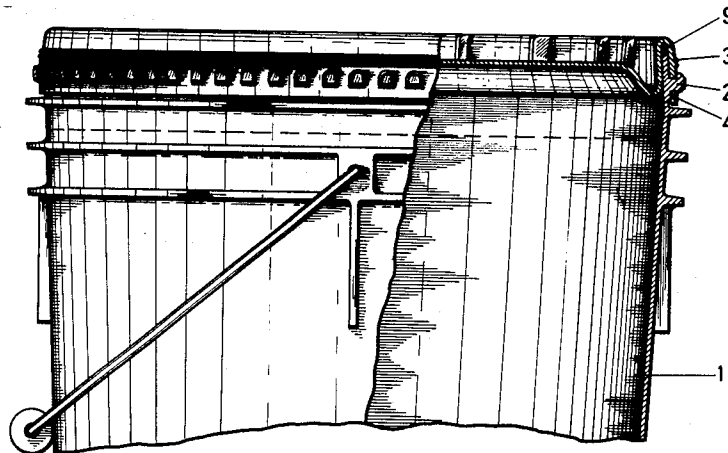


FIG. 1

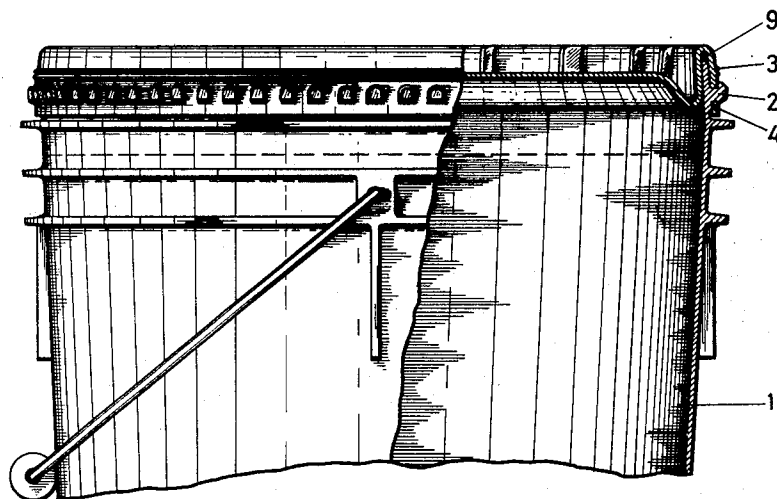


FIG. 2

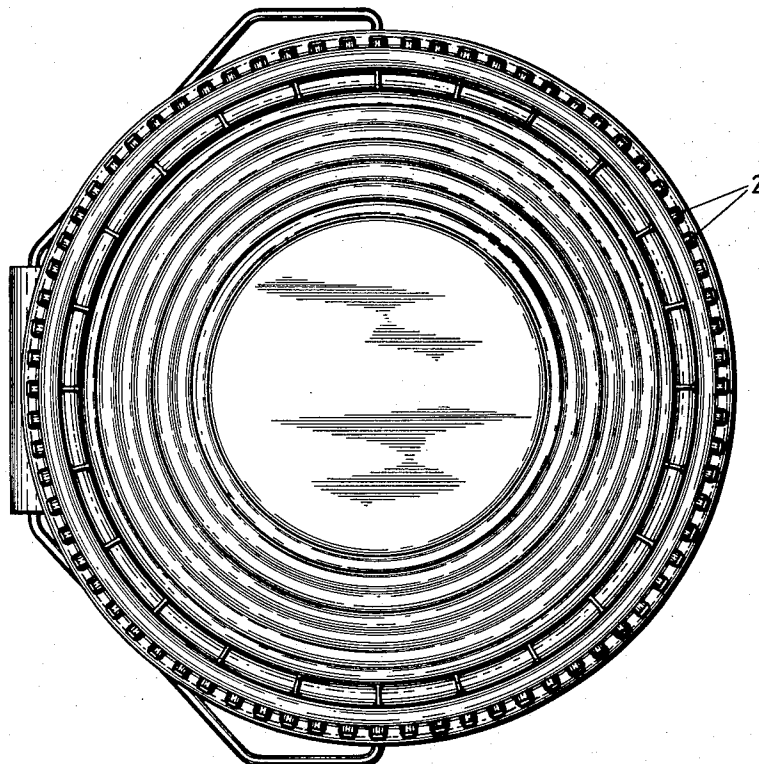


FIG. 3

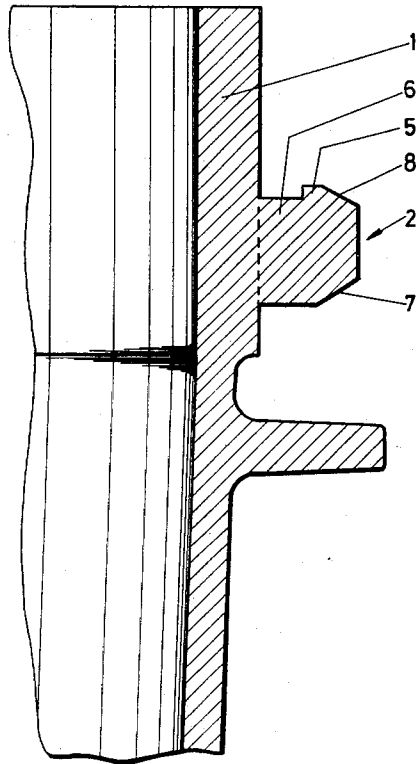


FIG. 4

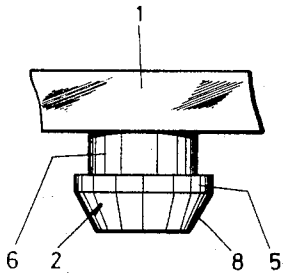


FIG. 5

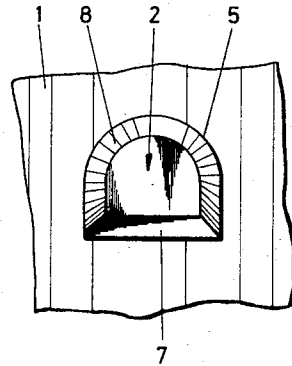


FIG. 6

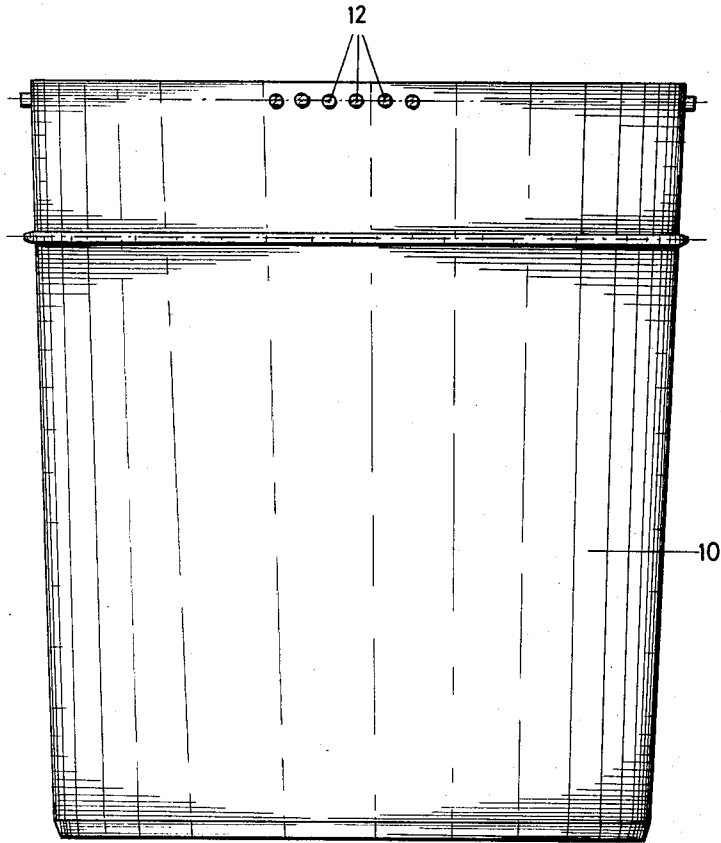


FIG. 7

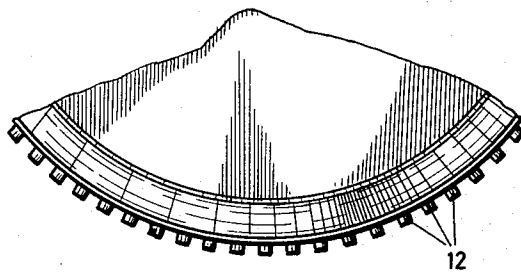


FIG. 8

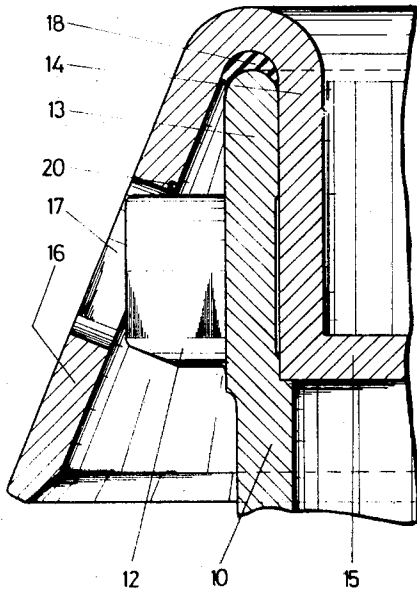


FIG. 9

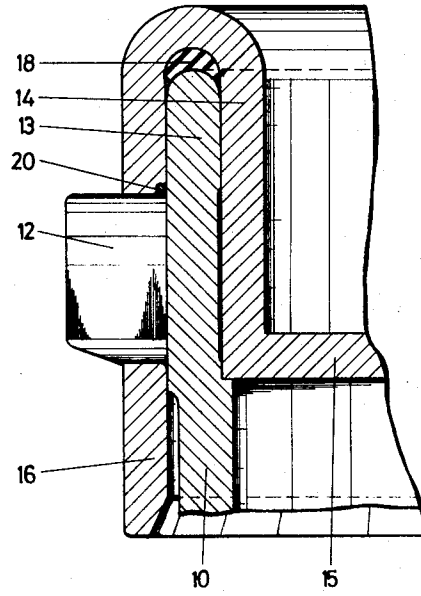


FIG. 10

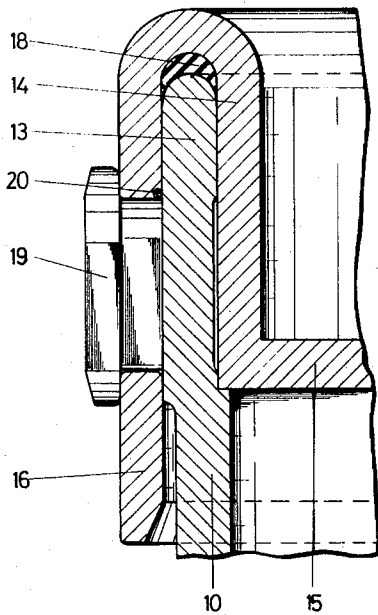


FIG. 11

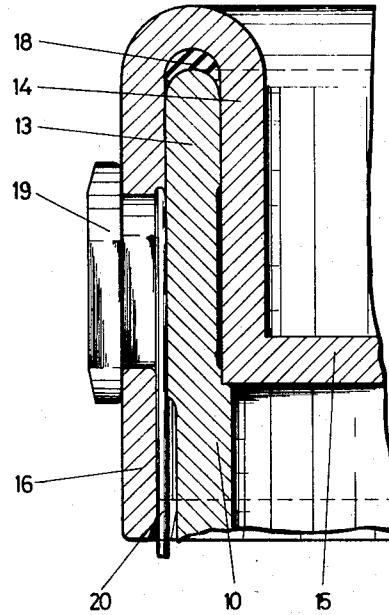
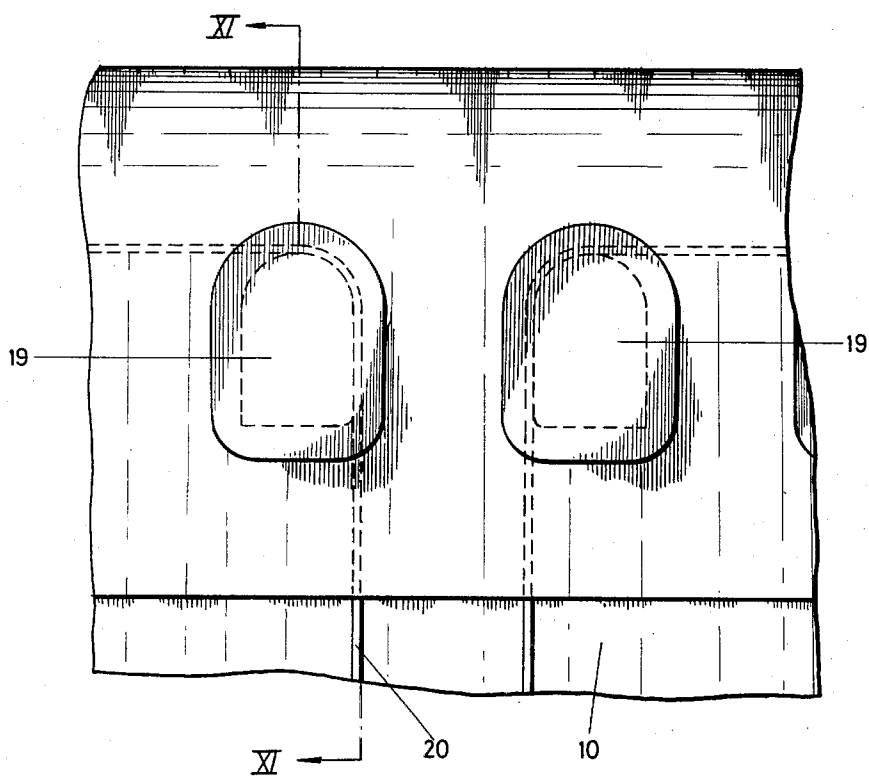


FIG. 12



CONTAINER WITH LID

The invention relates to a container with lid, both of which are made of synthetic material, preferably of thermoplastic synthetic material, which lid extends with a reversed, channel-shaped edge over the upper edge of the container, which is open at the top, and is connected with the outer leg of the reversed, channel-shaped edge to the outside wall of said container. Containers of this type are generally known in the art. They are generally given the shape of a bucket, so that they allow themselves to be simply stacked together when empty, while the lid may be fastened in several ways, for instance by means of a clamping strip, which can be tightened, or by means of a metal ring which engages the upper edge of the lid, the lower edge of which ring is provided with lips which can be deflected inwardly. The clamping strip may easily get lost and does not guarantee against unauthorized use of the contents, while special tools are required not only for closing said metal ring but for opening the same as well.

Due to the deformability of the closure construction, e.g., when the container falls, bumps or gets jammed, containers of this type rely as far as their closeness is concerned entirely upon the sealing function of the sealing ring or packing between lid and upper edge of the container.

Experience did show that this closeness cannot be guaranteed under all normal circumstances of transportation and storage.

It is the object of the present invention to provide a container with a simple attachment of said lid to said container, and this object is achieved according to the invention by the fact that the outer leg of the edge of the lid is provided with a number of peripheral openings which fit over a number of radially extending projections of the upper edge of the container, whereby this outer leg is retained radially by a thickened portion, ridge or similar projecting part on every projection and axially by the projections themselves. In this manner an excellent closure may be obtained, which is simple to realize in various manners.

Furthermore the closure is liquid-tight because it is necessary to press the lid in axial direction upon the container before the openings in the lid fit over the corresponding projections. Due to this the sealing between lid and the upper end of the container is compressed and this guarantees a leakfree closure. A metal ring is no longer needed, while various tools may be used to open the container. It might be possible, for instance, to cut off the head-like portions with a hot knife, for instance, but it is preferred according to the invention to provide a tear-off thread in the lid above the openings. It is possible also to cut free the lid with a cutting tool, e.g., as described in Dutch Pat. application No. 72.00405. With this it is achieved in a simple way that the lid can be entirely or partly detached from the container, and that if part of the contents are used the lid can be used again to close the container. Furthermore the body of the container remains reinforced by the edge of the lid which remains connected to it. If the free ends of the tear-off thread according to the invention are passed downwardly between two adjacent projections, and are made to extend from underneath the edge, on ripping off the edge of the lid with the aid of the tear-off thread, part of the edge of the lid will still be attached to the container, thus forming a hinged connection.

The projections with their thickened portions can be manufactured prior to being fixed to the container, and the outer leg of the edge of the lid with the openings present in the same is slid over the thickened portions, the dimensions of said openings having to be such that they will snap over the thickened portions in a resilient way and are thereupon retained between the outer rim of the container and the thickened portions on the projections. This press-stud fastening, as it were, between lid and container is achieved when the thermoplastic material is cold and provides a most reliable confinement.

The thickened portion may take the form of a peripheral flange along upper edge and side edges of the projection. This embodiment promotes the press-stud fastening and is self-releasing in the mould by means of which the container is manufactured.

It is possible according to the invention to obtain the thickened portion by heating the ends of the projections after the outer leg of the lid has been arranged over them and the projections are projecting through the openings of this outer leg. By applying heat and pressure with heated pressure shows the head-like portions are flattened like rivet heads and the lid is confined.

The invention will now be explained in more detail with reference to the drawings.

FIG. 1 shows in side view, partly in section, the upper part of a container according to the invention.

FIG. 2 is a top view of the container of FIG. 1.

FIG. 3 is a cross-sectional view through the upper edge of the container on an enlarged scale.

FIG. 4 is a top view of a projection.

FIG. 5 is an end view of a projection.

FIG. 6 is a side view of an alternative embodiment of a container according to the invention without lid.

FIG. 7 is a top view of the edge of the container of FIG. 6.

FIG. 8 shows a sectional view through the upper edge of the container with the lid in the unfastened position.

FIG. 9 shows the edge of the lid in the closing position in a similar manner as FIG. 8.

FIG. 10 shows the final confinement of the edge of the lid.

FIG. 11 shows a sectional view at the site of the end of the tear-off thread along the line XI—XI of FIG. 12.

FIG. 12 is a plan view on that portion of the upper edge where the ends of the tear-off thread are arranged.

The container 1 shown in the FIGS. 1 and 2 has been provided with a great number of specially shaped projections 2 on the upper edge of the same. The lid 3 fastens in a reversed channel-shaped manner about the upper edge of the container and the outer leg 4 is provided with a great number of openings, the number and mutual distance of which correspond with the number of projections 2 and the dimensions of which are such that they fit over said projections. In the embodiment of the FIGS. 1 to 5 inclusive the projections have been embodied such, as have been the openings in the outer leg of the lid that a snap action takes place when the edge of the lid with the openings is pushed over the projections.

In FIG. 3 the upper edge of the container 1 is shown on an enlarged scale and it appears both from FIG. 3

and the FIGS. 4 and 5 that the projections have been given a flange or thickened portion along the upper edge and the side edges, which thickened portion is indicated with 5. The openings in the edge of the lid are tunnel-shaped and fit about the neck 6 of the projections with an identical sectional shape. The projections are bevelled off at the lower edge, at 7. The thickness of the outer leg of the edge of the lid corresponds with the length of the neck 6 on the understanding that said neck fits between the outside wall of the container and the inwardly deflected edge of the flange 5.

In addition to this the end of every projection is provided with tapering edges 8 in order to turn the projection into a searching and aligning projection.

It will be apparent that with the great number of projections, particularly clearly shown in FIG. 2, an extremely solid connection between lid and container, can be obtained. The sealing of the container is in this embodiment obtained in a way known as such by fitting a sealing means 9 between the upper edge of the container and in the bottom of the reversed channel-shaped portion of the edge of the lid.

The container 10 shown in the FIGS. 6 and 7 has been given the shape of a bucket and has been provided with a number of projections on the upper edge, mutually spaced below the edge, said projections 12 being uniformly spaced about the periphery of said upper edge.

FIG. 8 shows the upper edge 13 of the container 10 with a projection 12 on an enlarged scale, and also the edge 14 of the lid 15, which edge has an outer leg 16 which is provided with openings 17, the number of which corresponds with the projections 12. The outer leg 16, in the non-attached position, has such a spread that it can easily be placed on the upper edge of the container together with a sealing means 18 without being interfered with by the projections.

The closure is obtained by pressing the outer leg 16 inwardly in the position of FIG. 9 and by subsequently providing the projection 12 with a head-like portion 19 by subjecting said projection to a heating process, as is

shown in FIG. 10. The outer leg, above the projections 12, is provided with a tear-off thread 20 which is embedded in the thermoplastic material of the lid by melting. FIGS. 11 and 12 show that the tear-off thread extends vertically downwardly between two adjacent projections and projects from underneath the outer leg 16 of the edge of the lid.

If the tear-off thread is utilized, the lid is cut through above the projections with the exception of the area between two adjacent projections shown in FIG. 12.

What we claim is:

1. A container with lid, which are both made of synthetic material, which lid extends with a reversed, channel-shaped edge over the upper edge of the container which is open at the top, and is attached to the outer wall of the container with the outer leg of the reversed channel-shaped edge, characterized in that said outer leg is provided with a number of peripheral openings which fit over a number of radially extending projections of the upper edge of the container, in which embodiment said outer leg is radially confined by a thickened portion, ridge or similar projecting part on each projection and axially by the projections themselves.

2. A container according to claim 1, characterized in that the thickened portion takes the form of a peripheral flange on the upper and side edges of every projection.

3. A container according to claim 1, characterized in that the thickened portion is obtained by heating the ends of the projections after the outer leg of the lid has been placed over them and the projections extend through the openings of said outer leg.

4. A container according to claim 1, characterized in that the lid is provided with a tear-off thread arranged above the openings.

5. A container according to claim 2, characterized in that the free ends of the tear-off thread extend downwardly between two adjacent projections and project from underneath the edge.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 3848767
DATED : March 26, 1975
INVENTOR(S) : WILLY B. NAF

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the title page:

Item 30 Foreign Application Priority Data

"Jan. 11, 1972 Switzerland00403/72"

should read -- Jan. 11, 1972 The Netherlands72.00403 --.

Signed and sealed this 20th day of May 1975.

(SEAL)

Attest:

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Attesting Officer

C. MARSHALL DANN
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