

[54]	LID TYPE DRUM	3,045,887	7/1962	Caine	220/72
[75]	Inventors: Theo Hammes; Otfried Kimm, both of Cologne, Germany	3,157,308	11/1964	Foster	220/72
		3,664,544	5/1972	Hammes	220/60 R
		3,690,503	9/1972	Curry	220/74
[73]	Assignee: Mauser Kommanditgesellschaft, Cologne, Germany	3,836,042	9/1974	Petitto	220/72

[22] Filed: Feb. 25, 1974

[21] Appl. No.: 445,344

Primary Examiner—William I. Price
Assistant Examiner—Joseph M. May
Attorney, Agent, or Firm—Elwood S. Kendrick

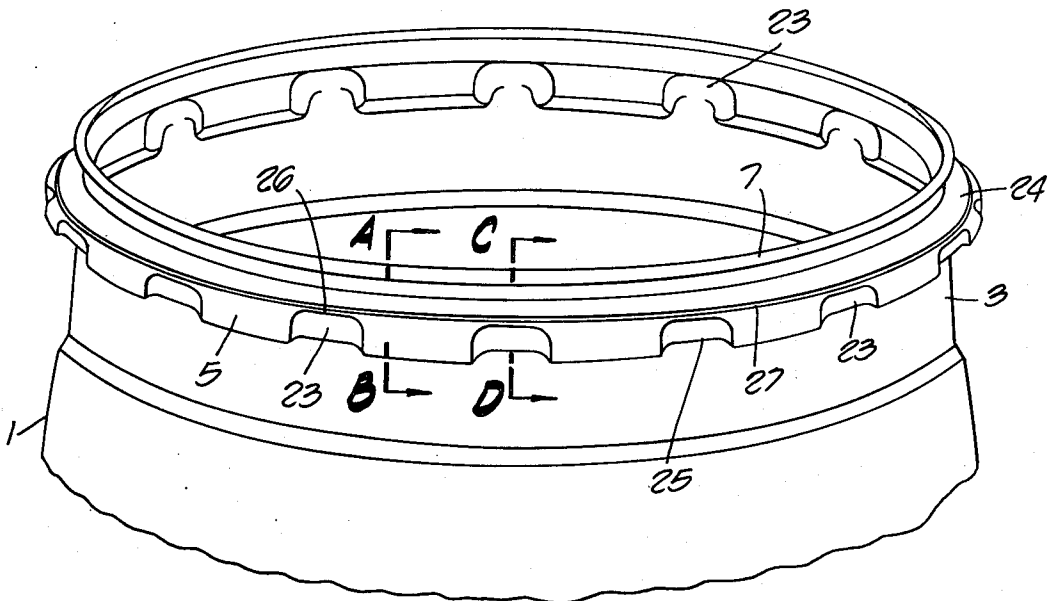
[30] Foreign Application Priority Data
Feb. 26, 1973 Germany..... 2309496

[52] U.S. Cl..... 220/74; 220/72
[51] Int. Cl.²..... B65D 5/42; B65D 57/00
[58] Field of Search 220/72, 74, 73, 71;
206/506, 509

[56] References Cited
UNITED STATES PATENTS
2,335,260 11/1943 Chamberlain..... 220/74

[57] ABSTRACT
An improved container construction includes a radially outwardly extending peripheral projection near the upper end thereof which has spaced upper and lower peripheral walls reinforced by radially inwardly extending indentations.

7 Claims, 3 Drawing Figures



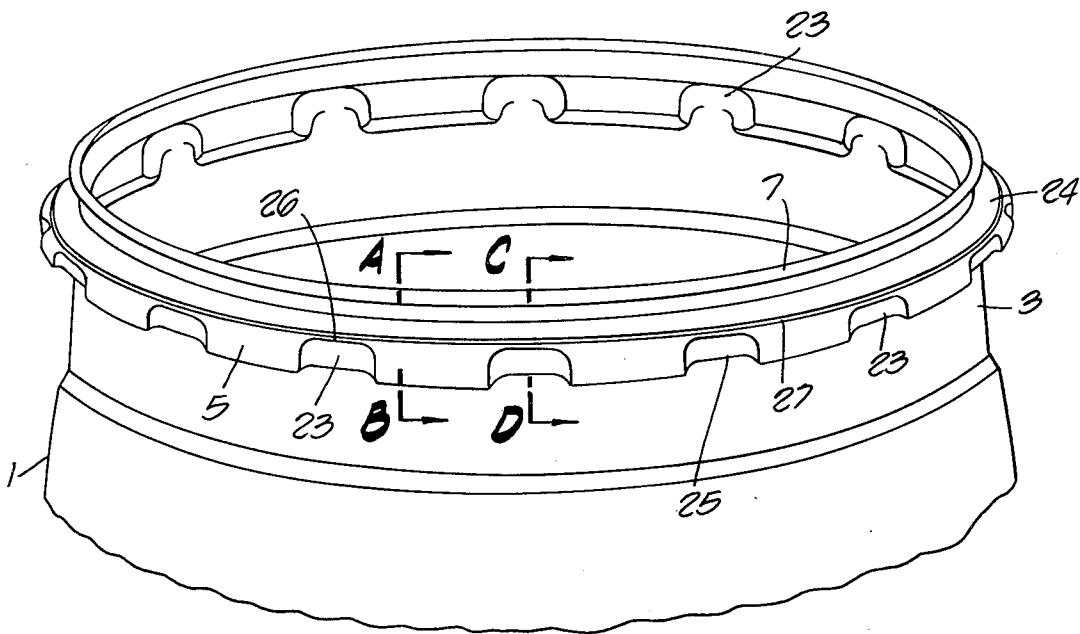


FIG. 1.

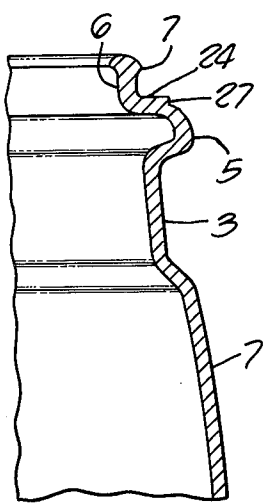


FIG. 2.

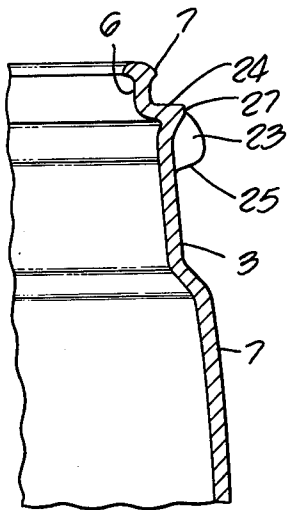


FIG. 3.

1

LID TYPE DRUM

The present invention relates to a plastic container having an open end which is adapted to be closed and sealed by a plastic cover member.

The container of the present invention is of the general type shown and described in U.S. Pat. No. 3,664,544. The container disclosed in said patent is generally cylindrical and includes a body portion having a closed lower end and a head portion integrally connected to the body portion and terminating in an open upper end. The head portion of the container has the following external surface configurations, in succession, going from the body portion to the open upper end:

- a first annular neck portion or section whose outer surface is approximately parallel to the axis of the generally cylindrical container;
- a radially outwardly extending projection having a lower annular section extending approximately at a right angle to the axis of the container and an upper annular section which forms a seat for an annular sealing ring which is disposed in the cover member;
- a second annular neck portion or section extending upwardly from the upper annular section of the radially outwardly extending projection to the open upper end; and
- an annular bead formed on the upper end of the second neck portion and projecting radially outwardly therefrom for sealing engagement by an annular rib projecting downwardly and inwardly from the cover member.

The container of said U.S. Pat. No. 3,664,544 is adapted to be closed by a cover member having a relatively flexible (preferably concave) central portion surrounded by a relatively rigid edge and skirt portion, the edge and skirt portion including the following parts, going from the container body portion towards the container opening when the closure is in position closing the container opening:

- a plurality of circumferentially-spaced securing members around the edge portion of the closure, the securing members being relatively rigid and having an internal configuration which conforms with the first neck portion or section of the container and the adjacent surface of said projection, and the securing members being arranged to be secured to the first neck by means of a clamping member passing around the exterior of the securing members, in order to secure the closure on the container;
- a skirt portion to which the securing members are attached; and
- a relatively rigid projection or rib on the inside of the closure and having an internal configuration which conforms with the container second neck and engages behind the container bead when the closure is in position closing the container opening; and
- a sealing ring retained between said closure projection or rib and the internal surface of the closure skirt portion so as to be pressed against the upper surface of the upper annular section of said container projection when the clamping member clamps the securing members.

While the container construction of said U.S. Pat. No. 3,664,544 provides a secure connection between

2

the container and the cover member to prevent the cover member from being blown off of the container and to prevent leakage from between the container and the cover member under the roughest of working conditions and during relatively high surges of internal pressure from the container, and further permits the cover member to be secured on the container relatively easily, the generally radially outwardly extending projection, which is in the form of an annular fold, may buckle in an axial direction (i.e., in a direction parallel to the axis of the container) when relatively great force is exerted on the barrel in an axial direction. Such axial forces may be created, for example, when a number of filled containers are stacked upon one another.

This buckling or flattening of all or a portion of the radially outwardly projecting annular fold may cause the stack of containers to tip over and, possibly, may dislodge the cover member from its sealing position on one of the lower containers in a stack.

The improved container construction of the present invention provides a stiffened or reinforced radially outwardly extending annular projection or fold so as to prevent deformation of flattening or buckling of the annular fold under external axial force or stress such as may be encountered by one of the lower containers in a stack of filled containers. This reinforcement is provided by forming a plurality of circumferentially-spaced, radially inwardly extending indentations in the annular projection. A generally flat annular surface is provided on top of the annular projection and provides a support surface for the outer peripheral portion of the cover member.

By virtue of the foregoing construction, there is provided a reinforced supporting structure within the annular projection or fold for supporting the weight of one or more filled containers stacked thereon; and buckling or flattening of the annular projection or fold is substantially eliminated.

The above-mentioned features and advantages of the container construction of the present invention may be better appreciated by referring to the following description and the accompanying drawings which describe and illustrate an exemplary embodiment of the present invention.

IN THE DRAWINGS:

FIG. 1 is a perspective view of the upper portion of a container constructed in accordance with the teachings of the present invention;

FIG. 2 is a sectional elevation view of the upper portion of the container taken along the line A-B of FIG. 1; and

FIG. 3 is a sectional elevation view of the upper portion of the container taken along the line C-D of FIG. 1.

Referring now to the drawings, the improved container construction of the present invention comprises a main body or belly portion 1 which is connected at its upper end to the lower end of a lower, annular, radially inwardly recessed neck portion or section 3. The upper end of the neck portion 3 is integrally connected to a radially outwardly extending, annular fold-like projection 5. The annular fold-like projection 5 is integrally connected to the lower end of a generally axially extending upper annular neck portion 6. The upper end of the upper annular neck portion 6 has a generally hook-shaped bead 7 integrally formed thereon, the

inner edge of which defines the opening of the container.

A generally flat, substantially horizontal annular surface 24 is provided on the upper portion of the annular fold-like projection 5 and terminates in a stepshaped outer peripheral edge 27. The horizontal annular surface 24 defines a supporting surface for receiving and sealingly engaging a sealing ring (not shown) which is disposed within the cover member (not shown) for the container.

A plurality of radially inwardly extending indentations 23 are provided in the annular projection 5 for strengthening the fold-like projection and preventing buckling or flattening under axially extending forces (e.g., such as may be created by one or more filled containers stacked on top of it). As will be noted from the drawings, each of the indentations 23 in the annular projection 5 extends upwardly to a point adjacent the outer peripheral edge 27 of the annular supporting surface 24.

It is contemplated, of course, that numerous modifications and changes may be made to the container shown in the drawings and described above without departing from the spirit and scope of the present invention. Accordingly, it is intended that the scope of this patent be limited only by the scope of the appended claims.

We claim:

1. A container comprising: a main body portion having an upper end and a head portion connected to said upper end of said main body portion; said head portion terminating in an upper free edge which defines an opening in said container; said head portion including a radially outwardly extending peripheral projection having an upper peripheral wall and a lower peripheral wall spaced from one another; said upper peripheral wall of said peripheral projection comprising a substantially flat, continuous annular surface; and a plurality of circumferentially spaced, radially inwardly extending indentations in said peripheral projection; each of said radially inwardly extending indentations terminating beneath said substantially flat annular surface.

2. A container according to claim 1, wherein said head portion of said container further includes an upper annular section extending between said upper peripheral wall of said peripheral projection and said upper free edge of said head portion; and a radially outwardly extending, annular bead formed around said upper free edge.

3. A container according to claim 2, wherein said container has a longitudinal axis; and wherein said upper peripheral surface of said peripheral projection lies in a plane which is substantially perpendicular to said longitudinal axis and wherein said upper peripheral surface has a free outer peripheral edge and an inner peripheral edge which is connected to the bottom of said upper annular section.

4. A container according to claim 1, wherein said head portion of said container further comprises a lower annular section extending between said peripheral projection and said main body portion of said container; said container having a longitudinal axis; and wherein said lower annular section has an outer circumference which is smaller than the circumference of said main body portion and is also smaller than the circumference of said peripheral projection.

5. A container according to claim 4, wherein said lower annular section has a lower edge, and wherein said main body portion has an upper edge; and wherein said lower edge of said lower annular section is connected to said upper edge of said main body portion by means of an annular connecting portion which extends inwardly from said upper edge of said main body portion to said lower edge of said lower annular section.

6. A container according to claim 1, wherein said radially inwardly extending indentations are generally arc-shaped.

7. A plastic container comprising:

a substantially cylindrical main body portion having a longitudinal axis, an upper end and a closed bottom end;

a head portion having a bottom end integrally connected to said upper end of said main body portion, and a free upper end defining an opening in said container;

said head portion having a lower annular section extending substantially parallel to said longitudinal axis of said container and a lower portion integrally connected to the upper portion of said main body portion;

said lower annular section having an outer circumference which is smaller than the outer circumference of said main body portion;

said head portion further comprising an upper annular section extending substantially parallel to said longitudinal axis of said container and terminating in said upper free edge of said head portion;

a generally radially outwardly extending annular bead extending around said upper free edge of said head portion;

a radially outwardly extending projection disposed between and integrally connected to said upper annular section and said lower annular section;

said radially outwardly extending projection including a substantially flat, continuous upper annular wall and a lower annular wall spaced from said upper annular wall, and a plurality of circumferentially-spaced inwardly extending indentations between said upper and lower annular walls of said radially outwardly extending projection;

said radially inwardly extending indentations interrupting said lower annular wall of said radially outwardly extending projection.

* * * * *