(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 026 089 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
09.08.2000 Bulletin 2000/32

(51) Int. Cl.[7]: **B65D 8/22**

(21) Application number: **00300419.9**

(22) Date of filing: **20.01.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **28.01.1999 GB 9901943**
19.02.1999 GB 9903928

(71) Applicant:
ALUMASC-GRUNDY LIMITED
Kettering Northamptonshire NN15 5JP (GB)

(72) Inventors:
- **Mitchinson, Michael**
  Yardley Hastings, Northamptonsh. NN7 1HQ (GB)
- **Peacock, Gordon**
  Pitsford, Northamptonsh. NN6 9AZ (GB)

(74) Representative:
Hammler, Martin Franz et al
Phillips & Leigh
5 Pemberton Row
London EC4A 3BA (GB)

(54) Short life kegs

(57) A limited usage container such as a keg 10 is designed to be used only once, or to be used and refilled only a few times. It comprises a mild steel body 12 provided internally with a protective polymeric lacquer, and is capable of containing service pressures of 400 kNm^{-2}.

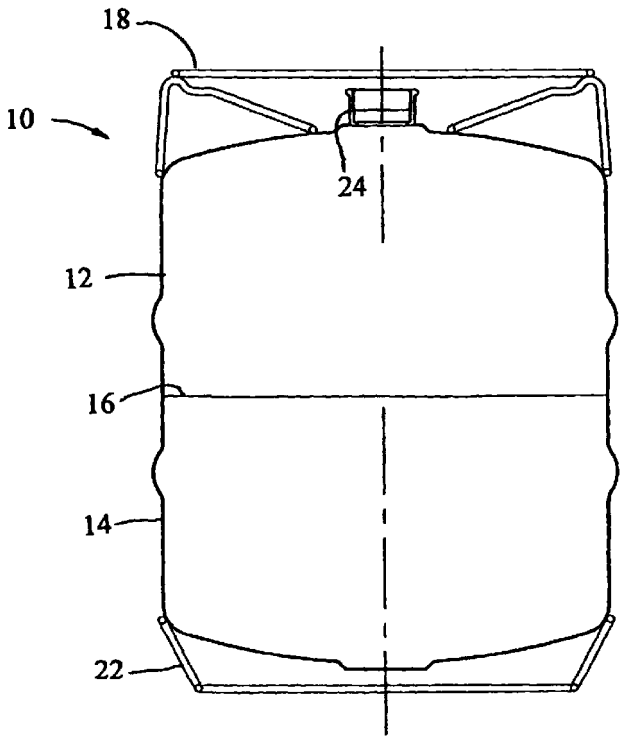

FIG. 2

EP 1 026 089 A2

Description

[0001] This invention relates to kegs or like containers for pressure dispensed liquids such as beer. Beer kegs are subject to rough handling in use and may have to contain pressures of up to 413 kNm^{-2} (60 psig) exerted by the gas that displaces the beer to empty the keg. In general keg designs used commercially in the United Kingdom are structurally tested to a pressure of 620 kNm^{-2} (90 psig). Conventional kegs are therefore of expensive, rugged construction and are only economic if they are refilled and reused many times. Hence they are designed to be free draining, readily washable/sterilisable and may incorporate features aiding repair, such as replaceable end chimes, further adding to manufacturing costs. The costs of keg cleaning and repair and the capital cost tied up in the kegs themselves can account for a significant proportion of beer delivery costs.

[0002] Most beer kegs in use today are either of aluminium or stainless steel. Aluminium was once the favoured material in the United Kingdom, but is increasingly being replaced by stainless steel. Kegs of either of these materials, even if made less rugged than is conventional, are too expensive to be discarded or recycled after being used only once, or after being used and refilled only a few times. We have realised that there is a need for an inexpensive, limited life keg, for example to serve export markets where the cost of returning the empty kegs is uneconomic, as well as to save capital, cleaning and repair costs generally. Containers of cheaper materials have been suggested; for example GB 987133 proposes a plastics cask which may be provided with an outer protective reinforcing skin of alloyed metal or steel. However the design shown is unsuitable for use with the high pressures encountered in gas dispense systems. GB 510 069 proposes a double walled cask of stainless steel/galvanised iron construction. Again this design is not intended for use in pressure dispense systems; besides which it is complex and expensive to manufacture.

[0003] The present invention provides a single or limited usage container for pressure dispensed liquids such as beer, comprising a hollow mild steel body provided internally with a protective polymeric lacquer and which is capable of containing service pressures of 400 kNm^{-2}. The expression "limited usage container" as used herein means a container intended to be used only once, or to be used and refilled only a few times, in contrast to a conventional keg which is refilled many times.

[0004] Preferably the lacquer is a phenolic resin lacquer of per se known kind, as used to line the interior of aluminium kegs, baked onto the inside of the container.

[0005] The container body may comprise two halves, each formed as a deep drawn pressing, united by a circumferential weld.

[0006] The container may be provided with an end chime formed from steel wire or rod, welded to the container top. A similar end chime may be provided at the container bottom, allowing both ends of the container to be convex and therefore inherently resistant to internal pressure, as well as containing no "dead spaces" and therefore being free draining, readily washed and sterilised.

[0007] Alternatively, the container bottom may be generally concave, sufficiently dished and having a peripheral stiffening channel to resist internal pressure, the channel also providing a stable base upon which the container can stand. A transverse, preferably diametral, channel in the container bottom may communicate with the peripheral channel and form a well or sump into which an extractor spear extends in use, allowing the container to be drained substantially completely. Alternatively the extractor spear may have an offset bottom end, communicating with the peripheral channel. (As used herein, the expressions "concave" and "convex" relate to the container when viewed from the outside.)

[0008] The bottom or, where present, the bottom end chime, of the container is preferably configured to interengage with the top end chime of an identical container, allowing two or more such containers to be stably stacked.

[0009] Illustrative embodiments of the invention are described below with reference to the drawings in which:-

Figure 1 is a top plan view of a beer keg forming a first embodiment of the invention;
Figure 2 is a cross-section on line II - II in figure 1;
Figure 3 is a cross-section corresponding to figure 2, but showing an alternative bottom end construction; and
Figure 4 is a cross-section corresponding to figure 3, but showing an alternative end chime construction.

[0010] The illustrated kegs 10, 20 comprise two deep drawn mild steel pressings 12, 14 of approximately 1.0 mm thickness, sufficient to resist internal pressures as stipulated for example in the relevant United Kingdom Allied Brewery Traders Association test specification. The pressings 12, 14 form the two ends of the keg and are united by a circumferential weld 16. Mild steel is cheaper than stainless steel or aluminium of equivalent strength, and as the keg is only intended to have limited usage, its construction need not be as rugged as is conventional, leading to further materials savings.

[0011] As shown in figure 2, low cost end chimes 18, 22 formed from thick steel wire or rod are welded to the pressings 12, 14 respectively. A keg neck 24 is welded in an aperture in the pressing 12. In the embodiment shown in figure 3, the end chime 22 is omitted and the pressing 14 is provided with a concave end 26, a peripheral stiffening channel 28 that also serves as a stable base for the keg, and a diametral sump forming

channel 30 aligned with the neck 24 axis and communicating with the channel 28. This embodiment may be more difficult to wash than the figure 3 embodiment, and is primarily intended for single use only, i.e. not for refilling. For easier cleaning, the diametral channel may be omitted to provide a plain concave keg bottom as indicated by dotted line 32. An extractor spear having an offset end communicating with the peripheral channel 28 is then used to fully drain the keg contents.

[0012] In the embodiment shown in figure 4, the wire or rod top end chime 20 of figure 3 is replaced by an end chime 33 fabricated in mild steel sheet, welded at 34 to the top of the keg body 12. The end chime 33 has a rolled lip 36, and circumferentially spaced drainage holes 38. A similar end chime (not shown) may replace the wire or rod bottom end chime 22 of figure 1.

[0013] To protect the pressings 12, 14 against corrosion and prevent contamination of the keg contents, the keg interior is cleaned/degreased e.g. using a phosphate based cleaner, and then covered in phenolic resin lacquer (not shown) such as EPIKOTE MD2019, available from Holdens Surface Coatings Ltd., Birmingham, England, baked on at a temperature of 210°C for 20 minutes.

Claims

1. A single or limited usage container for pressure dispensed liquids, comprising a hollow mild steel body provided internally with a protective polymeric lacquer, and which is capable of containing service pressures of 400 kNm^{-2}.

2. A container as defined in claim 1 wherein the lacquer is a phenolic resin lacquer baked onto the inside of the container.

3. A container as defined in claim 1 or 2 wherein the container body comprises two halves, each formed as a deep drawn pressing, united by a circumferential weld.

4. A container as defined in any preceding claim and provided with an end chime formed from steel wire or rod.

5. A container as defined in any preceding claim and provided with an end chime fabricated from mild steel sheet.

6. A container as defined in claim 4 or 5 wherein the bottom or, where present, a bottom said end chime, of the container is preferably configured to interengage with a top said end chime of an identical container, allowing two or more such containers to be stably stacked.

7. A container as defined in any preceding claim, the container bottom being generally concave and having a peripheral stiffening channel to resist internal pressure, the channel also providing a stable base upon which the container can stand.

8. A container as defined in claim 7 wherein a transverse channel in the container bottom communicates with the peripheral channel to form a well or sump into which an extractor spear may extend in use.

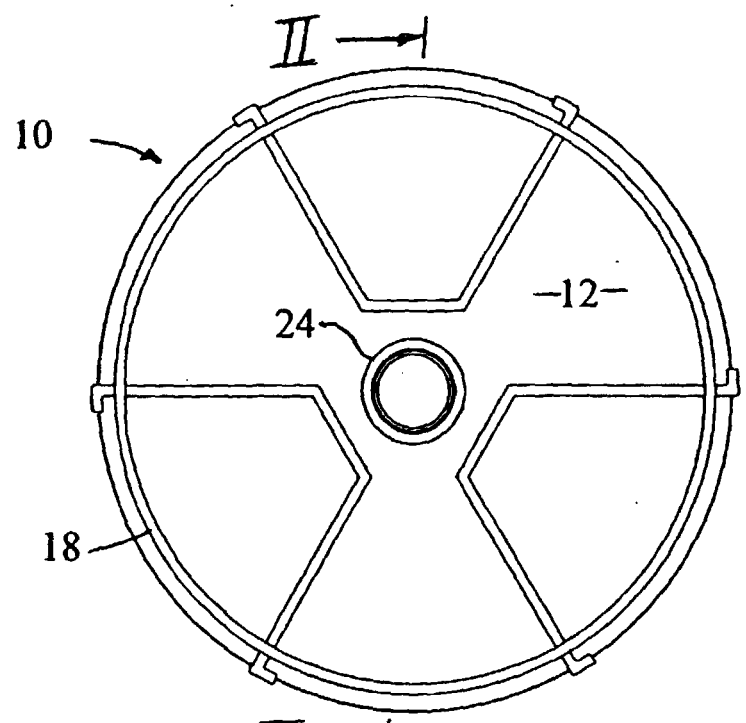

FIG. 1

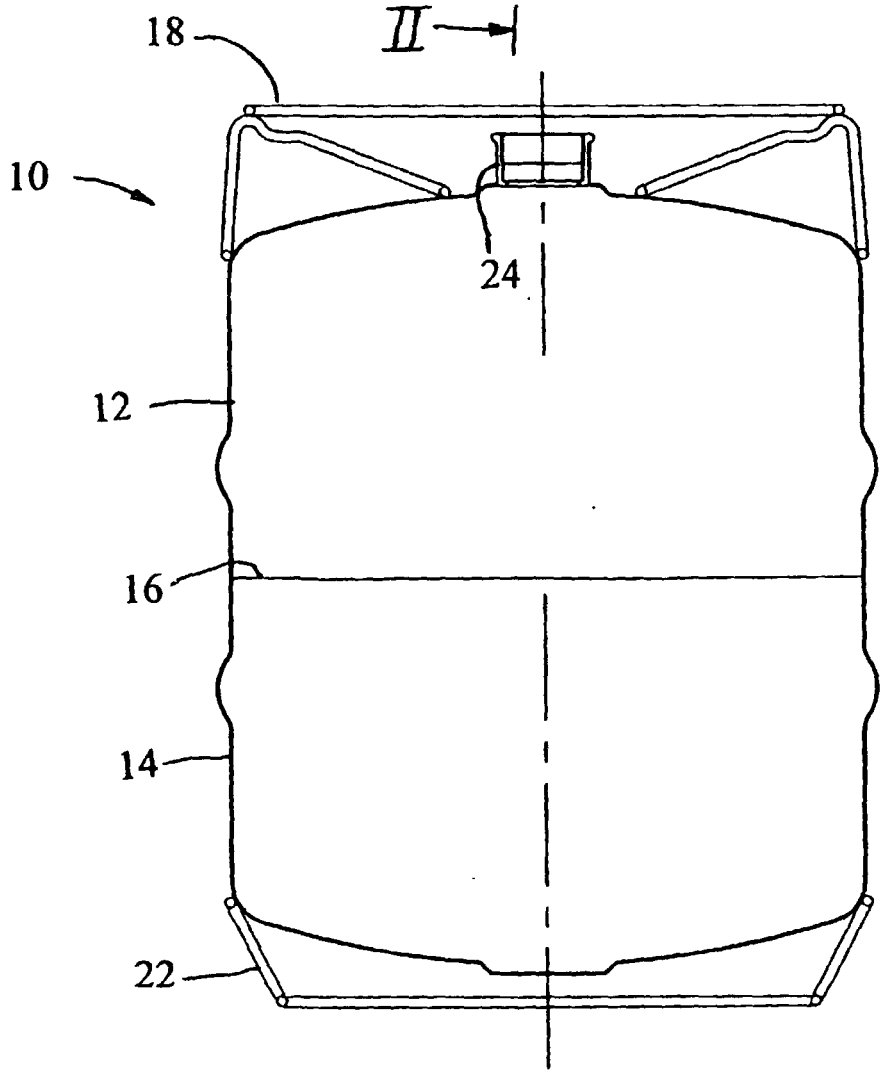

FIG. 2

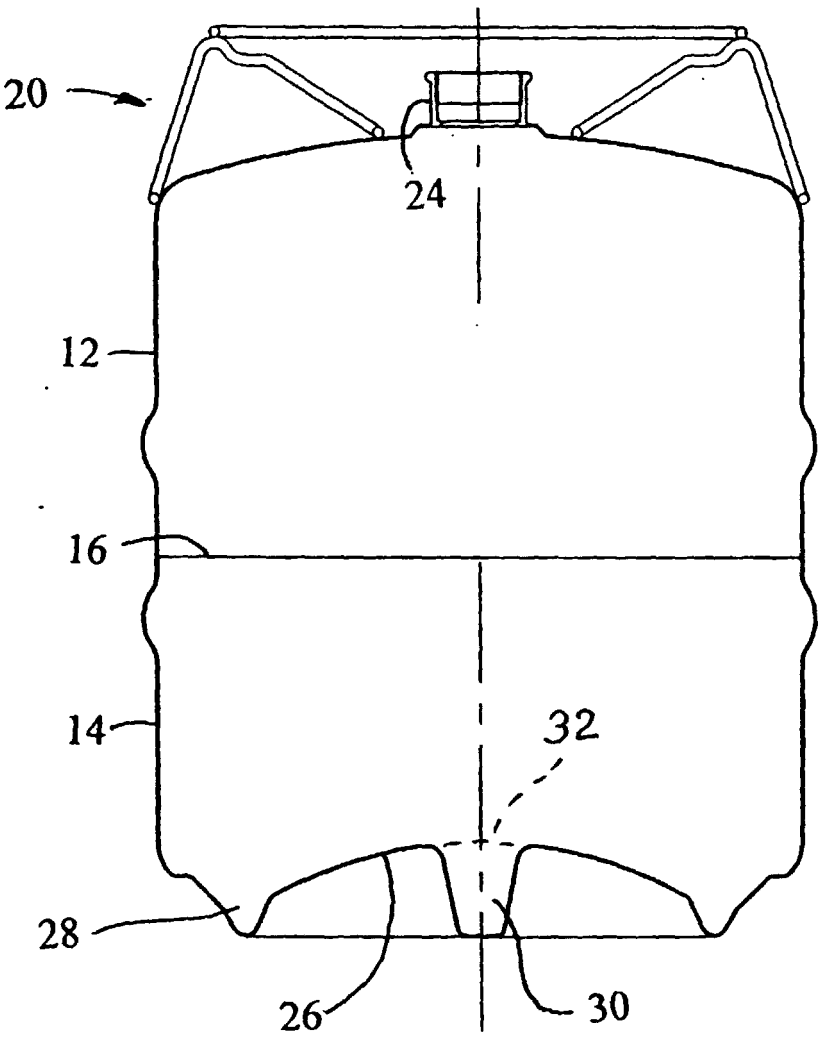

FIG. 3

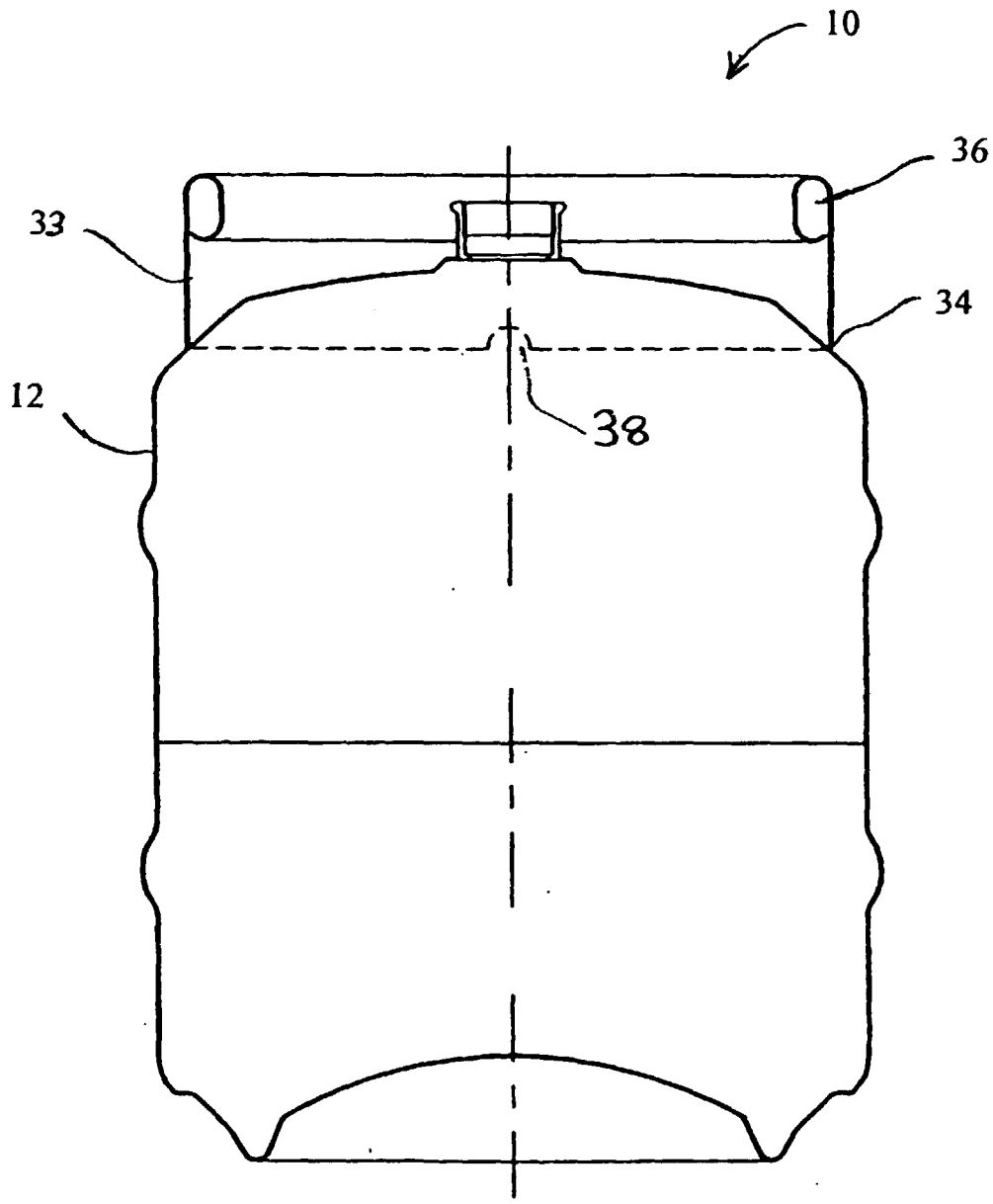

FIG. 4