

(12) UK Patent Application (19) GB (11) 2 353 519 (13) A

(43) Date of A Publication 28.02.2001

(21) Application No 9920264.0

(22) Date of Filing 26.08.1999

(71) Applicant(s)
Bericap UK Limited
(Incorporated in the United Kingdom)
Sutton Road, HULL, HU7 4AZ, United Kingdom

(72) Inventor(s)
Richard James Langcaster

(74) Agent and/or Address for Service
Phillips & Leigh
5 Pemberton Row, LONDON, EC4A 3BA,
United Kingdom

(51) INT CL⁷
B65D 41/48

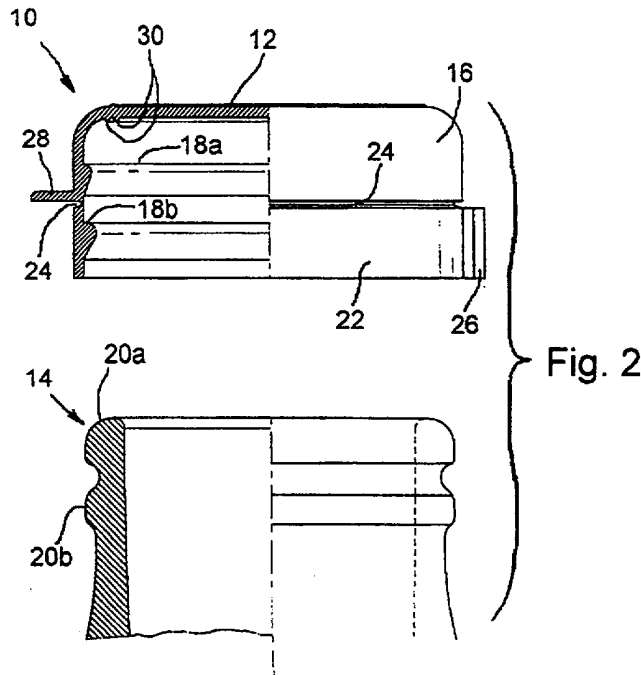
(52) UK CL (Edition S)
B8T TTB
U1S S1294

(56) Documents Cited
GB 2263901 A GB 2202520 A GB 1247317 A
GB 1014823 A US 5207340 A US 4722448 A

(58) Field of Search
UK CL (Edition Q) B8T TTB TTC
INT CL⁶ B65D 41/46 41/48
ONLINE:EPODOC, WPI

(54) Abstract Title
Dairy bottle closure

(57) The tamper evident, re-closeable snap-on closure 10 is for use with standard glass dairy bottles comprising a pair of ridges 20a, 20b adjacent to their mouth. The closure 10 comprises a substantially circular top piece 12, a substantially cylindrical skirt 16, and first and second circumferential shoulders 18a, 18b disposed inside the skirt 16 so as to be engageable beneath the ridges 20a, 20b of the bottle. An annular line of weakness 24 is disposed around the skirt 16, located between the first 18a and second 18b shoulders so as to define a tear-off tamper evident ring 22 bearing the second shoulder 18b, a finger tab 28 being attached to the skirt 16 above the line of weakness 24, the attachment being sufficiently rigid whereby, upon removal of the tamper-evident ring, finger pressure applied to the tab will deform the skirt and prize the first shoulder 18a from beneath the corresponding container ridge 20b. When the tear-off ring 22 is in place, the skirt 16 is reinforced to substantially prevent such deformation. A tear tab 26 is provided for removal of the ring 22.



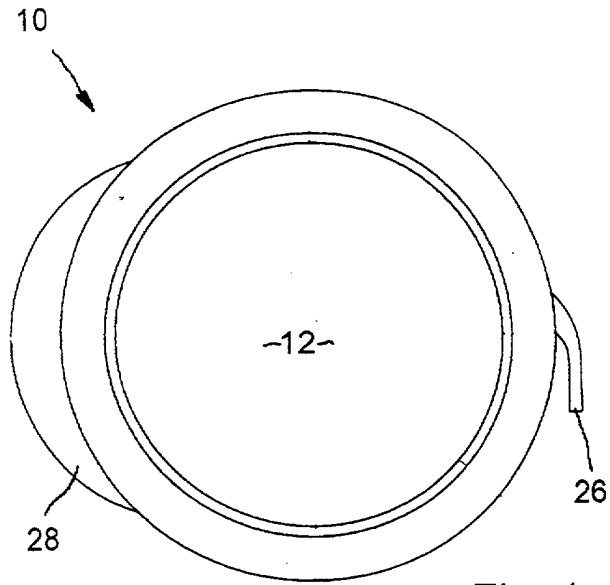


Fig. 1

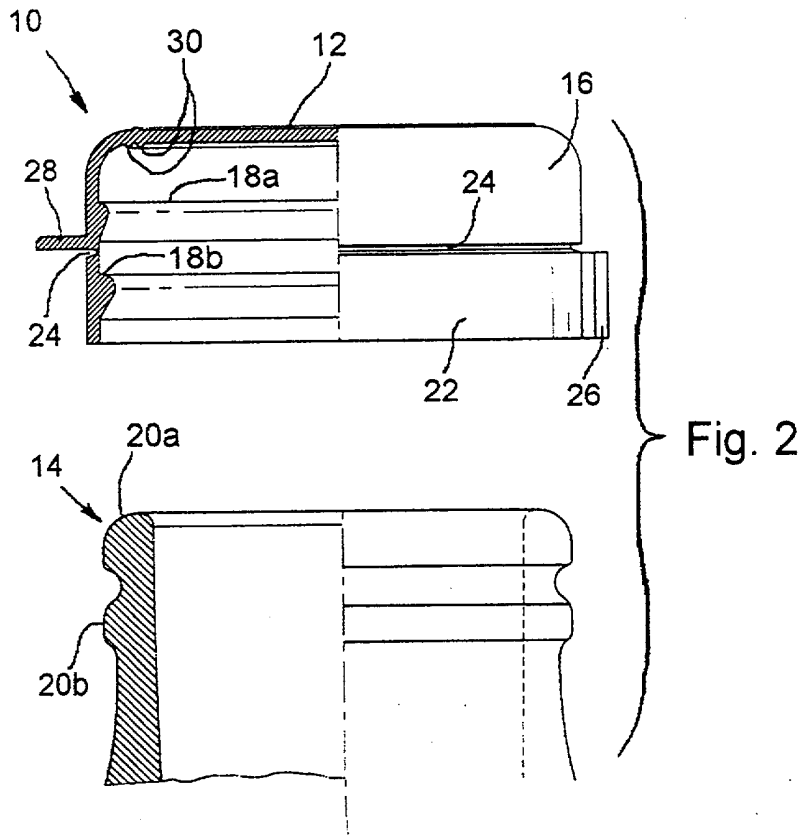


Fig. 2

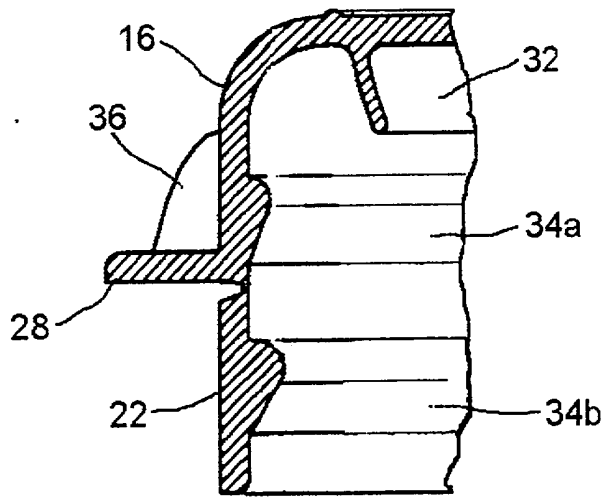


Fig. 3

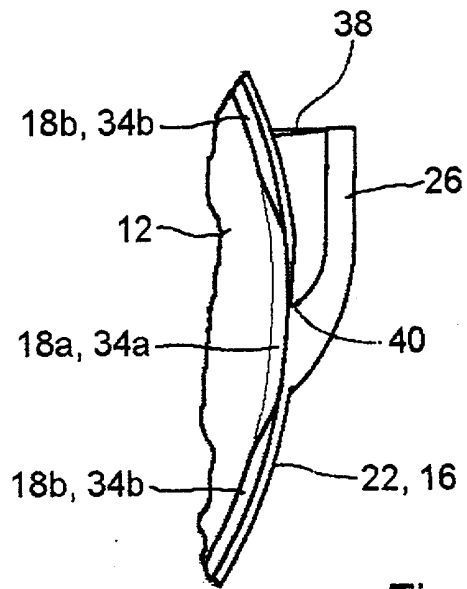


Fig. 4

DAIRY BOTTLE CLOSURE

The present invention relates to tamper evident re-closeable closures for conventional glass dairy bottles.

5

Such bottles as used in the United Kingdom are of standardised shape having a neck with two rounded annular ridges running close to the mouth of the bottle. They are designed for re-use, "empties" being collected and returned to the dairy for cleaning and refilling. The bottles are closed using a foil top, applied on an automated filling line. A rolled over
10 or crimped edge of the top engages the upper annular ridge on the bottle.

Although this type of top is suitable to prevent spillage or contamination it does not form a reliable liquid-tight seal, and bottles must therefore be transported in an upright position. Birds can easily break through the thin foil and spoil the contents. When the contents are
15 to be used, the foil top is deformed by applying downwards pressure. This dislodges the rolled edges of the top from the neck of the bottle and the contents can be poured out, often into another container. Once deformed, these foil tops cannot be re-closed to form a seal.

20 Re-closeable replacement tops for glass milk bottles are known for use in the home, primarily to allow an opened milk bottle to be safely stored in a refrigerator or used at table (see for example GB 1584061 and GB 2097654). Such re-closeable tops are generally too expensive for "one trip" use as original milk bottle closures applied in the dairy. Such tops also fail to provide "tamper evidence", i.e. they are incapable of
25 indicating whether or not the bottle seal has been breached.

To overcome some or all of these problems the present invention provides a tamper evident, re-closeable, snap-on closure for use with existing standard glass dairy bottles.

30 Preferably the closure comprises a substantially circular top piece, a substantially cylindrical skirt, first and second circumferential shoulders disposed inside the skirt so as to be engageable below first and second respective ridges on the neck of the dairy bottle in

use, and an annular line of weakness disposed around the skirt located between the first and second shoulders so as to define a tear-off tamper evident ring bearing the second shoulder. When the tamper evident ring is in place, the second shoulder prevents removal of the lid. Once the tamper evident ring has been torn off, the remainder of the
5 cap may be readily removed. The first shoulder then provides a snap-on re-closure facility, the cap still providing a reasonably secure leakproof re-closure for the dairy bottle.

Advantageously, a finger tab is attached to the skirt above the line of weakness, the
10 attachment being of sufficient rigidity to allow finger pressure applied to the tab to deform the skirt and prize the first shoulder from beneath the corresponding bottle ridge.

The tamper evident ring may have a tear tab located thereon to aid manual removal. Preferably the tear tab is located adjacent to a further line of weakness extending between
15 the annular line of weakness and the lower rim of the skirt.

The closure may be formed from a resilient plastics material, for example LDPE, conveniently as a one-piece injection moulding.

20 An annular sealing bead is preferably formed on the inner surface of the top piece. For example, the bead may comprise a depending sealing lip engageable inside the bottle neck, one or more annular ridges engageable with the rim of the bottle neck, or a substantially flat surface for such engagement.

25 Further preferred features and advantages of the invention are in the following description of illustrative embodiments, made with reference to the drawings, in which:-

- Fig. 1 is a top plan view of a cap forming a first embodiment of the invention;
Fig. 2 is a half section of the cap of Fig. 1 and a standard milk bottle neck;
30 Fig. 3 is a scrap section showing an alternative cap embodiment; and
Fig. 4 is a scrap underplan view of the tear tab shown in Figs. 1 and 2.

Referring to Figs. 1 and 2, the closure 10 is substantially cylindrical in shape. It has a top piece 12, which is round to mirror the shape of the neck of the bottle 14. It has a skirt 16 depending from the top piece 12, within which are located two circumferential lips having 5 upwardly facing shoulders 18a, 18b. These are positioned such that when the closure is placed onto a glass dairy bottle, the shoulders 18a, 18b sit underneath the two respective ridges or shoulders 20a, 20b found on a standard dairy bottle neck.

The closure comprises a tamper evident ring 22, formed from part of the skirt 16, defined 10 by a weakening comprising a groove 24 formed in the plastic between the two shoulders 18a, 18b. The tamper evident ring 22 has a tear tab 26 affixed to it. This enables a user to grasp the tab 26, and, using finger pressure, tear the plastic along the groove 24, to remove the ring 22 from the bottom of the skirt 16. This tearing also removes the annular lip possessing the shoulder 18b which engages with the lower ridge 20b on the dairy 15 bottle, thus allowing the closure 10 to be removed from the bottle neck 14. For this purpose, the closure also has a finger tab 28 rigidly attached to the skirt 16, and projecting outwardly therefrom. Upward finger pressure applied to the tab 28 deforms the skirt 16 outwardly from the neck 14 of the bottle, allowing the shoulder 18a to disengage from the corresponding ridge 20a, hence facilitating removal of the closure. When the tamper 20 evident ring 22 is in place, the skirt 16 is reinforced against such deformation, and the two shoulders 18a, 18b cannot be dislodged from beneath the corresponding ridges 20a, 20b on the bottle. When the tamper evident ring 22 has been removed, the shoulder 18a can be used to reattach the closure to the ridge 20a of the bottle as a snap fit, forming an air tight seal.

25

In order to form a seal between the bottle neck 14 and the closure 10 there is an annular bead comprising a pair of ridges 30 running around the underside of the top piece 12 of the closure, for engagement with the rim of the bottle neck. A bead of this type is not an essential feature of the invention and can be omitted or replaced with a different seal. For 30 example a depending sealing lip 32, Fig. 3, or a flat surface, not shown, could be used to engage and seal against the bottle neck 14.

The closure 10 is ideally made of a resilient plastics material such as low density polyethylene. This is cheaply moulded into closures of the correct dimensions to be used with existing dairy bottles. The closure 10 is applied to the bottle after filling, as a snap fit. As the closure is applied to the bottle neck the resilient plastic material deforms, allowing the shoulders 18a, 18b to slide into place over the annular ridges 20a, 20b on the bottle. The lips comprising the shoulders 18a, 18b in the closure include chamfered leading edges 34a, 34b, Fig. 3, allowing them to slide easily over the ridges 20a, 20b of the bottle when the closure is applied. Fig. 3 also shows a fillet 36, one or more of which may be optionally used to stiffen the attachment of the finger tab 28 to the skirt 16.

Fig. 4 is an underplan detail view showing the tear tab 26. A frangible connection 38 may attach the distal end of the tab 26 to the tamper evident ring 22. The lower circumferential lip comprising the shoulder 18b and its chamfered leading edge 34b has a discontinuity adjacent to the tear tab 26. The skirt 16 wall is thinned adjacent to the root of the tear tab 26, forming a further line of weakness 40, extending between the circumferential line of weakness 24 and the rim of the skirt 16. Pulling the tear tab 26 thus breaks the frangible connection 38 and the further line of weakness 40, allowing the tamper evident ring 22 to be torn away from the remainder of the skirt 16 along the line of weakness 24.

CLAIMS:

1. A tamper evident, re-closeable, snap-on closure for use with existing standard glass dairy bottles.
- 5
2. A closure as defined in claim 1, comprising a substantially circular top piece, a substantially cylindrical skirt, first and second circumferential shoulders disposed inside the skirt so as to be engageable below first and second respective ridges on the neck of the dairy bottle in use, and an annular line of weakness disposed around the skirt located
10 between the first and second shoulders so as to define a tear-off tamper evident ring bearing the second shoulder.
3. A closure as defined in claim 1 or 2, comprising a finger tab attached to the skirt above the line of weakness, the attachment being sufficiently rigid to allow finger pressure
15 applied to the tab to deform the skirt and prize the first shoulder from beneath the corresponding bottle ridge.
4. A closure as defined in claims 2 or 3, wherein the tamper evident ring comprises a tear tab located thereon to aid manual removal.
- 20
5. A closure as defined in claim 4, wherein the tear tab is located adjacent to a further line of weakness extending between the annular line of weakness and the lower rim of the skirt.
- 25 6. A closure as defined in any of claims 2-5 wherein an annular sealing bead is formed on the inner surface of the top piece.
7. A closure as defined in claim 6 wherein the sealing bead comprises a depending sealing lip engageable inside the bottle neck.

8. A closure as defined in claim 6 wherein the sealing bead comprises an annular ridge engageable with the rim of the bottle neck.
9. A closure as defined in any preceding claim formed from a resilient plastics material.
10. A tamper evident, re-closeable, snap-on glass bottle closure substantially as described with reference to or as shown in the drawings.
- 10 11. The combination of a standard glass dairy bottle and a closure as defined in any preceding claim.



Application No: GB 9920264.0
Claims searched: 1-11

Examiner: Stephen Smith
Date of search: 16 November 1999

**Patents Act 1977
Search Report under Section 17**

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.Q): B8T(TTB, TTC)

Int CI (Ed.6): B65D 41/46, 41/48

Other: ONLINE:EPODOC, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2263901 A (RYFORD) lines 14-31 of page 4	1, 9, 11
X	GB 2202520 A (ASEPTA) line 24 of page 1 to line 19 of page 2, lines 5-13 of page 4	1-4, 6-9, 11
X	GB 1247317 (HOHENZOLLERN) lines 1-73 of page 2	1-3, 9, 11
X	GB 1014823 (PERMUTA) lines 51-130 of page 2	1-5, 9, 11
X	US 5207340 (COCHRANE) line 40 of column 3 to line 61 of column 4	1-4, 9
X	US 4722448 (NOLAN) lines 33-63 of column 2	1, 2, 4, 6, 7, 9

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.