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(56) Documents Cited:
GB 2234742 A **GB 2162158 A**
EP 0896930 A1 **EP 0081976 A1**
WO 2006/057536 A1 **JP 2005035564 A**
US 4362250 A

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(54) Title of the Invention: **Improvements in or relating to drink containers**
Abstract Title: **Cap and Method for Sealing a Drink Container**

(57) A drink container comprising a mouth 14, which may be substantially circular, which is sealed shut with a seal sheet 16, and further protected by a cap 12. The cap 12 is secured to the container mouth 14, preferably using the threads 30 inside the cap 12, which allows for a thinner seal to be used than would otherwise be considered necessary. The cap 12 has an aperture 18 which may be located centrally or off-centrally with respect to the container mouth 14. This aperture exposes the seal sheet 16 for a drinking straw 20 to pierce. The cap 12 may have a generally planar portion 22 extending across the upper surface.

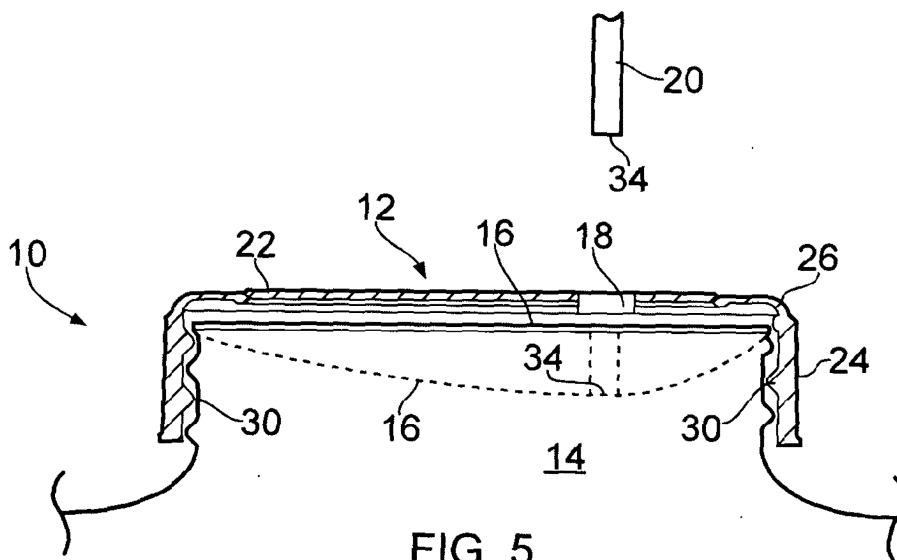


FIG. 5

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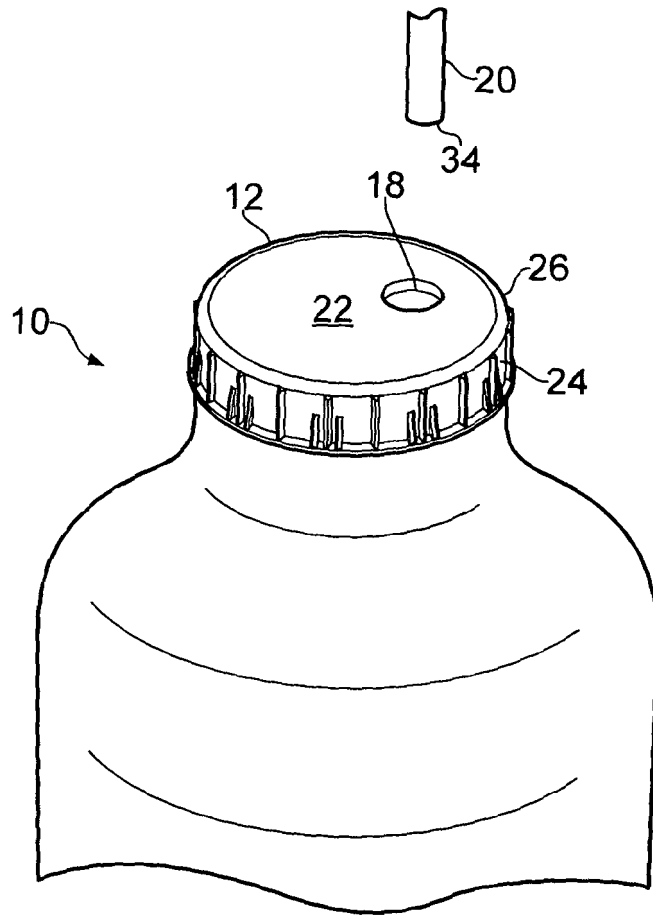


FIG. 1

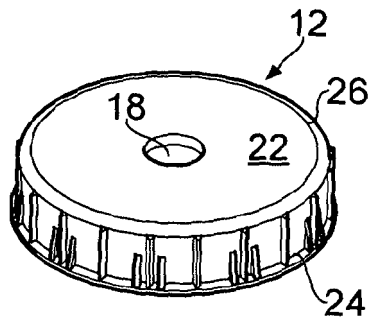


FIG. 3

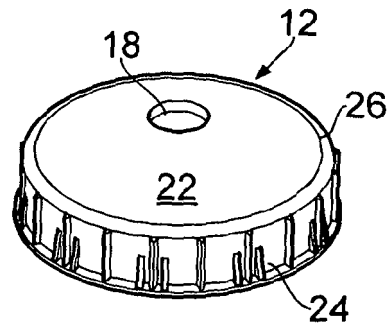


FIG. 2

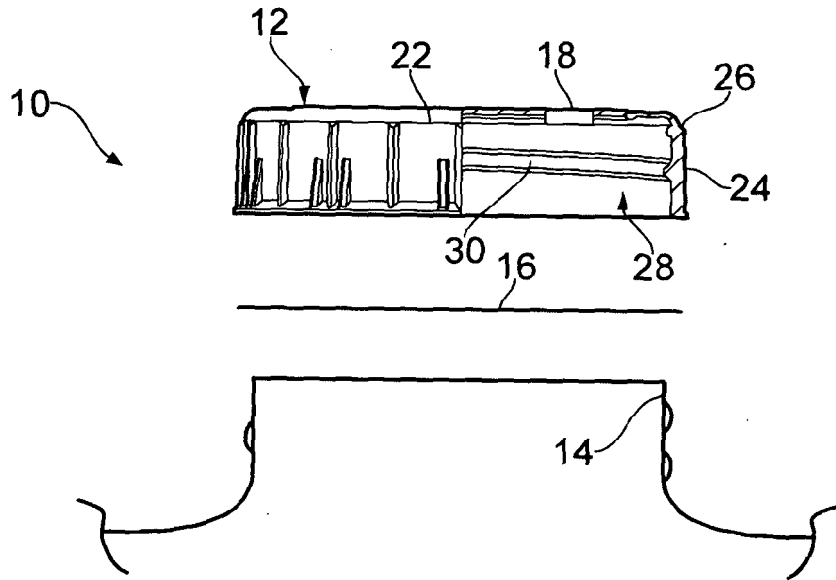


FIG. 4

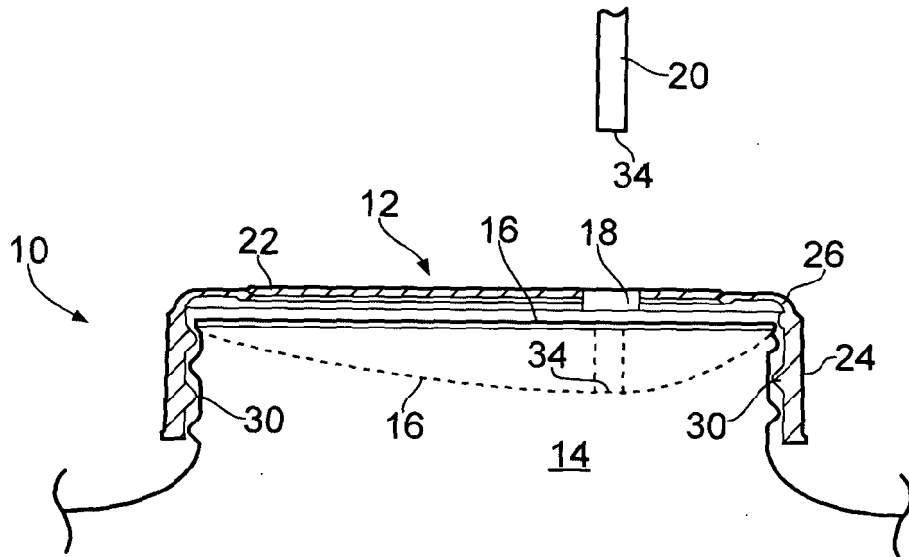


FIG. 5

Improvements in or relating to Drink Containers

The present invention relates to improvements in or relating to drink containers. Aspects
5 of the invention relate to improvements in or relating to methods of closing drink
containers and caps for closing drink containers.

Examples of the present invention provide a drink container comprising:

10 a container mouth;

a seal sheet across the mouth and secured to the container around the mouth, to
seal the container; and

15 a cap mounted at the container mouth to cover the seal sheet;

wherein the cap defines an aperture through which the seal sheet is exposed for
piercing by a drinking straw introduced through the aperture.

20 The cap may have a generally planar portion extending across the container mouth and
in which the aperture is defined. The aperture in the cap may be disposed centrally of
the container mouth. Alternatively, the aperture may be disposed off-centre of the
container mouth. The container mouth may be substantially circular.

25 The aperture in the cap may be so located as to expose the seal sheet at or near the
centre of the container mouth. Alternatively, the aperture in the cap may be so located
as to expose the seal sheet at a position offset from the centre of the container mouth.

In another aspect, the invention provides a method of closing a drink container having a
30 mouth, in which:

a seal sheet is placed across the mouth and secured to the container around the mouth, to seal the container; and

a cap is mounted at the container mouth to cover the seal sheet;

5

wherein the cap defines an aperture through which the seal sheet is exposed for piercing by a drinking straw introduced through the aperture.

The cap may have a generally planar portion extending across the container mouth and in which the aperture is defined. The aperture in the cap may be disposed centrally of the container mouth. Alternatively, the aperture in the cap may be disposed off-centre of the container mouth. The container mouth may be substantially circular.

The aperture in the cap may be so located as to expose the seal sheet at or near the centre of the container mouth. Alternatively, the aperture in the cap may be so located as to expose the seal sheet at a position offset from the centre of the container mouth.

In a further aspect, examples of the present invention provide a cap for closing a drink container having a mouth sealed by a seal sheet, the cap comprising an aperture through which the seal sheet is exposed, when the cap is in use on a sealed container, and through which a drinking straw is receivable for piercing the seal sheet.

The cap may have a generally planar portion to extend, in use, across the container mouth and in which the aperture is defined. The aperture in the cap may be disposed centrally of the container mouth. Alternatively, the aperture in the cap may be disposed off-centre of the container mouth. The container mouth may be substantially circular.

The aperture in the cap may be so located as to expose the seal sheet at or near the centre of the container mouth. Alternatively, the aperture in the cap may be so located as to expose the seal sheet at a position offset from the centre of the container mouth.

Examples of the present invention will now be described in more detail, by way of example only, and with reference to the accompanying drawings, in which:

Fig. 1 is a schematic perspective view of an example container;

5

Figs. 2 and 3 are perspective views of alternative caps for the container of Fig. 1;

Fig. 4 is a schematic partial exploded section of the mouth of the container, sealing foil and cap; and

10

Fig. 5 corresponds with Fig. 4, enlarged and showing the sealed condition of the container.

Overview

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The drawings illustrate a drink container 10, a cap 12 for the container 10, and methods of use of these structures. The drink container 10 comprises a container mouth 14. A seal sheet 16 extends across the mouth 14 and is secured to the container 10 around the mouth 14, to seal the container. The cap 12 is mounted at the container mouth 14 to cover the seal sheet 16. The cap 12 defines an aperture 18 through which the seal sheet 16 is exposed for piercing by a drinking straw 20 (Fig. 1 and Fig. 5) introduced through the aperture 18.

20

The seal sheet 16 may be a conventional metal or metallised foil sheet which is welded or heat sealed around the mouth 14, as will be described. The cap 12 may be threaded to the container mouth and therefore removable, or may be welded or heat sealed to the container 10, around the mouth 14.

25

Cap

Fig. 2 illustrates a first example of a cap 12. In this example, the cap 12 is generally circular, having a generally planar portion 22, which is circular. A flange 24 depends
5 from the circumference 26 of the planar portion 22 to define a short, generally circular and cylindrical cavity 28 within the cap 12 (Fig. 4). In this example, the inner surfaces of the flange 24 carry threads 30 for threading the cap 12 onto the mouth 14. The cap 12 may be formed by moulding from a suitable plastics material, for example.

10 The planar portion 22 contains the aperture 18. That is, the material of the planar portion 22 defines the aperture 18. In this example, the aperture 18 is disposed off-centre of the container mouth 14, as can be seen from Fig. 4. When the closure arrangements for the container 10 are fully assembled, as will be described, the seal sheet 16 remains exposed through the aperture 18.

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Fig. 3 illustrates a second example of a cap 12. This example differs from the first example only in that the aperture 18 is disposed centrally of the planar portion 22, and is thus disposed centrally of the container mouth 14.

20 In other examples, the aperture 18 can be disposed at other positions across the planar portion 22.

Closure arrangements

25 The closure arrangements for the container 10 can now be described, with particular reference to Fig. 4 and Fig 5.

After the container 10 has been filled with drink, the seal sheet 16 is placed across the mouth 14 and secured in position by welding, for example. This creates an aseptic seal
30 for the contents of the container 10. The cap 12 is then secured in position by threading onto the container 10, or by welding into position. This completes the closure of the

container 10. As can be seen from Fig 5, the seal sheet 16 is protected by the cap 12 across virtually the whole of the area of the seal sheet 16, except in the vicinity of the aperture 18. This provides mechanical protection for the seal sheet 16, against inadvertent puncturing.

5

Use of the container

When a user wishes to drink the contents of the container 10, a drinking straw 20 is introduced through the aperture 18 by hand. This allows the end 34 of the drinking straw 20 to make contact with the seal sheet 16, in the area of the seal sheet 16 which is exposed through the aperture 18. Light force can then be applied to the drinking straw 20, to press the end 34 down against the seal sheet 16, which will result in the seal sheet 16 being pressed into the mouth 14, as indicated by the broken lines in Fig 5. As the force applied by the drinking straw 20 is increased, the seal sheet 16 will eventually rupture, resulting in the seal sheet 16 being pierced by the drinking straw 20, the end 34 of which is then free to pass through the seal sheet 16, through the mouth 14 and into the container 10, to allow the contents of the container 10 to be consumed through the straw 20.

20 Concluding comments

In the arrangements which have been described, it is envisaged that the use of the cap 12 will provide mechanical protection to the seal sheet 16, after the container 10 has been filled and until the container contents are to be consumed. Although the seal sheet 25 16 is partly exposed through the aperture 18, the diameter of the aperture 18 will be small in comparison with the diameter of the cap 12 and thus, this exposure is not expected to represent a significant risk of inadvertent puncture, during normal storage, transportation or handling. Once the contents are to be consumed, it is a relatively simple matter to pierce the seal sheet 16 by the use of a drinking straw 20. In particular, 30 it is envisaged that the protection provided by the cap 12 to the seal sheet 16 will allow the seal sheet 16 to be thinner than would be acceptable without the protection of the

cap 12, thus allowing easy piercing by the drinking straw 20, without compromising the seal provided prior to the use of the straw 20.

5 It is envisaged that the choice of position of the aperture 18 across the cap 12 may affect the ease with which the seal sheet 16 can be pierced by a drinking straw 20. This is because the geometry of the formation created in the seal sheet 16, when it is depressed by the end of a drinking straw 20, will change according to the spacing of the point of contact of the drinking straw 20 and the seal sheet 16, from the circumference of the mouth 14.

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Many variations and modifications can be made to the apparatus described above, without departing from the scope of the present invention. In particular, many different sizes, shapes and relative sizes and shapes of the various components could be envisaged. Various different materials could be used for the components.

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Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular
20 emphasis has been placed thereon.

CLAIMS

1. A drink container comprising:

5 a container mouth;

a seal sheet across the mouth and secured to the container around the mouth, to seal the container; and

10 a cap mounted at the container mouth to cover the seal sheet;

wherein the cap defines an aperture through which the seal sheet is exposed for piercing by a drinking straw introduced through the aperture.

15 2. A container according to claim 1, wherein the cap has a generally planar portion extending across the container mouth and in which the aperture is defined.

3. A container according to claim 1 or 2, wherein the aperture in the cap is disposed centrally of the container mouth.

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4. A container according to claim 1 or 2, wherein the aperture is disposed off-centre of the container mouth.

25 5. A container according to any preceding claim, wherein the container mouth is substantially circular.

6. A container according to any preceding claim, wherein the aperture in the cap is so located as to expose the seal sheet at or near the centre of the container mouth.

7. A container according to any of claims 1 to 5, wherein the aperture in the cap is so located as to expose the seal sheet at a position offset from the centre of the container mouth.

5 8. A method of closing a drink container having a mouth, in which:

a seal sheet is placed across the mouth and secured to the container around the mouth, to seal the container; and

10 a cap is mounted at the container mouth to cover the seal sheet;

wherein the cap defines an aperture through which the seal sheet is exposed for piercing by a drinking straw introduced through the aperture.

15 9. A method according to claim 8, wherein the cap has a generally planar portion extending across the container mouth and in which the aperture is defined.

10. A method according to claim 8 or 9, wherein the aperture in the cap is disposed centrally of the container mouth.

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11. A method according to claim 8 or 9, wherein the aperture in the cap is disposed off-centre of the container mouth.

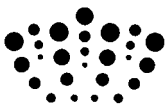
25 12. A method according to any of claims 8 to 11, wherein the container mouth is substantially circular.

13. A method according to any of claims 8 to 12, wherein the aperture in the cap is so located as to expose the seal sheet at or near the centre of the container mouth.

14. A method according to any of claims 8 to 12, wherein the aperture in the cap is so located as to expose the seal sheet at a position offset from the centre of the container mouth.
- 5 15. A cap for closing a drink container having a mouth sealed by a seal sheet, the cap comprising an aperture through which the seal sheet is exposed, when the cap is in use on a sealed container, and through which a drinking straw is receivable for piercing the seal sheet.
- 10 16. A cap according to claim 15, having a generally planar portion to extend, in use, across the container mouth and in which the aperture is defined.
17. A cap according to claim 15 or 16, wherein the aperture in the cap is disposed centrally of the container mouth.
- 15 18. A cap according to claim 15 or 16, wherein the aperture in the cap is disposed off-centre of the container mouth.
19. A cap according to any of claims 15 to 18, wherein the container mouth is substantially circular.
- 20 20. A cap according to any of claims 15 to 19, wherein the aperture in the cap is so located as to expose the seal sheet at or near the centre of the container mouth.
- 25 21. A cap according to any of claims 15 to 19, wherein the aperture in the cap is so located as to expose the seal sheet at a position offset from the centre of the container mouth.
- 30 22. A drink container substantially as described above, with reference to the accompanying drawings.

23. A method of closing a drink container, substantially as described above, with reference to the accompanying drawings.

24. A cap for closing a drink container, substantially as described above, with
5 reference to the accompanying drawings.



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Examiner: Mr Simon Holloway

Claims searched: 1 - 24

Date of search: 15 November 2012

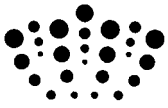
Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

| Category | Relevant to claims | Identity of document and passage or figure of particular relevance |
|----------|--|--|
| X | 1, 4, 5, 7, 8, 11, 12, 14, 15, 18, 19 and 21 | EP0896930 A1 (SOREMARTEC) see figures 1 and 2 |
| X | 1-3, 5, 6, 8-10, 12, 13, 15-17, 19 and 20 | JP2005035564 A (DAINIPPON PRINTING) see figures 1 and 5 |
| X | 1 - 3, 5 - 10, 12 - 17 and 19 - 21 | WO2006/057536 A1 (AHN) see figures 2 and 3 |
| X | 1-3, 5, 6, 8-10, 12, 13, 15-17, 19 and 20 | GB2162158 A (PILLA) see figure 2 and page 2 lines 52-54 |
| X | 1-21 | US4362250 A (NAT DISTILLERS) see figures 1-3 |
| X | 1-3, 5, 6, 8-10, 12, 13, 15-17, 19 and 20 | GB2234742 A (INIBSA LAB) see figure 1 |
| X | 1-3, 5, 6, 8-10, 12, 13, 15-17, 19 and 20 | EP0081976 A1 (STERILIN) see figures 1, 2 and 4 |

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Field of Search:

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Worldwide search of patent documents classified in the following areas of the IPC

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The following online and other databases have been used in the preparation of this search report

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| EPODOC, WPI |
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International Classification:

| Subclass | Subgroup | Valid From |
|-----------------|-----------------|-------------------|
| B65D | 0051/00 | 01/01/2006 |
| B65D | 0051/18 | 01/01/2006 |
| B65D | 0051/22 | 01/01/2006 |
| B65D | 0051/28 | 01/01/2006 |