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## (54) Lid for container

(57) A lid 10 for a container 40 has a body 14 and a peripheral channel 12 to engage with a lip 42 of the container. Inward projections 22 are formed on the outer wall 16 of the channel, and engage beneath the lip of the container. The outer wall of the channel can be detached from the body of the lid to allow the lid to be removed. The lid has a lift tab 30 which is connected to the body of the lid and forms part of said outer wall. To open the container, the user grasps the lift tab and pulls the lid away from the container, this removal also serving to detach the outer wall from the body of the lid. Alternatively, the outer wall can remain attached to the body of the lid at a part thereof.

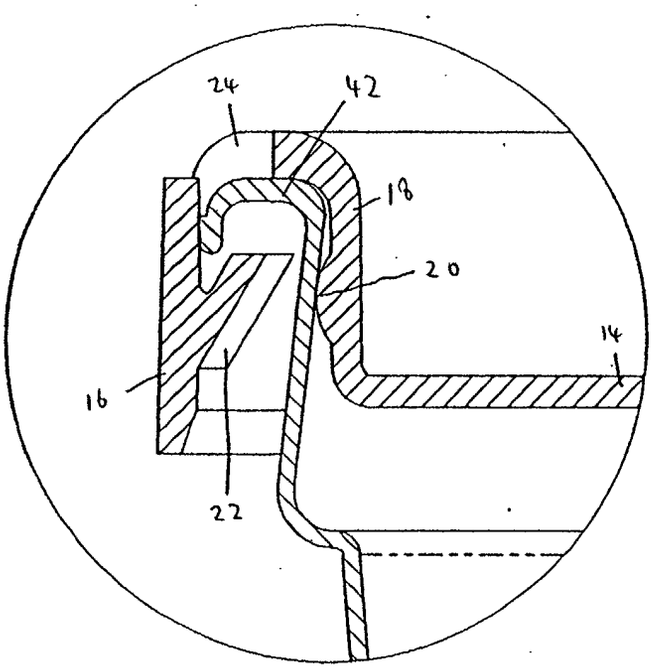


Fig. 3

EP 1 312 560 A2

## Description

**[0001]** The present invention relates to a lid for a container, and more particularly to a lid with tamper-evident features.

**[0002]** Tamper-evident features are well known, and are commonly employed on lidded containers for foodstuffs or the like, where it is important for a consumer to be sure that the container has not been opened prior to consumption. Normally, a part of the lid (or the container) is deformed or broken away when the container is opened. A consumer will notice the deformed or missing part, and thus be made aware that the container has been opened previously.

**[0003]** However, such tamper-evident containers can be laborious to open. For example, there are a number of designs for tamper-evident closures in which a part of the container must first be broken away in order to gain access to the lip of a lid, which must then be pulled from the container to open it. Thus, two separate actions are required to open the container. The operations required to open the container may not be obvious to the consumer, who may as a result damage the container or the lid while opening it, which could make it impossible to reseal the container.

**[0004]** According to the invention, there is provided a lid for a container, having a body and a peripheral channel for engaging with a lip of a container, wherein a plurality of projections are formed projecting inwardly from the outer wall of the channel, said projections being positioned beneath the lip of the container when the lid is positioned on the container, said outer wall of said channel being detachable or mostly detachable from the body of the lid, said lid having a lift tab connected to the body of the lid and forming part of said outer wall, allowing a user to remove the body of the lid from the container by grasping the lift tab and pulling the lid away from the container, this removal also serving to detach or mostly detach the outer wall from the body of the lid.

**[0005]** The engagement of the projections beneath the lip make it difficult to remove the lid from the container without damaging the lid or the container. Such damage will normally be noticeable to a consumer.

**[0006]** The lid can be removed from the container in a single motion, which pulls the body of the lid from the container and simultaneously tears the body of the lid away from the outer ring. Upwards motion of the outer ring is prevented by the engagement of the projections with the lip, and the outer wall is thus separated (or mostly separated) as the body of the lid is pulled away. If fully separated, the outer wall will then fall from the container under gravity. If the wall is only mostly separated, then it will remain attached to the lid. The absence of (or damage to) the outer wall will be noticed by a consumer, who will realize that the container has been opened.

**[0007]** Containers and lids having tamper-evident features are commonly moulded from plastics material. However, the moulding process used can place limitations on the design of the tamper-evident feature. For example, if the container or lid is formed using an injection-moulding process, where two mould parts are brought together to form a mould cavity into which molten plastic is injected, then the part formed must be designed so that it can be removed from the mould. This limits the size of undercuts, for example, which can be used.

**[0008]** Thus, it is preferred for openings to be formed in the upper wall of the channel above each of the projections. These openings allow a lower surface of an upper mould part to form the upper surface of the projections, and still be capable of being withdrawn from the moulded lid. This enables the projections to be larger, and thus increases the difficulty of removing the lid without damage.

**[0009]** It is preferred for the body of the lid to engage in a mouth of the container in a plug fit. This not only improves the sealing of the container before it is opened, but also allows the body of the lid to be refitted into the mouth of the container to reseal it if not all of the contents of the container are used immediately.

**[0010]** Preferably, a circumferential ring is formed on the lid to enhance sealing between the central part of the lid and the container.

**[0011]** In a preferred form, a line of weakness is formed between the outer wall and the body of the lid to facilitate separation of the outer wall from the body of the lid. This facilitates the removal of the outer wall of the channel, and also means that the outer wall will be removed cleanly. This reduces the chance of, for example, sharp edges which could cut a consumer being formed. Further, the tearing will take place along a predetermined line, and so there is less chance of the central part of the lid being torn, which could affect resealing.

**[0012]** The line of weakness can be formed in any convenient position. However, it is preferably formed in the upper wall of the channel, and is preferably in the form of a groove. Such a line of weakness can be easily formed in an injection moulding process.

**[0013]** It is preferred for a plurality of openings to be formed through the line of weakness, to further facilitate the separation of the body of the lid and the outer wall.

**[0014]** The line of weakness need not extend all the way round the lid. If it does not, then a region of the lid will remain untorn, and the outer wall will remain attached to the body of the lid at this point.

**[0015]** In a further preferred form, the regions between the part of the outer wall formed by the lift tab and the remainder of the outer wall are weaker than the remainder of the outer wall, so that these regions tear when said lift tab is lifted. This further facilitates the removal of the lid.

**[0016]** A preferred embodiment of the invention will now be described by way of example only and with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a lid according to a preferred embodiment of the present invention applied to a container;

Figure 2 is a cross-sectional view of the lid and container taken along line 2-2 in Figure 1;

Figure 3 is an enlarged cross-sectional view showing the engagement between the lid and the container at the left-hand side of Figure 2;

Figure 4 is an enlarged cross-sectional view showing the engagement between the lid and the container at the right-hand side of Figure 2;

Figure 5 is a cross-sectional view of the lid and the upper part of the container taken along line 5-5 in Figure 1.

**[0017]** Figure 1 shows a preferred embodiment of the lid (which is generally indicated by the reference numeral 10) on a container 40. As can be seen, the lid is intended for use with circular pot-type containers, but can of course be used with other containers which may be of non-circular form, for example oval or rectangular.

**[0018]** As best shown in Figures 3 and 4, the rim of the container 40 is formed as a lip 42, with a horizontal portion 44 and a depending vertical portion 46. The edge of the lid is formed with a downwardly-open channel 12, extending around the central part 14 of the lid and sized so as to fit closely over the lip 42. The central part of the lid fits inside the top of the container as a plug, as best seen in Figure 2.

**[0019]** As can be seen in Figure 4, there are two areas of sealing between the container and the lid; the first is the contact between the end of the depending vertical portion 46 of the lip 42 and the inside of the radially outer wall 16 of the channel 12 of the lid, and the second is the contact between the outside of the radially inner wall 18 of the channel 12 of the lid and the inner wall of the container 40. The radially inner wall of the channel of the lid is formed with a projecting ring 20 to improve this second seal.

**[0020]** As best shown in Figure 3, projecting radially inwardly from the outer wall 16 of the channel 12 of the lid are projections 22, which, when the lid is attached to the container, extend beneath the lip 42. These projections prevent the lid 10 from being simply lifted off the container 40.

**[0021]** The lid 10 is initially attached to the container 40 by being pressed downwardly onto it. The lid and the container must be formed of a material of sufficient flexibility to allow the lip 42, the projections 22 and the channel 12 to deform sufficiently to allow the projections 22 to engage under the lip 42 as this pressing takes place; however, most plastics materials used in the packaging of products which require tamper-evident features are suitable in this regard.

**[0022]** In order to facilitate the formation of the projections 22 in a moulding process, there are openings 24 in the upper wall of the channel above each of the projections. These openings 24 enable part of an upper mould part to form the upper surface of the projections 22, and still be withdrawn from the moulded lid through the openings 24. The presence of the openings allows the projections to be much larger than would otherwise be possible, and so increases the degree of engagement between the lid and the container.

**[0023]** There are eight projections, circumferentially equispaced, although the number can of course be varied. The circumferential distance between the projections is roughly equal to the circumferential extent of the projections. Any attempt to deform the lid radially outwardly to allow one of the projections to disengage from the lip will cause at least one of the other projections to engage more tightly with the lip, thus further increasing the difficulty of removing the lid.

**[0024]** Between two of the projections is formed a lift tab 30, which can be grasped by a user. The lift tab is formed by a part of the outer and upper walls of the channel 12. The part of the outer wall 16 which is formed by the lift tab 30 is connected to the remainder of the outer wall by weakened regions, which may for example be thinner than the remainder of the outer wall.

**[0025]** The position of the lift tab 30 can be indicated, for example, by an arrow (not shown) moulded on the upper surface of the part of the upper wall of the channel which forms part of the lift tab, by the words "lift here" or the like moulded onto the lid, or by any suitable means.

**[0026]** The regions of the upper wall formed between the other pairs of projections have a groove 28 formed in the upper surface of the upper wall. The groove 28 forms a line of weakness. In a preferred form, a number of vertical holes are formed passing through the groove; these facilitate tearing along the groove, as the total length which must tear at any one time is reduced to the length between a pair of openings.

**[0027]** In order to open the container, the user grasps the lift tab 30 of the lid 10, and lifts. This breaks the connections between the part of the outer wall 16 formed by the lift tab 30 and the remainder of the outer wall 16. As the tab 30 is lifted further, the main body of the lid is pulled upwards. However, the engagement between the projections 22 and the lip 42 prevents the outer wall 16 from moving, and so tearing takes place along the groove 28 as the body of the lid is lifted, separating the outer wall from the body of the lid. Once the lid and the outer wall are fully separated, the outer wall simply falls away from the container. The container is now fully open.

**[0028]** In an alternative version, the outer wall is not completely separated from the body of the lid during the tearing step. Instead, the part of the upper wall of the channel opposite to the lift tab is formed without a groove, and so remains untorn. As a result, the outer wall remains attached to the body of the lid at this point, but does not interfere with the opening process. In this alternative version, the user does not have a separate part to dispose of after the opening process.

**[0029]** The closure is tamper-evident as the absence of the outer wall 16 alerts a consumer to the fact that the container has been opened. Further, even if the lid is only slightly lifted, in order to gain access to the contents of the container, the partial tearing of the groove 28 and the broken connections between the part of the outer wall formed by the lift tab and the remainder of the outer wall will still be noticeable to a user.

**[0030]** Because of the presence of the additional projecting ring 20, the central part 14 of the lid can be refitted onto the container to reseal it. In addition, as the lift tab 30 is formed by a part of the upper wall and the outer wall, a consumer can use the lift tab to pull the central part 14 of the lid away from the container 40 after it has been resealed.

**[0031]** Although the invention has been described in terms of a preferred embodiment suitable for use with food containers, it will be appreciated that it can of course be used on other forms of containers. In addition, various minor amendments (for example to the lift tab) can be made without departing from the scope of the invention, as defined in the claims.

**[0032]** Further, although the central part of the lid has been shown as an upwardly-open hollow region, this region could be covered over by a label or the like and used a storage space. Utensils (such as a knife, fork or spoon to allow consumption of the contents of the container) could be stored here, and could be retained on the central part of the lid, for example by snap-fitting into recesses formed thereon. Other materials such as ingredients can also be stored here.

## Claims

1. A lid for a container, having a body and a peripheral channel for engaging with a lip of a container, wherein a plurality of projections are formed projecting inwardly from the outer wall of the channel, said projections being positioned beneath the lip of the container when the lid is positioned on the container, said outer wall of said channel being detachable or mostly detachable from the body of the lid, said lid having a lift tab connected to the body of the lid and forming part of said outer wall, allowing a user to remove the body of the lid from the container by grasping the lift tab and pulling the lid away from the container, this removal also serving to detach or mostly detach the outer wall from the body of the lid.

2. A lid as claimed in claim 1, wherein openings are formed in the upper wall of the channel above each of the projections.

3. A lid as claimed in claim 1 or claim 2, wherein the central part of the lid engages in a mouth of the container in a plug fit.

4. A lid as claimed in claim 3, wherein a circumferential ring is formed on the lid to enhance sealing between the central part of the lid and the container.

5. A lid as claimed in any preceding claim, wherein a line of weakness is formed between the outer wall and said body of the lid to facilitate separation of said outer wall from said body of said lid.

6. A lid as claimed in claim 5, wherein said line of weakness is formed in the upper wall of the channel.

7. A lid as claimed in claim 6, wherein said line of weakness is in the form of a groove.

8. A lid as claimed in any of claims 5 to 7, wherein a plurality of openings are formed through said line of weakness, to further facilitate said separation.

9. A lid as claimed in any of claims 5 to 8, wherein said line of weakness does not extend all the way round the lid.

10. A lid as claimed in any preceding claim, wherein the regions between the part of the outer wall formed by the lift tab and the remainder of the outer wall are weaker than the remainder of the outer wall, so that these regions tear when said lift tab is lifted.

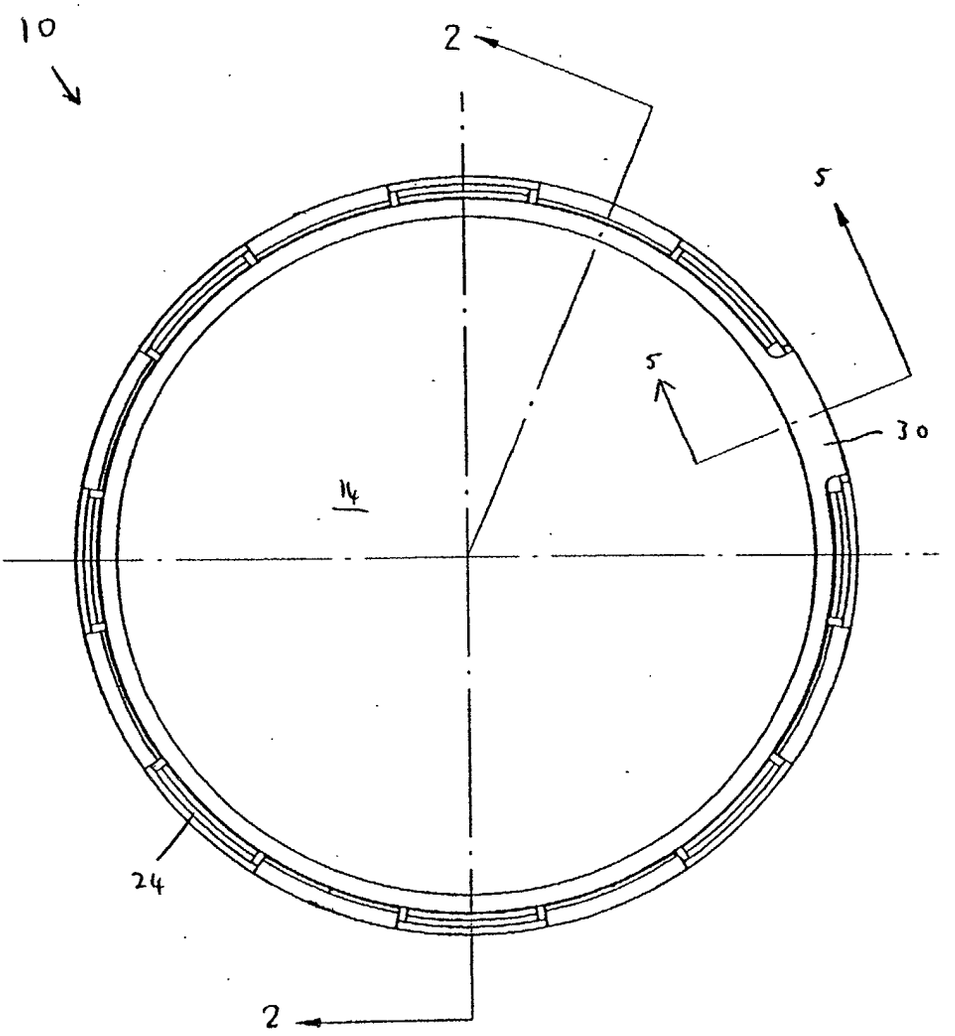


Fig. 1

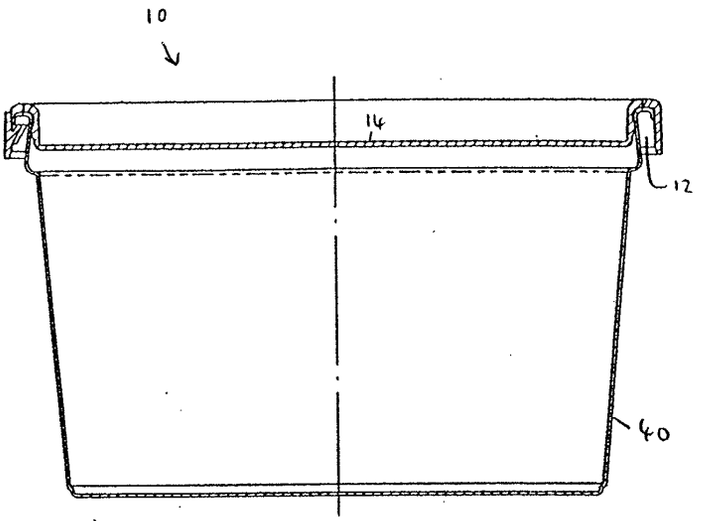


Fig. 2

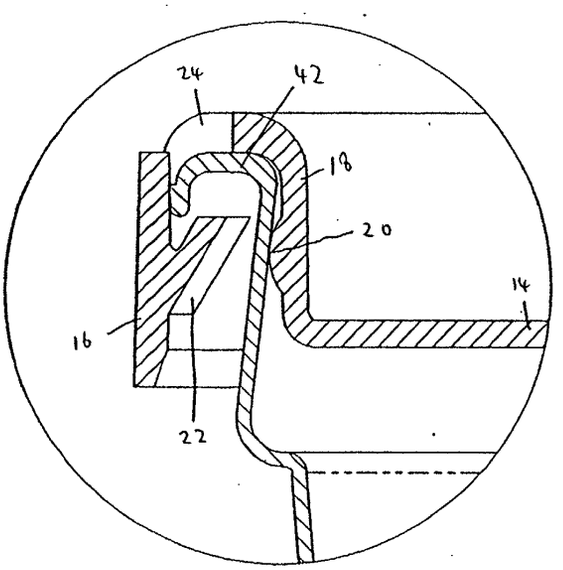


Fig. 3

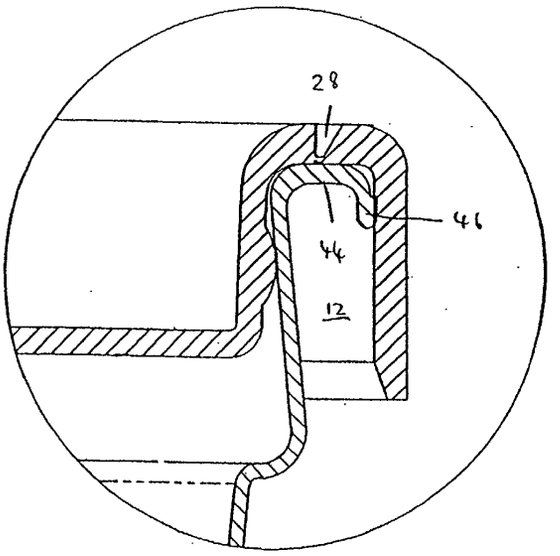


Fig. 4

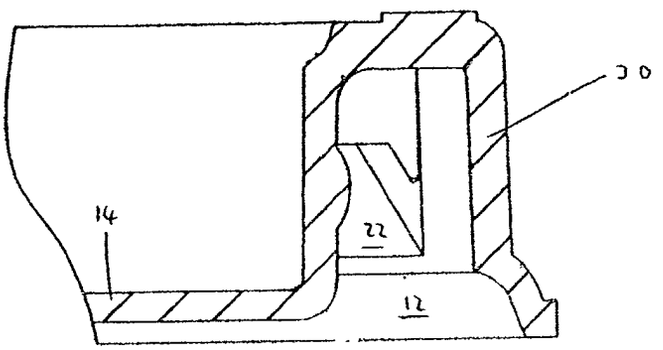


Fig. 5