A reclosable container lid includes a lid surface having an upper side, a lower side, a circumferential edge, and a zone for a dispensing aperture delimited by a circumferential weakening profile. A lever tab is pivotably fastened to the lid surface via a fastener for at least partly opening the dispensing aperture. The lever tab has first and second end portions, wherein the first end portion, in the opening position, at least partly overlaps with a section of the zone for the dispensing aperture. The lever tab also has a closure module comprising a closure collar that rests against the upper side of the lid surface and which, in the closure position, extends along the dispensing aperture in a sealing manner. The closure module also includes a reclosable aperture closure framed by the closure collar. A method of manufacturing reclosable containers using the container lids is also disclosed herein.
Fig. 5
RECLOSEABLE CONTAINER LID, CONTAINERS INCLUDING BEVERAGE CANS CONTAINING SAID RECLOSEABLE CONTAINER LID, METHODS OF MANUFACTURING SUCH CONTAINERS, AND USE OF SAID RECLOSEABLE CONTAINER LID

BACKGROUND

[0001] The present invention relates to a reclosable container lid, containers, particularly beverage cans, containing the reclosable container lid, methods of manufacturing such containers, and the use of such a container lid.

[0002] Non-returnable containers for liquids have been widely used in a variety of different shapes and sizes for quite some time. Frequently, light-metal beverage cans are used where the can lid is equipped with a so-called lever closure. According to a first embodiment variant, the lid piece forming a dispensing aperture is pushed in the direction of the can interior by operating this lever closure and remains undetachably connected to the can lid. According to a further embodiment variant, the lever closure, together with the zone or lid piece forming the dispensing aperture, is removed when operating the lever closure. Such closure systems are described, for example, in WO 97/030902; DE 100 18 685 C2; U.S. Pat. No. 4,148,410; EP 564 725 A1; WO 2005/056400 A1; and GB 2 379 917 A. Once these closure systems have been operated, an effective reclosing of the containers with the lid piece pushed down or out is basically no longer possible. This is perceived as very disadvantageous, particularly with larger beverage receptacles, as these usually are not consumed completely immediately after initial opening. If the beverage in question is a sugar-containing soft drink, for example, there is a risk of insects entering the container, particularly during the summer months. Moreover, the freshness, taste, and quality of the beverage are adversely affected if the beverage is kept in an unclosed condition. Particularly beverages containing milk or yogurt will permanently lose their taste and quality or will even become completely inedible if they are exposed to ambient air for a longer period of time. The non-reclosable closure systems of beverage receptacles containing carbonated beverages have shown to be particularly disadvantageous. Without a suitable closure, the carbon dioxide escapes very quickly, resulting in the beverage losing its characteristic taste.

[0003] There has been no lack of attempts, therefore, to achieve reclosable beverage cans. A first approach begins with can lids which contain a dispensing aperture right from the beginning. Proposals in this direction are disclosed, for example, in WO 2007/03957 A1; WO 2008/05635 A2; DE 20 020 019 224 U1; U.S. Pat. No. 3,952,911; and DE 601 01 995 T2. As a rule, however, such containers are not nearly as tightly sealed, especially over a longer period of time, as, for example, beverage cans made of a can body and a can lid not having a predefined dispensing aperture. Also, the manufacture of such beverage receptacles having a predefined dispensing aperture in most cases requires a very high material and labour input and is very cost-intensive if a high degree of tightness, particularly also after reclosing, is to be achieved.

[0004] For beverage receptacles not having a predefined dispensing aperture, reclosable systems are achieved according to a further realisation by the lid or a part of the lid being provided with an additional cover after the first opening procedure. Such systems are disclosed, for example, in DE 100 18 685 C2 and DE 92 11 883 U1. Instead of providing a complete cover of the can lid, partial covers being pivotably attached on the can lid are also known. According to DE 205 00 327 U1, after initial breaking-open or tearing-open of a dispensing aperture, a planar element may be pivoted about a pivot point on the lid surface to a position over the dispensing aperture. A comparable closure mechanism is used in WO 2005/056400 A1. From WO 99/67150 A1 a reclosable can lid is known in which the dispensing aperture is initially closed off with a removable film which is an integral part of the can lid. After removing this film, a closure cap being connected to the can lid via a film hinge may be inserted flush into the dispensing aperture. The closure variant described in WO 99/67150 A1 is suitable for can lids made of plastic materials.

[0005] U.S. Pat. No. 4,887,712 deals with a beverage can, the dispensing aperture of which may be created via a lever closure. Here, the surface of the can lid forming the dispensing aperture is pushed in the direction of the can interior and is undetachably connected to the can lid. The closure member, which is supported in a manner pivotable about a fastening point, has a dished region opposite the tab nose, which corresponds to the contour of the dispensing aperture and which may be inserted into it after pivoting the closure member for the purpose of closing. A sufficient degree of tightness, in particular gas-tightness, cannot be achieved with this embodiment. The closure system explained in GB 2 379 917 A substantially corresponds to the one of U.S. Pat. No. 4,887,712.

[0006] Also from DE 89 11 286 U1 a can lid is apparent, having a tear-open tab pivotally supported on the lid wall. This pivotally supported tear-open tab has a closure element, which, in the closing position, is present over the opened dispensing aperture and may closely engage it. The tear-open tab and the closure element are formed from sheet metal as a single piece.

[0007] WO 2004/056667 A1 discloses a beverage can closure in which the gripping portion of the tab is designed for reclosing the dispensing aperture created by breaking open a predetermined breaking line. Also in this embodiment, the gripping portion of the tab is supported in a manner pivotable about an axis located in the lid so as to be vertically pivotable, and the shape and size of the closure means are adapted to the dispensing aperture so as to ensure reasonably tight closure.

[0008] In DE 299 14 231 U1, a reclosable can lid is achieved by removing the entire can lid from the can rim via a seamed edge which is less stable in the region of the pull tab. The integrity of the can lid is not destroyed in this manner, so that the can lid may be placed back on the can rim after the can has been used.

[0009] To achieve reclosable can closures having a higher degree of tightness, according to DE 10 2005 057 755 A and DE 10 2005 004 759 A, threaded closures are to be integrated into the can lid. It may be provided, for example, that a safety film is destroyed on initial operation of the threaded closure.

[0010] From DE 693 02 424 T2 a reclosable can lid closure is apparent, where a plastic sleeve may be slipped over a metal pull or tear-open tab, said tab being pivotable about a fastening point, and fixed thereto by clamping. The peripheral edges of this slipped-over sleeve are realised such that the dispensing aperture may be covered completely. In order for the pivotally supported pull tab with its slipped-over plastic sleeve to remain over the dispensing aperture, a groove is provided at the outer peripheral edge of the tab, said groove
lockingly engaging the peripheral curled edge of the can lid. In this manner, the position of the pull tab over the dispensing aperture is fixed, but a particularly high degree of tightness is not accomplished thereby.

[0011] The reclosable lid variants known from the art still have their disadvantages and leave room for improvement, for example with regard to the tightness of the seal in the case of carbonated beverages. Moreover, the reclosable lid systems known in the prior art are usually not suitable to resist, with sufficient reliability, the pasteurisation conditions during mass production, which many beverages have to be subjected to as a rule. If the dispensing or lid system does not allow pasteurisation, during which temperatures above 70° C. and internal pressures of up to 7 bars generally occur, it is inevitable to resort to the use of preservatives.

[0012] Insofar as the systems known from the art allow pasteurisation to be performed at all without the reclosable closure system provided being affected, this is often achieved only by having to use plastic elements on the inner side of the can lid. This entails the risk, however, of components of the plastic materials used entering the pasteurised beverage in a dissolved form.

SUMMARY AND INITIAL DESCRIPTION

[0013] An aspect of the present application is therefore to provide a reclosable container lid which does not have the disadvantages of the prior art and which, in particular, allows easy and reliable manufacturing in the environment of mass production and leads to beverage receptacles in which the beverage continues to maintain its original quality and, in the case of carbonated beverages, the original concentration of dissolved carbon dioxide over a longer period of time after initial opening and reclosing.

[0014] Accordingly, disclosed herein is a reclosable container lid comprising a lid surface having an upper and a lower side and having a circumferential edge and a zone for a dispensing aperture delimited by at least one entirely or partially circumferential weakening profile. A lever tab is pivotally fastened to the lid surface via a fastener for at least partly opening the zone in a manner forming the dispensing aperture. The lever tab has a first end portion and an opposite second end portion, wherein the first end portion, in the opening position, can be brought to or is in a position so as to at least partly overlap with a section of the zone for the dispensing aperture and wherein the second end portion is present on the other side of the fastener in relation to the first end portion. The lever tab has a closure module at or adjacent to the second end portion, said closure module comprising a closure collar or frame which can be brought to rest or which rests against the upper side of the lid surface and which, in the closure position, extends along the dispensing aperture, particularly in a sealing manner when being placed on the upper side of the lid surface, and, particularly framed by the closure collar, a reclosable aperture closure.

[0015] “Opening position” in terms of the present application is to be understood as the orientation of the lever tab on the lid surface in which the lever tab may be operated so as to uncover the zone for the dispensing aperture. “Closure position” in terms of the present application is to be understood as the orientation of the lever tab in which the closure module of the lever tab is in a position over the dispensing aperture and can be, or in particular is, connected to said aperture in a manner forming a reclosable closure.

[0016] Depending on the container type, the lid surface may be manufactured from plastic, metal, or paperboard or cardboard, respectively, or comprise one or several of these materials. The same applies to the container body/container receptacle. Lid surface in terms of the present application comprises a planar structure, for example a metal and/or plastic layer. Naturally, the lid surface of the container lid disclosed herein may also be a multilayer structure, comprising, for example, a metal lid surface having on the lower side at least one plastic film as a protective layer.

[0017] The container lid disclosed herein may be an integral part of a separate part of a container. In the latter case, the container lid and container body or container receptacle may be connected to each other in a liquid-tight manner familiar to those skilled in the art, e.g., by gluing or pressing, for example by a seam. For example, the circumferential edge of the lid surface may also comprise a flange for connection to the container body. With the container lid disclosed herein, the circumferential edge in a preferred realisation may have an expansion extending axially away from the upper side of the lid surface. In a convenient realisation it may be provided that the axial extension of the edge is formed such that the extent of the expansion is greater than the extent of the expansion of the lever tab in an axial extension in relation to the lid surface in the opening position when the zone for the dispensing aperture is still intact. The latter embodiment of a container lid disclosed herein particularly allows containers equipped with such container lids to be stacked on top of each other without any problems.

[0018] A container body or receptacle in terms of the present application comprises constructions with and without a bottom element. This is due to the fact that, for example, metal beverage cans are often manufactured as two or three pieces. That is, in the case of a two-piece container, said container is joined from a container body already having a bottom element, particularly an integral one, and a container lid. In the case of a three-piece container, said container is manufactured from a bottom element, a receptacle wall and a container lid.

[0019] The reclosable container lids of the present application may be used for a variety of container types. Some examples include beverage cans, e.g., for carbonated beverages, milk cartons, (liquid) yogurt receptacles, or packings for fruit juices. Apart from containers for beverages, the container lid disclosed herein may of course also be used for containers in which liquid or powdery foodstuffs such as oil, vinegar or flour are offered. The container lids disclosed herein are also suitable for containers in which personal hygiene products such as shampoos or shower gels are available on the market.

[0020] The shape and size of the zone for the dispensing aperture in the lid surface may vary to a large degree and usually depend on the respective type of use of the container with which the lid disclosed herein is provided. In one realisation, it may be provided that the zone for the dispensing aperture is spaced at a distance from the fastener and in particular is adjacent to the edge of the lid surface. In a convenient realisation, the zone for the dispensing aperture is defined by an entirely or partially circumferential weakening profile. The container lids disclosed herein are advantageous in that, as long as the zone for the dispensing aperture has remained intact, penetration of liquid through the container lid is rendered impossible with a maximum degree of security. Particularly in the context of beverage cans such a fluid-
tight zone for the dispensing aperture is often also referred to as a score panel and the weakening profile adjoining or defining this zone is referred to as a score profile.

[0021] Fasteners for such lever tabs on the lid surface, such as may also be used with the container lid disclosed herein, are generally known. As far as its opening mechanism is concerned, the lever tab of the container lid is also referred to in the art as a lever closure. Particularly in the opening position, the first end portion of the lever tab, frequently also referred to as a tab nose, overlaps with a section of the zone for the dispensing aperture. By lifting the second end portion of the lever tab, a force is applied to a section of the zone of the dispensing aperture via the first end portion, or via the tab nose, by means of the lever action, leading to a fracturing of the weakening profile at or adjacent to the force application point, and to the zone of the lid surface previously covering the dispensing aperture being pivotable in the direction of the container interior while at the same time uncovering the dispensing aperture. The fastener is preferably a rivet and is preferably in the centre of the lid surface. Depending on the size of the lid surface, especially also relative to the size of the dispensing aperture, the fastener may also be fastened at a different position on the lid surface.

[0022] The second end portion of the lever tab comprises a closure module which is equipped with a re closable aperture closure, for example in the form of a flap or lid flap. This flap may, for example, be connected to the closure module, in particular the closure collar, via a hinge or a film hinge. The re closable aperture closure in one embodiment on its side facing the upper side of the lid surface has a reversible first arresting unit which, in interaction with a corresponding second arresting unit, provides a tight and reversibly operable aperture closure at the closure collar. This may be, for example, a groove/tongue connection system. The closure collar in terms of the present application comprises both a receiving element for the re closable aperture closure and the extension of the closure module up to the first end portion, for example up to the affixing to the first end of the retention element.

[0023] In a preferred embodiment, the closure module, particularly the closure collar, has at least a third arresting device on the side facing the upper side of the lid surface, said arresting device preferably substantially corresponding to the contour of the zone for the dispensing aperture, such that by operating the arresting device the closure module can be or is connected, particularly irreversibly, to the dispensing aperture, wherein preferably the closure collar, partially or entirely, rests against the upper side of the lid surface under pressure. The third arresting device for a preferably irreversible attachment of the closure module to the dispensing aperture is advantageously a ring snap connection or a locking hook snap connection that may be circumferential. Such arresting device systems are known in the art. Usually, these systems cannot be removed in a non-destructive manner after arresting has occurred.

[0024] In a particularly convenient realisation, the weakening profile surrounds the zone for the dispensing aperture except for a distance region, in particular adjacent to the first end portion in the opening position and laterally offset from a line formed by the fastener and the first end portion of the lever tab in the opening position. It has often shown to be advantageous if, after the initial breaking-open of the weakening profile, the zone for the dispensing aperture is not uncovered completely, but remains connected to the lid surface via the above-mentioned distance region. Particularly if the container lid disclosed herein is to be used for closing containers containing beverages, it should be ensured that the zone for the dispensing aperture does not fall into the beverage as a separate component after operating the lever tab. It has shown to be beneficial if this distance region, which prevents the separated zone for the dispensing aperture from falling in, is adjacent to the point where the first end portion of the tab nose of the lever tab is applied for the purpose of initial destruction of the weakening profile.

[0025] Particularly when using lid surfaces of metal, for example light metal, recessed and raised portions are worked into the lid surface as a rule for the purpose of stiffening the lid structure. Such structures are also known in the art as so-called beads and may be designed, for example, as a straight line or curved.

[0026] Particularly such container lids disclosed herein have shown to be convenient in which a partially or entirely circumferential bead is present on the upper side of the lid surface, particularly adjacent to the zone for the dispensing aperture. Preferably this bead is an arched portion extending axially upwards from the upper side of the lid surface.

[0027] According to a further embodiment of a container lid disclosed herein, the closure collar has at least one, particularly circumferential, seal, which can be brought to rest or which rests against the upper side of the lid surface, particularly adjacent to the dispensing aperture. It is particularly advantageous if the seal sealingly interacts or can be brought into sealing interaction with the particularly circumferential bead.

[0028] In a convenient realisation, the container lid disclosed herein further comprises at least one recess on the upper side of the lid surface, said recess in the opening position of the lever tab overlapping with the second end portion thereof at least partially and being particularly arranged laterally offset from the line formed by the second end portion and the fastener in the opening position. The at least one recess in the lid surface serves to facilitate reaching underneath and gripping the second end portion of the lever tab so as to be able to effectively raise the lever tab upwardly in the region of the second end portion, thus pressing the first end portion, i.e., the tab nose, against the overlapping area of the dispensing aperture. If the second end portion of the lever tab is particularly close to the lid edge, which often extends axially upwards relative to the lid surface, away from the upper side of the lid surface, there is, as a rule, little room left to be able to lift the second end portion of the lever tab. This shortcoming in handling is remedied by providing the above-mentioned recesses in the lid surface, which are arranged so as to overlap with the second end portion of the lever tab. Particularly advantageously recesses are provided, preferably in a minor-inverted arrangement, on different sides of a line extending from the second end portion to the first end portion in the opening location. With this embodiment variant, the opening process proceeds particularly conveniently. It has also shown to be particularly advantageous to provide alternatively or, in particular, additionally recessed finger grips, for example, in particular rounded, indentations in the second end portion of the lever tab, preferably in an area where, in the opening position, the lever tab overlaps with the recesses in the lid surface described above. This further facilitates the engagement, i.e., the operation of the lever tab.

[0029] Particularly preferred are those embodiments of the container lid disclosed herein in which the lever tab has a
retention element, particularly a metal retention tongue, via which the lever tab, particularly the first end portion of the lever tab, is fastened to the lid surface by means of the fastener. As a rule, the retention element is present in the plane of the lever tab or of the closure collar of the lever tab, respectively. Preferably it may be present, at least in parts during the opening process, in a plane which differs from the plane of the closure collar during this process. While the first end of the retention element generally faces the first end portion of the lever tab or is connected thereto, at the opposite second end of the retention element there is usually the attachment location for the fastener with which the lever tab is fastened to the lid surface.

[0030] When manufacturing the closure collar from plastic, it has shown to be particularly pragmatic to injection-mould the end portion of the lever tab, preferably the closure collar in the region of this first end portion, to the retention element, in particular the retention tongue. For this purpose, the end section of the retention element, in particular the retention tongue, also referred to as the first end of the retention element, which is opposite the end portion where the fastener connects the retention element, in particular the retention tongue, to the lid surface, also referred to as the second end of the retention element, is overmoulded with a plastic material. Overmoulding of metal components or parts thereof using the injection-moulding technique is known to those skilled in the art.

[0031] Affixing systems for attaching the lever tab to the lid surface by means of a fastener, e.g., a rivet, where applicable also using a retention element, e.g., a retention tongue or retention strut, such as may be used for the container lid disclosed herein, are known from the art and are described, for example, in DE 693 02 424 T2; U.S. Pat. No. 4,148,410; EP 564 725 A1; WO 2007/048897 A2; DE 100 18 685 C2; U.S. Pat. No. 4,887,712; DE 89 11 286 U1; and DE 102 61 232 A1.

[0032] Aspects of the present application are further achieved by a container comprising a container body or container receptacle and a container lid as disclosed herein. Any fluid may be accommodated in these containers. Suitable fluids comprise liquids, viscous pourable materials, and particulate bulk materials.

[0033] Aspects of the present application are also achieved by methods of manufacturing containers disclosed herein, comprising the following steps:

[0034] a) providing a container body, containing a bottom part, for accommodating a fluid,
[0035] b) providing a container lid, comprising a lid surface having an upper and a lower side and a circumferential edge as well as a zone for a dispensing aperture, delimited by at least one entirely or partially circumferential weakening profile, and a fastener for attaching a lever tab,
[0036] c) providing a lever tab for at least partly opening the zone in a manner forming the dispensing aperture, comprising a first end portion and an opposite second end portion having a closure module, comprising a closure collar and, where applicable, a reclosable aperture closure, and a retention element, in particular a retention tongue, which is or can be connected to the second end portion and which, in the direction of the second end portion, has an attachment location for the fastener,
[0037] d) filling the container body with a fluid,
[0038] e) attaching, in particular with fluid-tight attachment, the container lid to the container body, and
[0039] f) fastening the lever tab to the container lid via the attachment location by means of the fastener, as well as,
[0040] g) where applicable, attaching the reclosable aperture closure to the closure module of the lever tab,
[0041] or
[0042] i) providing a container body, containing a bottom part, for accommodating a fluid,
[0043] ii) providing a container lid, comprising a lid surface having an upper and a lower side and a circumferential edge as well as a zone for a dispensing aperture, delimited by at least one entirely or partially circumferential weakening profile, and a fastener for attaching a lever tab, as well as this lever tab, comprising a first end portion and an opposite second end portion having a closure module, comprising a closure collar and, where applicable, a reclosable aperture closure, and a retention element, in particular a retention tongue, which is or can be connected to the second end portion and which, in the direction of the second end portion, has an attachment location for the fastener,
[0044] iii) filling the container body with a fluid,
[0045] iv) attaching, in particular with fluid-tight attachment, the container lid to the container body and fastening the lever tab to the container lid via the attachment location by means of the fastener, as well as,
[0046] v) where applicable, attaching the reclosable aperture closure to the closure module of the lever tab,
[0047] or
[0048] 1) providing a container body without a bottom part,
[0049] 2) providing a bottom part for the container body,
[0050] 3) providing a container lid, comprising a lid surface having an upper and a lower side and a circumferential edge as well as a zone for a dispensing aperture, delimited by at least one entirely or partially circumferential weakening profile, and a fastener for attaching a lever tab,
[0051] 4) providing a lever tab for at least partly opening the zone in a manner forming the dispensing aperture, comprising a first end portion and an opposite second end portion having a closure module, comprising a closure collar and, where applicable, a reclosable aperture closure, and a retention element, in particular a retention tongue, which is or can be connected to the second end portion and which, in the direction of the second end portion, has an attachment location for the fastener,
[0052] 5) attaching, in particular with fluid-tight attachment, the container lid to the container body,
[0053] 6) fastening the lever tab to the container lid via the attachment location by means of the fastener, as well as,
[0054] 7) where applicable, attaching the reclosable aperture closure to the closure module of the lever tab,
[0055] 8) filling the container body with a fluid,
[0056] 9) attaching, in particular with fluid-tight attachment, the bottom part to the container body,
[0057] or
[0058] A) providing a container body without a bottom part,
[0059] B) providing a bottom part for the container body,
[0060] C) providing a container lid, comprising a lid surface having an upper and a lower side and a circumferential edge as well as a zone for a dispensing aperture, delimited by at least one entirely or partially circumferential weakening profile, and a fastener for attaching a lever tab, as well as this lever tab, comprising a first end portion and an opposite second end portion having a closure module, comprising a closure collar and, where applicable, a reclosable aperture
closure, and a retention element, in particular a retention tongue, which is or can be connected to the second end portion and which, in the direction of the second end portion, has an attachment location for the fastener.

D) attaching, in particular with fluid-tight attachment, of the container lid to the container body and fastening the lever tab to the container lid via the attachment location by means of the fastener, as well as,

E) where applicable, attaching the reclosable aperture closure to the closure module of the lever tab,

F) filling the container body with a fluid, and

G) attaching, in particular with fluid-tight attachment, the bottom part to the container body.

In the method variants described above, the sequence may be freely selected within certain limits. Steps (6) and (7) may, for example, follow steps (8) or (9), or step (E) may follow steps (F) or (G).

According to the present application, a sealing construction is further provided comprising an elastic sealing body and, particularly resting against this elastic sealing body, a seal support having a bead with a crest, said bead facing in the direction of the elastic sealing body, and shoulders extending in opposite directions therefrom, wherein the elastic sealing body, facing the bead, has a first wedge-shaped elastic rib and, spaced apart therefrom, a second wedge-shaped elastic rib, which taper in the direction of the bead and which each rest or can be brought to rest against opposite bead shoulders extending away from the crest of the bead, and further a first sealing wall, spaced from the first elastic rib opposite to the direction of the second rib, and a second sealing wall, spaced from the second elastic rib opposite to the direction of the first rib, each being spaced at a greater distance from the crest of the bead than the first and second elastic ribs, respectively, and resting against the seal support if the elastic ribs rest against the bead shoulders.

The present application is based on the surprising finding that container closures as disclosed herein permit a reliable and tight red joint of container systems provided with so-called lever closures, such as those known from beverage cans. It is further particularly advantageous in the context of the container lids disclosed herein that, even though non-metallic components may be used for their manufacture, for example plastics, the fluid filled into the container provided with this container lid is not subjected to such plastic materials either during the filling process or during a pasteurisation, sterilisation, or any other preservation or treatment step which may have to be performed and also not during subsequent storage and transport. Particularly under the usual pasteurisation conditions, during which temperatures ranging from 50 to 70°C and pressures of up to 7 bar are applied, it is advisable for reasons of food hygiene to avoid any contact with plastic parts which are not designed for such harsh conditions. A further advantage associated with the container lids disclosed herein is the great process variability in the finishing of fluid-filled containers. It is even conceivable to fasten the lever tab to the top surface of the lid only after the container lids disclosed herein have been attached to the fluid-filled container body. It has also shown to be particularly practical that the containers available with the container lids disclosed herein can be readily configured such that they can be stacked on top of each other, i.e., being in direct contact with each other. Furthermore, an advantage which is quite significant from a marketing point of view is that the reclosable container lid may be provided with logos or brand names in a particularly easy manner. This aperture closure may be manufactured in a separate manufacturing step and is subsequently be integrated into the lever tab in a manner forming the closure module.

DESCRIPTION OF THE DRAWINGS

Further features and advantages of the invention will become apparent from the description below, in which preferred embodiments of the invention will be explained by way of example with reference to schematic drawings, in which

FIGS. 1a) to 1g) show a container lid and a container, respectively, in different stages of use;

FIG. 2 shows a container lid with a closed aperture closure;

FIGS. 3a) to 3b) show a container lid with an opened aperture closure;

FIG. 4 shows a schematic top view of a container lid without the lever tab;

FIG. 5 shows a schematic perspective top view of the lower side of the closure collar of the lever tab;

FIG. 6 shows a container lid in a cross-sectional view;

FIG. 7 shows an enlargement of section A of FIG. 6;

FIG. 8 shows an enlarged representation of section B of FIG. 6; and

FIG. 9 shows a schematic perspective view of an embodiment of a third arresting device of a container lid.

DETAILED DESCRIPTION

FIG. 1a) shows a container 1 with a container lid 2 and a container receptacle or body 4. The container lid 2 has a circumferential edge 6 which is connected to the container receptacle 4 in a fluid-tight manner via a seam connection 8. Moreover, the container lid 2 is equipped with a lid surface 10 in which there is a zone 12 for a dispensing aperture. The container lid 2 furthermore has a lever tab 14 having a first end portion 16 in the form of a tab nose and an opposite second end portion 18. The zone for the dispensing aperture 12 is bounded by a weakening profile 20.

In the embodiment depicted in FIG. 1a), the can lid 10 or the zone 12 for the dispensing aperture is made from a light metal, e.g., aluminium. For mechanical reinforcement of the lid surface occupied by the zone 12, a circumferential bead 22 is provided therein. For reinforcement of the dispensing aperture a circumferential bead 25 is provided adjacent to the zone 12.

The lever tab 14 in the embodiment depicted in FIG. 1a) is in the so-called opening position. That is, the first end portion or tab nose 16 is in a position partly overlapping with the zone 12 for the dispensing aperture. The lever tab 14 is connected to the lid surface 10 via a fastener 24 in the form of a rivet. This connection is achieved via a retention tongue or strut 26, which extends from the fastener 24 in the direction of the zone 12 for the dispensing aperture and transitions into the first end portion 16.

By lifting the second end portion 18 of the lever tab 14 in the opening position, the first end portion or tab nose 16 is pressed against the overlapping region of the zone 12 for the dispensing aperture. Due to the recesses 28 and 30 provided in the lid surface 10, the second end portion 18 can be gripped and lifted particularly comfortably also with container lids having a very small diameter (see FIGS. 1b) and 1c)). In the
embodiment of a container lid 2 as depicted in FIG. 1, where the second end portion 18 of the lever tab 14 is very close to the edge 6, a correct usage is practically forced on the user due to the positioning of the recesses 28 and 30 in the lid surface 10 on both sides of the axis extending between the first and second end portions 16, 18 in the opening position (see broken line in FIG. 1a)). If the lever tab 14 is in a position turned from the opening position, a proper reaching under and gripping of the lever tab in the region of the second end portion 18 can usually no longer be achieved.

[0082] In the represented embodiment, the handling of the lever tab 14 at the second end portion 18 is still further facilitated by the provision of gripping indentations 19 and 21, which, if the lever tab is in the opening position, correspond to the location of the recesses 28 and 30, i.e., the gripping indentation 19 lies above the recess 28 and the gripping indentation 21 lies above the recess 30. In this manner, problem-free lifting of the lever tab at the second end portion 18 is enabled, particularly with container lids having a small diameter or those container lids where the second end portion is very close to the edge 6.

[0083] By lifting the lever tab, as shown in FIGS. 1a), the weakening profile 20 is first destroyed in only one place. If the lever tab 14 is pressed downwards further to the position shown in FIG. 1c), the weakening profile 20 is almost completely torn open or destroyed. The separated zone for the dispensing aperture is pushed into the container interior by the interaction with the first end portion 16. By not designing the weakening profile to be entirely circumferential, but by providing instead a distance region (see also reference numeral 52 in FIG. 4) not having a weakening profile, this lid segment can be prevented from falling into the container interior (further details are given also with reference to FIG. 5).

[0084] After the zone 12 for the dispensing aperture has been uncovered, the lever tab 14 may be pushed back to its original horizontal orientation, as shown in FIG. 1d). Subsequently, the lever tab 14 may be brought into the closure position by a 180° rotation in the plane of the lid surface 10 (see FIG. 1e)). The second end portion 18 is then in a position over the dispensing aperture 12 (see FIG. 1f)).

[0085] In the region of the second end portion 18, the lever tab 14 has a closure module 36 comprising a substantially circumferential closure collar 32 and an aperture closure 34. In the variant shown, the reversibly operable aperture closure 34 is inside the closure collar. On the side facing the upper side of the lid surface 10, the closure collar 32 is realised such that the closure module 36 comprising the closure collar 32 and the aperture closure 34 may be pressed into the dispensing aperture in a sealing manner, as shown in FIG. 1g).

[0086] FIG. 2 shows a representation of the container lid 2. The closure module 36 comprises the closure collar 32 and the aperture closure 34, is accommodated in the dispensing aperture 12. The reversibly operable aperture closure 34 in the form of a flap lid is connected to the lever tab 14 or the closure collar 32, respectively, via a hinge 38. Stop points 42, 44, 46, and 48 protruding from the lid surface 10 can further be seen in FIG. 2. The stop points 42 and 44 prevent the lever tab 14 from rotating beyond an angle of 180° and facilitate the correct adjustment of the closure module 36 in the closure position over the dispensing aperture 12. The stop points 46 and 48 are responsible for the lever tab 14 being able to be brought from the opening position to the closure position only in the direction of rotation (indicated by the arrow in FIG. 2).

[0087] FIGS. 3a) and b) show the container lid 2, where the aperture closure 34 is in the opened position. As shown in FIG. 3b), the aperture closure 34 may be flipped backwards, i.e., in the direction of the recesses 28 and 30, even further beyond the position shown in FIG. 3a). Preferably the aperture closure 34 is reversibly held in this flipped-open position by suitable locking or arresting facilities. In this way, a particularly interference-free drinking of liquid from the receptacle represented in 3 Figs. 3a) and b) is achieved. As indicated in FIG. 3a), the aperture closure 34 may be used again for closing the container lid 2. To achieve a particularly tight fit, the circumferential edge 35 of the aperture closure 34 can be brought into sealing engagement with the inner edge 37 of the closure collar 32. Those skilled in the art will be familiar with suitable locking connections or snap or clamp connections, respectively.

[0088] From FIG. 4, a schematic top view of the container lid 2 can be seen, however, without the lever tab. In the centre of the lid surface 10 there is the fastener 24 for the lever tab (not shown). Circumferentially and adjacent to the weakening profile 20, the zone 12 for the dispensing aperture has an upwardly curved circumferential bead 22, which serves as a reinforcement of the area formed by the zone 12. Also adjacent to the weakening profile 20 there is a circumferential upwardly curved bead 50 adjacent to the zone 12 in the lid surface 10.

[0089] As can be seen from FIG. 4, the weakening profile 20 is designed so as to be not entirely circumferential. Rather, there is a distance region 52 which is laterally offset from the axis A-A. On operation of the lever tab 14, the first end portion or tab nose 16, which, in the opening position, overlaps with a section of the zone 12 for the dispensing aperture, acts on the zone 12 adjacent to this distance region 52. By pressing the first end portion 16 against the zone 12 by operating the lever tab 14, the weakening profile 20 ruptures such that on further operation of the lever tab the entire zone 12 is pushed into the container interior. The distance region 52 ensures that this zone does not become separated completely and cannot fall into the container interior. Rather, it is present in the container interior as an inwardly turned lid surface segment.

[0090] FIG. 5 shows a schematic representation of a component of the lever tab 14, with the closure collar 32 as a part of the closure module 36. For the sake of clarity, the aperture closure 34 and the retention tongue are not shown. In FIG. 5, the side of the lever tab 14 is seen which, when used in the generic manner, faces the upper side of the lid surface 10. The closure collar 32 on this side is provided with a circumferential seal 54. In the variant illustrated, the closure collar 32 extends into the first end portion 16 and also serves to stiffen the lever tab. At this end portion 16, the retention tongue or retention element (not shown) acts, and, together with the fastener (not shown), provides the affixment to the lid surface.

[0091] FIG. 6 shows a cross-sectional view of a container lid. The closure collar 32 of the closure module 36 is inserted into the dispensing aperture 12 via locking teeth 56 as a part of a third arresting device 55. The circumferential seal 54 on the lower side of the closure collar 32 rests sealingly on the circumferential bead 50. The aperture closure 34 is inserted into the closure collar 32. Furthermore, the seammed edge 8 forming the edge of the lid surface 2 can be seen from FIG. 6. Moreover, the affixment of the lever tab 14 to the lid surface 10 via the fastener 24 can be seen from FIG. 6. The fastener 24, being a rivet in the embodiment shown in FIG. 6, retains the retention element 26 in a pivotally supported manner, the
first end 27 of said retention element being overmoulded with the plastic material of the first end portion 16 of the lever tab 14. As FIG. 6 shows, in the embodiment illustrated, the closure collar 32 is connected to the retention element only in the region of the first end portion 16.

[F0092] FIG. 7 shows an enlargement of detail A of FIG. 6. The seal 54, which interacts with the bead 50, is equipped with two wedge-shaped, elastic ribs 58, 60, which act on opposite sides of the bead back. Moreover, the seal 54 has sealing walls 62, 64 adjacent to these sealing ribs and spaced at a distance therefrom, which are in contact with the upper side of the lid surface 10. With the sealing construction 54 represented in FIG. 7, a particularly effective liquid-tight insertion of the closure module 36 into the dispensing aperture 12 is achieved. The locking of the locking hooks 56 beneath the circumferential edge of the dispensing aperture 12 is configured such that, in the locked or arrested state, both the sealing ribs 58 and 60 and the sealing wall elements 62 and 64 are circumferentially pressed against the upper side of the lid surface 10. This seal in a non-significant manner contributes a reclosable container closure according to the present application, which effectively prevents the escape of gases, such as carbon dioxide, from a container which has already been opened once before.

[F0093] FIG. 8 shows an enlarged schematic sectional view of section B of FIG. 6. Adjacent to the edge 11 of the lid surface 10 bounding the dispensing zone or dispensing aperture 12, the circumferential bead 50 is present in the lid surface, extending axially away from the upper side of the lid surface 10. The closure module 36 is irreversibly connected to the lid surface 10 via locking teeth 56. In the closure position, the locking teeth 56 of the third arresting device 55 have been pressed into the dispensing aperture 12. This is particularly facilitated by bevelled surfaces 59 provided on the surface of the locking teeth 56 facing the lid edge. When pressing the closure module 36 into the dispensing aperture 12, these bevelled surfaces are pressed against the edge 11.

[F0094] It is advantageous if the locking teeth 56 or the third arresting device 55 are formed from a relatively rigid, but nevertheless still resilient material. Suitable plastic materials having these properties are known to those skilled in the art. The third arresting device 55 may have, for example, two, three, four, five, or even more locking teeth 56 circumferentially along the edge 11 of the dispensing aperture 12. Particularly if only a few locking teeth are used, for example two, three, or four, it is advantageous to have them approximately equally spaced from each other and preferably not only engaging the lower side of the lid surface 10 at points, but being of a wider-sized design.

[F0095] Alternatively it is also possible, as shown in FIG. 9, to realise the third arresting device 55 circumferentially, such that locking teeth 56 engage or grip the lower side of the lid surface 10 along the edge 11 along the entire circumference of the dispensing aperture 12. As soon as the edge 56 with the projection 61 has locked into the aperture edge 11 underneath the lid surface 10, the closure module 36 is present in the dispensing aperture 12 in a sealingly locked state. The sealing enclosure of the closure module 36 via the circumferential seal 54, which interacts with the upper side of the lid surface 10, has already been described in detail with reference to FIG. 7.

[F0096] FIG. 8 shows a reclosable aperture closure 34 being inserted into the closure collar 32, said aperture closure being sealingly present at the inner wall of the closure collar 32, for example via the circumferential bulges 63 and 65.

[F0097] FIG. 9 shows a schematic perspective view of an embodiment of the third arresting device 55, which is realised circumferentially and which represents a part of the closure collar 32 (not shown). This third arresting device 55 has a total of eight locking teeth 56 in its circumference. The locking teeth are provided with a rounded contact surface 59 and a locking projection 61 which reaches underneath and engages the lid surface 10 at the edge 11 of the same (not shown). In the variant shown, the respective locking teeth are realised having a relatively wide size and are separated only by narrow notches 67.

[F0098] The features disclosed in the preceding description, in the claims, and in the drawings may, both individually and in any combination, be implemented for the realisation of the invention disclosed herein in its various embodiments.

1. A reclosable container lid, comprising:
   a lid surface having an upper side, a lower side, a circumferential edge, and a zone for a dispensing aperture delimited by at least one entirely or partially circumferential weakening profile;
   a lever tab that is pivotably fastened to the lid surface via a fastener, for at least partly opening the zone in a manner forming the dispensing aperture, the lever tab having a first end portion and an opposite second end portion, wherein the first end portion, in an opening position, can be brought to or is in a position to at least partly overlap with a section of the zone for the dispensing aperture, and wherein the second end portion is present on the other side of the fastener in relation to the first end portion, and wherein the lever tab has a closure module at or adjacent to the second end portion, said closure module comprising a closure collar which can be brought to rest or which rests against the upper side of the lid surface and which, in a closure position, extends along the dispensing aperture in a sealing manner being placed on the upper side of the lid surface, and
   a reclosable aperture closure framed by the closure collar.

2. A container lid according to claim 1, wherein the closure module has an arresting device on the side facing the upper side of the lid surface such that, by operating the arresting device, the closure module can be or is connected to the dispensing aperture, wherein the closure collar, partially or entirely, rests against the upper side of the lid surface under prestress.

3. A container lid according to claim 1, wherein the container lid is a beverage can lid.

4. A container lid according to claim 1, wherein the circumferential edge of the lid surface comprises a flange.

5. A container lid according to claim 1, wherein the zone for the dispensing aperture is a score panel and the weakening profile is a score profile.

6. A container lid according to claim 1, wherein the weakening profile surrounds the zone for the dispensing aperture except for a distance region adjacent to the first end portion in the opening position and laterally offset from a line formed by the fastener and the first end portion in the opening position.

7. A container lid according to claim 1, wherein the fastener is present in the region of the centre of the lid surface.

8. A container lid according to claim 1, wherein the fastener is a rivet.
9. A container lid according to claim 2, wherein the arresting device is a ring snap connection or a locking hook snap connection.

10. A container lid according to claim 1, further comprising at least one bead on the upper side of the lid surface extending partially or entirely circumferentially along the zone for the dispensing aperture.

11. A container lid according to claim 10, wherein the closure collar has at least one circumferential seal which can be brought to rest or which rests against the upper side of the lid surface, adjacent to the dispensing aperture.

12. A container lid according to claim 11, wherein the seal sealingly interacts or can be brought into sealing interaction with the bead.

13. A container lid according to claim 1, wherein the zone for the dispensing aperture is spaced at a distance from the fastener and is adjacent to the edge of the lid surface.

14. A container lid according to claim 1, wherein the dispensing aperture closure includes a lid panel which is or can be connected to the closure collar via a hinge.

15. A container lid according to claim 1, further comprising at least one recess on the upper side of the lid surface, said recess in the opening position of the lever tab overlapping with the second end portion thereof at least partially, being arranged laterally offset from a line formed by the second end portion and the fastener in the opening position.

16. A container lid according to claim 1, wherein said container lid is manufactured from metal and/or plastic.

17. A container lid according to claim 1, wherein the lever tab has a retention element via which the first end portion of the lever tab is fastened to the lid surface by the fastener.

18. A container lid according to claim 17, wherein the first end portion of the lever tab is injection-moulded to the retention element.

19. A container lid according to claim 1, wherein the circumferential edge has an expansion extending axially away from the upper side of the lid surface.

20. A container lid according to claim 19, wherein the axial extension of the edge is formed such that the extent of the expansion is greater than the extent of an expansion of the lever tab in an axial extension in relation to the lid surface in the opening position when the zone for the dispensing aperture is still intact.

21. A reclosable container, comprising a container body and a container lid according to claim 1 connected thereto in a liquid-tight manner.

22. A container according to claim 21, wherein said container is a beverage can.

23. Use of the container lid according to claim 1 for manufacturing redo sable containers.

24. A method of manufacturing a reclosable container according to claim 21, comprising:
   a) providing a container body for accommodating a fluid;
   b) providing a container lid comprising a lid surface having an upper and a lower side and a circumferential edge as well as a zone for a dispensing aperture delimited by at least one entirely or partially circumferential weakening profile, and a fastener for attaching a lever tab;
   c) providing the lever tab for at least partly opening the zone in a manner forming the dispensing aperture, the lever tab comprising a first end portion and an opposite second end portion having a closure module, the closure module comprising a closure collar and a reclosable aperture closure, and a retention element which is or can be connected to the second end portion and which, in the direction of the second end portion, has an attachment location for the fastener;
   d) filling the container body with a fluid;
   e) attaching the container lid to the container body;
   f) fastening the lever tab to the container lid via the attachment location by means of the fastener; and
   g) attaching the reclosable aperture closure to the closure module of the lever tab.

25. A method according to claim 24, wherein the lever tab is obtained by overmoulding the retention element with a plastic material in the region of the first end portion of the lever tab in a manner forming the closure collar.

26. A method according to claim 24, wherein the container body does not have a bottom part, the method further comprising providing a bottom part and attaching the bottom part to the container body.

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