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(54) **EASY-OPENING LID**

LEICHT ZU ÖFFNENDER DECKEL

COUVERCLE A OUVERTURE FACILE

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Description

OBJECT OF THE INVENTION

[0001] The present invention, an easy-open lid, applies to the field of metal containers, specifically of those containers used for food commercialization, such as tins, cans, etc., and specifically focuses on the opening means of the lid thereof, commonly called "easy-open".

[0002] The invention is specifically related to the classic groove or cut which are provided on lids of this type of containers, for facilitating the opening thereof by means of a punch-tear away ring tab.

BACKGROUND OF THE INVENTION

[0003] In the preferred scope of practical application of the invention, sealed food packaging, metal containers are conventionally used, the lid of which is provided with a perimetral groove or cut line, as well as a ring tab provided with a punch vertex overlapping said cut line, such that in normal conditions, the ring tab is parallel and adjacent to the lid, whereas during the opening maneuver, it swings thereon such that initially, and through its punch vertex, it causes the start of the tearing of the lid, and then it causes the complete tearing away thereof by pulling on said ring tab.

[0004] This solution, perfectly valid from the theoretical point of view, presents drawbacks in practice derived from an incorrect positioning of the ring tab. In this aspect, it happens quite frequently that, during the ring tab manufacturing process, or in the subsequent sealing, filling, sterilization, handling processes, etc., of the container, said ring tab undergoes a slight rotation, causing a modification of the theoretical position provided for its punch vertex with regard to the cut of the lid, since the ring tab rotates about the point where it is attached to the lid, noticeably eccentric with regard to the latter, whereas the cut line defines a path parallel and close to the contour of said lid, therefore more or less spacing occurs between the punch vertex of the ring tab and the cut of the lid, causing a significant increase of the force necessary to begin the opening operation, i.e. for causing the punching or breaking of the cut line, after which the lid is subsequently torn away.

[0005] This increase of force contributes to significantly increasing the number of lids in which the ring tab cannot overcome the cut and does not open the lid, even occasionally causing the ring tab to break since the hole which connects the ring tab to the lid by means of a rivet, becomes deformed, with the subsequent release of the ring tab and inability to use the container opening mechanism.

[0006] US patent US3,762,596-B discloses a can lid having means on it which prevent the rotation of the ring tab, said means consisting of respective outward projections on both sides of the ring tab. It also has a cut line the path of which in the ring tab operation area is different from that of the rest of said cut line. Specifically, the cut line in that initial breakage area is elliptical in order to space the cut line from the edge of the can and to facilitate the manufacturing process of the can. The devices used for preventing the rotation of the ring tab do not ensure that, during the handling of the can in the different manufacturing processes thereof, it will not slightly rotate, although it does reduce said rotation. Due to the elliptical configuration of the cut line in its initial breakage area, a minimum rotation of the ring tab will prevent the punch vertex thereof from acting on said initial breakage area, therefore originating the aforementioned drawbacks in opening the can.

DESCRIPTION OF THE INVENTION

[0007] The improvements proposed by the invention satisfactorily solve the drawback explained above, ensuring a proper operation of the punch ring tab, even when said ring tab is significantly rotated with regard to its theoretical correct position.

[0008] Therefore more specifically, the invention entails changing the path of the cut line, specifically in the segment thereof facing the punch ring tab, such that by said cut line maintaining a general path parallel and close to the contour of the lid, in said area facing the ring tab it undergoes two symmetrical inflections with regard to the theoretical punch point, which frame an intermediate segment in which the path of the cut is arcuate, specifically with a curvature center arranged in correspondence with the rivet of the ring tab, such that after a rotation of the ring tab, its punch vertex remains in place on said cut.

[0009] The amplitude of said arcuate segment with a curvature in the rivet of the ring tab will vary according to different constructive criteria, this amplitude necessarily being greater than 1°, although it is convenient for said arcuate segment to not exceed 80°.

[0010] Said arcuate segment will be join the rest of the cut through also rounded inflections which "smooth" the path of said cut and which, accordingly, favor tearing away the lid.

[0011] Evidently the improvements of the invention are applicable both to circular and elliptical or rectangular lids, which are the three conventional configurations in this type of metal containers.

[0012] In any case and according to the described structure, it is achieved that, even due to a significant rotation of the ring tab, which can reach 10° to the right or left, said ring tab keeps its punch vertex on the cut line, causing the proper punching thereof with a minimum force.

DESCRIPTION OF THE DRAWINGS

[0013] To complement the description that is being made and for the purpose of aiding to better understand the features of the invention according to a preferred practical embodiment thereof, a set of drawings is at-

tached to said description as an integral part thereof which, with an illustrative and nonlimiting character, show the following:

Figure 1 shows a schematic plan view of an easy-open lid for metal containers provided with the improvements object of the present invention.

Figure 2 shows an enlarged detail view of the lid of the previous figure, in the area thereof in which said improvements are made.

Figure 3 shows, according to a view similar to figure 1, another type of conventional easy-open lid, also provided with the improvements of the invention.

PREFERRED EMBODIMENT OF THE INVENTION

[0014] In view of the figures, and more specifically of figure 1, it can be seen how the improvements of the invention are applicable to a lid made of a laminar body (1), in this case having a circumferential contour, as this lid is intended for a cylindrical container, provided with a marginal strip (2) through which, by seaming or by any other means, the body (1) is attached to the opening of the container, not shown, and is provided inside said marginal strip with a cut or perimetral groove (3) which is intended for tearing away the lid (1) during the container opening maneuver, opening which is carried out with the collaboration of a ring tab (4) attached to the body (1) of the lid with the collaboration of a rivet (5), and provided with, in opposition to the ring tab (4) itself, a punch vertex (6) which must be located on the cut line (3) on which it acts when the ring tab (4) is manually swinged on the rivet (5) which fixes the ring tab to the body (1) of the lid. The lid (1) can adopt the circular configuration of figure 1, the rectangular configuration with rounded vertices of figure 3, or any other configuration conventional in this type of containers, such as an elliptical configuration, also normally being provided with deep-draws (7) which stiffen its structure.

[0015] Therefore, from this basic and conventional structure, according already to the invention, the cut line (3), in its area where it faces the ring tab (4), undergoes a variation in its path, defining a breakage segment (8) in a circumference arc shape, having a curvature center (9) arranged in correspondence with the center of the rivet (5), as can particularly be seen in figure 2, such that the mid-point of this arcuate breakage segment (8) is located in correspondence with the theoretical point (10) provided for operating the punch vertex (6) of the ring tab (4) when the latter is correctly located in the context of the lid (1).

[0016] As previously mentioned, this results in that, after an accidental rotation of the ring tab (4) at any time throughout the container handling process, its punch vertex (6) is kept perfectly in place facing the cut line (3), specifically along this breakage segment (8), thereby ensuring that the tearing conditions are optimal.

[0017] As was also mentioned above, the amplitude of said breakage segment (8) with a curvature center (9) coinciding with the axis of the rivet (5), can range between 1° and 80°, the amplitude of said arc preferably being 20°, 10° on each side of the theoretical point (10) provided for operating the punch vertex (6) of the ring tab (4) when the latter is correctly located in the context of the lid (1), and said breakage segment (8) will join the rest of the cut line (3) by means of double, offsetting and arcuate inflections (11-11'), which facilitate tearing away the lid (1), preventing the existence of sharp bendings in said cut line (3) which could negatively affect tearing away the lid.

Claims

1. An easy-open lid, specifically applicable in lids (1) which, with a circular, elliptical or rectangular configuration with rounded vertices, incorporate a cut line (3), at least in part parallel and close to their perimeter for opening the lid with the collaboration of a punch-tear away ring tab (4) attached to the body (1) of the lid by means of a rivet (5) and provided with a punching vertex (6) acting on said cut line (3), **characterized in that** said cut line (3) is provided with a breakage segment (8) with a curved path, having a curvature center (9) coinciding with the rivet (5) for attaching the ring tab (4) to the body (1) of the lid, such that said punch vertex (6) is kept in place on the breakage segment (8) after an accidental rotation of said ring tab (4) throughout the process of handling the lid (1) itself and the container which it is associated to.

2. An easy-open lid according to claim 1, **characterized in that** the amplitude of the arcuate breakage segment (8) of the cut line (3) is greater than 1°.

3. An easy-open lid according to claim 1, **characterized in that** the amplitude of the arcuate breakage segment (8) of the cut line (3) ranges between 1° and 80°.

4. An easy-open lid according to previous claims, **characterized in that** the amplitude of the arcuate breakage segment (8) of the cut line (3) is 20°.

5. An easy-open lid according to previous claims, **characterized in that** the breakage segment (8) on the cut line (3) is symmetrical with regard to the imaginary axis formed by the theoretical actuation point (10) of the punch vertex (6) of the ring tab (4), coinciding with the mid-point of the breakage segment (8), and the rivet (5) for attaching the ring tab (4).

6. An easy-open lid according to claim 5, **characterized in that** amplitude the arcuate breakage segment (8) of the cut line (3) is 10° on each side of the

theoretical actuation point (10) of the punch vertex (6) of the ring tab (4).

7. An easy-open lid according to previous claims, **characterized in that** the arcuate breakage segment (10) of the cut line (3), with a curvature center (9) on the rivet (5), is joined the rest of the cut line (3) by means of double, arcuate and counteropposing inflections (11-11') for facilitating the tearing along said line.

Patentansprüche

1. Einfach zu öffnender Deckel, speziell bei Deckeln (1) mit einer kreisförmigen, elliptischen oder rechtwinkligen Ausbildung mit abgerundeten Ecken anwendbar, die eine zumindest teilweise parallele Schnittlinie (3) in der nähe deren Umfang zum Öffnen des Deckels anhand einer stanzenden abreißbaren Ringlasche (4) einschließen, die am Körper (1) des Deckels durch ein Niet (5) befestigt ist und mit einer Stanzecke (6) versehen ist, der auf die genannte Schnittlinie (3) einwirkt, **dadurch gekennzeichnet, dass** die genannte Schnittlinie (3) mit einem Bruchabschnitt (8) mit einer gekrümmten Strecke versehen ist, der eine Krümmungsmitte (9) hat, die sich mit dem Niet (5) zur Befestigung der Ringlasche (4) am Körper (1) des Deckels deckt, so dass die genannte Stanzecke (6) nach einer versehentlichen Drehung der genannten Ringlasche (4) während des Handhabungsvorganges des eigenen Deckels (1) und des zugehörigen Behälters auf dem Bruchabschnitt (8) gehalten wird.

2. Einfach zu öffnender Deckel nach Anspruch 1, **dadurch gekennzeichnet, dass** die Amplitude des kreisbogenförmigen Bruchabschnitts (8) der Schnittlinie (3) größer als 1° ist.

3. Einfach zu öffnender Deckel nach Anspruch 1, **dadurch gekennzeichnet, dass** die Amplitude des kreisbogenförmigen Bruchabschnitts (8) der Schnittlinie (3) sich zwischen 1° und 80° befindet.

4. Einfach zu öffnender Deckel nach vorherigen Ansprüchen, **dadurch gekennzeichnet, dass** die Amplitude des kreisbogenförmigen Bruchabschnitts (8) der Schnittlinie (3) 20° beträgt.

5. Einfach zu öffnender Deckel nach vorherigen Ansprüchen, **dadurch gekennzeichnet, dass** der Bruchabschnitt (8) auf der Schnittlinie (3) bezüglich der durch die theoretische Betätigungsstelle (10) der Stanzecke (6) der Ringlasche (4), die sich mit dem Mittelpunkt des Bruchabschnitts (8) deckt, und den Niet (5) zur Befestigung der Ringlasche (4) gebildeten imaginären Achse symmetrisch ist.

6. Einfach zu öffnender Deckel nach Anspruch 5, **dadurch gekennzeichnet, dass** die Amplitude des kreisbogenförmigen Bruchabschnitts (8) der Schnittlinie (3) auf jeder Seite der theoretischen Betätigungsstelle (10) der Stanzecke (6) der Ringlasche (4) 10° beträgt.

7. Einfach zu öffnender Deckel nach vorherigen Ansprüchen, **dadurch gekennzeichnet, dass** der kreisbogenförmige Bruchabschnitt (10) der Schnittlinie (3) mit einer Krümmungsmitte (9) auf dem Niet (5) mit dem Rest der Schnittlinie (3) durch doppelte, kreisbogenförmige und gegenüberliegende Inflexionen (11-11') zur Vereinfachung des Abreißens entlang der genannten Linie verbunden ist.

Revendications

1. Couvercle à ouverture facile, spécifiquement applicable aux couvercles (1) qui, avec une configuration circulaire, elliptique ou rectangulaire aux sommets arrondis, incorporent une ligne de coupe (3), au moins en partie parallèle et proche de leur périmètre pour l'ouverture du couvercle avec la collaboration d'une attache annulaire (4) qui se pousse puis se tire attachée au corps (1) du couvercle au moyen d'un rivet (5) et dotée d'un sommet de poinçonnage (6) agissant sur ladite ligne de coupe (3), **caractérisé en ce que** ladite ligne de coupe (3) est dotée d'un segment de casse (8) ayant une trajectoire courbe et un centre de courbure (9) coïncidant avec le rivet (5) pour attacher l'attache annulaire (4) au corps (1) du couvercle, de telle façon que ledit sommet de poinçonnage (6) reste en place sur le segment de casse (8) après une rotation accidentelle de ladite attache annulaire (4) au cours du processus de manipulation du couvercle (1) lui-même et du récipient auquel il est associé.

2. Couvercle à ouverture facile selon la revendication 1, **caractérisé en ce que** 1'amplitude du segment de casse courbe (8) de la ligne de coupe (3) est supérieure à 1°.

3. Couvercle à ouverture facile selon la revendication 1, **caractérisé en ce que** l'amplitude du segment de casse courbe (8) de la ligne de coupe (3) peut varier de 1° à 80°.

4. couvercle à ouverture facile selon les revendications précédentes, **caractérisé en ce que** l'amplitude du segment de casse courbe (8) de la ligne de coupe (3) est de 20°.

5. Couvercle à ouverture facile selon les revendications précédentes, **caractérisé en ce que** l'amplitude du segment de casse (8) sur la ligne de coupe

(3) est symétrique par rapport à l'axe imaginaire formé par le point d'appui théorique (10) du sommet de poinçonnage (6) de l'attache annulaire (4), coïncidant avec le point central du segment de casse (8), et le rivet (5) pour attacher l'attache annulaire (4).

6. Couvercle à ouverture facile selon la revendication 5, **caractérisé en ce que** l'amplitude du segment de casse courbe (8) de la ligne de coupe (3) est de 10° de chaque côté du point d'appui (10) théorique du sommet de poinçonnage (6) de l'attache annulaire (4).

7. Couvercle à ouverture facile selon les revendications précédentes, **caractérisé en ce que** le segment de casse courbe (10) de la ligne de coupe (3), avec un centre de courbature (9) sur le rivet (5), est joint au reste de la ligne de coupe (3) au moyen de doubles inflexions courbes et de sens opposé (11-11') pour faciliter l'arrachage le long de ladite ligne.

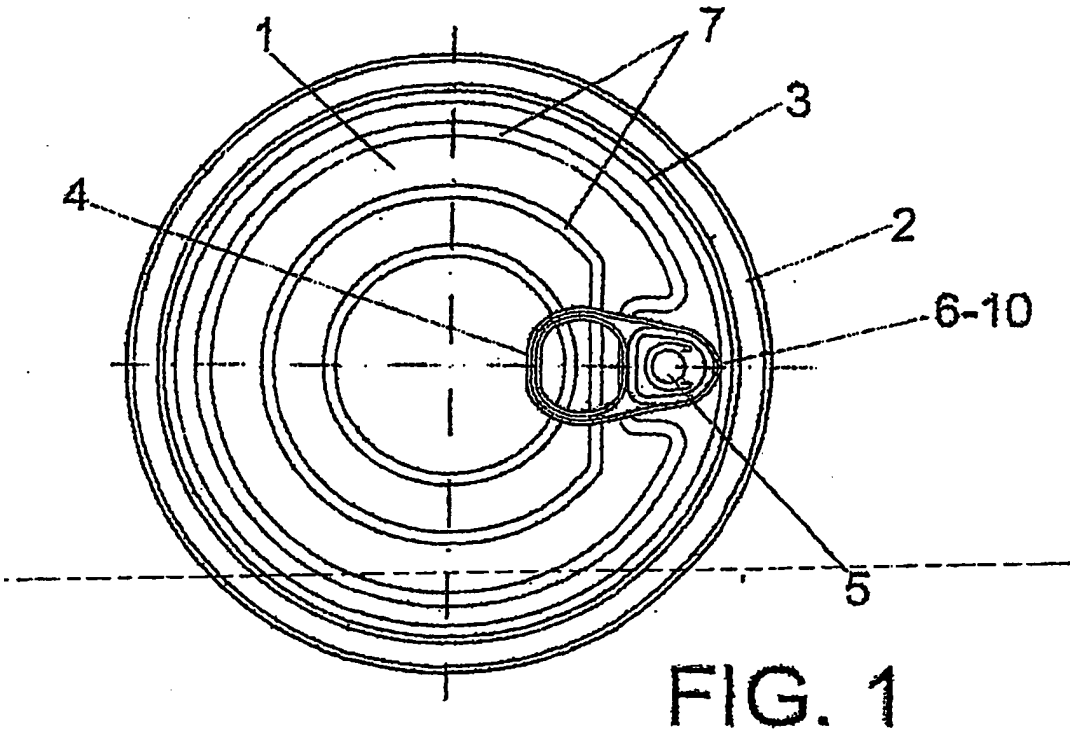

FIG. 1

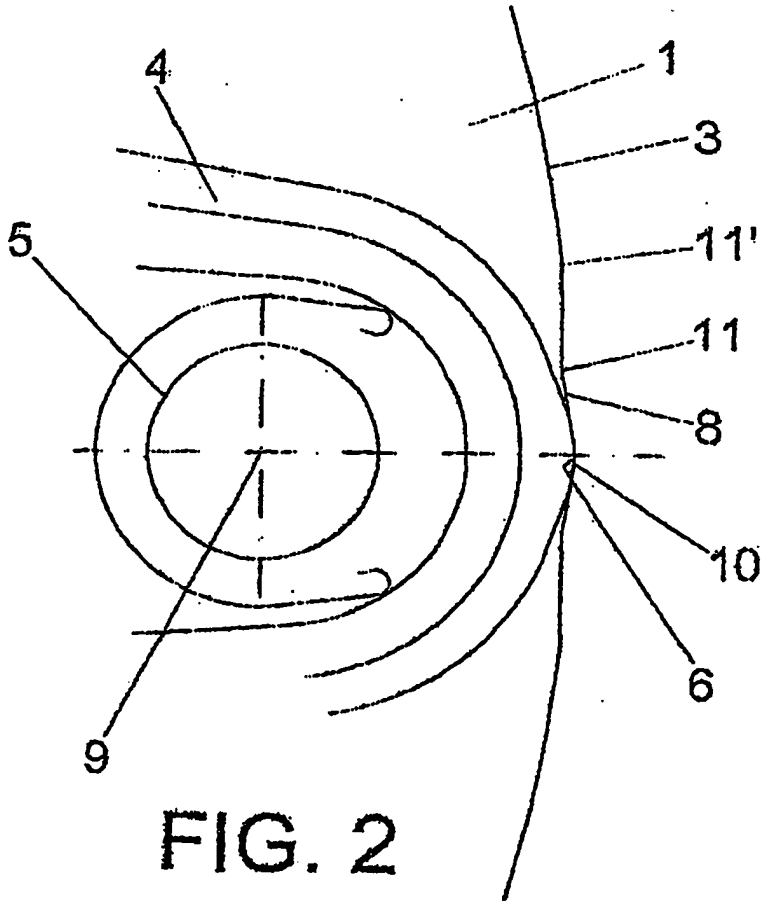

FIG. 2

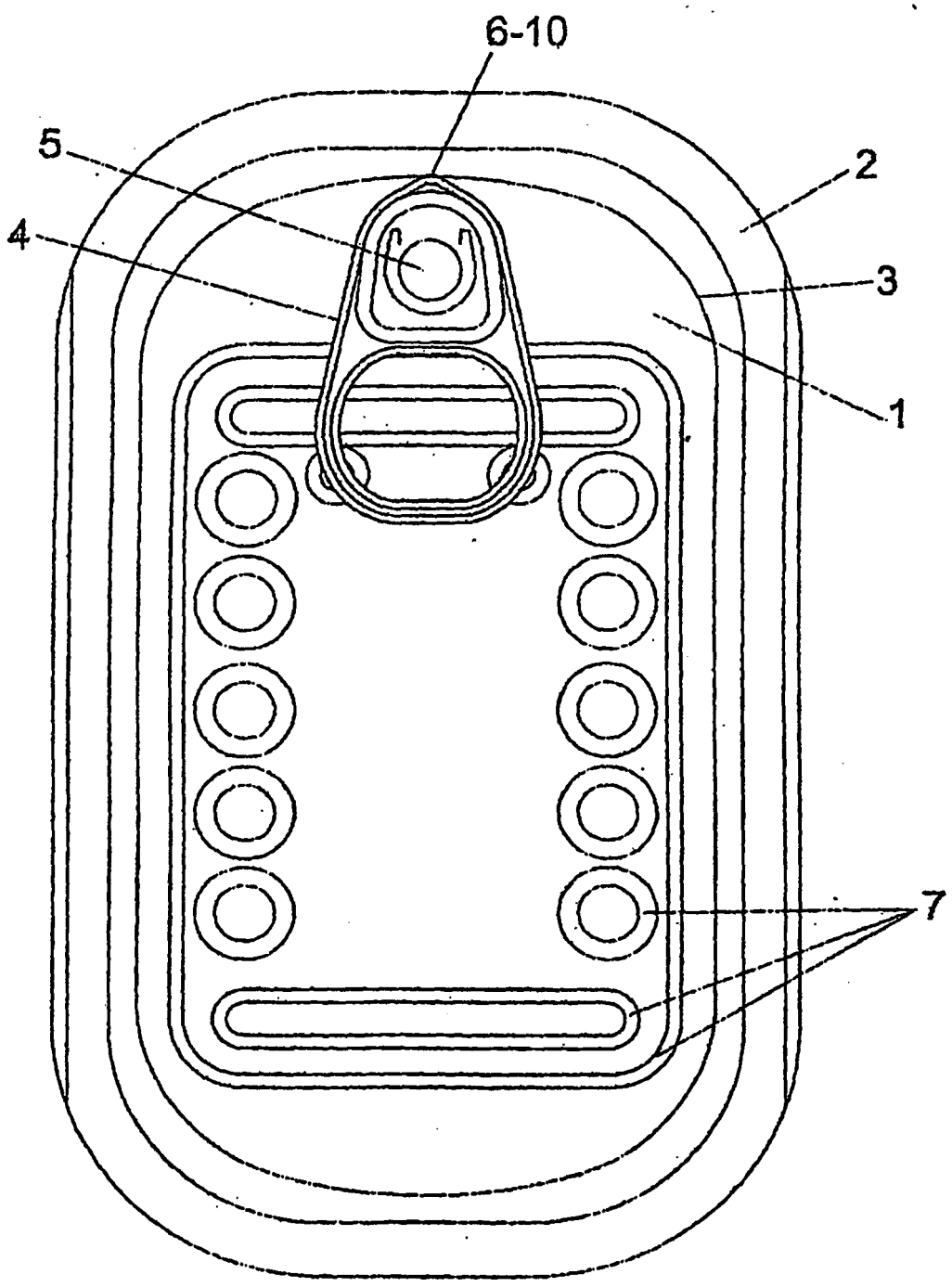

FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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