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TOP LID FOR BEVERAGE CANS WITH OPENER INTEGRATED
SANITARY COVER

Technical Field

The present invention relates, in general, to
5 beverage cans made of metal, such as aluminum or steel,
and, more particularly, to a top lid for such beverage
cans with an opener integrated sanitary cover, the
sanitary cover being attached to the top lid using a
locking member and being designed to sanitarily cover the
10 lip contact portion of the top lid using its cover part
during storage of the can and to reliably open the top
lid without failure using its reinforced opener part.

Background Art

In order to open and empty a beverage can made of
15 metal, a lever opener, exteriorly attached to the top lid
of the can using a locking member, such as a rivet, is
levered up, thus breaking an opening piece of the lid
along a depressed seam and forming a rounded opening on
said lid. Such beverage cans are stored with the top
20 lids being exposed to the atmosphere, and so the lip
contact portion defined around the opening piece is
regrettably contaminated by dust and other atmospheric
impurities. During use of such a can, the lip contact
portion, contaminated with such impurities, is bad for
25 one's health. In an effort to overcome the above
problem, a can, with a sanitary suction straw being
provided at the can, was proposed. However, the can,
with such a suction straw, is problematic in that it is
very difficult to produce the can in great quantity, and
30 so the can fails to be produced on a commercial scale.

In order to solve the problems experienced in the
typical beverage cans, the inventor of this invention
proposed a beverage can with a sanitary cover as
disclosed in U.S. Patent No. 5,813,559, corresponding to
35 Korean Patent Registration No. 141,618. This can may be
designed to have three types. That is, the can may have

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operation of the cover while rotating or levering the cover. In the third-type can, the opener integrated sanitary cover is designed to have a lever opener part, which levers down the opening piece of the top lid when the cover is levered up at the covering position to open the lid. However, the lever opener part is free from any reinforcing means, thus having a structural defect failing to effectively break the opening piece along the depressed seam. This allows a user to sometimes fail to open the top lid and results in an inconvenience to the user. In addition, the sanitary cover regardless of the type, disclosed in the above U.S. patent, is designed to almost completely cover the seamed rim until it covers the outside portion of said rim. Due to such a sanitary cover, it is somewhat difficult to produce the can, and so the work efficiency and productivity while producing the can is reduced.

Disclosure of the Invention

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a top lid for beverage cans with an opener integrated sanitary cover, the cover being primarily designed to be levered up at its covering position while opening the lid using its opener part and having a reinforcing means for improving the stiffness of the opener part, thus reliably opening the lid without failure, the cover also having a thumb-operable resilient dome capable of elastically raising a sanitary cover part of the cover over the lid when the dome is pressed down by a thumb, thus allowing a user to easily handle the cover while levering up the cover, the cover also having a reaction means for allowing the resilient dome to more effectively raise the sanitary cover part when the dome is thumb-pressed, and the cover being further designed to have a structure free from disturbing the process of manufacturing the can, thus allowing the can to be effectively produced in great quantity or on a commercial scale.

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described above, the opener part levers down the opening piece, thus breaking the piece along the depressed seam. The above opener part is provided with a reinforcing means, such as a reinforcing rib having a first folded
5 and compact rectangular cross-section, a second reinforcing rib having an arcuate cross-section, or a rugged pattern, thus having an improved stiffness. Therefore, the opener part reliably breaks the opening piece along the depressed seam without failure regardless
10 of an interior pressure acting on the opening piece.

The thumb-operable resilient dome of this invention may be preferably used with a conventional lever opener attached to the top lid. In such a case, the lever opener is elastically raised up when the dome is pressed
15 down by a thumb. Therefore, it is easy for a user to grasp and handle the opener while levering up the opener to open the top lid of the can.

In an embodiment of this invention, a thumb-operable resilient dome is formed on the sanitary cover, while an
20 arcuate cutting line is formed at an intermediate portion of the sanitary cover between the locking member and the dome, thus forming the opener part. In addition, a depressed bending line is formed on the sanitary cover while transversely and linearly extending outwardly from
25 each end of the cutting line to the outside edge of the cover. The sanitary cover is thus bendable along said bending line when the cover is levered up. The above opener part has a reinforcing means, such as a reinforcing rib having a first folded and compact
30 rectangular cross-section, a second reinforcing rib having an arcuate cross-section, or a rugged pattern, thus having an improved stiffness. The opener part thus reliably breaks the opening piece along the depressed seam without failure.

35 In the present invention, the sanitary cover may be designed to reach the seamed rim of the can. However, it is more preferable to design the sanitary cover to have a compact size reaching a position just inside the interior wall of the seamed rim or covering the area
40 around the opening piece since such a sanitary cover

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of this invention;

Figs. 4a to 4d are sectional views, respectively showing additional embodiments of the thumb-operable resilient dome of this invention;

5 Figs. 5a and 5b are sectional views, respectively showing other embodiments of the thumb-operable resilient dome of this invention;

10 Figs. 6a and 6b are a perspective view and a plan view of the top lid of a can provided with a sanitary cover in accordance with still another embodiment of the present invention;

Fig. 7 is a perspective view of the top lid of a can provided with a sanitary cover in accordance with still another embodiment of the present invention;

15 Fig. 8 is a plan view of the top lid of a can provided with a sanitary cover in accordance with still another embodiment of the present invention;

20 Fig. 9 is a plan view of the top lid of a can provided with a sanitary cover in accordance with still another embodiment of the present invention;

Fig. 10 is a plan view of the top lid of a can provided with a sanitary cover in accordance with still another embodiment of the present invention;

25 Fig. 11 is a plan view of the top lid of a can provided with a sanitary cover in accordance with still another embodiment of the present invention;

Figs. 12a to 12c are sectional views, respectively showing embodiments of a reinforced opener part formed at the sanitary cover of this invention;

30 Fig. 13 is a sectional view, showing another embodiment of the reinforced opener part;

Figs. 14a and 14b are a perspective view and a sectional view, showing still another embodiment of the reinforced opener part;

35 Figs. 14c and 14d are sectional views, respectively showing further embodiments of the reinforced opener part;

Fig. 15 is a sectional view, showing still another embodiment of the reinforced opener part;

40 Fig. 16 is a plan view, showing the top lid of a can provided with a sanitary cover in accordance with still

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for improving stiffness of the U-shaped opener part 13, thus allowing the opener part 13 to more reliably break the opening piece 3a along the depressed seam 3c without failure. In the primary embodiment, the reinforcing means
5 comprises one center reinforcing rib 13b and two side reinforcing ribs 13c. Of the three reinforcing ribs 13b and 13c, the center rib 13b, having a folded and compact rectangular cross-section, extends along the central axis
10 of the opener part 13 from the outside edge 13a of the part 13 to the edge of the dome 6. On the other hand, the two side ribs 13c, individually having an arcuate cross-section, extend from the outside edge 13a of the part 13 to the edge of the dome 6 at both sides of the center rib 13b. The two side ribs 13c are parallel to
15 the center rib 13b.

The sanitary cover 8 also has a first reaction means for allowing the dome 6 to more effectively perform a desired resilient reaction when the dome 6 is pressed down by a thumb. In the primary embodiment, the first
20 reaction means comprises an annular reaction rim 6a which is formed along the outside edge of the resilient dome 6.

In the present invention, the sanitary cover 8 may be designed to only cover the area around the opening piece 3a as shown in Figs. 1b and 1c. Alternatively, the
25 sanitary cover 8 may be designed to further extend until it reaches a position just inside the interior wall 20 of the seamed rim 5 and rests in the annular groove of the top lid as shown in Fig. 1f. As well known to those skilled in the art, the above rim 20 seams the junction
30 between the top lid 50 and the sidewall of the can. As a further alternative, the sanitary cover 8 may be designed to reach a position just inside the interior wall 20 of the seamed rim 5, with the outside edge of the cover 8 being closely seated in a seating groove formed
35 on the sidewall of the annular groove of the top lid at a position just inside the interior wall 20 as shown in Fig. 1g. In such a case, the outside edge of the cover 8 is inserted into the seating groove of the top lid 50 to a length equal to the thickness of the cover 8. The
40 sanitary cover 8 of Fig. 1g thus gives a compact

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In the primary embodiment, the center rib 13b is formed by primarily projecting the U-shaped opener part 13 upwardly along the central axis of the part 13, thus giving an arcuate cross-section to the rib 13b.

5 Thereafter, the rib 13b is compressed at both sidewalls, thus having a folded and compact rectangular cross-section as described above. The center rib 13b may be thus so-called a folded rib. In accordance with a compression force applied to the rib 13b, the folded cross-section of

10 the rib 13b may become a triangular cross-section or a tightly compressed cross-section. In the primary embodiment, only one folded rib 13b is formed on the U-shaped opener part 13. However, it should be understood that two or more folded ribs 13b may be formed on the

15 opener part 13 so as to further improve the stiffness of the opener part 13. The U-shaped opener part 13, with two or more folded ribs 13b, may be preferably used with a highly pressurized can.

In the present invention, the thumb-operable

20 resilient dome 6 may have a simple domed configuration without having any reaction rim 6a as shown in Fig. 2a. However, it is more preferable to continuously form a reaction rim 6a, having an appropriate width, along the outside edge of the resilient dome 6 as shown in Figs. 2b

25 and 2c. Such a reaction rim 6a allows the dome 6 to more effectively perform a resilient reaction when the dome 6 is pressed down by a thumb.

In order to open and empty a beverage can with the above-mentioned sanitary cover 8, the resilient dome 6 is

30 primarily pressed down by a thumb. The position of the sanitary cover 8 is changed from the closed position of Fig. 1c to a raised position of Fig. 1d. That is, the cover part of the sanitary cover 8 is elastically raised up due to a reaction force of the dome 6, thus being

35 spaced apart from the top lid 50 as shown in Fig. 1d. Therefore, it is easy for a user to grasp and handle the cover 8 when levering up the cover 8 to press down the opening piece 3a using the opener part 13. When the cover 8 is levered up as described above, the cover 8 is

40 bent up along the two bending lines 10 as shown in Fig.

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a side, thus having a leaning surface 6g. In the embodiment of Fig. 4d, the top portion of the dome 6 is designed to have a smoothly depressed surface 6h at the top center. The flat top surface 6e, the nipple 6f, the
5 leaning surface 6g, or the depressed top surface 6h improves the resilient reaction of the dome 6.

In still another embodiment, the reinforcing means of the U-shaped opener part 13 may comprise only one folded rib 13b formed along the central axis of the
10 opener part 13 as shown in Figs. 6a and 6b. The sanitary cover 8, having such a single reinforcing rib 13b at the U-shaped opener part 13, may be used with a lowly pressurized can, for example, a can filled with beverage other than carbonated drink. Such a single reinforcing
15 rib 13b simplifies the production process and reduces the production cost of the sanitary cover 8. This results in a reduction in the production cost of the beverage cans.

In a further embodiment, the reinforcing means of the U-shaped opener part 13 may comprise two folded ribs 13b
20 extending in parallel to each other as shown in Fig. 7. The two reinforcing ribs 13b further improve the stiffness of the U-shaped opener part 13 in comparison with the embodiment of Figs. 6a and 6b, thus being preferably used with a can pressurized higher than that of Figs. 6a and
25 6b.

As a further alternative, the reinforcing means of the U-shaped opener part 13 may comprise three rounded ribs 13c extending in parallel to each other as shown in Fig. 8.

30 As described above, it is possible to freely design the reinforcing means for the U-shaped opener part 13 in accordance with the interior pressure acting on the opening piece 3a of the top lid 50.

Of course, it should be understood that the number
35 and arrangement of the reinforcing ribs 13b and 13c may be somewhat freely changed without affecting the function of this invention. For example, the reinforcing means for the opener part 13 may comprise a plurality of folded ribs 13b without having any rounded ribs 13c.
40 Alternatively, the reinforcing means for the opener part

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be formed along the central axis of the folded rib of Fig. 12b. The opener part 13, with such an axial groove, is shown in Fig. 12c. The strength of the opener part 13 of Fig. 12c is higher than that of Fig. 12b.

5 In a further embodiment, the U-shaped opener part 13 may be designed to have a waved cross-section as shown in Fig. 13. In the embodiment of Fig. 13, the opener part 13 has two ridges 31 with one furrow being formed between the two ridges 31. Even though such ridges 31 fail to
10 have the same complete configuration as that of the two side reinforcing ribs 13c of Fig. 1e, the ridges 31 effectively reinforce the U-shaped opener part 13 and allow the opener part 13 to reliably break the opening piece 3a along the depressed seam 3c.

15 In still another embodiment, the reinforcing means for the U-shaped opener part 13 may comprise a reinforcing dome 13f as shown in Figs. 14a and 14b. In this embodiment, the reinforcing dome 13f is formed on the opener part 13 with the outside edge of the dome 13f
20 reaching the edge of the part 13 and a position just outside the reaction rim of the resilient dome 6. The outside edge of the reinforcing dome 13f may have a circular or an oval configuration. In a further embodiment, the reinforcing dome 13f of the opener part
25 13 may be shaped as an angled dome as shown in Figs. 14c and 14d. The reinforcing dome 13f according to the embodiment of Fig. 14c has a rectangular cross-section, while the reinforcing dome 13f according to the embodiment of Fig. 14d has a triangular cross-section. Such an
30 angled reinforcing dome of Fig. 14c or 14d more effectively reinforces the opener part 13 than the rounded reinforcing dome of Figs. 14a and 14b, thus being preferably used with a can which is highly pressurized and forces the opener part 13 to have a higher strength.

35 Fig. 15 shows a reinforcing means for the U-shaped opener part 13 in accordance with still another embodiment of this invention. In this embodiment, the opener part 13 is raised up along the central axis prior to being flat pressed down, thus forming a reinforcing rib with a
40 double-folded edge 13e being formed at each side edge of

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conventional can opener 101 or a conventional one-touch can opener 101', which is attached to the top lid of a can using a locking means in the same manner as that described for the sanitary cover 8 of this invention, but is not designed to completely cover the opening piece 3a different from the sanitary cover 8. That is, the dome 6 is formed on the opener 101 at a position between the outside end 103 and an arcuate slit 104 of the opener 101. When the resilient dome 6 is pressed down by a thumb, the opener 101 is elastically raised up due to a reaction force of the dome 6, thus being spaced apart from the top lid 50. Therefore, it is easy for a user to grasp and handle the opener 101 when levering up the opener 101 to press down the opening piece 3a. The above resilient dome 6 may be designed to have a flat top surface, a nipple, a leaning surface, or a depressed top surface in the same manner as that described for the embodiments of Figs. 4a to 4d. Of course, the objective of the flat top surface, the nipple, the leaning surface, or the depressed top surface is to improve the resilient reaction of the dome, and is freely designed to give an appropriate reaction force to the dome 6 in accordance with the size and pressure of the can. In addition, the above dome 6 may have a regular or irregular pattern capable of allowing the dome 6 to more stably and reliably perform a desired elastic reaction. The dome 6 also may be designed to have the same reaction rim 6a as that described for the sanitary cover 8 or to be free from such a reaction rim 6a. The opener 101, having the thumb-operable resilient dome 6, may be rotatably attached to the top lid 50 of a can in a way such that the opener 101 is normally positioned on the opening piece 3a so as to cover the opening piece 3a and is selectively rotated to a levering position where the opener 101 is levered up to break the opening piece 3a along the depressed seam 3c.

Industrial Applicability

As described above, the present invention provides



Claims:

1. A top lid for beverage cans, comprising a sanitary cover attached to the top lid using a locking member and adapted for keeping a lip contact portion of the top lid sanitary during storage of the can, wherein said sanitary cover comprises:

5 a thin plate body having a sanitary cover part at an outside end portion thereof and exteriorly attached to the top lid at an inside end portion thereof using said locking member, thus covering an opening piece, defined on the top lid by a depressed seam, while covering the lip contact portion around the opening piece by the sanitary cover part;

10 a thumb-operable resilient dome formed on the sanitary cover part and adapted for elastically raising the cover part above the top lid when the dome is pressed down;

15 an opener part defined on the thin plate body by a cutting line at an intermediate position between the locking member and the dome;

20 a depressed bending line formed on the thin plate body while transversely and linearly extending outwardly from each end of said cutting line to an outside edge of the thin plate body, with the thin plate body being bendable along said bending line when the cover is levered up so as to break the opening piece along the depressed seam using the opener part; and

25 reinforcing means for improving stiffness of said opener part, thus allowing the opener part to break the opening piece along the depressed seam without failure.

2. The top lid according to claim 1, wherein said sanitary cover part of the thin plate body reaches a position just inside a rim of the can, said rim seaming a junction between the top lid and a sidewall of the can.

35 3. The top lid according to claim 1, wherein said sanitary cover part of the thin plate body reaches a boundary of said opening piece.



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10. The top lid according to claim 1, wherein said cutting line is depressed to form a depressed seam, or is completely cut to form a slit.

11. The top lid according to claim 1, wherein said
5 sanitary cover is attached to the top lid using two or more locking members.

12. The top lid according to claim 1, wherein said resilient dome has both a reaction rim formed along an outside edge of the resilient dome and a reaction slit
10 formed on a top portion of the resilient dome, both the reaction rim and the reaction slit allowing the resilient dome to stably and reliably perform a desired elastic reaction.

13. The top lid according to claim 1, wherein said
15 resilient dome has a hemispherical profile or another profile modified from the hemispherical profile.

14. The top lid according to claim 1, wherein said
20 cutting line forms an arcuate profile or another profile modified from the arcuate profile.

15. A top lid for beverage cans, comprising an opening piece defined by a depressed seam and selectively broken along the depressed seam so as to form an opening on the top lid, and an opener attached to the top lid
25 using a locking member with an inside end of the opener being positioned on the opening piece to press down the opening piece when necessary and an outside end being positioned inside an interior wall of a seamed rim of said top lid, wherein a thumb-operable resilient dome is
30 formed on said opener at a position between said outside end and an arcuate slit formed around the locking member.

16. The top lid according to claim 15, wherein a reaction rim is formed along an outside edge of said resilient dome so as to allow the dome to stably and
35 reliably perform a desired elastic reaction, and said