



(12) **EUROPEAN PATENT APPLICATION**  
published in accordance with Art. 153(4) EPC

(43) Date of publication:  
**07.06.2023 Bulletin 2023/23**

(51) International Patent Classification (IPC):  
**B65D 17/40 (2006.01)**

(21) Application number: **21848988.8**

(52) Cooperative Patent Classification (CPC):  
**B65D 17/40**

(22) Date of filing: **28.07.2021**

(86) International application number:  
**PCT/JP2021/027891**

(87) International publication number:  
**WO 2022/025112 (03.02.2022 Gazette 2022/05)**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**  
Designated Validation States:  
**KH MA MD TN**

(71) Applicant: **Daiwa Can Company**  
**Chiyoda-ku, Tokyo 100-7009 (JP)**

(72) Inventors:  
• **SHIOTANI, Masahiro**  
**Sagamihara-shi, Kanagawa 252-5183 (JP)**  
• **MIYASHITA, Rio**  
**Sagamihara-shi, Kanagawa 252-5183 (JP)**

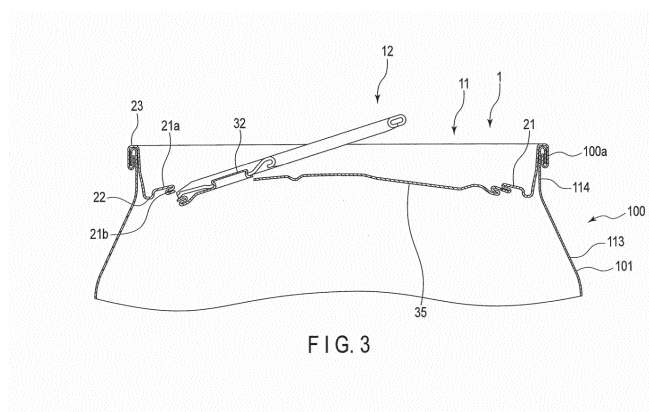
(30) Priority: **31.07.2020 JP 2020129858**

(74) Representative: **AWA Sweden AB**  
**Junkersgatan 1**  
**582 35 Linköping (SE)**

(54) **CAN CONTAINER**

(57) A can container (100) includes a can lid (1) and a can body (101). The can lid (1) includes a disk-shaped panel portion (21) in which a circular score line (31) defining a region for forming a drinking opening is formed. On an outer peripheral edge side, a groove portion (22) connected to the outer peripheral edge of the panel portion (21) and recessed from the panel portion, a rivet portion (32) provided in the panel portion (21) and adjacent to an inner side of the score line (31) in a radial direction, a tab (12) for an opening operation that is fixed to the rivet portion, and a flange portion (23) connected to the groove portion (22), wherein the panel portion in-

cludes a panel outer peripheral portion (21a) in which a portion between the score line (31) and the groove portion (22) is inclined outward in an axial direction toward the inner side in the radial direction. The can body (101) includes a cylindrical body portion (111), a fixing portion (114) fixed to the flange portion (23), and a tapered portion (113) provided between the body portion (111) and the fixing portion (114) and having a diameter reduced from the body portion toward the fixing portion, the can body being filled with an effervescent content. A ratio between a diameter of the score line (31) and an inner diameter of the body portion (111) is 0.6 to 0.8.



## Description

### FIELD

**[0001]** The present invention relates generally to a can container used for an effervescing beverage.

### BACKGROUND

**[0002]** For example, as disclosed in Japanese Patent Application KOKAI Publication No. 2000-264355, a stay-on-tab type can lid having an opening portion partially in a panel portion of the can lid is used for a can container for effervescing beverages such as beer.

### CITATION LIST

### PATENT LITERATURE

**[0003]** Patent Literature 1: Japanese Patent Application KOKAI Publication No. 2000-264355

### SUMMARY

### TECHNICAL PROBLEM

**[0004]** In the above-described can container, the opening portion serving as a drinking opening is smaller than an opening of a beverage container such as a cup or a jug. For this reason, the can container has a problem in that a user cannot enjoy a feeling of drinking an effervescing beverage in a glass, a jug, or the like.

**[0005]** Further, even if a full-open type can lid, which is opened on the entire surface and used as a lid for cans of solid foods, etc., is used as the can lid, there is a problem in that it is difficult to obtain foaming as when beer is poured into a cup because the container is filled with the content in advance.

**[0006]** Accordingly, it is an object of the present invention to provide a can container which allows a user to drink a beverage with a feeling as if the user is drinking the beverage in a beverage container and which can obtain a foaming property.

### SOLUTION To PROBLEM

**[0007]** According to one aspect of the present invention, a can container comprising: a can lid includes a disk-shaped panel portion in which a circular score line defining a region for forming a drinking opening is formed on an outer peripheral edge side, a groove portion connected to the outer peripheral edge of the panel portion and recessed from the panel portion, a rivet portion provided in the panel portion and adjacent to an inner side of the score line in a radial direction, a tab for an opening operation that is fixed to the rivet portion, and a flange portion connected to the groove portion, wherein the panel portion includes a panel outer peripheral portion in which

a portion between the score line and the groove portion is inclined outward in an axial direction toward the inner side in the radial direction; and a can body including a cylindrical body portion, a fixing portion fixed to the flange portion, and a tapered portion provided between the body portion and the fixing portion and having a diameter reduced from the body portion toward the fixing portion, the can body being filled with an effervescing content and having a positive internal pressure, wherein a ratio between a diameter of the score line and an inner diameter of the body portion is 0.6 to 0.8.

### ADVANTAGEOUS EFFECTS OF INVENTION

**[0008]** According to the present invention, it is possible to provide a can container which allows a user to drink a beverage with a feeling as if the user is drinking the beverage in a beverage container and which can obtain a foaming property.

### BRIEF DESCRIPTION OF THE DRAWINGS

#### [0009]

**FIG. 1** is a cross-sectional view showing a configuration of a can container according to an embodiment of the present invention.

**FIG. 2** is a cross-sectional view showing a configuration of an essential part of the can container.

**FIG. 3** is a cross-sectional view showing a configuration of a can lid of the can container during opening.

**FIG. 4** is a cross-sectional view showing a configuration of the can lid of the can container after opening.

**FIG. 5** is a plan view showing a configuration of the can lid.

**FIG. 6** is a cross-sectional view showing a configuration of the can lid.

**FIG. 7** is a cross-sectional view showing an enlarged configuration of the can lid.

### DETAILED DESCRIPTION

**[0010]** In the following, a configuration of a can container 100 according to an embodiment of the present invention will be described with reference to FIGS. 1 to 7.

**[0011]** **FIG. 1** is a cross-sectional view showing the configuration of the can container 100 according to the embodiment of the present invention. **FIGS. 2 to 4** are enlarged cross-sectional views showing a can lid 1 and a can body 101 of the can container 100. **FIG. 2** shows a state before opening the can lid 1, **FIG. 3** shows a state during opening the can lid 1, and **FIG. 4** shows a state after opening the can lid 1.

**[0012]** **FIG. 5** is a plan view showing a configuration of the can lid 1 before fixing it to the can body 101, and **FIG. 6** is a cross-sectional view showing a configuration of the can lid 1 before fixing it to the can body 101. **FIG. 7** is a cross-sectional view showing an enlarged configuration

of the can lid 1.

**[0013]** As shown in FIGS. 1 to 5, the can container 100 is a so-called full-open type container, in which the can lid 1 is opened on the entire surface. The can container 100 is a positive pressure can, the inside of which is under a positive pressure. The can container 100 is filled with an effervescing content as the content. Here, the effervescing content is an effervescing beverage. Examples of the effervescing beverage include beers, effervescing liquors, beer-like alcoholic beverages, and beer-like non-alcoholic beverages. The effervescing beverages are not limited thereto.

**[0014]** The can container 100 includes the can lid 1 and the can body 101. After the can container 100 is filled with a beverage, the can lid 1 and the can body 101 are integrally assembled by seaming the can lid 1 to the can body 101, for example, by double seaming. As a result, in the can container 100, the can lid 1 and the can body 101 are airtightly fixed by a seamed portion 100a. The can container 100 is, for example, a so-called two-piece can in which a bottom portion and a body portion of the can body 101 are integrated.

**[0015]** As shown in FIGS. 1 to 7, the can lid 1 includes a can lid body 11 and a tab (can lid tab) 12. The can lid 1 is of a full-open type, which is opened on the entire surface so that an opening portion occupies most of the panel portion 21. The can lid 1 is formed by pressing a metal plate to form the can lid body 11 and the tab 12 in another process, and then fixing the tab 12 to the panel portion 21. Examples of the metal plate forming the can lid body 11 include an aluminum alloy plate and a surface-treated steel plate having a resin film formed on the surface thereof. Examples of the metal plate forming the tab 12 include an aluminum alloy plate.

**[0016]** As shown in FIGS. 1 to 3 and 5 to 7, the can lid body 11 includes the panel portion 21, a ring-shaped groove portion 22 provided on an outer peripheral edge of the panel portion 21, and a flange portion 23 provided on an outer peripheral edge of the ring-shaped groove portion 22.

**[0017]** As shown in FIGS. 5 and 6, the panel portion 21 is formed in a disk shape. The panel portion 21 includes a score line 31, a rivet portion 32, an auxiliary score line 33, a protection portion 34, and a finger insertion concave portion 35. The panel portion 21 may also have a display portion 36 or the like such as braille for displaying the content of the can container 100. Further, the panel portion 21 may have a convex portion or a concave portion for product identification, design, reinforcement, or the like.

**[0018]** A panel outer peripheral portion 21a, which is a portion between the score line 31 and the groove portion 22 of the panel portion 21, is inclined outward in an axial direction of the panel portion 21 from an outer side in a radial direction toward a center side of the panel portion 21. In other words, as shown in FIG. 1, when the can container 100 is oriented with the can lid 1 on an upper side, the panel outer peripheral portion 21a of the

panel portion 21 is tapered upward from the outer side (groove portion 22 side) toward an inner side (score line 31 side) in the radial direction of the can lid 1. Further, the panel outer peripheral portion 21a has, on the score line 31 side, a convex portion 21b on an inner surface on the can body 101 side. The convex portion 21b has, for example, a ring shape along the score line 31 and projects from the inner surface of the panel outer peripheral portion 21a to the inside of the can container 100.

**[0019]** As shown in FIG. 3, the score line 31 is broken by an opening operation of the tab 12. By being broken, the score line 31 creates an opening portion of the can lid 1 in the panel portion 21. In other words, the score line 31 surrounds a region which becomes an opening piece of the panel portion 21 when the opening portion of the can lid 1 is formed. Since the can lid 1 is of a full-open type, the score line 31 is formed in a circular shape or an approximately circular shape as shown in FIG. 7, for example. When the score line 31 is broken, as shown in FIGS. 3 and 4, a portion of the panel portion 21 that is on an inner side of the score line 31 in the radial direction can be removed as an opening piece together with the rivet portion 32 from a portion of the panel portion 21 that is on an outer side of the score line 31 in the radial direction.

**[0020]** The score line 31 is a groove that constitutes a fragile part that enables a part of the panel portion 21 to be broken in the shape of the opening portion by an external force. As shown in FIG. 7, the score line 31 is, for example, a wedge-shaped groove provided on an outer surface of the panel portion 21, and a part of the panel portion 21 is formed to be thin by the score line 31. Here, the outer surface of the panel portion 21 is a main surface exposed to the outside in a state where the can body 101 of the can container 100 is provided with the can lid 1, that is, a surface constituting an upper surface of the can container 100.

**[0021]** The score line 31 is, for example, arranged in the protection portion 34. The score line 31 is not limited to a circular shape, and may have, for example, a configuration in which the score line 31 is formed in a partially intermittent arc shape, most of the panel portion 21 is opened, and an opening piece that is opened is partially continuous with the panel portion 21.

**[0022]** As shown in FIGS. 1 to 3 and 5 to 7, the rivet portion 32 is provided on one main surface of the panel portion 21, specifically, on the outer surface of the panel portion 21. The rivet portion 32 is provided on an outer peripheral edge side of the panel portion 21 and on the center side with respect to the score line 31. That is, the rivet portion 32 is provided adjacent to the inner side of the score line 31 in the radial direction.

**[0023]** The rivet portion 32 is formed in a columnar shape in such a manner as to project from one main surface of the panel portion 21. The rivet portion 32 is formed by drawing a part of the panel portion 21 into a cylindrical shape. By swaging the rivet portion 32 after the tab 12 is arranged, the tab 12 is fixed to the panel

portion 21. In FIGS. 1 to 3 and 5 to 7, the rivet portion 32 is shown in a state after swaging.

**[0024]** As shown in FIGS. 5 and 7, the auxiliary score line 33 is formed in the vicinity of the rivet portion 32 of the panel portion 21. A part of the auxiliary score line 33 is broken at the time of the opening operation of the tab 12. The auxiliary score line 33 includes, for example, a main score line 41 and a sub score line 42 which is provided in parallel to the main score line 41 and on a side opposite to the rivet portion 32 across the main score line 41.

**[0025]** The main score line 41 is a groove that constitutes a fragile part that enables a part of the panel portion 21 to be broken in the shape of the opening portion by an external force. The main score line 41 is, for example, a wedge-shaped groove provided on the outer surface of the panel portion 21. A part of the panel portion 21 is formed thin by the main score line 41. As shown in FIG. 3, the main score line 41 is broken at the time of the opening operation of the tab 12 to allow the rivet portion 32 to move upward.

**[0026]** The sub score line 42 is provided on an inner side of the main score line 41 in the radial direction. The sub score line 42 is formed in parallel to the main score line 41. The sub score line 42 is, for example, a wedge-shaped groove provided on the outer surface of the panel portion 21. The sub score line 42 is formed to have a depth smaller than that of the main score line 41. That is, a thickness of a portion of the panel portion 21 where the sub score line 42 is provided is formed thicker than a thickness of a portion of the panel portion 21 where the main score line 41 is provided. A part of the panel portion 21 is formed thin by the sub score line 42.

**[0027]** As shown in FIG. 7, the protection portion 34 is formed by the panel portion 21 being folded in a ring shape. The protection portion 34 is, for example, formed by being folded four times on an inner side of the outer peripheral edge of the panel portion 21 in the radial direction and on an outer side of the rivet portion 32 in the radial direction. That is, the protection portion 34 is formed by arranging the panel portion 21 in five layers. The score line 31 is formed in the protection portion 34 and in the third layer of the panel portion 21.

**[0028]** When the tab 12 is opened and the score line 31 is broken, the protection portion 34 constitutes an outer protection portion 34a that protects an inner peripheral edge of a portion (panel outer peripheral portion 21a) of the panel portion 21 broken along the score line 31 that is present in the can body 101, and an inner protection portion 34b that protects an outer peripheral edge of a portion (opening piece) of the panel portion 21 broken along the score line 31 that is removed from the can body 101. The outer protection portion 34a is constituted by a three-layered panel portion 21, and a folded portion is present at the inner peripheral edge of the opened panel portion 21. The inner protection portion 34b is constituted by a three-layered panel portion 21, and a folded portion is present at the outer peripheral edge of the portion sep-

arated from the opening of the panel portion 21.

**[0029]** In other words, as shown in FIG. 7, the protection portion 34 has an upper layer 34c formed by the folded panel portion 21 in the first and second layers and located on an outer surface side of the can lid 1, a lower layer 34d formed by the folded panel portion 21 in the fourth and fifth layers and located on an inner surface side of the can lid 1, and an intermediate layer 34e formed by the folded panel portion 21 in the third layer and located between the upper layer 34c and the lower layer 34d.

**[0030]** The outer protection portion 34a is formed by the upper layer 34c and a part of the intermediate layer 34e, and the upper layer 34c is located above the score line 31 and functions as a protection portion after the score line 31 is broken. A part of the upper layer 34c and a part of the intermediate layer 34e of the panel portion 21 constituting the outer protection portion 34a are the convex portion 21b located on the inner surface of the panel outer peripheral portion 21a on the score line 31 side. To be more specific, the convex portion 21b of the present embodiment is formed by a folded portion of the panel portion 21 in the second and third layers of the configuration of the outer protection portion 34a of the protection portion 34.

**[0031]** The inner protection portion 34b is formed by a part of the intermediate layer 34e and the lower layer 34d, and the lower layer 34d is located below the score line 31 and functions as a protection portion after the score line 31 is broken.

**[0032]** The finger insertion concave portion 35 is located below a rear end of the tab 12 on which a finger is hooked, and is recessed from the outer surface of the panel portion 21.

**[0033]** The groove portion 22 is a ring-shaped recess which is provided continuously with the outer peripheral edge of the panel portion 21 and projects to a can body side when the panel portion 21 is fixed to the can body. The groove portion 22 has a function to improve pressure resistance of the can lid 1.

**[0034]** The flange portion 23 is seamed with an opening end of the can body 101. The flange portion 23 is provided with a sealing resin layer on a surface contacting the can body 101.

**[0035]** As shown in FIGS. 1 to 3 and 5 to 7, the tab 12 includes an attachment portion 51, a tip portion 52, and a finger hook portion 53. In the tab 12, the attachment portion 51, the tip portion 52, and the finger hook portion 53 are formed integrally. When the tab 12 is opened by a finger or the like hooked on the finger hook portion 53, the tip portion 52 presses a portion of the panel portion 21 that is adjacent to the inner side of the score line 31 in the radial direction to break the score line 31.

**[0036]** As shown in FIG. 7, the attachment portion 51 is formed in a plate shape, and has a rivet hole 51a. The attachment portion 51 is continuous with the tip portion 52 and the finger hook portion 53. The rivet hole 51a is formed to have an inner diameter into which the rivet

portion 32 can be inserted. The rivet portion 32 inserted into the rivet hole 51a is swaged so that the attachment portion 51 is fixed to the panel portion 21 by the rivet portion 32.

**[0037]** The tip portion 52 is formed on a tip side of the tab 12. The tip portion 52 has a tip formed in an arc shape or a polygonal shape. The tip portion 52 is formed by, for example, bending double an outer peripheral edge excluding the tip.

**[0038]** The finger hook portion 53 is a portion on which a finger is hooked in order to lift the tab 12 at the time of the opening operation of the tab 12. As shown in FIGS. 5 and 6, for example, the finger hook portion 53 includes a ring hole 53a and is formed in a ring shape. As a specific example, the finger hook portion 53 is formed in a rectangular frame shape having arc-shaped corner portions. The finger hook portion 53 is formed on a side opposite to the tip portion 52 across the attachment portion 51. When the tab 12 is attached to the panel portion 21, a rear end of the finger hook portion 53 faces the finger insertion concave portion 35. The finger hook portion 53 is formed by, for example, bending an outer peripheral edge and an inner peripheral edge of the ring hole 53a so that they are doubled.

**[0039]** As shown in FIG. 1, the can body 101 is formed in a bottomed cylindrical shape. The can body 101 includes a body portion 111, a bottom portion 112, a tapered portion 113, and a fixing portion 114. The body portion 111 is formed in a cylindrical shape. The bottom portion 112 is integrally provided at one end of the body portion 111. One end (lower end) of the tapered portion 113 is integrally continuous with the other end of the body portion 111, and the other end (upper end) thereof is integrally continuous with the fixing portion 114. A diameter of the tapered portion 113 gradually decreases from the body portion 111 side toward the fixing portion 114 side. The fixing portion 114 forms an opening end of the can body 101. The fixing portion 114 is fixed to the flange portion 23 by seaming.

**[0040]** In the can container 100 having such a configuration, a ratio between a diameter of the score line 31 of the panel portion 21 and an inner diameter of the body portion 111 is set to 0.6 to 0.8. More preferably, the ratio between the diameter of the score line 31 of the panel portion 21 and the inner diameter of the body portion 111 is 0.6 to 0.75. For example, the diameter of the score line 31 is the maximum diameter of the score line 31, and the inner diameter of the body portion 111 is the maximum inner diameter of the body portion 111. The diameter of the score line 31 corresponds to an inner diameter of an opening portion which serves as a drinking opening formed in the panel portion 21 when the lid is opened.

**[0041]** A ratio between an inner diameter of an end portion (upper end portion) of the tapered portion 113 on the fixing portion 114 side and an inner diameter of an end portion (lower end portion) of the tapered portion 113 on the body portion 111 side is set to 0.75 to 0.9. The inner diameter of the upper end portion of the tapered

portion 113 is set to be larger than the diameter of the score line 31.

**[0042]** According to the can container 100 formed as described above, since the score line 31 is formed on the outer peripheral side of the panel portion 21, the can container 100 is a full-open type in which approximately the entire surface of the panel portion 21 is opened. Since the content is an effervescing beverage and the foam generated in addition to the beverage moves from the tapered portion 113 where the inner diameter of the can container 100 is reduced to the full opening, the foam generated in addition to the beverage also flows together. Thus, the can container 100 can provide a drinking feeling similar to that of a beverage container such as a cup, a beer glass, or a beer jug. In addition, when the foam generated at the time of opening the lid is present in the tapered portion 113, a thickness of the foam can be increased, so that the amount of flowing foam is increased and the drinking feeling can be made the same as that of the beverage container.

**[0043]** Further, in the can container 100, the panel outer peripheral portion 21a of the panel portion 21 is inclined outward in the axial direction from the outer side toward the inner side in the radial direction. Thus, when the content (effervescing beverage) flows at the time of opening the lid or drinking, the content can be concentrated toward the center of the can container 100. Thus, the effervescing beverage easily foams, and the can container 100 can obtain the foaming property. Here, the foaming property is an ability or efficiency of the can container 100 to cause foaming of the effervescing beverage when the lid is opened or the effervescing beverage flows.

**[0044]** In addition, in the can container 100, the ratio between the diameter of the score line 31 of the panel portion 21 and the inner diameter of the body portion 111 is set to 0.6 to 0.8, and more preferably, the ratio between the diameter of the score line 31 of the panel portion 21 and the inner diameter of the body portion 111 is set to 0.6 to 0.75. By setting the ratio between the diameter of the score line 31 of the panel portion 21 and the inner diameter of the body portion 111 as described above, in the can container 100, the content can be concentrated toward the center of the container when the lid is opened or the content is drunk, and the content is more likely to foam. Thus, the can container 100 has a high foaming property. In particular, the foam is generated mainly on the inner surface of the body portion 111. The bubbles generated on the inner surface of the body portion 111 interfere with each other in the process of flowing toward the opening portion defined by the score line 31 having a smaller diameter than the body portion 111. As a result, the content is more likely to foam.

**[0045]** In the can container 100, the inner diameter ratio between the upper end portion and the lower end portion of the tapered portion 113 is set to 0.75 to 0.9. By setting the inner diameter ratio between the upper end portion and the lower end portion of the tapered portion 113 as described above, in the can container 100, the

content can be more concentrated toward the center of the container when the lid is opened or the content is drunk, and the content is more likely to foam. Thus, the can container 100 has a high foaming property.

**[0046]** Since the can container 100 has the convex portion 21b on the inner surface side of the panel outer peripheral portion 21a of the panel portion 21, the content flowing to the opening portion collides with the convex portion 21b, and the content can be further foamed. Since the convex portion 21b can improve the foaming property of the can container 100, the can container 100 has a high foaming property.

**[0047]** As an example of dimensions of the can container 100, the can container 100 was set such that the diameter of the score line 31 of the panel portion 21 of the can lid 1 is 44 mm, the inner diameter of the body portion 111 of the can body 101 is 65.9 mm, the inner diameter of the upper end of the tapered portion 113 is 54.9 mm, and the inner diameter of the lower end of the tapered portion 113 is the same as the inner diameter of the body portion 111, i.e., 65.9 mm. When the can container 100 of this example was filled with beer and the lid was opened, the foaming of the beer was good and the drinking feeling was also favorable.

**[0048]** As described above, according to the can container 100 of the present embodiment, it is possible to drink with a feeling of drinking from a beverage container, and it is possible to obtain the foaming property of the filled effervescing beverage.

**[0049]** Note that the present invention is not limited to the embodiment described above. For example, in the example described above, an example has been described in which the convex portion 21b provided on the inner surface side of the panel outer peripheral portion 21a of the panel portion 21 is formed by a part of the intermediate layer 34e constituting the outer protection portion 34a, but the present invention is not limited thereto. For example, a groove portion may be formed in a portion of the panel outer peripheral portion 21a that is adjacent to the score line 31, and this groove portion may constitute the convex portion 21b.

**[0050]** Also, the can container 100 is not limited to the configuration or use described above. For example, the can container 100 may have a configuration in which a foaming member that foams the filled effervescing beverage, that is, performs so-called surging, is accommodated together with the content. For example, the foaming member that foams the effervescing beverage is formed of a resin material having a spherical shape, a columnar shape, or the like, and is accommodated in the can container 100. The can container 100 may be foamed with an ultrasonic whisk or the like before or after opening the lid. As described above, even if an effervescing beverage is foamed by a foaming member, a whisk, or the like, by using the can container 100 of the present embodiment having a foaming property, it is possible to prevent the foam from disappearing and to obtain a drinking feeling similar to that of a beverage container.

**[0051]** In addition, in the above-described example, the effervescing beverage which is the content filled in the can container 100 is exemplified, but the effervescing beverage is not limited to the above-described example.

That is, the can container 100 exhibits the function of the foaming property of the effervescing beverage by being filled with the effervescing beverage, but it is needless to say that the can container 100 may be filled with a beverage other than the effervescing beverage.

**[0052]** The present invention is not limited to the above-described embodiments, and can be modified in practice without departing from the spirit of the invention. The embodiments may also be implemented by combining them appropriately, in which case the combined advantages are obtained. Furthermore, the embodiments include various inventions, and such various inventions can be derived by properly combining the structural elements disclosed in connection with the embodiments. For example, even if some structural elements are deleted from all the structural elements shown in the embodiments, when the problem can be solved and the advantageous effects can be obtained, such a configuration in which those structural elements are deleted can be extracted as an invention.

## REFERENCE SIGNS LIST

**[0053]** 1: can lid, 11: can lid body, 12: tab (can lid tab), 21: panel portion, 21a: panel outer peripheral portion, 21b: convex portion, 22: groove portion, 23: flange portion, 31: score line, 32: rivet portion, 33: auxiliary score line, 34: protection portion, 34a: outer protection portion, 34b: inner protection portion, 34c: upper layer, 34d: lower layer, 34e: intermediate layer, 35: finger insertion concave portion, 36: display portion, 41: main score line, 42: sub score line, 51: attachment portion, 51a: rivet hole, 52: tip portion, 53: finger hook portion, 53a: ring hole, 100: can container, 100a: seamed portion, 101: can body, 111: body portion, 112: bottom portion, 113: tapered portion, 114: fixing portion

## Claims

1. A can container comprising:

a can lid including a disk-shaped panel portion in which a circular score line defining a region for forming a drinking opening is formed on an outer peripheral edge side, a groove portion connected to the outer peripheral edge of the panel portion and recessed from the panel portion, a rivet portion provided in the panel portion and adjacent to an inner side of the score line in a radial direction, a tab for an opening operation that is fixed to the rivet portion, and a flange portion connected to the groove portion, wherein the panel portion includes a panel outer periph-

eral portion in which a portion between the score line and the groove portion is inclined outward in an axial direction toward the inner side in the radial direction; and

a can body including a cylindrical body portion, a fixing portion fixed to the flange portion, and a tapered portion provided between the body portion and the fixing portion and having a diameter reduced from the body portion toward the fixing portion, the can body being filled with an effervescing content and having a positive internal pressure, wherein

a ratio between a diameter of the score line and an inner diameter of the body portion is 0.6 to 0.8.

2. The can container according to claim 1, wherein, in the tapered portion, a ratio between an inner diameter of an end portion on the fixing portion side and an inner diameter of an end portion on the body portion side is set to 0.75 to 0.9.
3. The can container according to claim 1 or 2, wherein the can lid includes a convex portion provided on the score line side and the can body side of the panel outer peripheral portion.

30

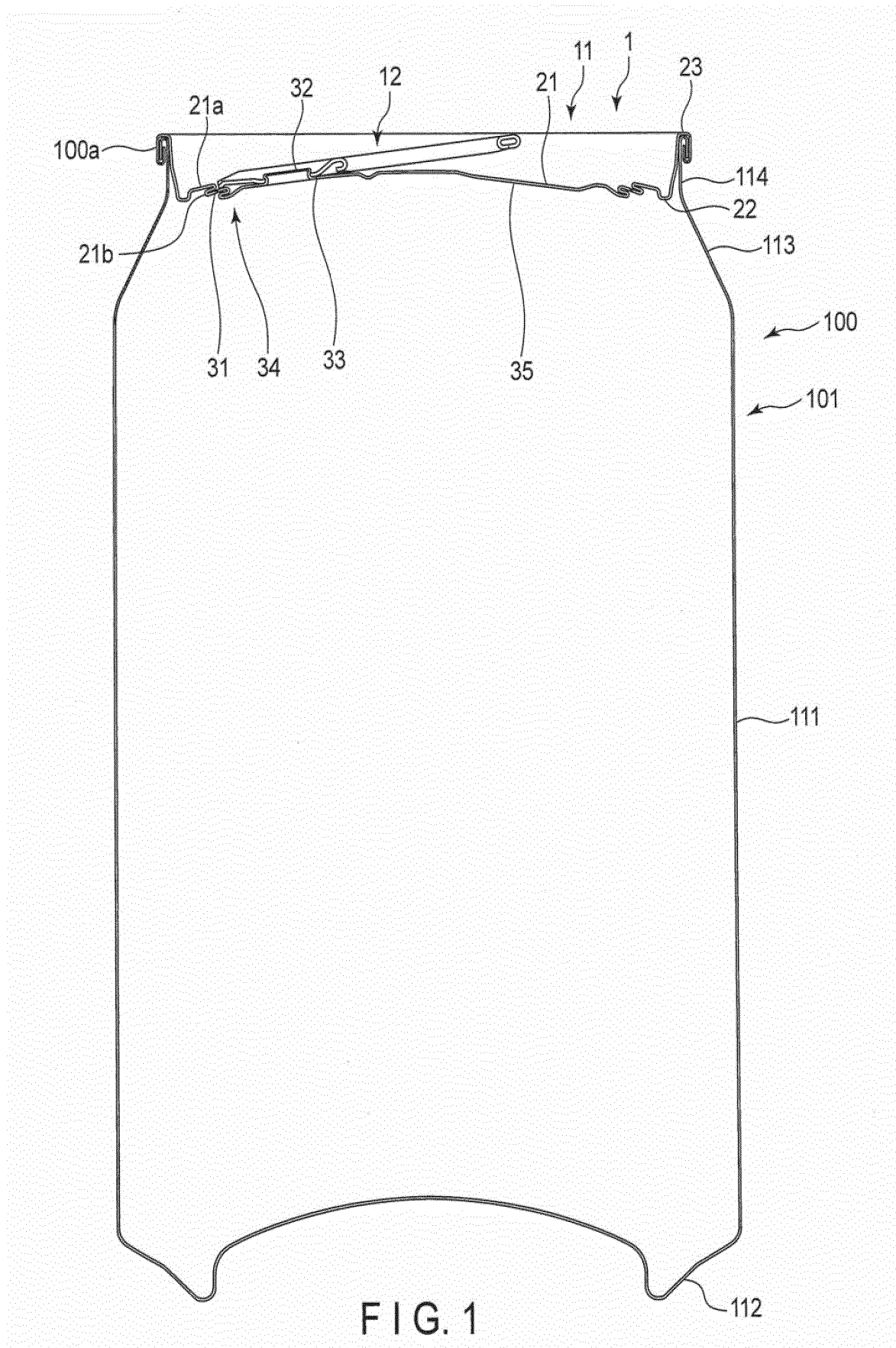
35

40

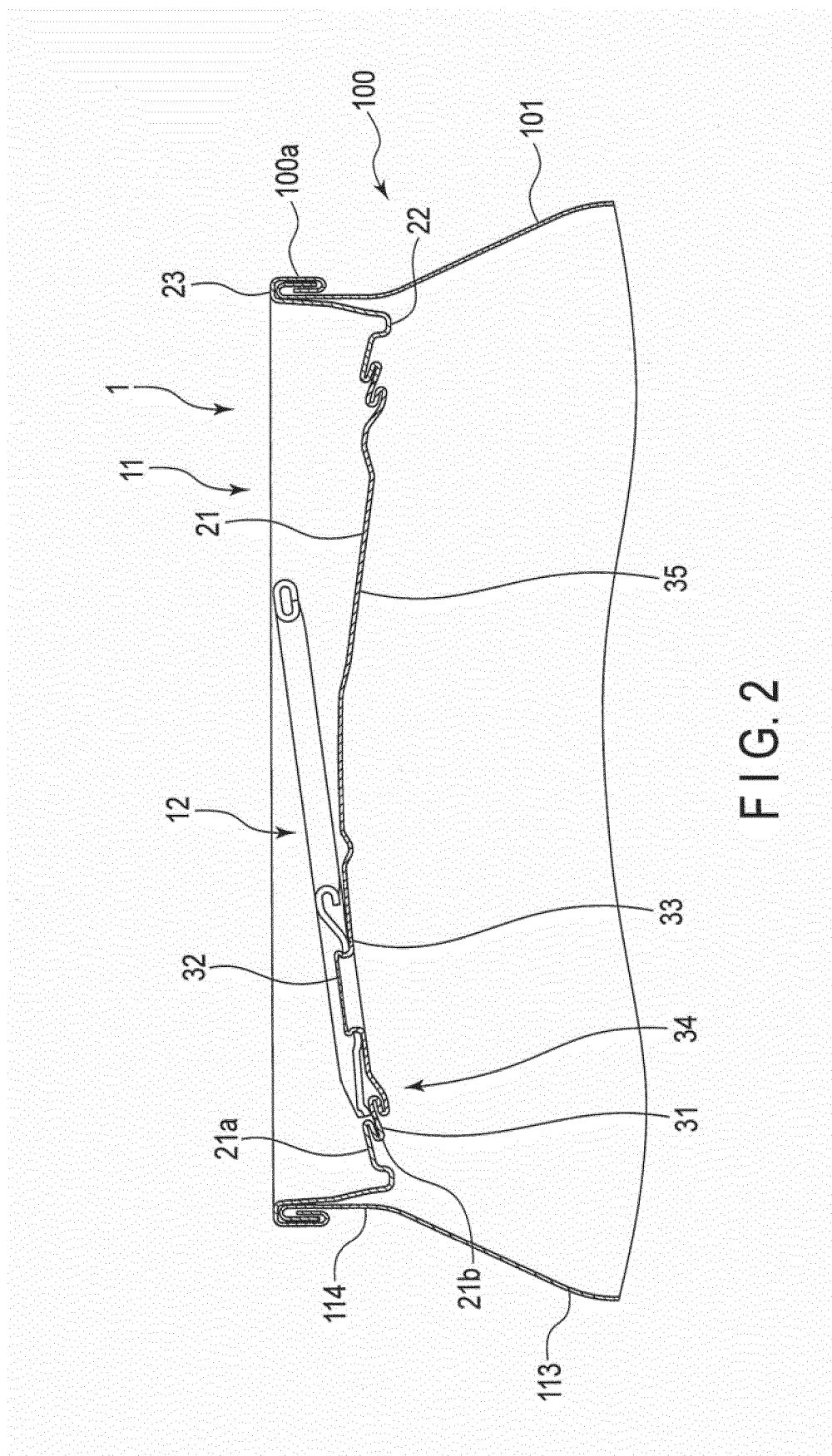
45

50

55







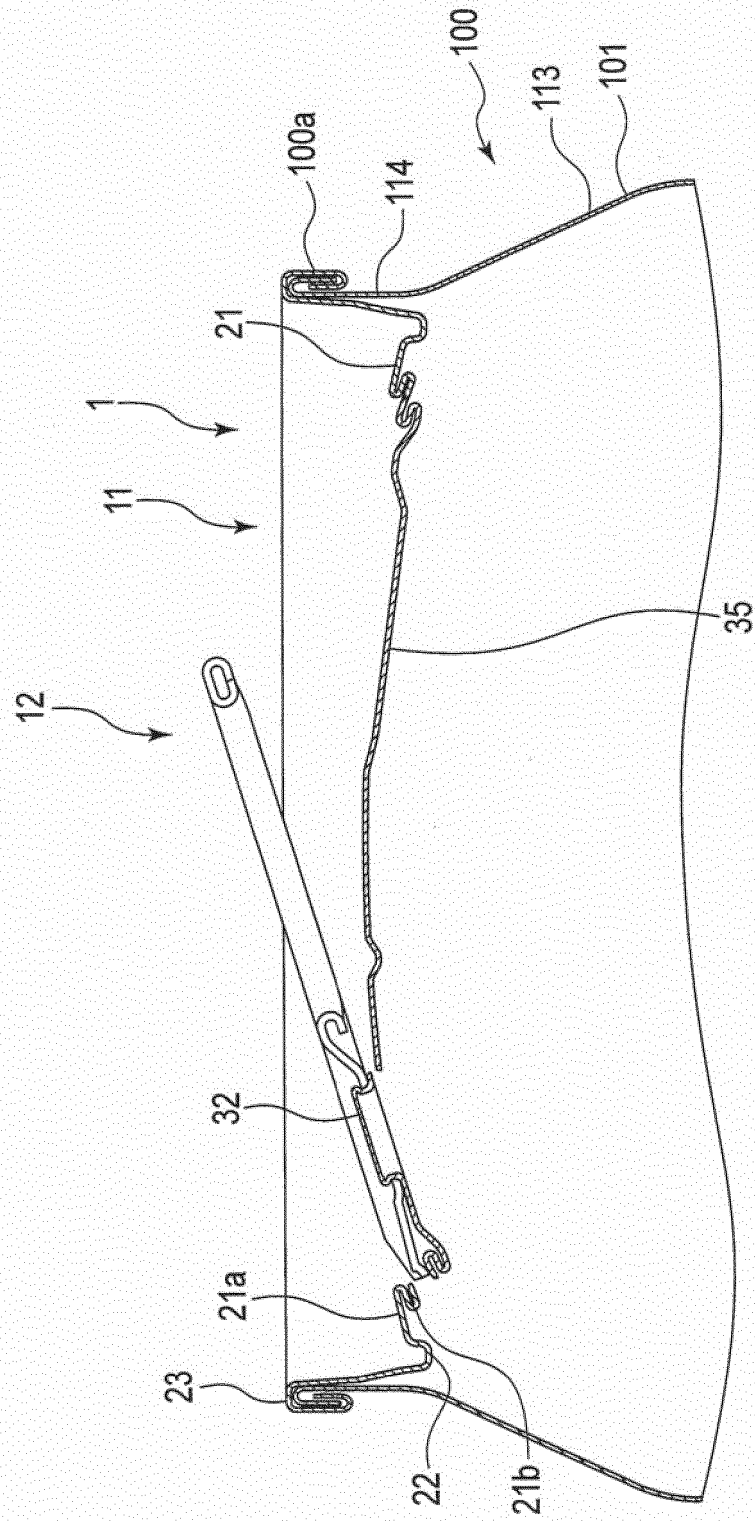
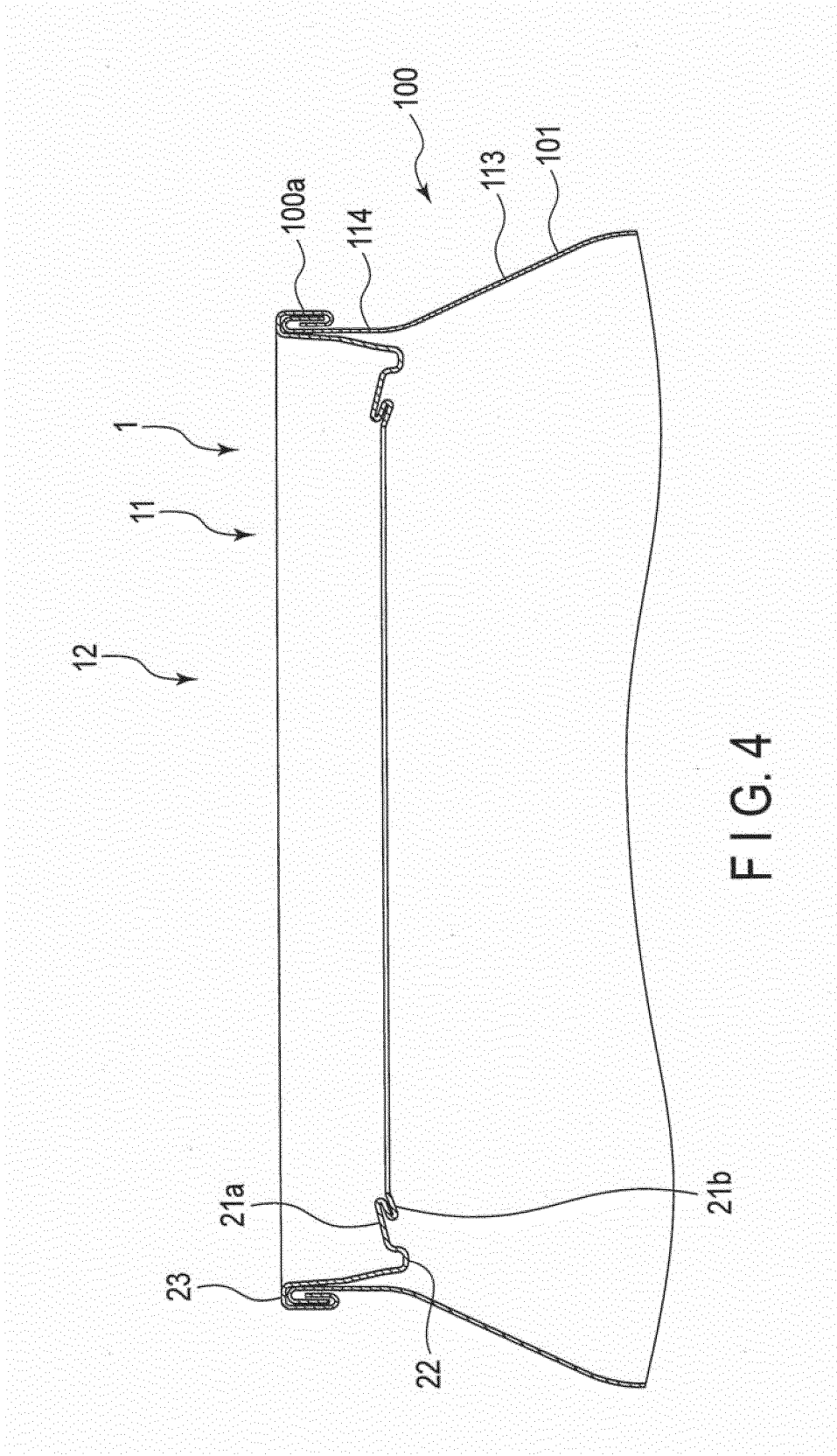


FIG. 3



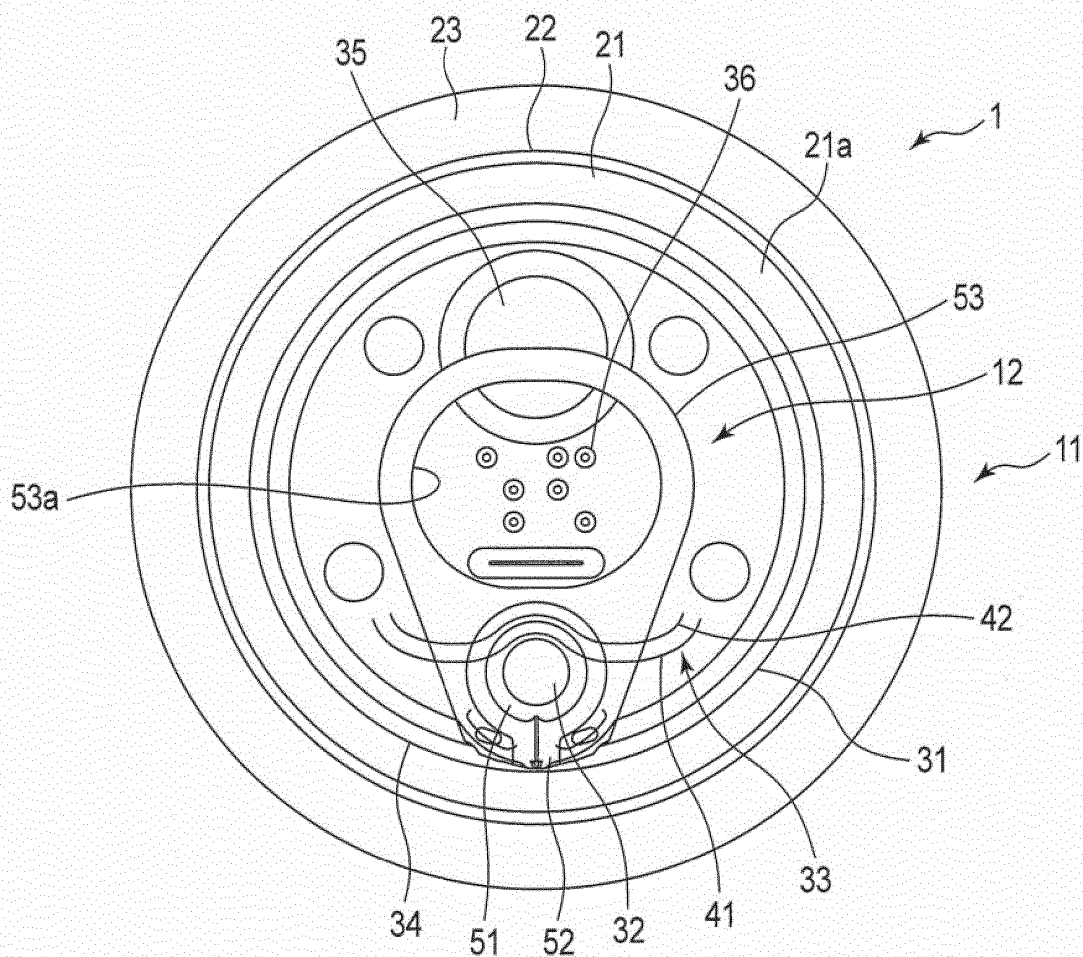
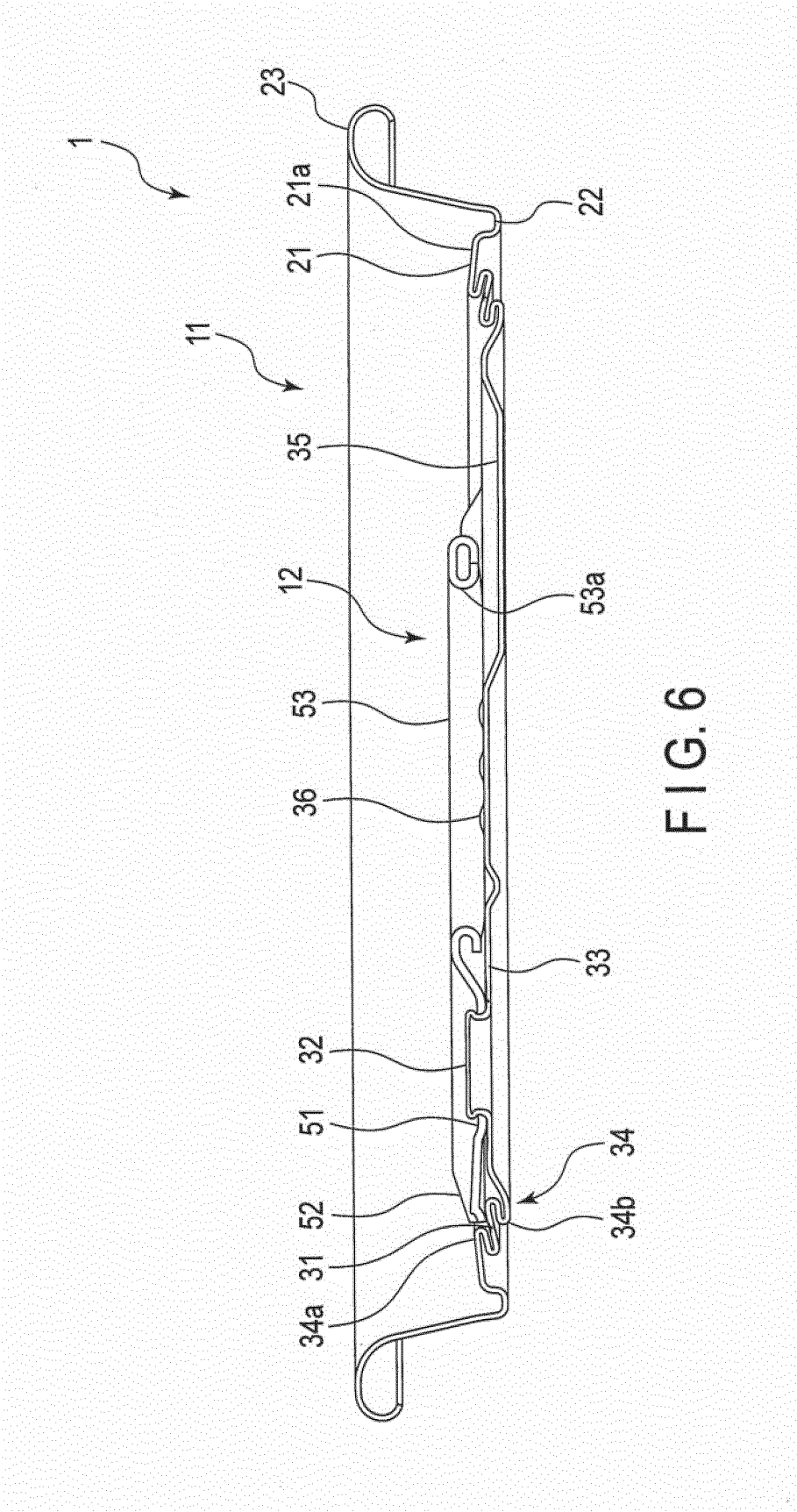


FIG. 5



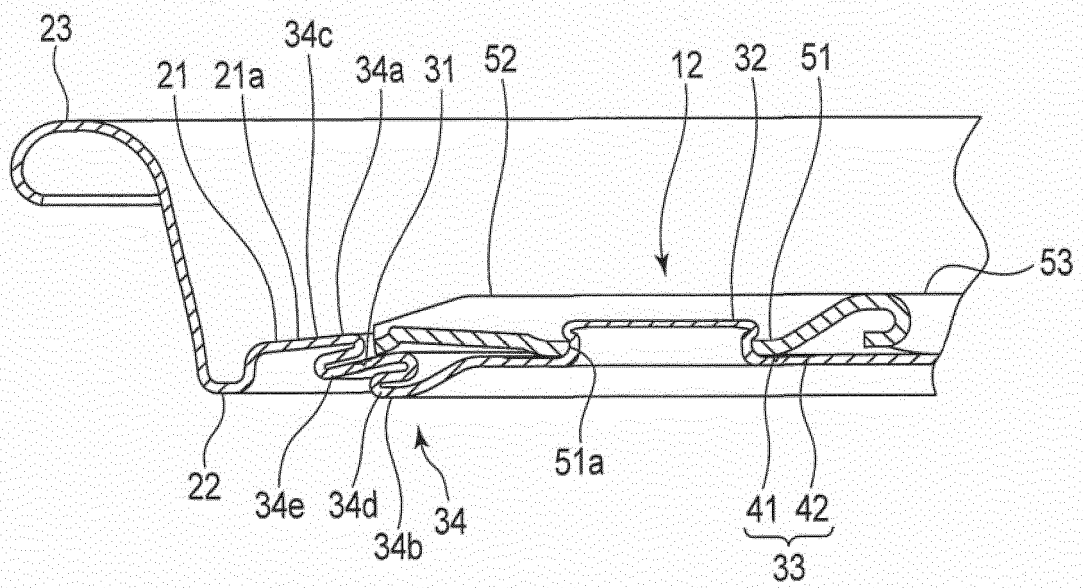


FIG. 7

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2021/027891

## A. CLASSIFICATION OF SUBJECT MATTER

**B65D 17/40**(2006.01)i

FI: B65D17/40

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D17/40

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan 1922-1996  
 Published unexamined utility model applications of Japan 1971-2021  
 Registered utility model specifications of Japan 1996-2021  
 Published registered utility model applications of Japan 1994-2021

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2013-503788 A (CROWN PACKAGING TECHNOLOGY INC. ) 04 February 2013 (2013-02-04) paragraphs [0012], [0016]-[0021], fig. 1-6, 8	1-3
Y	JP 2010-519147 A (IMPRESS GROUP BV ) 03 June 2010 (2010-06-03) paragraph [0026], fig. 28	1-3
Y	JP 2007-308142 A (HOKKAI CAN CO., LTD.) 29 November 2007 (2007-11-29) paragraphs [0040], fig. 4, 5	3
Y	JP 2004-155480 A (DAIWA CAN CO.) 03 June 2004 (2004-06-03) paragraphs [0015]-[0019], fig. 3	3

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

09 September 2021

Date of mailing of the international search report

28 September 2021

Name and mailing address of the ISA/JP

Japan Patent Office (ISA/JP)  
 3-4-3 Kasumigaseki, Chiyoda-ku, Tokyo 100-8915  
 Japan

Authorized officer

Telephone No.

**INTERNATIONAL SEARCH REPORT**  
**Information on patent family members**

International application No.

**PCT/JP2021/027891**

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
JP 2013-503788 A	04 February 2013	US 2011/0056945 A1 paragraphs [0012], [0013], [0030]-[0035], fig. 1-6, 8 WO 2011/026900 A1 EP 2473414 A1 AU 2010291195 A1 CA 2772712 A1 SG 178957 A1 MX 2012002712 A CN 102625769 A CO 6511215 A2 RU 2012112951 A ES 2575203 T3 ZA 201201609 B DK 2878547 T3 HK 1174313 A1 HU E030328 T2 PL 2878547 T3 BR 112012004865 A2	
JP 2010-519147 A	03 June 2010	US 2010/0163560 A1 paragraph [0032], fig. 2B WO 2008/104392 A1 EP 1964784 A1 CA 2679196 A1 CN 101622175 A KR 10-2009-0115814 A EA 200970801 A1 ES 2344079 T3 SI 1964784 T1 AU 2008220972 A1 NZ 578986 A UA 96475 C2 BR PI0807658 A2 MA 32117 B1 MX 2009008871 A PL 1964784 T3	
JP 2007-308142 A	29 November 2007	(Family: none)	
JP 2004-155480 A	03 June 2004	(Family: none)	

Form PCT/ISA/210 (patent family annex) (January 2015)



**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- JP 2000264355 A [0002] [0003]