(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 509 423 A1**

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

(43) Date of publication:
19.02.2025 Bulletin 2025/08

(21) Application number: **23807732.5**

(22) Date of filing: **22.05.2023**

(51) International Patent Classification (IPC):
B65D 47/36 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65D 47/36

(86) International application number:
PCT/JP2023/018892

(87) International publication number:
WO 2023/224131 (23.11.2023 Gazette 2023/47)

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **20.05.2022 US 202263344399 P**
12.10.2022 JP 2022164372

(71) Applicant: **KY7 Inc.**
Tokyo 141-0022 (JP)

(72) Inventor: **HAYASHI, Hiroyoshi**
Tokyo 141-0022 (JP)

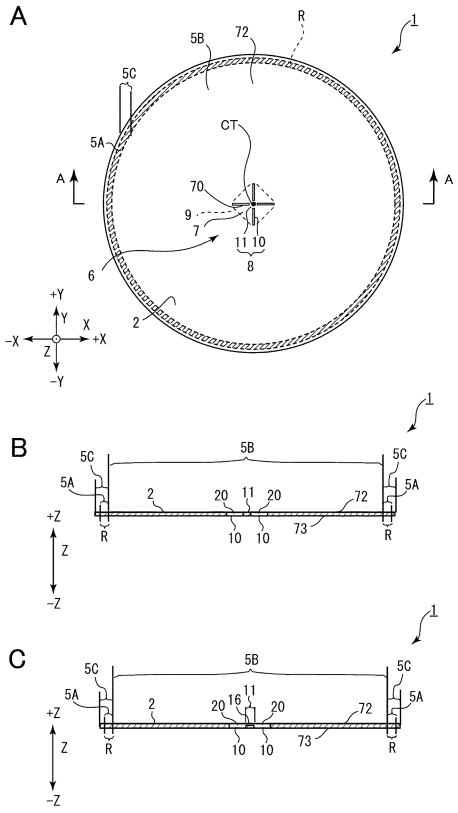
(74) Representative: **Algemeen Octrooi- en Merkenbureau B.V.**
P.O. Box 645
5600 AP Eindhoven (NL)

(54) LID, CONTAINER EQUIPPED WITH LID, AND COMBINATION OF LID AND CONTAINER

(57) A lid, a container with a lid, and a combination of a lid and a container capable of suppressing spurts of content from a lid in a state of a container with a lid is provided.

A lid includes a main body formed in such a way as to be contactable with a container including an opening and an edge forming an outer periphery of the opening, in which the main body includes an insertion part configured to be capable of forming an insertion hole, the insertion part includes a hole lid that covers the insertion hole and a Weakened part that forms at least a part of an outer circumferential edge of the hole lid, the Weakened part includes a plurality of cuts penetrating the main body in a thickness direction of the main body and a non-penetrating part where the main body is not penetrated, the insertion hole is formed by applying stress to the insertion part from outside in the thickness direction of the main body, and when the insertion hole is formed, the non-penetrating part is broken, the broken non-penetrating part forms a fracture surface in a part of the outer circumferential edge of the hole lid, the hole lid is displaced together with the fracture surface, and at least a part of the fracture surface is located at a tip of the hole lid.

Fig.1



Processed by Luminess, 75001 PARIS (FR)

Description

Technical Field

[0001] The present invention relates to a lid, a container with a lid, and a combination of a lid and a container.

Background Art

[0002] It is being widely practiced to provide a food, a drink, or the like (hereinafter also referred to as "content") in a container with a lid by putting the food, the drink, or the like in a container, which has an opening, and attaching a lid to the container.

[0003] It is desired to use a paper-based material for a lid to be attached to a container from a viewpoint of reducing an environmental burden. As a method for attaching a lid to a container, a method in which a lid is joined to an edge forming an outer periphery of an opening at an upper end of the container using a method such as hot pressing (sealing method) is known. As a method for taking in content covered by a lid when the content is a liquid such as a soft drink or a carbonated drink, Patent Literature 1 discloses a method in which an insertion part for forming an insertion hole is formed in the lid and a straw or the like is inserted into the insertion part to suck out the content.

Citation List

Patent Literature

[0004] Patent Literature 1: JP 2012-153382 A

Summary of Invention

Technical Problem

[0005] In the technique described in Patent Literature 1, the content might leak from the insertion part due to vibration of a container with a lid when a user carries the container with a lid, and the content might spurt out from the insertion part especially when the content generate gas as in the case of a carbonated beverage. Furthermore, when the lid is formed of a material that can have moisture absorbability or water absorbability, such as a paper-based material, a gap is likely to be formed in the insertion part, and the content is more likely to spurt out from the insertion part. There is therefore room for improvement in terms of suppressing spurts of the content from the lid.

[0006] The present invention has been made in view of such a problem, and an object thereof is to provide a lid, a container with a lid, and a combination of a lid and a container capable of suppressing spurts of content from a lid in a state of a container with a lid.

Solution to Problem

[0007] The gist of the present invention is inventions according to following (1) to (13).

[0008]

(1) A lid including a main body formed in such a way as to be contactable with a container including an opening and an edge forming an outer periphery of the opening, in which the main body includes an insertion part configured to be capable of forming an insertion hole, the insertion part includes a hole lid that covers the insertion hole and a Weakened part that forms at least a part of an outer circumferential edge of the hole lid, the Weakened part includes a plurality of cuts penetrating the main body in a thickness direction of the main body and a non-penetrating part where the main body is not penetrated, the insertion hole is formed by applying stress to the insertion part from outside in the thickness direction of the main body, and when the insertion hole is formed, the non-penetrating part is broken, the broken non-penetrating part forms a fracture surface in a part of the outer circumferential edge of the hole lid, the hole lid is displaced together with the fracture surface, and at least a part of the fracture surface is located at a tip of the hole lid.

(2) A lid including a main body formed in such a way as to be contactable with a container including an opening and an edge forming an outer periphery of the opening, in which the main body includes an insertion part configured to be capable of forming an insertion hole, the insertion part includes a hole lid that covers the insertion hole and a Weakened part that forms at least a part of an outer circumferential edge of the hole lid, the hole lid includes a corner forming a protruding portion of a contour in plan view of the main body, the Weakened part includes a plurality of cuts penetrating the main body in a thickness direction of the main body and a non-penetrating part where the main body is not penetrated, the insertion hole is formed by applying stress to the insertion part from outside in the thickness direction of the main body, and when the insertion hole is formed, the non-penetrating part is broken, the broken non-penetrating part forms a fracture surface in a part of the outer circumferential edge of the hole lid, the hole lid is displaced together with the fracture surface, and at least a part of the fracture surface is located at the corner of the hole lid.

(3) The lid according to (1), in which a plurality of the fracture surfaces is formed when the non-penetrating part is broken, and at least a part of at least one of the fracture surfaces is located at the tip of the hole lid.

(4) The lid according to (1) or (2), in which the Weakened part includes a plurality of the non-penetrating parts, and at least one of the non-penetrating

parts is broken by applying stress to the insertion part from the outside in the thickness direction of the main body.

(5) The lid according to (1) or (2), in which the insertion part includes a plurality of the hole lids, and when the insertion hole is formed, the fracture surface is formed in a part of the outer circumferential edge of each of the hole lids.

(6) The lid according to (1) or (2), in which the non-penetrating part has a half-cut structure in which the main body is cut to a predetermined depth in the thickness direction of the main body.

(7) The lid according to (1) or (2), in which the Weakened part has a structure in which at least three of the cuts are formed around the non-penetrating part.

(8) The lid according to (1) or (2), in which a raised part is formed, and the insertion part is formed in a formation region of the raised part.

(9) The lid according to (1) or (2), in which the main body is formed of a paper-based material.

(10) The lid according to (1) or (2), further including a Joining region corresponding part corresponding to a region joined to the container along the edge of the container and a lid region corresponding part that is a portion inside the Joining region corresponding part, in which the insertion part is formed in the lid region corresponding part.

(11) The lid according to (1) or (2), in which a side wall is provided around an outer periphery of the main body, and the side wall is configured to be lockable to the container along the edge of the container.

(12) The lid according to (1) or (2), in which the cuts each include a circumferential surface part and ends, and when different two of the cuts are defined as a first cut and a second cut, respectively, at least one pair of the first cut and the second cut is arranged such that the non-penetrating part is formed between one of the ends of the first cut and the circumferential surface part of the second cut.

(13) A container with a lid including the lid according to (1) or (2); and the container including the opening and the edge forming the outer periphery of the opening, in which the lid is joined to the container.

(14) A combination of a lid and a container, including the lid according to (1) or (2) and the container including the opening and the edge forming the outer periphery of the opening.

Advantageous Effects of Invention

[0009] According to the present invention, it is possible to provide a lid, a container with a lid, and a combination of a lid and a container capable of suppressing spurts of content from the lid in a state of a container with a lid.

Brief Description of Drawings

[0010]

Fig. 1A is a plan view schematically illustrating an example of a lid according to a first embodiment. Fig. 1B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line A-A in Fig. 1A. Fig. 1C is a cross-sectional view schematically illustrating a cross section of a portion of another example of the lid according to the first embodiment corresponding to the vertical cross section taken along line A-A in Fig. 1A.

Fig. 2A is a plan view schematically illustrating a state in which an insertion hole is formed in the example of the lid according to the first embodiment. Fig. 2B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line B-B in Fig. 2A.

Fig. 3A is an external perspective view illustrating an example of a container with a lid. Fig. 3B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line C-C in Fig. 3A.

Figs. 4A to 4H are diagrams illustrating examples of layout of a Weakened part in examples of lids according to a first modification of the first embodiment.

Fig. 5A is a plan view illustrating another example of a lid according to a second modification of the first embodiment. Fig. 5B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line D-D in Fig. 5A.

Fig. 6A is a plan view illustrating an example of a lid according to a second embodiment. Fig. 6B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line E-E in Fig. 6A.

Fig. 7A is a plan view schematically illustrating a state in which an insertion hole is formed in the example of the lid according to the second embodiment. Fig. 7B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line F-F in Fig. 7A.

Figs. 8A to 8E are diagrams illustrating examples of layout of a Weakened part in examples of lids according to a first modification of the second embodiment.

Fig. 9A is a perspective view illustrating an example of a lid in a first example of a third embodiment. Fig. 9B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line G-G in Fig. 9A.

Fig. 10A is a perspective view illustrating an example of a lid in a second example of the third embodiment. Fig. 10B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line H-H in Fig. 10A.

Fig. 11A is a plan view illustrating an example of a container with a lid. Fig. 11B is a cross-sectional view

schematically illustrating a state of a vertical cross section taken along line I-I in Fig. 11A.

Fig. 12A is a plan view illustrating an example of a lid according to a fifth modification of the first embodiment. Fig. 12B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line J-J in Fig. 12A.

Fig. 13A is a plan view illustrating another example of the lid according to the fifth modification of the first embodiment. Fig. 13B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line K-K in Fig. 13A.

Fig. 14A is a perspective view illustrating an example of a lid in a third example of the third embodiment. Fig. 14B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line L-L in Fig. 14A.

Fig. 15 is a cross-sectional view schematically illustrating an example of a container with a lid in a third example of the third embodiment.

Description of Embodiments

[0011] A lid according to the present invention will be described in detail hereinafter with reference to the drawings. Note that the lid according to the present invention will be described while taking as an example a lid used with a container (cup) for containing various beverages, such as a coffee cup, but is not limited to a lid of a container for containing beverages, and can also be applied as a lid of a container for containing food items, not beverages. Furthermore, the lid according to the present invention can also be applied to containers capable of storing various articles other than food and drink such as parts including bolts and nuts, for example, and articles other than those described above. Moreover, although the lid according to the present invention will be described below using an example of a lid having a circular shape in plan view, a shape of the lid is not limited to the circular shape in plan view, and can be applied to various shapes other than the circular shape, such as elliptical shapes, rectangular shapes, triangular shapes, other polygonal shapes, chamfered rectangular shapes, and chamfered polygonal shapes.

[0012] A first embodiment, a second embodiment, a third embodiment, and application examples relating to the present invention will be sequentially described hereinafter with reference to the drawings. In the present specification and the drawings, components having substantially the same functional configuration are given the same reference numerals, and redundant description thereof is omitted.

[0013] The following description is preferred specific examples of the present invention, and the content of the present invention is not limited to these embodiments and the like. Furthermore, in the following description, directions such as front and back, left and right, up and down and directions of a horizontal plane will be shown in consideration of convenience of description, but the content of the present invention is not limited to these directions. It is assumed in the examples of Figs. 1 to 15 that a Z-axis direction is a vertical direction (an upper side is a +Z direction and a lower side is a -Z direction), an X-axis direction is a front-back direction (a back side is a +X direction and a front side is a -X direction), directions along an X-axis and a Y-axis orthogonal to each other defined on a plane having the Z-axis direction as a normal line are an X-axis direction and a Y-axis direction, and an XY plane that is a plane defined by the X-axis and the Y-axis is a horizontal plane, and description will be given on the basis of these definitions. Relative magnitude ratios such as sizes illustrated in Figs. 1 to 15 are described for convenience, and do not limit actual magnitude ratios unless otherwise specified.

[1 First Embodiment]

[1-1 Configuration]

[0014] A lid 1 according to the first embodiment includes a main body 2.

(Main Body)

[0015] As will be described later with reference to Fig. 3A, Fig. 3B, and the like, the main body 2 is formed in such a way as to be contactable with a container 101 having an opening 102 and an edge 103 that is an upper end edge forming an outer periphery of the opening 102. Figs. 3A and 3B are a perspective view and a cross-sectional view illustrating an example of a container with a lid 150, which is obtained by attaching the lid 1 illustrated in Figs. 1A and 1B to the container 101. In the example of Fig. 3A, the container 101 is provided with the opening 102 at an upper end in the vertical direction. The lid 1 in the first embodiment can be used in the container with a lid 150 by joining the main body 2 thereof along the edge 103. Fig. 3B is a cross-sectional view schematically illustrating a vertical cross section taken along line C-C in Fig. 3A. Note that, as the container 101, a container having flexibility at the edge 103 of the opening 102 is more preferably used. These, however, do not prohibit the container 101 from being a container having less or substantially no flexibility, such as a metal container.

[0016] The lid 1 according to the first embodiment has a joining region R in the main body 2. A region of the lid 1 joined to the edge 103 in plan view of the lid 1 will be referred to as the joining region R. In Fig. 1A, a region of the main body 2 corresponding to the joining region R is a region on an opposing surface 73 side in a portion indicated by hatching. Fig. 1A is a plan view schematically illustrating an example of the lid 1 according to the first embodiment.

[0017] In the example of Fig. 1A, the joining region R corresponds to a region formed in a substantially annular shape along the opening 102 of the container 101 in a

shape corresponding to the opening 102.

[0018] As illustrated in Figs. 1A and 1B, the main body 2 of the lid 1 according to the first embodiment includes a Joining region corresponding part 5A and a lid region corresponding part 5B. Fig. 1B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line A-A in Fig. 1A.

(Joining region corresponding part)

[0019] The Joining region corresponding part 5A is a portion corresponding to a region of the lid 1 joined to the container 101 along the edge 103 of the container 101. That is, the Joining region corresponding part 5A is a portion of the lid 1 corresponding to the joining region R (a region facing the edge 103 of the container 101 and a region joined to the container 101). In the container with a lid 150, the Joining region corresponding part 5A is a portion of the lid 1 that forms a joint part 151 between the lid 1 and the container 101. More specifically, a portion of the lid 1 forming the joining region R in plan view is defined as the Joining region corresponding part 5A (when the Z-axis direction (vertical direction) is defined as a line-of-sight direction in the example of Fig. 1A). The Joining region corresponding part 5A is usually formed in an annular shape as illustrated in Fig. 1A. In particular, as shown in Fig. 1A, when the edge 103 of the container 101 is formed in a substantially annular shape, the joining region R becomes an annular shape, and the Joining region corresponding part 5A also becomes a substantially annular shape in plan view of the lid 1. An outer edge of the Joining region corresponding part 5A is determined in accordance with a position of an outer edge of the joining region R. The outer edge of the Joining region corresponding part 5A may be located at an outer circumferential edge of the lid 1, or may be located inside the outer circumferential edge of the lid 1 as illustrated in the example of Fig. 1A. When the joining region R between the lid 1 and the container 101 is not continuously formed, portions sandwiched between adjacent joining regions R and facing the edge 103 are also included in the Joining region corresponding part 5A, which will be described later.

(Lid region corresponding part)

[0020] The lid region corresponding part 5B is a portion of the lid 1 inside the Joining region corresponding part 5A. That is, the lid region corresponding part 5B is a portion inside an inner edge of the Joining region corresponding part 5A, and an outer peripheral end of the lid region corresponding part 5B is the inner edge end of the Joining region corresponding part 5A. The lid region corresponding part 5B is a portion of the container with a lid 150 covering the opening 102. Note that, as illustrated in the example of Fig. 1A, a portion of the lid 1 outside the outer peripheral end of the lid region corresponding part 5B will be referred to as an outer region corresponding part 5C.

(Insertion part)

[0021] The main body 2 includes an insertion part 6 configured to be able to form an insertion hole. An insertion hole HL is a hole into which a member can be inserted from the outside, and specific examples of the member to be inserted from the outside include a straw and the like. As illustrated in Figs. 2A and 2B, the insertion hole HL is formed by applying stress to the insertion part 6 from the outside in a thickness direction of the main body 2. In this case, hole lids 7 are pushed open, and a resultant hole-shaped opening is the insertion hole HL. Fig. 2A is a diagram illustrating a state in which the insertion hole HL is formed by applying stress to the insertion part 6 of the lid 1 according to the first embodiment downward (-Z direction) from the outside. Fig. 2B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line B-B in Fig. 2A.

[0022] A position of the insertion part 6 is not particularly limited, but is formed in the lid region corresponding part 5B in the example of Fig. 1A. Furthermore, in this example, the insertion part 6 is formed near a center CT of the lid region corresponding part 5B. Note that arrangement of cuts 10, which will be described later, forming the insertion part 6 is not limited to the example of Fig. 1A. Positions of the cuts 10 may be determined in such a way as to establish a state in which the insertion part 6 illustrated in Fig. 1A is appropriately rotated.

[0023] An insertion part 6 includes hole lids 7 and a Weakened part 8.

(Hole Lids)

[0024] Hole lids 7 are portions covering an insertion hole HL. The hole lids 7 are portions surrounded by portions (hinge corresponding parts 9) that serve as hinges when the insertion hole HL is formed (pushed open) and a Weakened part 8, which will be described later, and in the example of Fig. 1A, four hole lids 7 are formed around a non-penetrating part 11 forming a Weakened part 8. In this example, two hole lids 7 are divided with a cut 10 as a boundary. Note that cases where an insertion hole HL is formed include not only cases where a hole lid 7 rotates at a constant angle about a specific position as an axis but also cases where a hole lid 7 is displaced while being gradually curved toward a tip 7A side of the hole lid 7 with a hinge corresponding part 9 as a base end (a base end of the hole lid 7).

(Weakened part)

[0025] A Weakened part 8 is a portion forming at least a part of outer circumferential edges 70 of hole lids 7, and is a portion that can form contours of the hole lids 7 together with hinge corresponding parts 9. A Weakened part 8 includes cuts 10 and a non-penetrating part 11. The

Weakened part 8 indicates a position (division position) where division occurs when a force for lifting or pushing down the Weakened part 8 is applied to form a divided portion in the main body 2. For example, in the example of Fig. 1A, when a force for pushing down a portion corresponding to the insertion part 6 from an exposed surface 72 side to the opposing surface 73 side is applied, the non-penetrating part 11 is broken as illustrated in Figs. 2A and 2B to generate fracture surfaces 12, the hole lids 7 are pushed down while causing division along a cross section forming the fracture surfaces 12 and the cuts 10, and the insertion hole HL is formed (the insertion hole HL is opened).

(Cuts)

[0026] Cuts 10 penetrate a main body 2 in a thickness direction (Z-axis direction) of the main body 2. A plurality of cuts 10 is formed in the main body 2. In the example of Fig. 1A, each cut 10 is formed in such a way as to be a linear cut line, but this is an example. Note that Fig. 1A illustrates the cuts 10 in a state where the cuts 10 have a somewhat large width for convenience of description. The same applies to Figs. 2 to 15.

[0027] In the lid 1 according to the first embodiment, for example, cuts 10 may be formed in curved shapes as illustrated in Fig. 4C, Fig. 4D, and the like.

Furthermore, although the cuts 10 are radially arranged around the non-penetrating part 11, which will be described later, this is also an example, and the arrangement is not limited to this. From a viewpoint of easily forming a configuration in which at least parts of fracture surfaces are positioned at tips of hole lids 7 as described later, it is preferable that cuts 10 are radially arranged around a non-penetrating part 11. The cuts 10 has a structure (penetrating structure) cut in the vertical direction (the thickness direction or the Z-axis direction) from one surface (exposed surface 72) to the other surface (opposing surface 73) of the main body 2. Each cut 10 includes a circumferential surface part 20 and ends 21. The circumferential surface part 20 extends in a longitudinal direction of the cut 10, and the ends 21 are formed at cut ends (ends of the circumferential surface part 20). Note that the cuts 10 can function as breathing portions. Here, the breathing portions refer to portions through which gas can pass from one surface side to another surface side (from the opposing surface 73 side to the exposed surface 72 side) of the main body 2.

[0028] Note that, in a Weakened part 8, a structure in which at least two cuts 10 are formed around a non-penetrating part 11 is formed, and as illustrated in Fig. 4A, a structure in which three or more cuts 10 are formed is preferably formed. If at least three cuts 10 are formed around a non-penetrating part 11, it is possible to establish a state in which hole lids 7 are formed in such a way as to surround a position corresponding to the non-penetrating part 11 with fracture surfaces 12 formed by breaking the non-penetrating part 11 located at tips 7A of the hole lids 7, and it is easy to uniformly support a straw or the like with the hole lids 7 when the straw or the like is inserted into the insertion hole HL. Note that, from this viewpoint, four cuts 10 may be formed around the non-penetrating part 11 as illustrated in Fig. 1A, or five or more cuts 10 (six cuts 10 are formed in an example of Fig. 4B) may be formed around the non-penetrating part 11 as illustrated in Fig. 4B.

(Non-penetrating parts)

[0029] Non-penetrating parts 11 are portions of a Weakened part 8 where a main body 2 is not penetrated. The non-penetrating parts 11 can be defined as portions where portions (fracture surfaces) of outer circumferential edges 70 of hole lids 7 excluding hinge corresponding parts 9 and circumferential surface parts 20 are planned to be formed. In the example of Fig. 1A, the arrangement of the non-penetrating part 11 is determined such that the cuts 10 are radially arranged around the non-penetrating part 11. Furthermore, in the example of Fig. 1A, the non-penetrating part 11 is formed as a portion (continuous portion) in which a cut is not formed in the main body 2. The non-penetrating part 11, however, is not prohibited from being a portion where the main body 2 is cut halfway through (a portion having a half-cut structure, in which the main body 2 is cut to a predetermined depth and not penetrated), and, for example, the non-penetrating part 11 may be a portion having the half-cut structure (half-cut 16) as illustrated in Fig. 1C. Fig. 1C is a cross-sectional view illustrating an example of a case where the non-penetrating part 11 has the half-cut structure. Note that the half-cut 16 is not limited to a portion where the main body 2 is cut to half the thickness thereof in the thickness direction thereof. The half-cut 16 has a structure in which the main body 2 is cut to half or more of the thickness thereof without being penetrated or a structure in which the main body 2 is cut to less than half of the thickness thereof in the thickness direction thereof.

[0030] The number of non-penetrating parts 11 formed is one in the example of Fig. 1A, but the number of the non-penetrating parts 11 formed may be plural, instead. For example, in an example of Fig. 4D, cuts 10 are formed in a curved line shape, and three non-penetrating parts 11 are provided between ends 21 of two different cuts 10.

(Fracture Surfaces)

[0031] When an insertion hole HL is formed by applying stress to an insertion part 6, non-penetrating parts 11 are broken, hole lids portion 7 are pushed open accordingly, and the broken non-penetrating parts 11 form fracture surfaces 12 in parts of outer circumferential edges 70 of the hole lids 7. The fracture surfaces 12 in the present specification are surfaces formed by tearing the member forming the main body 2 with stress applied to the insertion part 6.

(Interrelationship between Hole Lids, Non-penetrating parts, Cuts, and Fracture Surfaces)

[0032] When an insertion hole HL is formed in the lid 1, hole lids 7 are pushed by the action of external force applied to an insertion part 6 (tips 7A of the hole lids 7 are pushed out in a direction in which the external force acts), and the hole lids 7 are displaced together with fracture surfaces 12 when the tips 7A of the hole lids 7 are pushed out. In the lid 1 according to the first embodiment, at least parts of the fracture surfaces 12 are located at the tips 7A of the hole lids 7 at this time. The fracture surfaces 12 are formed in shapes corresponding to a state of fracture of the non-penetrating parts 11. In the example of Fig. 1A, a state in which fracture surfaces 12 are formed at the tips 7A of the hole lids 7 is established. For example, when non-penetrating parts 11 are cross-cut to form fracture surfaces 12, a tip 7A of each hole lid 7 is formed in a corner shape (pointed shape), and end surfaces of portions corresponding to the tips 7A in outer circumferential edges 70 of the hole lids 7 are formed as fracture surfaces 12.

[0033] In the lid 1 according to the first embodiment, when non-penetrating parts 11 are broken and a plurality of fracture surfaces 12 is formed, at least a part of at least one of the fracture surfaces 12 is located at a tip 7A of a hole lid **7.** For example, when non-penetrating parts 11 are broken and two fracture surfaces 12 are formed, a part of at least one of the fracture surfaces 12 may be formed in such a way as to be located at a tip 7A of a hole lid 7.

[0034] As illustrated in Fig. 1A, when the insertion part 6 includes a plurality of hole lids 7 and an insertion hole HL is formed, it is sufficient that fracture surfaces 12 are formed at a tip 7A of at least one hole lid **7.** For each hole lid 7, however, a fracture surface 12 is formed in a part of an outer circumferential edge 70 of the hole lid 7.

(Material of Main Body)

[0035] A material of the main body 2 is preferably a paper-based material from a viewpoint of reducing an environmental burden. Examples of the paper-based material include, in addition to so-called paper products produced by sticking vegetable fibers or other fibers, such as so-called paper obtained by spreading slurry of a fiber raw material on a net, drying or compression-drying the slurry, and making a sheet of paper and a so-called air-laid sheet obtained by accumulating, with an air flow, an open fiber raw material such as crushed pulp obtained by crushing raw material sheets made of pulp-based fibers or the like with a crushing machine and fixing the fibers of a resultant fibrous body with a binder, chemical fiber paper, synthetic paper, water-resistant paper, coated paper, alternative paper, parchment paper, wool paper, glass fiber paper, stone paper, porcelain paper, and the like, as well as those obtained by stacking a plurality of these on one another. Furthermore, the paper-based material may contain be a material including fibers such as non-pulp-based natural fibers, synthetic fibers, or regenerated fibers instead of a material composed only of pulp, but the paper-based material preferably contains 50%mass or more, more preferably 70%mass or more, further preferably 80%mass or more, and particularly preferably 100%mass of pulp. As the paper-based material, a film of a synthetic resin or a natural resin, a nonwoven fabric, a wood-based material such as a wood foil, or a composite material with a material such as an aluminum foil can also be used, but when a composite material is used, the composite material preferably contains 50%mass or more of pulp as a whole, and particularly preferably contains 80%mass or more of pulp. The higher the content of pulp is, the more easily the paper-based material is biodegraded, which is preferable.

[0036] It is preferable that the main body 2 is entirely formed of the above-described paper-based material, but this does not prohibit that a part or the entirety of the main body 2 is formed of a material different from the paper-based material. For example, the main body 2 may be formed of a laminate of a paper-based material and a resin film material.

[1-2 Action and Effects]

[0037] With a conventional container with a lid in which a lid is attached to a container, there is a problem that when a user carries the container with a lid, content leak from an insertion part due to vibration of the container with a lid during the movement. In particular, when the content generate gas as in the case of a carbonated beverage, there is a risk that the content spurt out together with the gas when the gas is released from the insertion part. With respect to a container with a lid, therefore, there is room for improvement in terms of suppressing spurts of content from a lid.

[0038] With the lid 1 of the first embodiment, the insertion part 6 includes hole lids 7 and a Weakened part 8, and the Weakened part 8 includes cuts 10 and a non-penetrating part 11. In addition, the non-penetrating part 11 is formed such that when an insertion hole HL is formed, fracture surfaces 12 generated as a result of breakage of the non-penetrating part 11 are located at tips 7A of the hole lids 7.

[0039] By the way, when an insertion part includes hole lids and cuts and content spurt out from a lid, the content is likely to leak from portions of the cuts where gas easily leaks out. Since portions of the cuts on a tip side of the hole lids are portions likely to be displaced due to stress from the outside, gaps in the cuts are likely to be widened and the gas is likely to leak out.

[0040] In this respect, with the lid 1 according to the first embodiment, since the non-penetrating parts 11 are formed in portion from which gas easily leaks, such as portion of the hole lids 7 on a tip 7A side before the insertion hole HL is opened and formed (when a state

of the lid 1 at a stage before the insertion hole HL is formed as a state in which the insertion hole HL is opened is viewed), it is possible to suppress content from spurting out from the lid 1 in a state of the container with a lid 150.

[0041] Furthermore, since, when a lid is formed of a paper-based material, end surfaces of the paper-based material forming a main body are easily exposed at an insertion part, there is a possibility that moisture penetrates into fibers constituting the paper-based material from the end surfaces, stiffness of the lid is greatly impaired, and strength of the insertion part is reduced. In particular, when moisture enters near tips of hole lids forming the insertion part, there is a possibility that the lid becomes droopy near the tips of the hole lids (stiffness of the paper-based material is particularly weakened near the tips of the hole lids), gaps expand near the tips of the hole lids, and spurts of content from the lid further deteriorate.

[0042] In this respect, with the lid 1 according to the first embodiment, the non-penetrating parts 11 broken when the insertion hole HL is formed form the fracture surfaces 12 in parts of the outer circumferential edges 70 of the hole lids **7.** At this time, at least parts of the fracture surfaces 12 are located at the tips 7A of the hole lids 7. Since the non-penetrating parts 11 are formed in such a way as to establish such a state, the non-penetrating parts 11 are formed in portions near the tips 7A of the hole lids 7 before the insertion hole HL is opened and formed. With the lid 1 according to the first embodiment, therefore, even when the lid 1 is formed of a paper-based material, stiffness of the paper-based material is less likely to be weakened near the tips 7A of the hole lids 7, and a possibility of spurts of content from the lid 1 near the tips 7A of the hole lids 7 can be suppressed.

[0043] Next, modifications of the first embodiment will be described.

[1-3 Modifications]

(First Modification)

[0044] In the lid 1 according to the first embodiment, when the insertion part 6 is formed in the main body 2, layout of the Weakened part 8 forming the insertion part 6 is not limited to the example of Fig. 1A, and may be one of layouts illustrated in Figs. 4A to 4G (first modification). Figs. 4A to 4G are diagrams for describing examples of the lid 1 according to the first modification of the first embodiment.

(Layout of Weakened part)

[0045] The layout of the Weakened part 8 may be determined in accordance with various conditions such as a function and the like of the Weakened part 8, designability, and the like. In the examples of the Weakened part 8 illustrated in the examples of Figs. 4A and 4B, one non-penetrating part 11 is formed, and a total of three cuts are formed in Fig. 4A, and a total of six cuts 10 are formed in Fig. 4B. In the examples of Figs. 4A and 4B, the cuts 10 are formed in such a way as to radially extend in different directions from the non-penetrating part 11.

[0046] Furthermore, in examples illustrated in Figs. 4C and 4D, the Weakened part 8 is formed in a C shape (a shape imitating a letter C) with a plurality of cuts 10 and non-penetrating parts 11. Furthermore, as illustrated in the example of Fig. 4C, one non-penetrating part 11 may be formed, or as illustrated in Fig. 4D, a plurality of non-penetrating parts 11 may be formed.

[0047] In examples illustrated in Figs. 4E and 4F, the Weakened part 8 is formed in an N-shape (a shape imitating a letter N) and a W-shape (a shape imitating a letter W), respectively, with a plurality of cuts 10 and non-penetrating parts 11. In these examples, the non-penetrating parts 11 are formed at or near positions where two cuts 10 having different longitudinal directions intersect with each other in extending directions. Furthermore, in each of the examples of Figs. 4E and 4F, a plurality of non-penetrating parts 11 is formed.

[0048] In an example illustrated in Fig. 4G, the Weakened part 8 is formed in a lateral U shape (a shape obtained by turning a shape imitating a letter U sideways) in which a portion corresponding to a tip 7A is linearly formed with a plurality of cuts 10 and non-penetrating parts 11. In the example of Fig. 4G, the portion corresponding to the tip 7A is formed as a non-penetrating part 11 as a whole, and the non-penetrating part 11 is a half-cut 16.

(Second Modification)

[0049] In the lid 1 according to the first embodiment, when the Weakened part 8 includes a plurality of non-penetrating parts 11 and the insertion hole HL is formed, all the non-penetrating parts 11 may be broken by stress applied from the outside to the insertion part 6 in the thickness direction of the main body 2, but at least one of the non-penetrating parts 11 may be broken. Three non-penetrating parts 11 are provided in the Weakened part 8 illustrated in Fig. 4D, for example, but insofar as a non-penetrating part 11 located on a tip 7A side of a hole lid 7 is broken when the insertion hole HL is formed, one or both of two non-penetrating parts 11 located closer to a hinge corresponding part 9 of the hole lid 7 than the non-penetrating part 11 need not be broken. Even in this case, a part of the hole lid 7 (a portion of the hole lid 7 on the tip 7A side) is in pushed, and the insertion hole HL can be formed in a certain size.

(Third Modification)

[0050] When two different cuts 10 are defined as a first cut 10A and a second cut 10B, respectively, in the lid 1 according to the first embodiment as illustrated in Fig. 4H, at least one pair of the first cut 10A and the second cut 10B may be arranged such that a non-penetrating part 11

is formed between an end 21 of the first cut 10A and a circumferential surface part 20 of the second cut 10B (third modification). Fig. 4H is a diagram for describing an example of the lid 1 according to the third modification of the first embodiment.

(Action and Effects of Third Modification)

[0051] When the insertion hole HL is formed in the lid 1, the non-penetrating parts 11 are torn and fracture surfaces 12 are formed in directions away from the ends 21 of the cuts 10 starting from the ends 21 by stress applied to the insertion part 6. At this time, the fracture surfaces 12 are often formed in the lid 1 in the longitudinal directions of the cuts 10, but when the main body 2 includes a paper-based material, there is a possibility that fracture directions of the non-penetrating parts 11 become unintended directions depending on an orientation of fibers included in the paper-based material forming the main body 2 and shapes of hole lids 7 become unintended shapes. In this regard, according to the third modification of the first embodiment, since the non-penetrating part 11 is formed between the end 21 of the first cut 10A and the circumferential surface part 20 of the second cut 10B, even when the non-penetrating part 11 is torn in a direction away from the end 21 of the first cut 10A starting from the end 21 and the fracture direction of the non-penetrating part 11 is slightly deviated, the fracture surface 12 formed as a result of the fracture of the non-penetrating part 11 merge with the circumferential surface part 20 of the second cut 10B, and it is possible to suppress a possibility that the shapes of the hole lids 7 become unintended shapes.

(Fourth Modification)

[0052] In the lid 1 according to the first embodiment, a raised part 17 may be formed on the main body 2 as illustrated in Figs. 5A and 5B (fourth modification). Figs. 5A and 5B are a plan view and a cross-sectional view for describing an example of the lid 1 according to the fourth modification of the first embodiment. The raised part 17 is a portion raised toward the exposed surface 72. In Figs. 5A and 5B, a portion of the opposing surface 73 corresponding to the raised part 17 is a depressed portion. In this case, in plan view of the main body 2 (when the thickness direction of the main body 2 is the line-of-sight direction), an insertion part is preferably formed in a formation region of the raised part 17.

(Fifth Modification)

[0053] In the lid 1 according to the first embodiment, a window portion 51 may be formed in the main body 2 as illustrated in Figs. 12A, 12B, 13A, and 13B (fifth modification). Figs. 12A and 13A are plan views for describing examples of the lid according to the fifth modification of the first embodiment. Furthermore, Figs. 12B and 13B are cross-sectional views for describing the examples of the lid 1 according to the fifth modification of the first embodiment: Fig. 12B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line J-J in Fig. 12A, and Fig. 13B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line K-K in Fig. 13A.

[0054] The window portion 51 includes an opening 52 formed in a part of the main body 2 and a window lid member that covers at least a part of a formation region of the opening 52 and that is capable of transmitting light (preferably, the entirety of the formation region of the opening 52). Examples of the window lid member include transparent and translucent materials. Examples of such materials include a colored or non-colored transparent or translucent resin film, cellophane paper, transparent paper formed of cellulose nanofibers (cellulose microfibrils), which are a transparent paper-based material, such as glassine paper, and the like. Arrangement of the window lid member can be achieved, for example, by attaching the window lid member around the opening 52 in a state where the window lid member is covering the opening 52. By providing the window portion 51 to which a window member made of a transparent or translucent material is stuck, it is possible to check content of the container 101 with the lid 1 joined to the container 101 (with the lid 1 closed).

[0055] A shape of the window portion 51 is not limited to the illustrated shape, and may be formed in any size and shape. As illustrated in Figs. 12A and 12B, for example, the window portion 51 may be formed while avoiding a portion where the Weakened part 8 is formed, or as illustrated in Figs. 13A and 13B, the Weakened part 8 may be formed in a region where the window portion 51 is formed. When the Weakened part 8 is provided in the region where the window portion 51 is formed as illustrated in Figs. 13A and 13B, it is preferable that the Weakened parts 8 are formed by bonding a reinforcing member 53 of a predetermined size including the weakened portion 8 to the window portion 51 from a viewpoint of preventing a film or the like constituting the window portion 51 from being broken when a straw or the like is inserted into the weakened portions 8. As a material used for the reinforcing member 53, a conventionally known material can be arbitrarily selected and used, but a paper-based material is preferably used from a viewpoint of reducing an environmental burden.

[2 Second Embodiment]

[2-1 Configuration]

[0056] As illustrated in Figs. 6A and 6B, a lid 1 according to the second embodiment includes a main body 2, and an insertion part 6 is formed in the main body 2. Fig. 6A is a plan view schematically illustrating an example of the lid 1 according to the second embodiment. Fig. 6B is a cross-sectional view schematically illustrating a state of a

vertical cross section taken along line E-E in Fig. 6A. In the lid 1 according to the second embodiment, a definition and configuration of each of a Joining region corresponding part 5A, a lid region corresponding part 5B, and an outer region corresponding part 5C of the main body 2, and a material of the main body 2 are the same as those in the first embodiment, and description thereof is omitted. Furthermore, an insertion part 6 includes hole lids 7 and a weakened portion 8. The insertion part 6 is formed in the same manner as in the first embodiment except that the hole lids 7 include corners 13 and that formation positions of at least parts of fracture surfaces 12 include positions corresponding to the corners 13. In the second embodiment, description of the same components as those in the first embodiment is omitted.

(Hole Lids)

[0057] In the lid 1 according to the second embodiment, the hole lids 7 of the insertion part 6 include the corners 13 in plan view of the hole lids 7. Note that, when the insertion part 6 includes a plurality of hole lids 7, corners 13 may be formed for all the hole lids 7, or corners 13 may be formed in a subset of the hole lids 7. In the example of Fig. 6A, two hole lids 7 are formed, but this is an example.

(Corners)

[0058] The corners 13 are corner-shaped portions formed in the hole lids 7 and correspond to protruding portions of contours of the hole lids 7. In the example of Fig. 6A, the hole lids 7 are each formed in a rectangular shape including portions corresponding to a weakened portion 8 and a hinge corresponding part 9 as four sides thereof, and portions corresponding to positions of corners of a rectangle formed by the weakened portion 8 are the corners 13. Note that the corners 13 may be formed in substantially corner-like shapes. The corners 13, therefore, may be portions formed in pointed shapes, and even when portions corresponding to positions of corners of a rectangle formed by the weakened portion 8 are formed in slightly rounded shapes, the portions can still be considered as the corners 13, and even when portions corresponding to positions of corners of a rectangle formed by the weakened portion 8 are formed in slightly flat surface shapes, the portions can still be considered as the corners 13.

(Weakened Portion)

[0059] The weakened portion 8 includes cuts 10 and a non-penetrating part 11 as described in the first embodiment. The layout of the weakened portion 8 illustrated in the example of Fig. 6A is different from the layout illustrated in Fig. 1A as an example of the first embodiment, and has an H shape and includes a combination of three cuts 10 and two non-penetrating parts 11. The layout of the weakened portion 8 in the lid 1 according to the second embodiment is not limited to the example of Fig. 6A.

(Fracture Surfaces)

[0060] In the lid 1 according to the second embodiment, too, as in the first embodiment, the insertion hole HL is formed by applying stress to the insertion part 6 from the outside in the thickness direction (Z-axis direction) of the main body 2 as illustrated in Figs. 7A and 7B. The non-penetrating parts 11 are then broken when the stress is applied, and a tip 7A side of the hole lids 7 is pushed in a direction of the stress applied from the outside. Furthermore, the broken non-penetrating parts 11 form fracture surfaces 12 in parts of outer circumferential edges 70 of the hole lids 7.

[0061] Furthermore, in the lid 1 according to the second embodiment, at least parts of the fracture surfaces 12 are located at corners 13 of the hole lids **7.** Note that, in the example of Fig. 7A, the hole lids 7 are displaced together with the fracture surfaces 12 as the tip 7A side of the hole lids 7 is pushed out.

[0062] In the example of the lid 1 according to the second embodiment, two parallel cuts 10 and a cut 10 whose longitudinal direction is orthogonal to a longitudinal direction of the two cuts 10 are formed at a position between the two cuts 10. When the cut formed at the position between the two parallel cuts 10 is defined as a first cut and the two cuts 10 are defined as second cuts, non-penetrating parts 11 are formed between ends of the first cuts and circumferential surface parts of the second cuts. This, however, is an example, and it is not prohibited that a non-penetrating part 11 is avoided from being formed between an end of one cut and a circumferential surface part of another cut. As will be described later, however, when the main body 2 of the lid 1 includes a paper-based material, a non-penetrating part 11 is preferably formed between an end of one cut and a circumferential surface part of another cut (an end of the first cut and the circumferential surface part of one of the second cuts).

[0063] Note that the first to fourth modifications described in the first embodiment may be applied to the second embodiment.

[2-2 Action and Effects]

[0064] As described in the first embodiment, when an insertion part of a lid that can be used for a container with a lid includes hole lids and cuts and gas in the container spurt out from the lid, content is likely to leak from portions of the cuts where the gas easily leaks out. When corners are formed in the hole lids of the cuts, since the corners of the hole lids are portions likely to be displaced due to stress from the outside, gaps in the cuts are likely to expand near the corners and gas is likely to leak out. With the lid 1 according to the second embodiment, since non-

penetrating parts are formed at portions where gas easily leaks, such as corners of hole lids, it is possible to suppress content from spurting out from the lid in a state of a container with a lid.

[0065] With the lid 1 according to the second embodiment, since the non-penetrating parts 11 are formed at portions that are the corners 13 of the hole lids 7, stiffness near the corners 13 of the hole lids 7 is less likely to be weakened even when the lid 1 is formed of a paper-based material, and it is possible to suppress content from spurting out from the lid 1 near the corners 13 of the hole lids 7.

[2-3 Modifications]

(First Modification)

[0066] In the lid 1 according to the second embodiment, when the insertion part 6 is formed in the main body 2, layout of the weakened portion 8 forming the insertion part 6 is not limited to the example of Fig. 6A, and may be one of layouts illustrated in Figs. 8A to 8E (first modification). Figs. 8A to 8E are diagrams for describing examples of the lid 1 according to the first modification of the second embodiment.

(Layout of Weakened Portion)

[0067] The layout of the weakened portion 8 may be determined in accordance with various conditions such as a function and the like of the weakened portion 8, designability, and the like. In the examples of the weakened portion 8 illustrated in the examples of Figs. 8A to 8E, two non-penetrating parts 11 are formed, and a total of three cuts 10 are formed. In an examples illustrated in Figs. 8A to 8E, the weakened portion 8 is formed in a lateral U shape (a shape obtained by turning a shape imitating a letter U sideways) in which a portion corresponding to a tip 7A is linearly formed with a plurality of cuts 10 and non-penetrating parts 11. Fig. 8D, however, illustrates a shape slightly similar to a horseshoe.

[0068] When two different cuts 10 are defined as a first cut 10A and a second cut 10B, respectively, in the lid 1 according to the first modification of the first embodiment as illustrated in Figs. 8A to 8D, at least one pair of the first cut 10A and the second cut 10B may be arranged such that a non-penetrating part 11 is formed between an end 21 of the first cut 10A and a circumferential surface part 20 of the second cut 10B. In this case, it is possible to produce the same action and effects as those described in the third modification of the first embodiment.

[0069] Note that, in the lid 1 according to the first modification of the second embodiment, the non-penetrating parts 11 may be formed in such a way as to avoid being formed between a circumferential surface part 20 of one cut 10 and an end 21 of another cut as illustrated in Fig. 8E.

[3 Third Embodiment]

[3-1 First Example]

[0070] As illustrated in Figs. 9A and 9B, the lid 1 according to the third embodiment includes a main body 50 and a side wall 31. This example will be referred to as a first example of the third embodiment. Figs. 9A and 9B are diagrams illustrating an example of the first example of the lid 1 according to the third embodiment.

(Main Body)

[0071] The main body 50 includes a top surface 32, and, in the example of Figs. 9A and 9B, includes the top surface 32 and an outer circumferential part 33. In the example of Figs. 9A and 9B, a material of the main body 50 may be formed similarly to the material of the main body 2 described in the first embodiment and the second embodiment, and description thereof is omitted.

(Top Surface)

[0072] The top surface 32 corresponds to a portion covering the opening 102 when the lid 1 is attached to the container 101, and includes an insertion part 6 similarly to the lid region corresponding part 5B of the main body 2 in the first embodiment and the second embodiment. The top surface 32 may therefore be configured similarly to the lid region corresponding part 5B of the main body 2 in the first embodiment and the second embodiment. In description of the third embodiment, therefore, description of the insertion part 6 is omitted. Note that, in the example of Figs. 9A and 9B, an example in which the insertion part 6 is configured similarly to the insertion part 6 illustrated in Fig. 1A is described as an example. The same applies to Figs. 10A, 10B, 11A, and 11B.

(Outer circumferential part)

[0073] The outer circumferential part 33 is configured as a portion extending in a direction away from a base end 33A with the outer circumferential edge 32A of the top surface 32 as the base end 33A. In the example of Fig. 9B, the outer circumferential part 33 is a portion (rising part 34) rising from the outer circumferential edge 32A of the top surface 32 in a direction (upward direction) from the opposing surface 73 to the exposed surface 72 side or in an obliquely upward direction. The rising part 34 is formed to have a slightly tapered shape (dwindling shape) from an upper end (tip 33B) thereof toward a lower end (base end 33 A) thereof.

(Side Wall)

[0074] The side wall 31 is arranged on the lid 1 in such a way as to surround an outer periphery of the top surface

32. In the example of Figs. 9A and 9B, the side wall 31 is provided in such a way as to surround an outer surface 35 of the outer circumferential part 33. At least a part of the side wall 31 faces the outer surface 35. In the case of Figs. 9A and 9B, a portion of the side wall 31 facing the outer surface 35 (the outer surface of the rising part 34) of the outer circumferential part 33 is an upper side wall 37, and a portion under the upper side wall 37 is a lower side wall 38. The lower side wall 38 extends below the top surface 32, and at least a part of the extending portion is a portion for locking the lid 1 to the container 101 when the lid 1 is attached to the container 101.

[0075] The side wall 31 is preferably provided with a folded part 39 that covers the upper end (tip 33B) of the outer circumferential part 33 and that extends to an inner surface 36 side of the outer circumferential part 33 with the upper end 37A of the upper side wall 37 as a base end. In the example of Figs. 9A and 9B, the folded part 39 is provided in such a way as to surround the inner surface 36 of the outer circumferential part 33.

[0076] Similarly to the rising part 34, the side wall 31 is formed to have a slightly tapered shape (dwindling shape) from the upper end (tip) (the upper end 37A of the upper side wall) thereof toward a lower end (base end) (a lower end 38A of the lower side wall) thereof. Since the lower side wall 38 is tapered downward, the lid 1 can be firmly locked to the container 101 when the lid 1 is attached to the container 101.

(Locking Structure Forming Portion)

[0077] A locking structure forming portion 40 is a portion that forms a structure for locking the lid 1 to the container 101 when the lid 1 is attached to the container 101. In the example of Figs. 9A and 9B, the locking structure forming portion 40 includes the lower side wall 38. The locking structure forming portion 40 may further include a portion (upper part 41) from the outer circumferential edge 32A of the top surface 32 to a position slightly inside the outer circumferential edge 32A. The upper part 41 can be specified as a portion that can be brought into contact with the edge 103 of the container 101 when the lid 1 is attached to the container 101.

[3-2 Second Example]

[0078] As illustrated in Figs. 10A and 10B, the lid 1 according to the third embodiment may form a main body portion and a side wall. This example will be referred to as a second example of the third embodiment. Figs. 10A and 10B are diagrams illustrating an example of the second example of the lid 1 according to the third embodiment.

(Top Surface)

[0079] The main body 50 includes a top surface 32 and an outer circumferential part 33. Since the top surface 32 is similar to that in the first example of the second embodiment, description thereof is omitted.

(Outer circumferential part)

[0080] Similarly to the first example of the second embodiment, the outer circumferential part 33 is configured as a portion extending in a direction away from the base end 33A with the outer circumferential edge 32A of the top surface 32 as the base end 33A. In the example of Figs. 10A and 10B, however, the outer circumferential part 33 is a portion (drooping part 42) that drops from the outer circumferential edge 32A of the top surface 32 in a direction (downward direction) from the exposed surface 72 toward the opposing surface 73 side or in an obliquely downward direction. The drooping part 42 is formed in a slightly tapered shape (dwindling shape) from the upper end (base end) (the base end 33A of the outer circumferential part 33) thereof toward the lower end (tip) (the tip 33B of the outer circumferential part 33) thereof.

(Side Wall)

[0081] The side wall 31 in the second example of the third embodiment is arranged in such a way as to surround an outer periphery of the top surface 32. Furthermore, in the side wall 31 illustrated in the example of Figs. 10A and 10B, a portion of the side wall 31 facing the outer surface 35 (the outer surface of the drooping part 42) of the outer circumferential part 33 is the lower side wall 38, and a portion above the lower side wall 38 is the upper side wall 37. The upper side wall 37 extends upward from the top surface 32.

[0082] The side wall 31 is preferably provided with a folded part 39 that covers the lower end of the outer circumferential part 33 and that extends to an inner surface 36 side of the outer circumferential part 33 with the lower end 38A of the lower side wall 38 as a base end. In the example of Figs. 9A and 9B, the folded part 39 is provided in such a way as to surround the inner surface 36 of the outer circumferential part 33. Furthermore, a tip of the folded part 39 may be in a non-contact state with respect to an opposing surface 73 side of the top surface 32, or may be in a contact state with respect to the opposing surface 73 side of the top surface 32.

[0083] Similarly to the drooping part 42, the side wall 31 is formed to have a slightly tapered shape (dwindling shape) from the upper end (the upper end 37A of the upper side wall 37) thereof toward the lower end (tip) (the lower end 38A of the lower side wall 38) thereof. Furthermore, when the folded part 39 is formed as in the example of Fig. 10B, the folded part 39 is also preferably formed in a tapered shape in the downward direction.

[0084] As illustrated in the example of Fig. 10B, a curled part (Side wall curled part 45) obtained by winding a member forming the side wall 37 outward may be formed at the upper end 37A of the upper side wall 31, or a portion (bent portion) bent outward may be formed. An end surface of a member forming the side wall 31 may

be exposed at the upper end 37A of the upper side wall 37.

(Locking Structure Forming Portion)

[0085] In the second example, the locking structure forming portion 40 has a laminated structure of the lower side wall 38 and the outer circumferential part 33 (the drooping part 42 in Fig. 10). In the example of Fig. 10A, the locking structure forming portion 40 further includes the folded part 39, and has a laminated structure of the folded part 39, the outer circumferential part 33, and the lower side wall 38. Note that, as described in the first example, the locking structure forming portion 40 may further include a portion (upper part 41) from the outer circumferential edge 32A of the top surface 32 to a position slightly inside the outer circumferential edge 32A. With the locking structure forming portion 40 illustrated in the example of Fig. 10A, since the laminated structure of the folded part 39, the outer circumferential part 33 (the drooping part 42 in Fig. 10), and the lower side wall 38 is formed in a tapered shape in the downward direction, the lid 1 can be firmly locked to the container 101 when the lid 1 is attached to the container 101.

[3-3 Third Example]

[0086] As illustrated in Figs. 14A and 14B, the lid 1 according to the third embodiment forms a main body portion and a side wall, and the main body portion and the side wall may be formed by bending one blank material (not illustrated). This example will be referred to as a third example of the third embodiment. Figs. 14A and 14B are diagrams illustrating an example of the third example of the lid 1 according to the third embodiment. Note that, with respect to the lid 1, the lid 1 is joined to the container 101 in a state of the container with a lid 150 illustrated in Fig. 15. In the first example and the second example of the third embodiment, the lid 1 and the container 101 are joined together by bonding (including adhesion) the container 101 and the lid 1 to each other. In the third example of the third embodiment, the joining of the lid 1 to the container 101 is not limited to a case where the lid 1 is bonded to the container 101, and may be achieved by fitting the lid 1 to the container 101.

[0087] As illustrated in Figs. 14A and 14B, the lid 1 in the third example includes a top lid portion 202 as a main body part and a side wall portion 203 as a side wall. The lid 201 in the third example is formed in such a way as to be able to come into contact with a container 101 including an opening 102 formed at an upper end and an edge 103 that is an upper end edge forming an outer periphery of the opening 102. With respect to a state in which the lid 201 and the container 101 are in contact with each other, the lid 201 is formed in such a way as to be fittable to the container 101 including the opening 102 formed at the upper end and the edge 103 that is the upper end edge forming the outer periphery of the opening 102.

[0088] As illustrated in Figs. 14A and 14B, the lid 201 preferably includes a bent portion 204. The bent portion 204 is a portion connecting the top lid portion 202 and the side wall portion 203 to each other, and in the example of Figs. 14A and 14B, the bent portion 204 and the side wall portion 203 are continuously (integrally) formed.

(Top lid portion)

[0089] The top lid portion 202 is a portion that covers the opening 102 of the container 101 when the lid 201 is attached (mounted) to the container 101. A shape of the top lid portion 202 may be determined in accordance with a shape of the container 101, and examples thereof include a circular shape, elliptical shapes, triangular shapes, rectangular shapes, polygonal shapes, chamfered shapes, and the like.

(Bent Portion)

[0090] The bent portion 204 is formed in such a way as to surround an outer circumferential edge of the top lid portion 202, and is a portion forming a boundary between the top lid portion 202 and the side wall portion 203. The bent portion 204 is formed such that the side wall portion 203 faces the side wall 104 and the edge 103 of the container 101 when the lid 201 is attached to the container 101. In the example of Figs. 14A and 14B, the bent portion 204 has a bent structure, but the bent portion 204 is not limited to a case of the bent structure. Furthermore, the "portion forming a boundary between the top lid portion 202 and the side wall portion 203" includes both a case where the portion itself forms a boundary and a case where a boundary is defined inside the portion or at an end of the portion (a case where a part of the top lid portion 202 and/or the side wall portion 203 also serves as the bent portion 204). The boundary between the top lid portion 202 and the side wall portion 203 is defined at the center of the bent portion 204. When the bent portion 204 has a curved structure (not illustrated), the bent portion 204 is a portion specified in a curved range, and the boundary between the top lid portion 202 and the side wall portion 203 is defined at substantially the center of the bent portion 204.

(Side Wall Portion)

[0091] The side wall portion 203 is formed in an annular shape along an outer peripheral end of the top lid portion 202. The lid 201 in the third example can be obtained by integrally forming the top lid portion 202, the bent portion 204, and the side wall portion 203 through integral molding of a blank material (not illustrated) for forming the lid 201.

(Blank Material)

[0092] In the lid 201 in the third example, the blank

material is preferably formed of a sheet material including a fiber sheet containing fibers formed of a paper-based material and a resin material. The sheet material may have a structure in which a resin material is attached to at least some of fibers forming the inside of the fiber sheet.

(Contact Portions)

[0093] The lid 201 includes contact portions 274 that come into contact with the container 101 when fitted to the container 101. One of the contact portions 274 is formed in a predetermined portion (first contact portion 274A) of the side wall portion 203. Furthermore, as illustrated in Fig. 14B, the other contact portion 274 is preferably formed in a portion (second contact portion 274B) of the top lid portion 2 corresponding to a predetermined region on the opposing surface 273 side. Since the contact portions 274 are formed when the lid 201 is fitted to the container 101, it is possible to suppress a possibility that content of the container 101 leak to the outside. The first contact portion 274A is preferably formed over substantially the entire circumference of an outer surface end of the edge 103 of the container, and is preferably formed in an annular shape. The second contact portion 274B is preferably formed over substantially the entire circumference of the upper end of the edge 103 of the container, and is preferably formed in an annular shape. The first contact portion 274A and the second contact portion 274B may be separated from each other or connected to each other.

[0094] With the lid 201 in the third example, since the top lid portion 202, the bent portion 204, and the side wall portion 203 are formed of one blank material, the lid 201 has elasticity as a whole, and it is possible to provide a lid that is easy to fit to a container and that can be easily removed. Furthermore, in a case of a lid configured to be closed when fitted to a container, if the lid 201 has elasticity as a whole, it is possible to greatly improve sealability while the lid is closed, and it is possible to greatly reduce a risk of content leaking to the outside of the container while the lid is closed.

[0095] Note that the first to fourth modifications described in the first embodiment may be applied to the first to third examples of the third embodiment.

[4 Application Examples]

(First Application Example)

[0096] The lid 1 described above can be used for the container with a lid 150 as illustrated in Figs. 3A and 3B. Fig. 3A is a perspective view illustrating an example in which the lid 1 according to the first embodiment is attached to an edge 103 forming an outer periphery of an opening 102 of a container 101 having the opening 102 formed at an upper end. In this example, the lid 1 is joined to the edge 103. Fig. 3B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line C-C in Fig. 3A. The container with a lid 150 will be described with reference to Figs. 3A and 3B.

(Container with a lid)

[0097] The container with a lid 150 includes the joint part 151 where the container 101 and the lid 1 are joined, and a region of the lid 1 forming the joint part 151 is the joining region R. A method of joining the lid 1 and the container 101 is not particularly limited, and a joining method such as a pressure bonding method or a thermal fusion method (heat sealing) can be appropriately used. A case where the lid 1 according to the first embodiment is used for the container with a lid 150 will be described hereinafter as an example.

[0098] The container 101 includes a container body 110 that has a cylindrical side wall 104 whose diameter increases in an upward direction (decreases in a downward direction) and a bottom 107 and that forms a space 105 therein and an opening 102 opened at an upper end of the container body 110 (an upper end of the side wall 104). Although not illustrated, the opening 102 of the container 101 is formed in a circular shape. The container 101 described here, however, is an example, and does not limit configuration of the container 101. For example, the container 101 may have the opening 102 formed in a rectangular shape. The container 101 may be any container insofar the opening 102 can be covered with the lid 1. Furthermore, an article to be stored in the inside (space 105) of the container 101 is not particularly limited, and examples of the article include a liquid, a solid, and a combination of these.

[0099] In the container 101 illustrated in Fig. 3A and the like, the edge 103 of the opening 102 includes a flange. The flange may be a curled part 108 in which a member forming the container body 110 is wound outward, or may be formed as a portion (brim) extending on a plane in an outward direction.

[0100] Furthermore, the lid 1 may be combined with the container 101 having the opening 102.

(Second Application Example)

[0101] The lid 1 may be used for a container with a lid 150 illustrated in Figs. 11A and 11B. Fig. 11A is a diagram illustrating an example in which the lid 1 in the first example of the third embodiment is attached to an edge 103 forming an outer periphery of an opening 102 of a container 101 having the opening 102 formed at an upper end. In this example, an example in which the lid 1 is locked to the edge 103 is illustrated. Fig. 11B is a cross-sectional view schematically illustrating a state of a vertical cross section taken along line I-I in Fig. 11A.

[0102] Furthermore, the lid 1 according to the third embodiment may be combined with the container 101 having the opening 102.

[0103] As described above, the lid 1 in the present

invention can be applied to lids 1 in such various modes. Furthermore, the lid 1 in the present invention can also be applied to lids 1 in modes other than the above. Although the lid in the present invention has been described in detail above, the above description is merely about examples of the lid in the present invention, and the lid in the present invention is not limited to these examples. The examples, therefore, may be appropriately modified without departing from the gist of the present invention. Furthermore, with respect to the above-described configurations of the lids, the configuration of the lid in each example may be independently used, or the configurations of the lids in different examples may be appropriately combined together and applied.

[0104] The present invention may employ following configurations [E1] to [E14] on the basis of the above description of the present specification.

[E1] A lid including:

a main body formed in such a way as to be contactable with a container including an opening and an edge forming an outer periphery of the opening, in which
the main body includes an insertion part configured to be capable of forming an insertion hole,
the insertion part includes a hole lid that covers the insertion hole and a weakened portion that forms at least a part of an outer circumferential edge of the hole lid,
the weakened portion includes a plurality of cuts penetrating the main body in a thickness direction of the main body and a non-penetrating part where the main body is not penetrated,
the insertion hole is formed by applying stress to the insertion part from outside in the thickness direction of the main body, and
when the insertion hole is formed, the non-penetrating part is broken, the broken non-penetrating part forms a fracture surface in a part of the outer circumferential edge of the hole lid, the hole lid is displaced together with the fracture surface, and at least a part of the fracture surface is located at a tip of the hole lid.

[E2] A lid including:

a main body formed in such a way as to be contactable with a container including an opening and an edge forming an outer periphery of the opening, in which
the main body includes an insertion part configured to be capable of forming an insertion hole,
the insertion part includes a hole lid that covers the insertion hole and a weakened portion that forms at least a part of an outer circumferential edge of the hole lid,
the hole lid includes a corner forming a protruding portion of a contour in plan view of the main body,
the weakened portion includes a plurality of cuts penetrating the main body in a thickness direction of the main body and a non-penetrating part where the main body is not penetrated,
the insertion hole is formed by applying stress to the insertion part from outside in the thickness direction of the main body, and
when the insertion hole is formed, the non-penetrating part is broken, the broken non-penetrating part forms a fracture surface in a part of the outer circumferential edge of the hole lid, the hole lid is displaced together with the fracture surface, and at least a part of the fracture surface is located at the corner of the hole lid.

[E3] The lid according to [E1], in which
a plurality of the fracture surfaces is formed when the non-penetrating part is broken, and at least a part of at least one of the fracture surfaces is located at the tip of the hole lid.

[E4] The lid according to any one of [E1] to [E3], in which

the weakened portion includes a plurality of the non-penetrating parts, and
at least one of the non-penetrating parts is broken by applying stress to the insertion part from the outside in the thickness direction of the main body.

[E5] The lid according to any one of [E1] to [E4], in which

the insertion part includes a plurality of the hole lids, and
when the insertion hole is formed, the fracture surface is formed in a part of the outer circumferential edge of each of the hole lids.

[E6] The lid according to any one of [E1] to [E5], in which
the non-penetrating part has a half-cut structure in which the main body is cut to a predetermined depth in the thickness direction of the main body.

[E7] The lid according to any one of [E1] to [E6], in which
the weakened portion has a structure in which at least three of the cuts are formed around the non-penetrating part.

[E8] The lid according to any one of [E1] to [E7], in which

a raised part is formed, and
the insertion part is formed in a formation region of the raised part.

[E9] The lid according to any one of [E1] to [E8], in which
the main body is formed of a paper-based material.
[E10] The lid according to any one of [E1] to [E9], further including:

a Joining region corresponding part corresponding to a region joined to the container along the edge of the container; and
a lid region corresponding part that is a portion inside the Joining region corresponding part, in which
the insertion part is formed in the lid region corresponding part.

[E11] The lid according to any one of [E1] to [E9], in which

a side wall is provided around an outer periphery of the main body, and
the side wall is configured to be lockable to the container along the edge of the container.

[E12] The lid according to any one of [E1] to [E11], in which

the cuts each include a circumferential surface part and ends, and
when different two of the cuts are defined as a first cut and a second cut, respectively, at least one pair of the first cut and the second cut is arranged such that the non-penetrating part is formed between one of the ends of the first cut and the circumferential surface part of the second cut.

[E13] A container with a lid including:

the lid according to any one of [E1] to [E12]; and
the container including the opening and the edge forming the outer periphery of the opening, in which
the lid is joined to the container.

[E14] A combination of a lid and a container, including:

the lid according to any one of [E1] to [E12]; and
the container including the opening and the edge forming the outer periphery of the opening.

Reference Signs List

[0105]

1 Lid
2 Main body
5A Joining region corresponding part
5B Lid region corresponding part
5C Outer region corresponding part
6 Insertion part
7 Hole lid
7A Tip
8 Weakened part
9 Hinge corresponding part
10 Cut
10A First cut
10B Second cut
11 Non-penetrating part
12 Fracture surface
13 Corner
16 Half-cut
17 Raised part
20 Circumferential surface part
21 End
31 Side wall
32 Top surface
32A Outer circumferential edge
33 Outer circumferential part
33A Base end
33B Tip
34 Rising part
35 Outer surface
36 Inner surface
37 Upper side wall
37A Upper end
38 Lower side wall
38A Lower end
39 Folded part
40 Locking structure forming portion
41 Upper part
42 Drooping part
45 Side wall curled part
50 Main body
70 Outer circumferential edge
72 Exposed surface
73 Opposing surface
101 Container
102 Opening
103 Edge
104 Side wall
105 Space
107 Bottom
108 Curled part
110 Container body
150 Container with a lid
151 Joint part
CT Center
HL Insertion hole
R Joining region

Claims

1. A lid comprising:

a main body formed in such a way as to be

contactable with a container including an opening and an edge forming an outer periphery of the opening, wherein
the main body includes an insertion part configured to be capable of forming an insertion hole,
the insertion part includes a hole lid that covers the insertion hole and a Weakened part that forms at least a part of an outer circumferential edge of the hole lid,
the Weakened part includes a plurality of cuts penetrating the main body in a thickness direction of the main body and a non-penetrating part where the main body is not penetrated,
the insertion hole is formed by applying stress to the insertion part from outside in the thickness direction of the main body, and
when the insertion hole is formed, the non-penetrating part is broken, the broken non-penetrating part forms a fracture surface in a part of the outer circumferential edge of the hole lid, the hole lid is displaced together with the fracture surface, and at least a part of the fracture surface is located at a tip of the hole lid.

2. A lid comprising:

a main body formed in such a way as to be contactable with a container including an opening and an edge forming an outer periphery of the opening, wherein
the main body includes an insertion part configured to be capable of forming an insertion hole,
the insertion part includes a hole lid that covers the insertion hole and a Weakened part that forms at least a part of an outer circumferential edge of the hole lid,
the hole lid includes a corner forming a protruding portion of a contour in plan view of the main body,
the Weakened part includes a plurality of cuts penetrating the main body in a thickness direction of the main body and a non-penetrating part where the main body is not penetrated,
the insertion hole is formed by applying stress to the insertion part from outside in the thickness direction of the main body, and
when the insertion hole is formed, the non-penetrating part is broken, the broken non-penetrating part forms a fracture surface in a part of the outer circumferential edge of the hole lid, the hole lid is displaced together with the fracture surface, and at least a part of the fracture surface is located at the corner of the hole lid.

3. The lid according to claim 1, wherein
a plurality of the fracture surfaces is formed when the non-penetrating part is broken, and at least a part of at least one of the fracture surfaces is located at the tip of the hole lid.

4. The lid according to claim 1 or 2, wherein

the Weakened part includes a plurality of the non-penetrating parts, and
at least one of the non-penetrating parts is broken by applying stress to the insertion part from the outside in the thickness direction of the main body.

5. The lid according to claim 1 or 2, wherein

the insertion part includes a plurality of the hole lids, and
when the insertion hole is formed, the fracture surface is formed in a part of the outer circumferential edge of each of the hole lids.

6. The lid according to claim 1 or 2, wherein
the non-penetrating part has a half-cut structure in which the main body is cut to a predetermined depth in the thickness direction of the main body.

7. The lid according to claim 1 or 2, wherein
the Weakened part has a structure in which at least three of the cuts are formed around the non-penetrating part.

8. The lid according to claim 1 or 2, wherein

a raised part is formed, and
the insertion part is formed in a formation region of the raised part.

9. The lid according to claim 1 or 2, wherein
the main body is formed of a paper-based material.

10. The lid according to claim 1 or 2, further comprising:

a Joining region corresponding part corresponding to a region joined to the container along the edge of the container; and
a lid region corresponding part that is a portion inside the Joining region corresponding part, wherein
the insertion part is formed in the lid region corresponding part.

11. The lid according to claim 1 or 2, wherein

a side wall is provided around an outer periphery of the main body, and
the side wall is configured to be lockable to the container along the edge of the container.

12. The lid according to claim 1 or 2, wherein

the cuts each include a circumferential surface part and ends, and
when different two of the cuts are defined as a first cut and a second cut, respectively, at least one pair of the first cut and the second cut is arranged such that the non-penetrating part is formed between one of the ends of the first cut and the circumferential surface part of the second cut.

13. A container with a lid comprising:

the lid according to claim 1 or 2; and
the container including the opening and the edge forming the outer periphery of the opening, wherein
the lid is joined to the container.

14. A combination of a lid and a container, comprising:

the lid according to claim 1 or 2; and
the container including the opening and the edge forming the outer periphery of the opening.

Fig.1

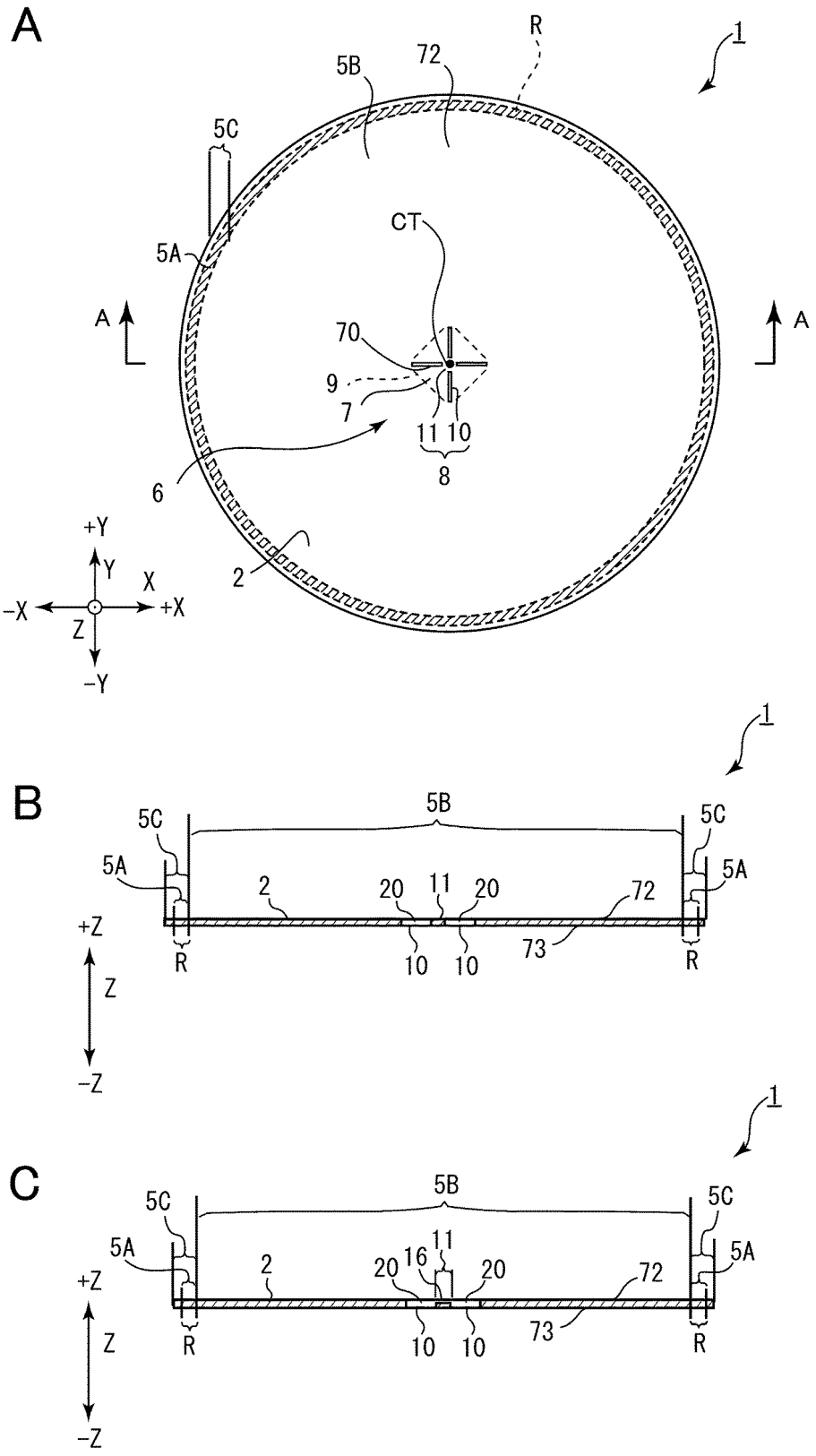

A
R
1
72
5B
5C
CT
5A
A
A
70
9
7
11
10
8
6
2
+Y
Y
X
-X
+X
Z
-Y
B
1
5B
5C
5C
5A
5A
2
20
11
20
72
+Z
Z
-Z
R
10
10
73
R
C
1
5B
5C
5C
5A
5A
11
16
2
20
20
72
+Z
Z
-Z
R
10
10
73
R

Fig.2

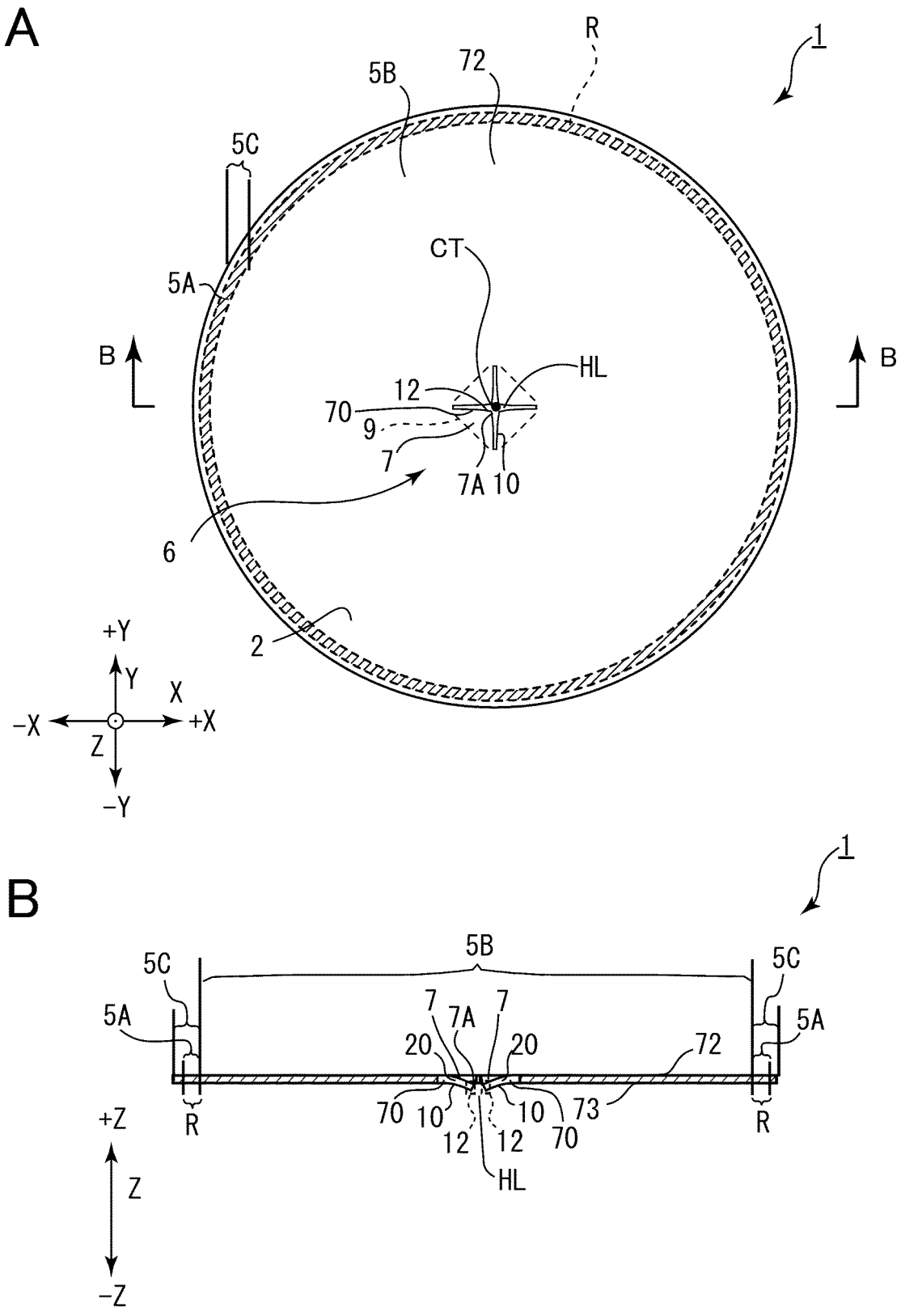

A
R
1
5B
72
5C
CT
5A
B
B
HL
12
70
9
7
7A
10
6
2
+Y
Y
X
−X
+X
Z
−Y
B
1
5B
5C
5C
5A
7
7A
7
5A
20
20
72
R
R
70
10
10
73
+Z
12
12
70
Z
HL
−Z

Fig.3

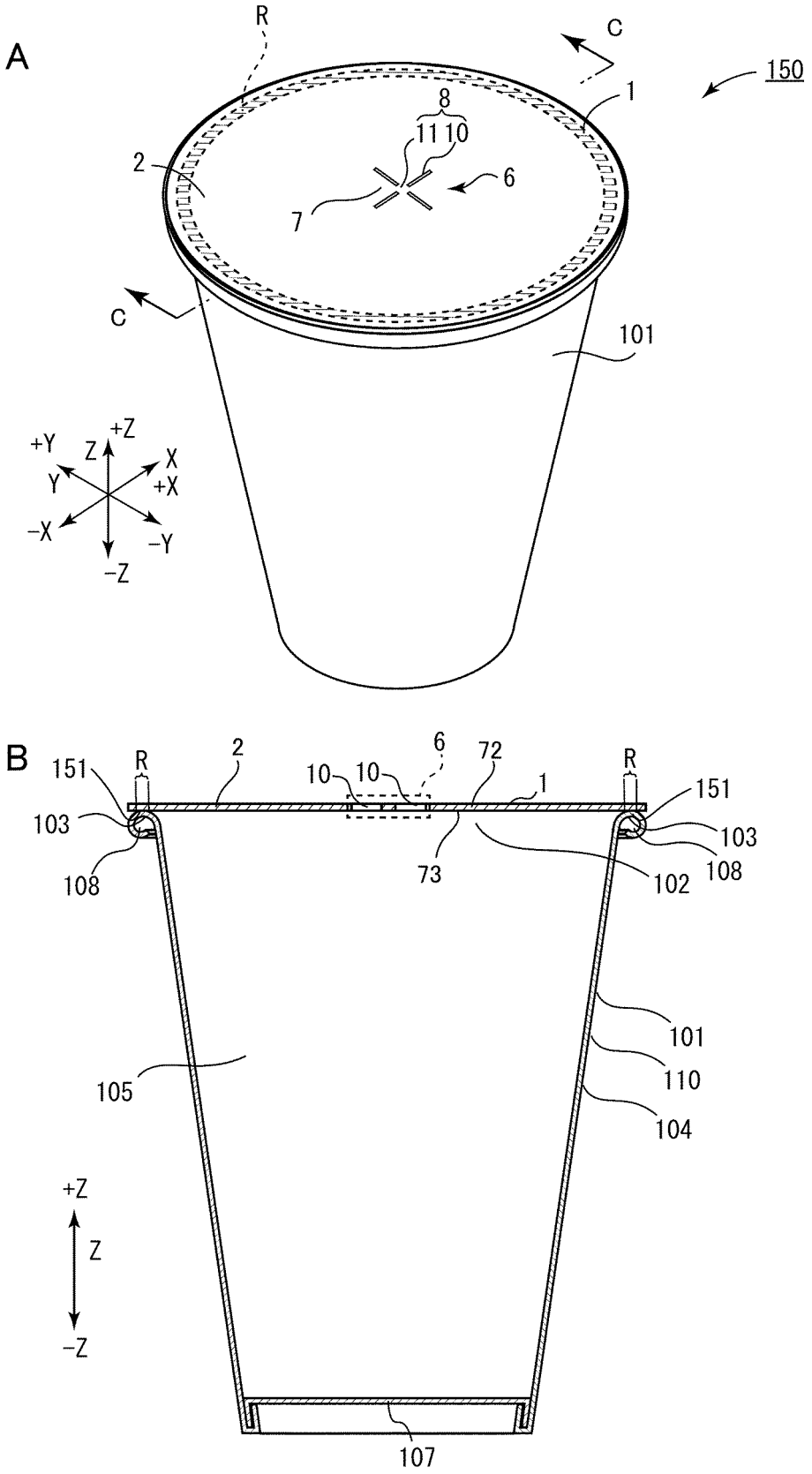

A
R
C
150
1
8
11
10
2
6
7
C
101
+Z
+Y
Z
X
Y
+X
−X
−Y
−Z
B
151
R
2
6
72
R
10
10
1
151
103
103
108
73
102
108
101
110
105
104
+Z
Z
−Z
107

Fig.4

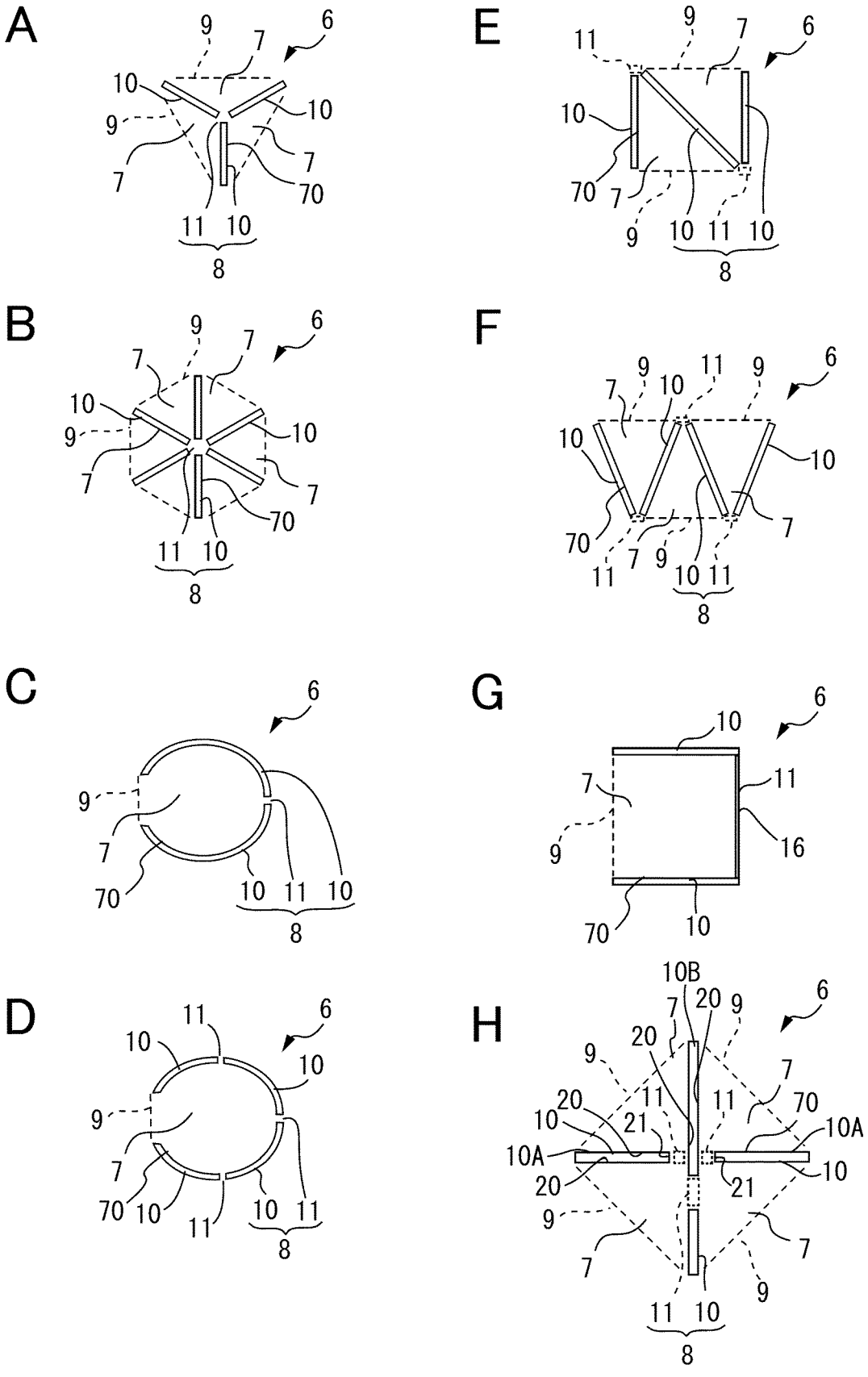

A
9
7
6
10
10
9
7
7
70
11
10
8
B
9
7
6
7
10
10
9
7
7
70
11
10
8
C
6
9
7
70
10
11
10
8
D
11
6
10
10
9
7
70
10
11
10
11
8
E
11
9
7
6
10
70
7
9
10
11
10
8
F
9
11
9
6
7
10
10
10
70
7
11
7
9
10
11
8
G
10
6
7
11
9
16
70
10
H
10B
7
20
9
6
20
9
11
11
7
10
20
21
70
10A
10A
20
21
10
9
7
7
9
11
10
8

Fig.5

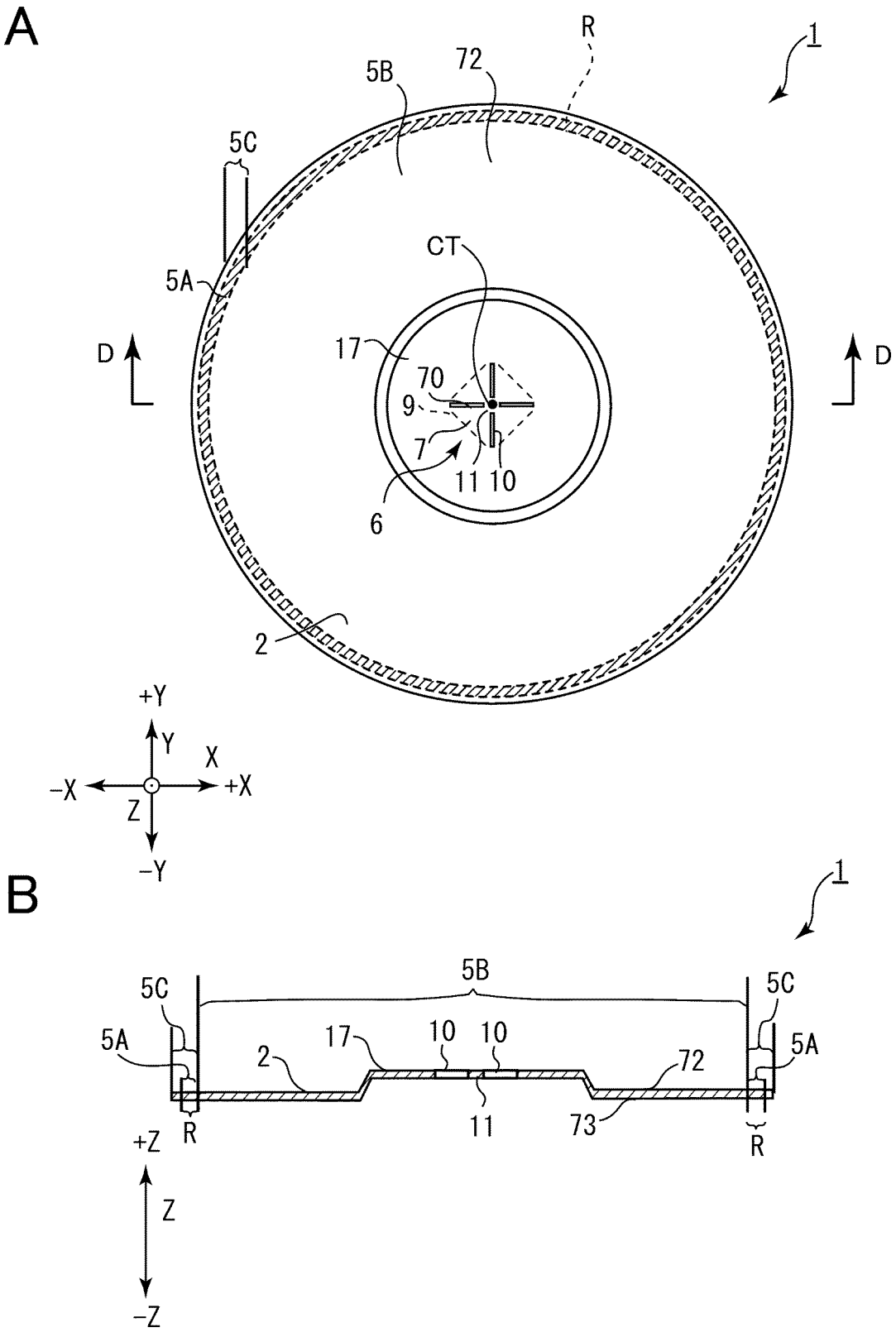

A
R
1
72
5B
5C
CT
5A
17
70
9
7
11
10
6
D
D
2
+Y
Y
X
-X
+X
Z
-Y
B
1
5B
5C
5C
5A
5A
17
10
10
2
72
R
11
73
R
+Z
Z
-Z

Fig.6

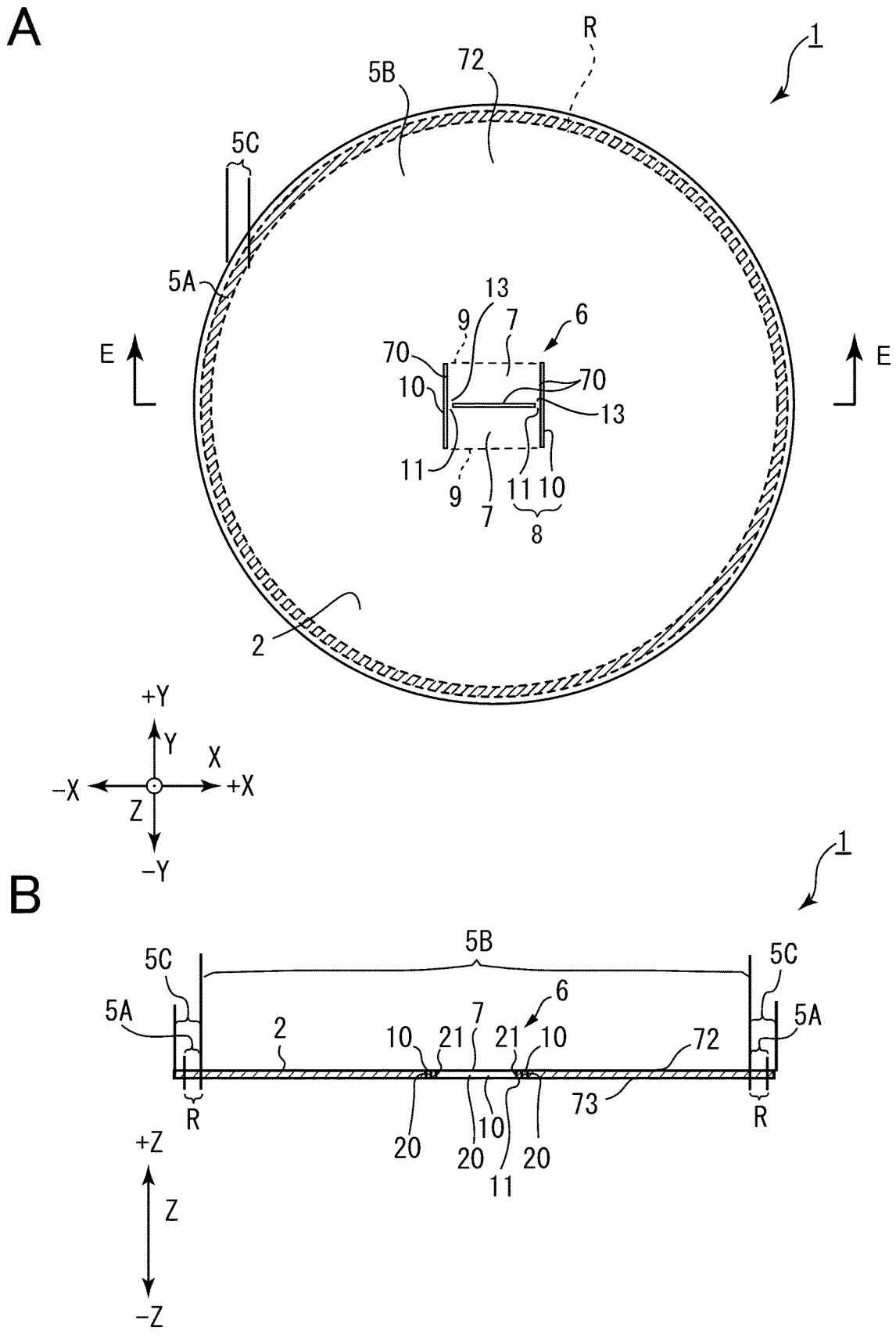

A
R
1
72
5B
5C
5A
13
9
7
6
70
10
70
13
E
E
11
9
7
11
10
8
2
+Y
Y
X
−X
+X
Z
−Y
B
1
5B
5C
5C
5A
6
7
5A
2
10
21
21
10
72
R
R
73
20
10
20
20
11
+Z
Z
−Z

Fig.7

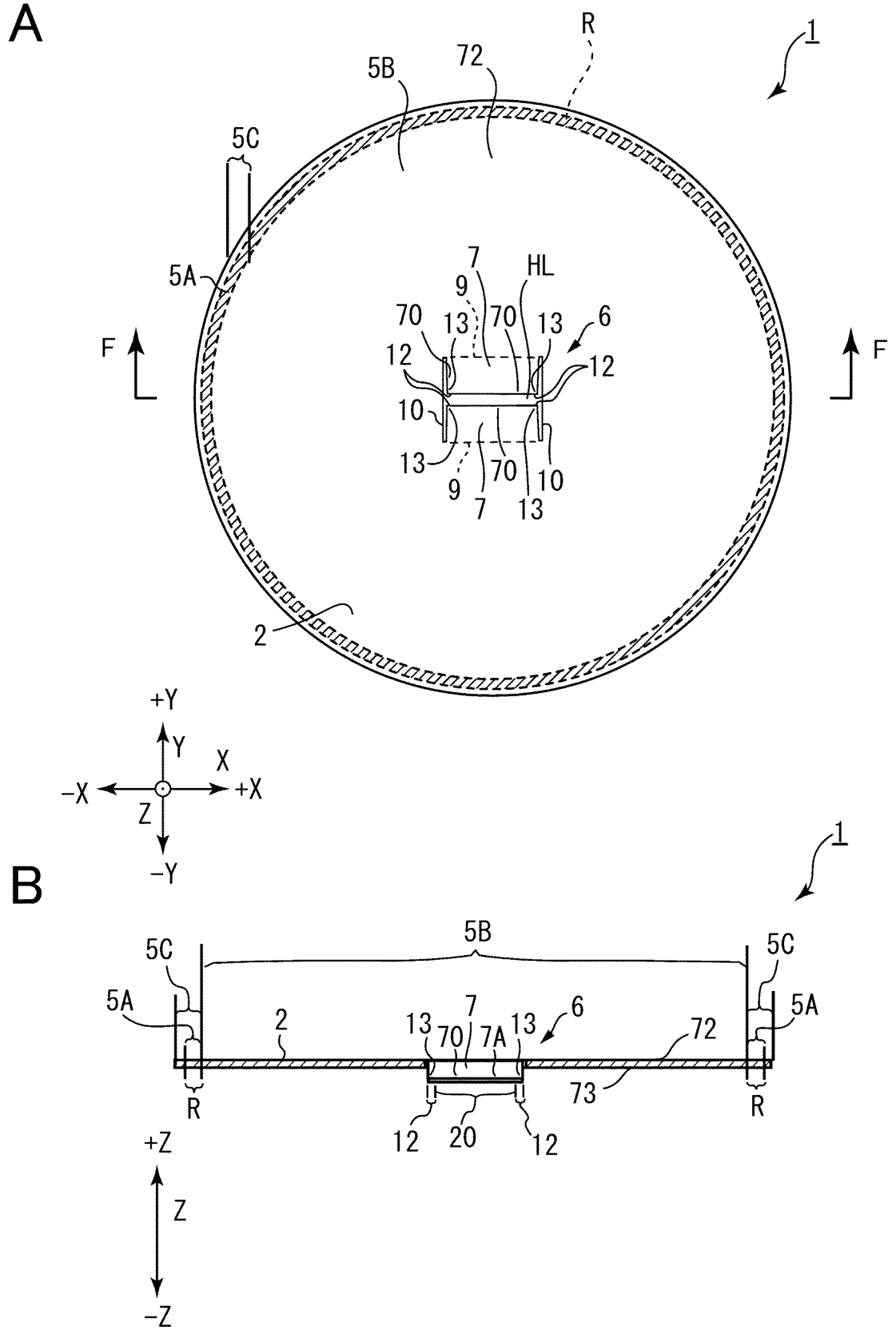
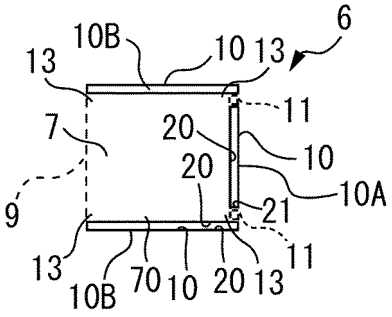
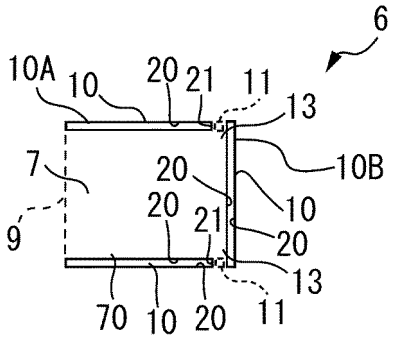

A
R
1
72
5B
5C
5A
7
HL
9
70
13
70
13
6
12
12
10
13
9
70
10
7
13
F
F
2
+Y
Y
X
−X
+X
Z
−Y
B
1
5B
5C
5C
5A
5A
2
13
70
7
7A
13
6
72
73
R
R
12
20
12
+Z
Z
−Z

Fig.8

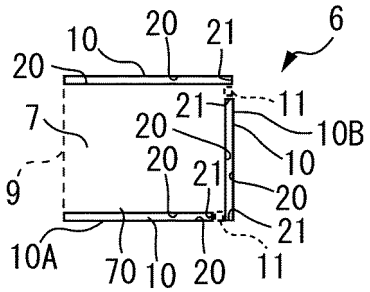
A


6
10B
10
13
13
11
7
20
10
20
10A
9
21
13
11
10B
70
10
20
13

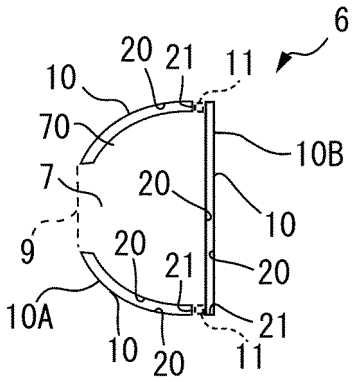
B


6
10A
10
20
21
11
13
10B
7
20
10
20
21
9
20
13
70
10
20
11

C


6
10
20
21
20
11
21
10B
7
20
10
20
21
9
20
21
10A
70
10
20
11

D


6
20
21
11
10
70
10B
7
20
10
9
20
21
20
10A
21
10
20
11

E

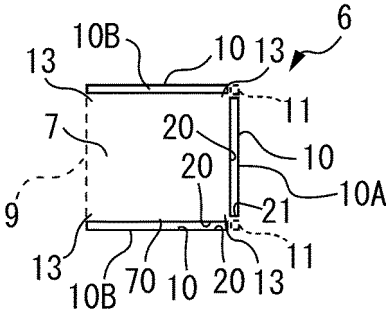
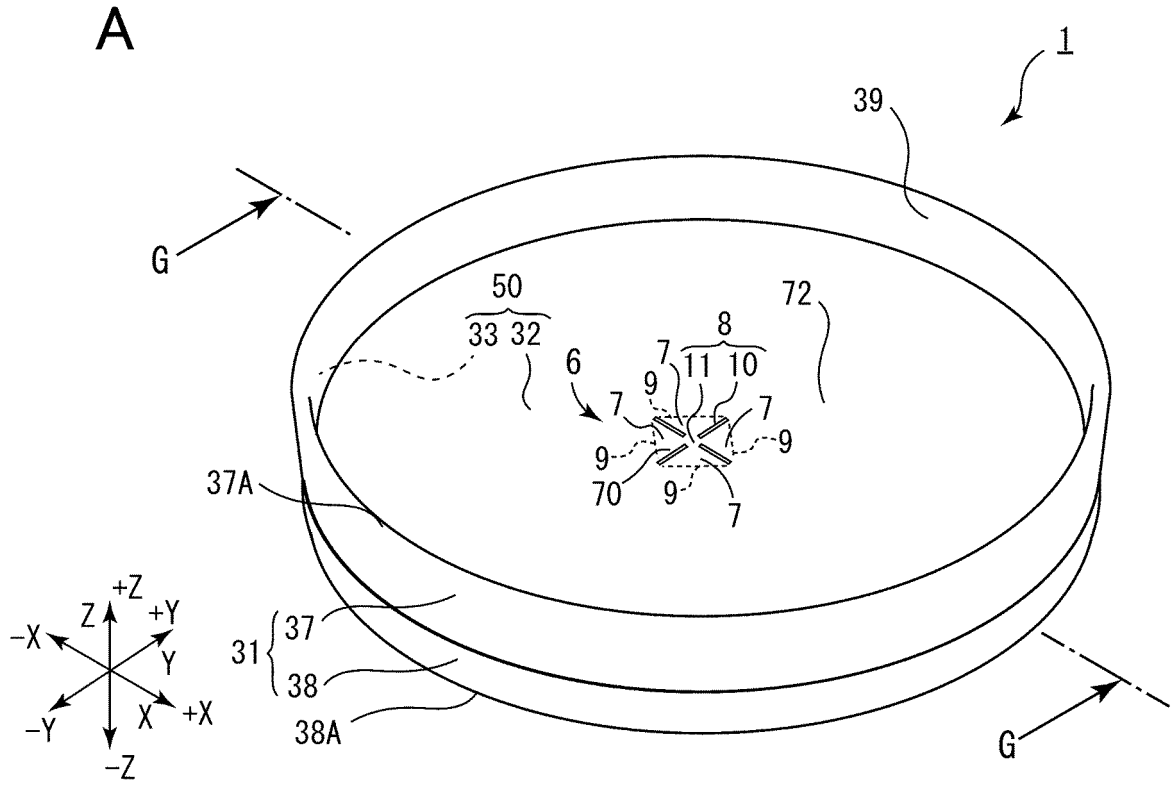

6
10B
10
13
13
11
7
20
10
20
10A
9
21
13
11
10B
70
10
20
13

Fig.9


A
1
39
G
50
33 32
72
8
6
7
11 10
9
7
7
9
9
70
9
7
37A
+Z
Z
+Y
-X
Y
-Y
X
+X
-Z
31
37
38
38A
G

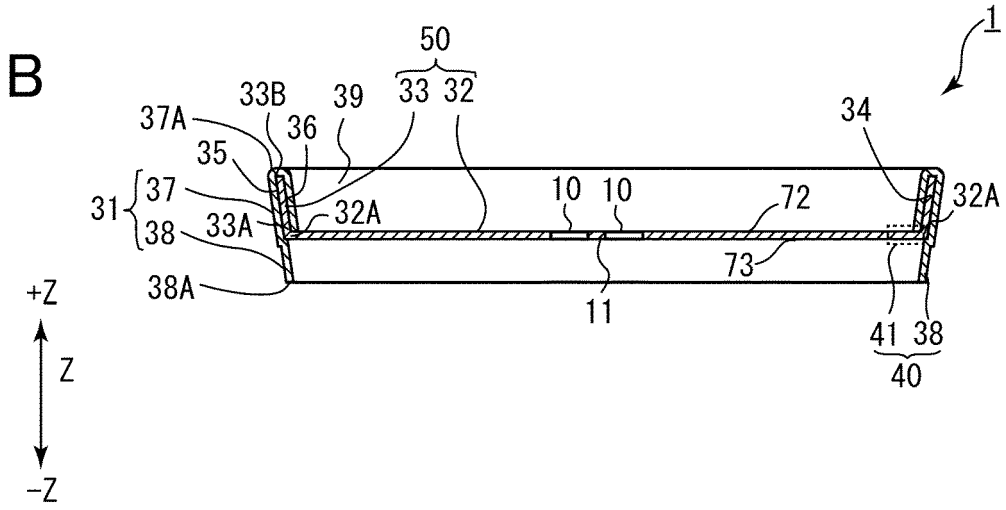
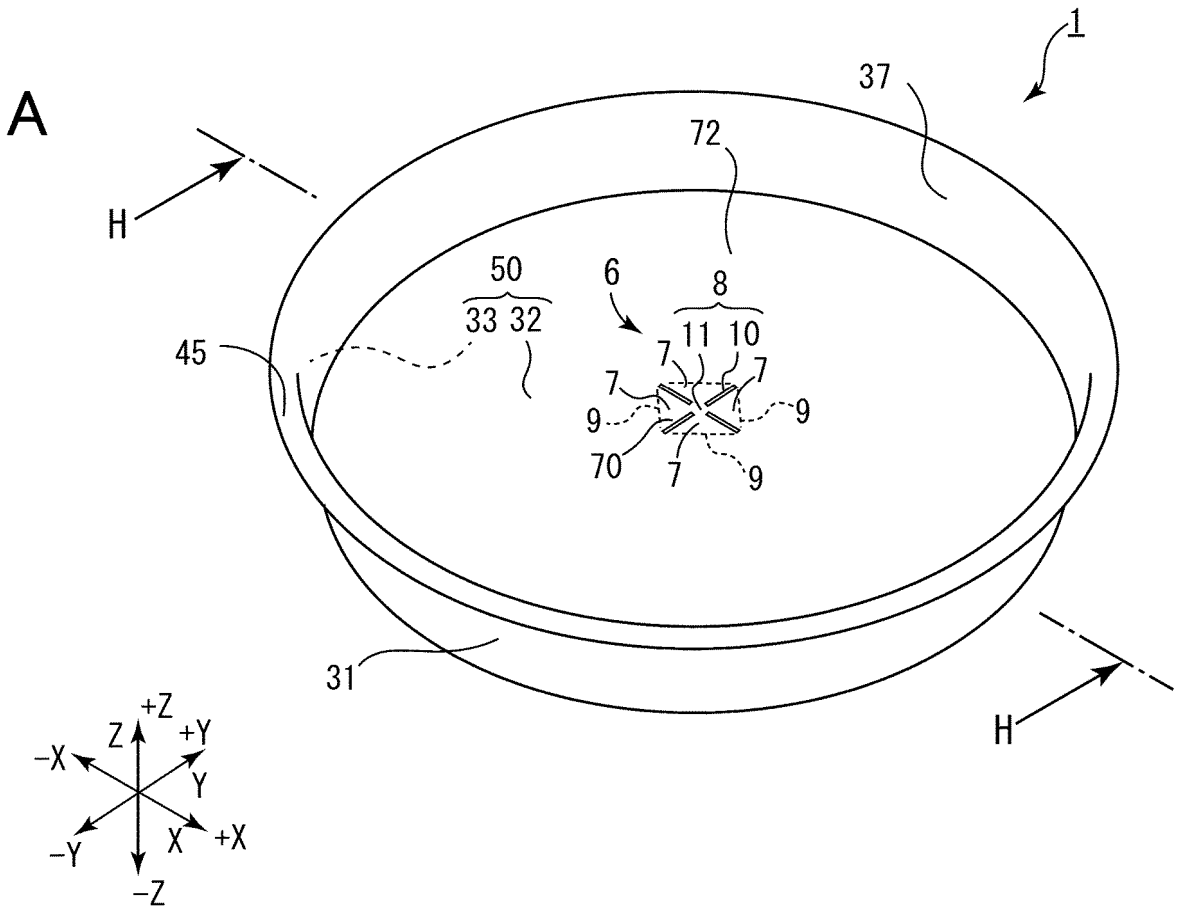

B
1
50
33 32
33B
39
37A
36
35
34
31
37
38
32A
33A
10 10
72
32A
73
38A
11
41 38
40
+Z
Z
-Z

Fig.10


A
1
37
72
H
50
33 32
6
8
11 10
7
45
9
70
31
+Z
Z
+Y
−X
Y
X
+X
−Y
−Z
H

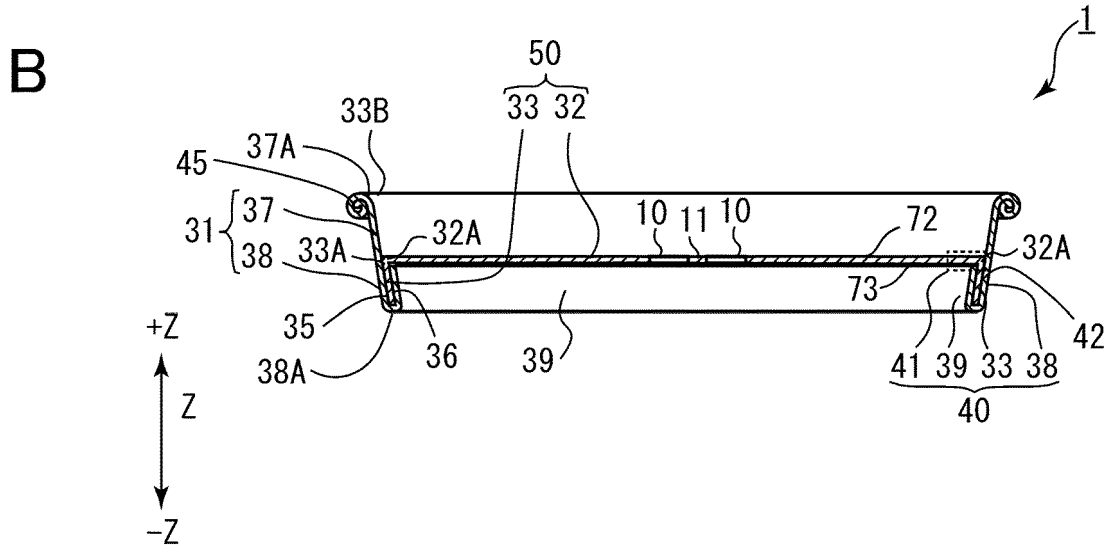

B
1
50
33 32
33B
37A
45
37
31
38
32A
33A
10 11 10
72
73
32A
35
36
38A
39
42
41 39 33 38
40
+Z
Z
−Z

Fig.11

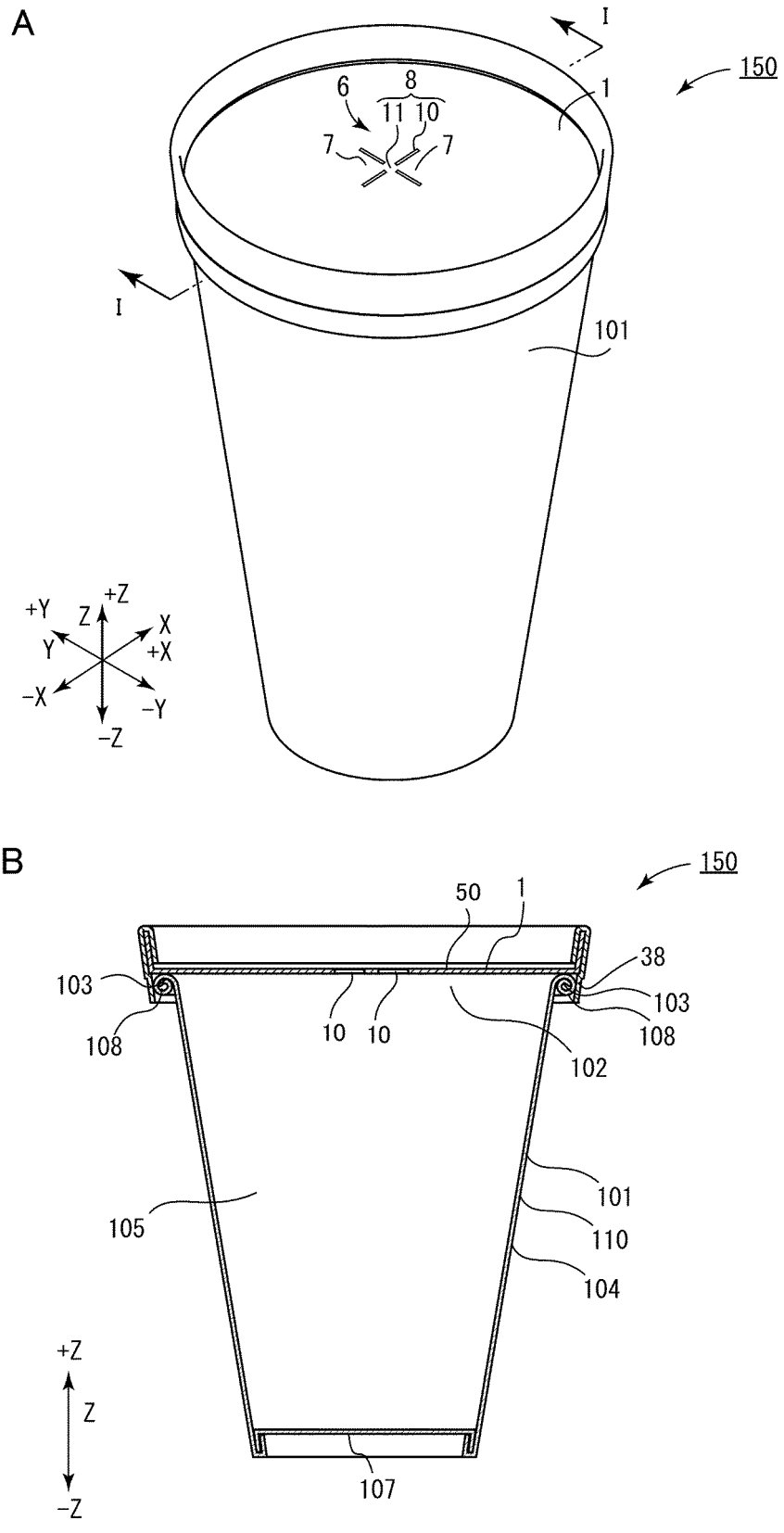

A
I
150
6
8
11
10
1
7
7
I
101
+Y
+Z
Z
X
Y
+X
−X
−Y
−Z
B
150
50
1
38
103
103
108
108
10
10
102
101
105
110
104
+Z
Z
−Z
107

Fig.12

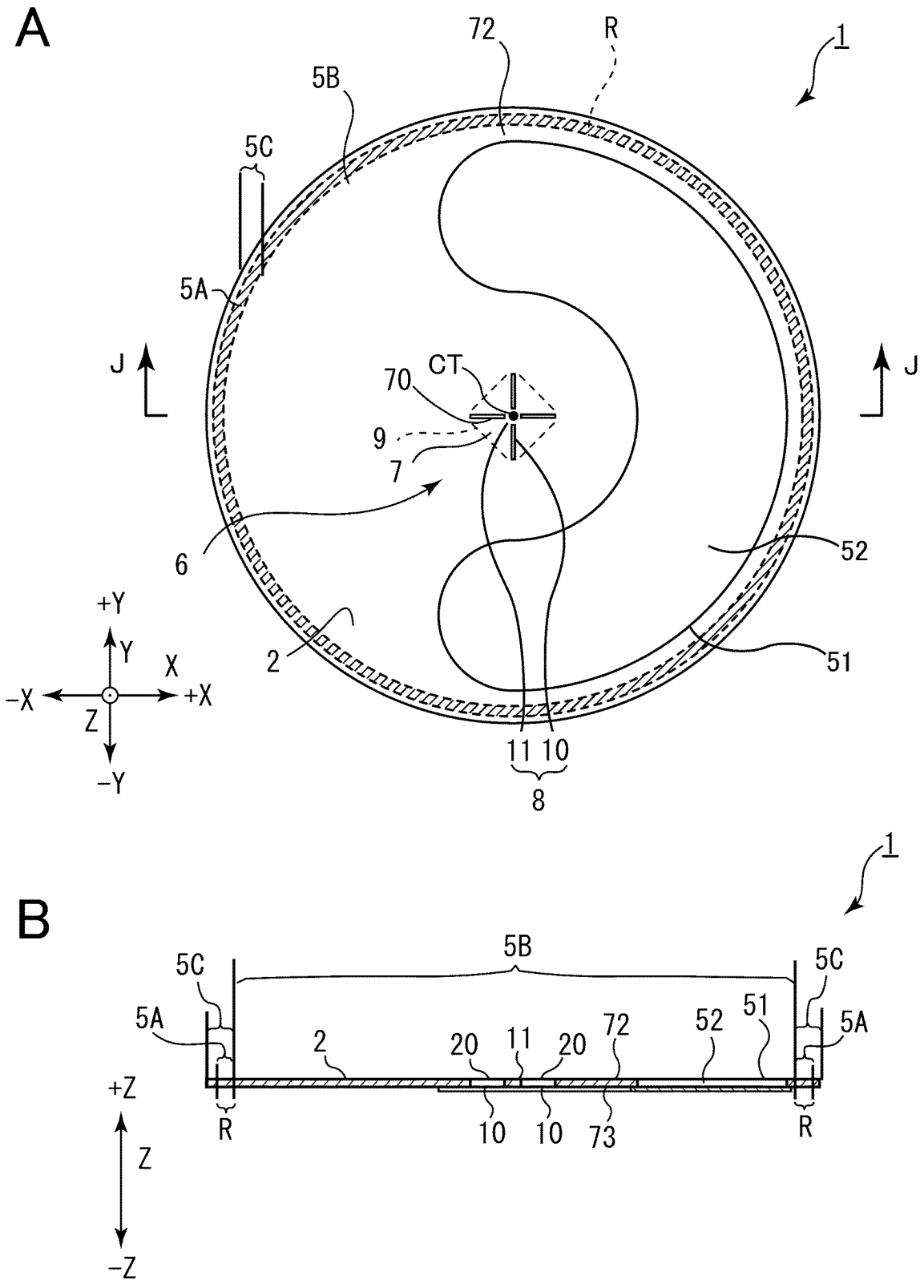

A
72
R
1
5B
5C
5A
J
J
CT
70
9
7
6
52
51
2
11
10
8
+Y
Y
X
−X
+X
Z
−Y
B
1
5B
5C
5C
5A
5A
2
20
11
20
72
52
51
+Z
Z
−Z
R
10
10
73
R

Fig.13

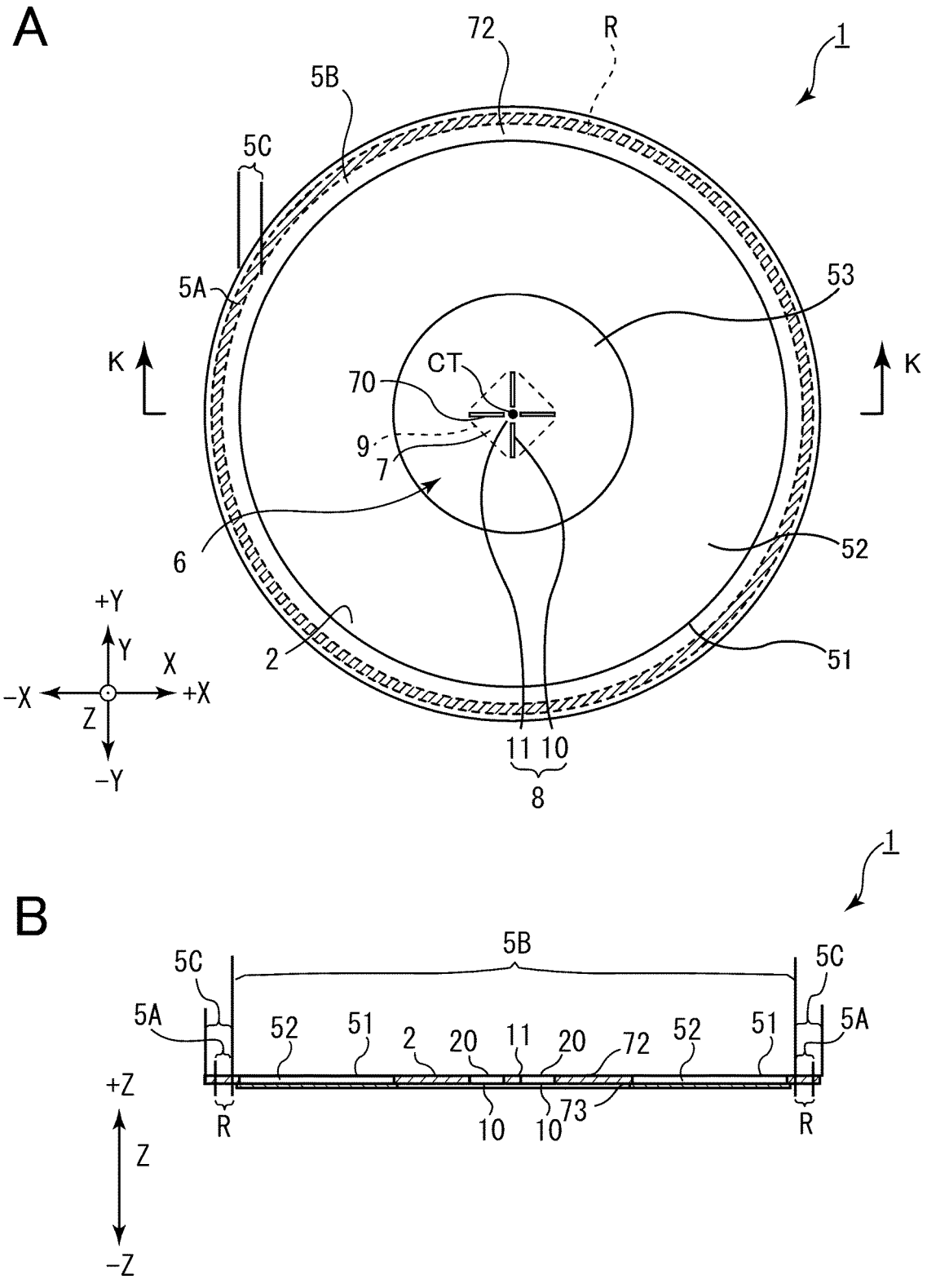
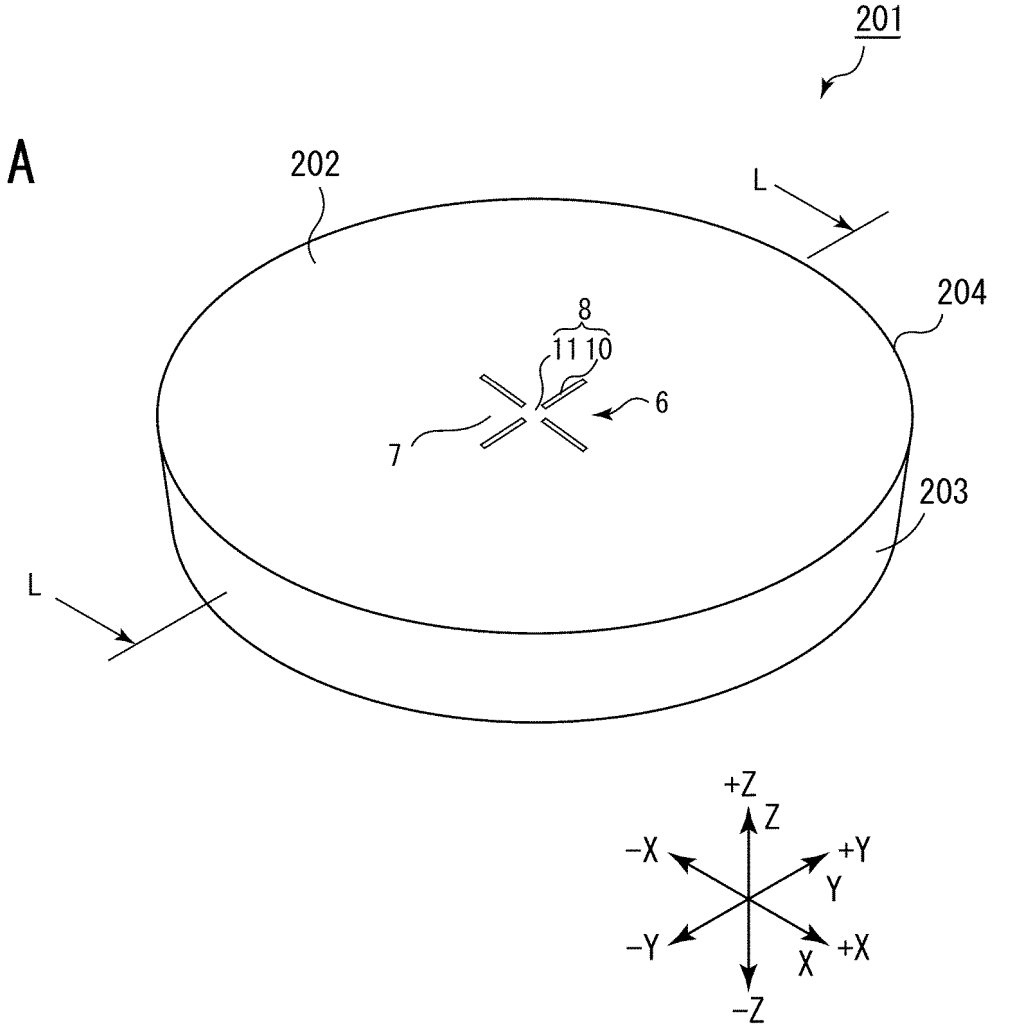

A
72
R
1
5B
5C
5A
53
K
K
CT
70
9
7
6
52
+Y
Y
X
2
51
-X
+X
Z
-Y
11 10
8
B
1
5B
5C
5C
5A
5A
52
51
2
20
11
20
72
52
51
+Z
Z
-Z
R
10
10
73
R

Fig.14


A
201
202
L
204
8
11 10
6
7
203
L
+Z
Z
−X
+Y
Y
−Y
+X
X
−Z

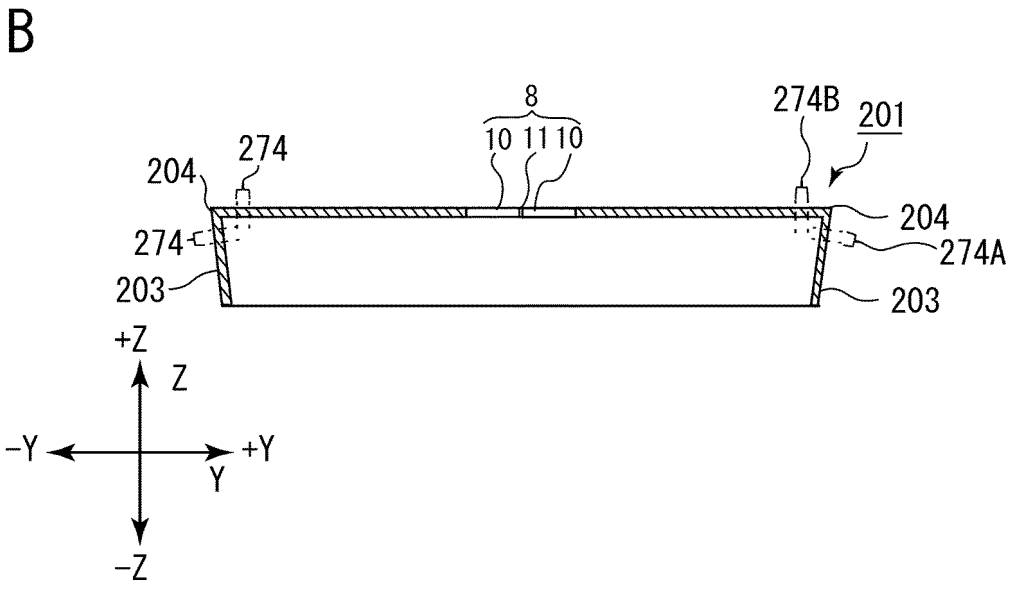
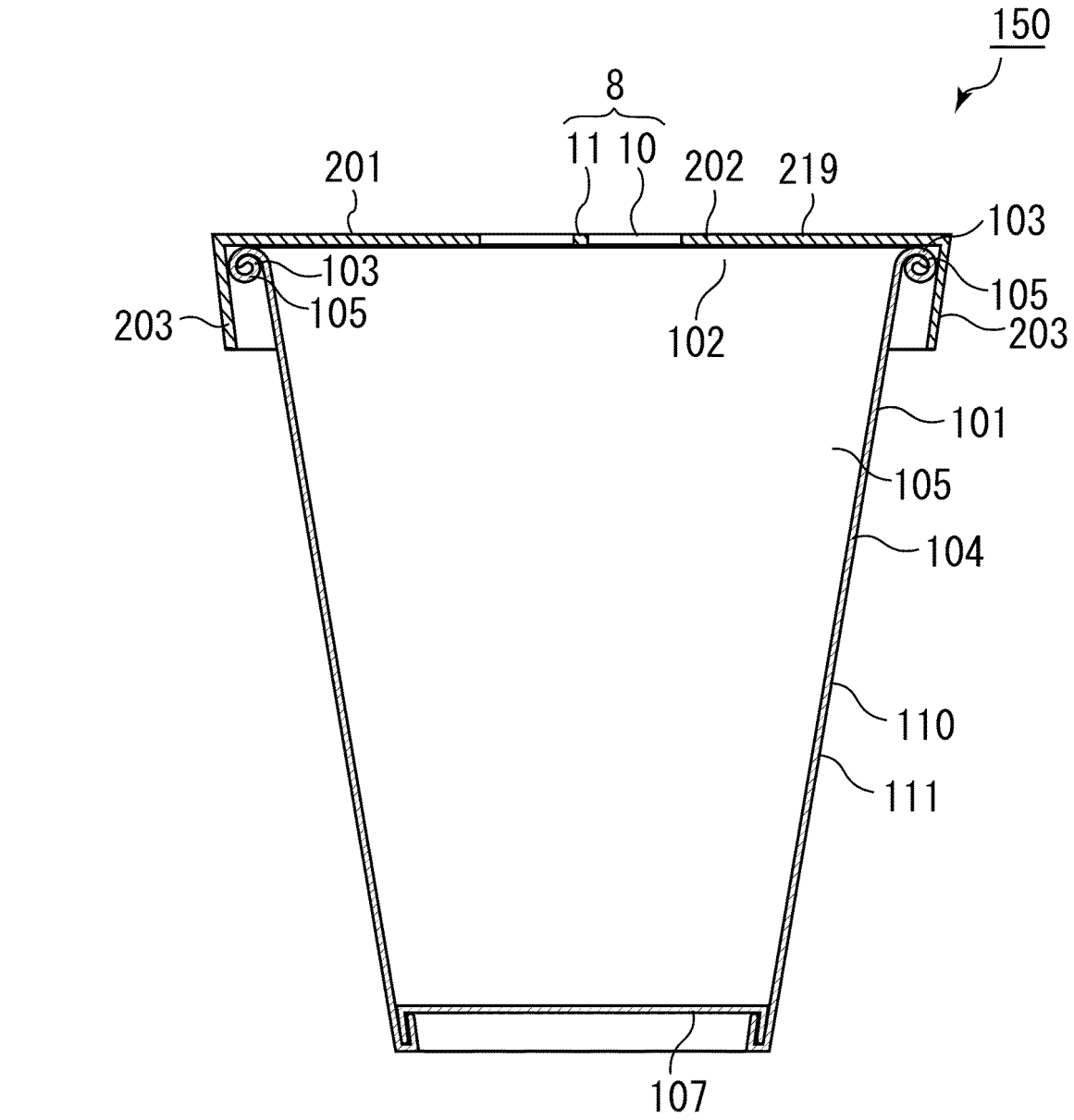
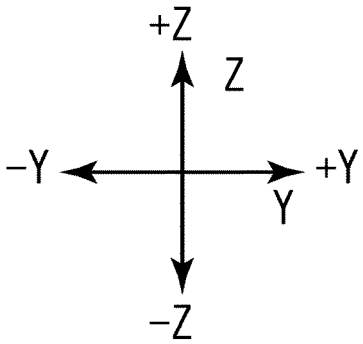

B
8
274B
201
10 11 10
274
204
204
274
274A
203
203
+Z
Z
−Y
+Y
Y
−Z

Fig.15


150
8
11
10
201
202
219
103
103
105
105
203
203
102
101
105
104
110
111
107


+Z
Z
−Y
+Y
Y
−Z

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2023/018892

A. CLASSIFICATION OF SUBJECT MATTER

B65D 47/36(2006.01)i
FI: B65D47/36

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)

B65D47/36

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 1971-2023
Registered utility model specifications of Japan 1996-2023
Published registered utility model applications of Japan 1994-2023

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.
X	JP 2010-137902 A (NIPPON DEKISHI KK) 24 June 2010 (2010-06-24) paragraphs [0017]-[0027], fig. 1-3, 5(c), (d)	1- 8, 11-12, 14
Y	paragraphs [0017]-[0027], fig. 1-3, 5(c), (d)	9-10, 13
Y	JP 6-100029 A (DAINIPPON PRINTING CO LTD) 12 April 1994 (1994-04-12) paragraphs [0008]-[0011], fig. 1-2	9-10, 13
A	JP 2002-544076 A (GEN-PROBE INC) 24 December 2002 (2002-12-24) entire text, all drawings	1-14
A	JP 2012-121619 A (DAINIPPON PRINTING CO LTD) 28 June 2012 (2012-06-28) entire text, all drawings	1-14
A	WO 2010/024148 A1 (KABUSHIKI KAISHA YAKULT HONSHA) 04 March 2010 (2010-03-04) entire text, all drawings	1-14
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 103617/1978 (Laid-open No. 21921/1980) (NIPPON DEKISHI KK) 13 February 1980 (1980-02-13), entire text, all drawings	1-14

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"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)
"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
"T" 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
"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
"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
07 July 2023	**18 July 2023**
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.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2023/018892

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
JP 2010-137902 A	24 June 2010	(Family: none)	
JP 6-100029 A	12 April 1994	(Family: none)	
JP 2002-544076 A	24 December 2002	US 2001/0039058 A1 entire text, all drawings EP 1997558 A1 CA 2678141 A1	
JP 2012-121619 A	28 June 2012	(Family: none)	
WO 2010/024148 A1	04 March 2010	US 2011/0204057 A1 entire text, all drawings EP 2332852 A1 KR 10-2011-0052693 A CN 102164827 A	
JP 55-21921 U1	13 February 1980	(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 2012153382 A **[0004]**