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

(11) **EP 4 245 684 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
20.11.2024 Bulletin 2024/47

(21) Application number: **21891873.8**

(22) Date of filing: **09.11.2021**

(51) International Patent Classification (IPC):
B65D 43/04 *(2006.01)* ***B65D 81/38*** *(2006.01)*
B65D 21/08 *(2006.01)* ***B65D 25/02*** *(2006.01)*
B65D 43/02 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65D 81/3813; B65D 21/08; B65D 25/02; B65D 43/022; B65D 81/3816

(86) International application number:
PCT/JP2021/041225

(87) International publication number:
WO 2022/102627 (19.05.2022 Gazette 2022/20)

(54) **HEAT INSULATING CONTAINER**

WÄRMEISOLIERENDER BEHÄLTER

CONTENANT D'ISOLATION THERMIQUE

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

(30) Priority: **12.11.2020 JP 2020188395**

(43) Date of publication of application:
20.09.2023 Bulletin 2023/38

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Description

Technical Field

[0001] The present invention relates to a heat insulating container.

Background Art

[0002] Hitherto, various types of heat insulating containers (cold storage boxes) have been proposed and put into practical use for transporting and storing foodstuffs and the like contained together with cold storage materials. For example, there has currently been proposed a cold storage box 100 including an outer box 10, an inner box 20 placed in the outer box 10, an inner lid 30 spanning the opening of the inner box 20, and a cold storage material 40 disposed on the inner lid 30 (refer to Patent Document 1). It is described that, by adopting such a configuration, the inner box 20 is placed in the outer box 10, an object is placed in the inner box 20, the inner lid 30 spans the opening of the inner box 20, the cold storage material 40 is disposed on the inner lid 30, and the outer box 10 is sealed, thus making it possible to dispose the cold storage material 40 at a position above the object to cause cold air cooled by the cold storage material 40 to descend from the upper part inside the outer box 10 and circulate in the outer box 10, efficiently cooling the entire interior of the outer box 10.

[0003] Patent Documents 1 to 3 disclose cold storage containers and an inner lid installed therein.

[0004] Patent Document 2 (US5558241) discloses a heat insulating container according to the preamble of claim 1.

Citation List

Patent Document

[0005]

Patent Document 1: Utility Model Registration No. 3204212
Patent Document 2: US5558241 A
Patent Document 3: JP2012131546

Summary of Invention

Technical Problem

[0006] Meanwhile, the conventional cold storage box disclosed in Patent Document 1 is configured to have the undeformable outer box, whereas the volume of an object stored therein changes depending on circumstances. Therefore, if, for example, the volume of the object is significantly reduced, the inside of the box will be filled with a relatively large amount of air. Air has high specific heat than the contents, thus posing a problem that the cold insulation (heat insulation efficiency) inconveniently deteriorates when the inside of the box is filled with a relatively large amount of air.

[0007] The present invention has been made in view of such circumstances, and it is an object of the invention to provide a heat insulating container capable of suppressing the deterioration of heat insulation efficiency even if the volume of an object stored is reduced.

Solution to Problem

[0008] To achieve the above-described object, a heat insulating container in accordance with the present invention is a heat insulating container including: a container body having a storage space formed by a bottom wall and side walls, and an opening continuous to the storage space; and a deformable plate-shaped lid, wherein the lid is configured such that at least a part thereof is deformed in a state of being inserted into the storage space through the opening of the container body thereby to bring a peripheral edge of the lid into close contact with the inner surfaces of the side walls.

[0009] When such a configuration is adopted, the lid is configured such that at least a part of the lid is deformed in a state of being inserted into the storage space through the opening of the container body, thereby bringing the peripheral edge of the lid into close contact with the inner surfaces of the side walls. This makes it possible to form, inside the storage space, a heat-insulated closed space composed of the bottom wall of the container body and a part of the side walls (the portions closer to the bottom wall) of the container body, and the lid, thus making it possible to hold an object in the heat-insulated closed space for the purpose of transportation or the like. In this case, the volume of the heat-insulated closed space can be changed by changing the position of the lid (the position where the peripheral edge of the lid and the side walls of the container body come in close contact) according to the volume of an object stored. For example, if the volume of an object stored reduces, then a heat-insulated closed space having a relatively small volume can be formed by shifting the position of the lid toward the bottom wall of the container body so as to bring the peripheral edge of the lid into close contact with the side walls of the container body. Therefore, even if the volume of an object stored changes, the volume of the heat-insulated closed space can be changed accordingly, thus making it possible to suppress the presence of air, which has high specific heat, inside the heat-insulated closed space with a resultant suppression of the deterioration of heat insulation efficiency.

[0010] In the heat insulating container according to the present invention, a lid configured by connecting a plurality of sections by means of a connecting elastic part can be adopted. In such a case, the projected area of the lid can be reduced by compressing the connecting elastic part so as to reduce the interval between the sections, while the projected area of the lid can be increased

by releasing the compression of the connecting elastic part so as to extend the interval between the sections. In addition, it is possible to set the projected area of the lid to be equal to or smaller than the area of the opening of the container body (or setting the length of at least one side of the lid to be equal to or less than one corresponding side of the opening) by compressing the connecting elastic part thereby to reduce the interval between the sections, while it is also possible to set the projected area of the lid to be equal to or larger than the area of the opening of the container body (or setting the length of at least one side of the lid to be equal to or more than the length of one corresponding side of the opening) by releasing the compression of the connecting elastic part thereby to increase the interval between the sections. The connecting elastic part may have a bellows structure.

[0011] When such a configuration is adopted, the lid is configured by connecting the plurality of sections by the connecting elastic part. Further, the projected area of the lid is reduced by compressing the connecting elastic part thereby to reduce the interval between the sections (consequently setting the projected area of the lid to be equal to or smaller than the area of the opening of the container body, or setting the length of one side of the lid to be equal to or less than one corresponding side of the opening), while the projected area is increased by releasing the compression of the connecting elastic part thereby to increase the interval between the sections (consequently setting the projected area of the lid to be equal to or larger than the area of the opening of the container body, or increasing the length of one side of the lid to be equal to or more than the length of one corresponding side of the opening). When inserting the lid having such a configuration into the storage space of the container body, the connecting elastic part is compressed so as to reduce the projected area of the lid (to be equal to or smaller than the area of the opening of the container body), and then the compression of the connecting elastic part is released in the storage space so as to increase the projected area (to be equal to or larger than the area of the opening of the container body), thus making it possible to bring the peripheral edge thereof into close contact with the side walls of the container body.

[0012] Further, when such a configuration is adopted, since the lid is adopted that is configured by connecting the plurality of sections by the connecting elastic part, it is possible to, for example, set the height of a first section and the height of a second section to be different from each other, with the connecting elastic part being the boundary therebetween. Consequently, even if an object stored in the container body has a different height, the height of the first section and the height of the second section can be changed according to the height of the object, thus allowing the lid to be closer to the object (or allowing the lid to be in close contact with the object). As a result, the space generated between an object having a different height and the lid can be reduced (or substantially eliminated), thus effectively suppressing the deterioration of heat insulation efficiency.

[0013] In the heat insulating container according to the present invention, a lid having a substantially rectangular shape in plan view can be configured by connecting a plurality of sections by a belt-shaped connecting elastic part extending in a first direction in plan view. In such a case, the lid can be configured such that the length of a side of the lid along a second direction is reduced to be equal to or less than the length of a corresponding side of the opening of the container body by compressing the connecting elastic part along a second direction intersecting with the first direction (e.g., the direction orthogonal to the first direction), while the length of a side of the lid along the second direction is increased to be longer than the length of the corresponding side by releasing the compression of the connecting elastic part along the second direction.

[0014] Adopting such a configuration makes it possible to increase the lengths of the sides of the lid along the second direction to be equal to or more than the sides corresponding thereto (corresponding sides) of the opening of the container body by releasing the compression of the connecting elastic part of the lid along the second direction. This makes it possible to bring the sides intersecting with the sides along the second direction of the lid into close contact with the inner surfaces of the side walls at the sides of the opening of the container body that correspond to the intersecting sides so as to fix the lid to the container body. In this case, the projected area of the lid when the compression of the connecting elastic part is released does not necessarily have to be larger than the area of the opening of the container body.

[0015] In the heat insulating container according to the present invention, the lid can be configured by connecting a first section and a second section, each having a substantially rectangular shape in plan view, by a connecting elastic part. Further, the lid can be configured such that a projection protruding in a direction away from the connecting elastic part is formed on at least either a first side positioned on the opposite side from the connecting elastic part in the first section and a second side positioned on the opposite side from the connecting elastic part in the second section, and such that the projection is brought into close contact with at least a part of one side of the opening by releasing the compression of the connecting elastic part. In this case, a belt-shaped connecting elastic part extending in the first direction in plan view can be adopted, a first projection protruding from the first side and a second projection protruding from the second side can be adopted, the first projection can be placed closer to one end portion in the first direction, and the second projection can be placed closer to the other end portion in the first direction.

[0016] Adopting such a configuration makes it possible to fix the lid to the container body by bringing the projection into close contact with the inner surface of a side wall in at least a part of a side of the opening of the con-

tainer body corresponding to the projection, while bringing the remaining peripheral edge of the lid into close contact with a part of the inner surfaces of side walls of the container body that corresponds to the remaining peripheral edge when the compression of the connecting elastic part is released. Also in the case where such a configuration is adopted, the projected area of the lid when the compression of the connecting elastic part is released does not necessarily have to be larger than the area of the opening of the container body.

[0017] In the heat insulating container according to the present invention, it is possible to adopt a lid configured to be divided into a plurality of sections and deformable between a bent state and a flat state by connecting the sections by a hinge.

[0018] Adopting such a configuration makes it possible to appropriately deform the lid according to the size of the opening of the container body so as to bring the peripheral edge thereof into close contact with the side walls of the container body, since the lid is divided into the plurality of sections and configured by connecting the sections by the hinge thereby to be deformable between the bent state and the flat state.

[0019] In the heat insulating container according to the present invention, the hinge can be placed substantially at the center of the lid in plan view. In such a case, it is possible to reduce the projected area of the lid by setting the lid to the bent state when inserting the lid into the storage space through the opening of the container body, while the projected area of the lid can be increased by setting the lid to the flat state after inserting the lid into the storage space.

[0020] By adopting such a configuration, the projected area of the lid is reduced by setting the lid to the bent state when inserting the lid into the storage space through the opening of the container body, while the projected area thereof is increased by setting the lid to the flat state after inserting the lid into the storage space. The lid having such a configuration allows the peripheral edge thereof to come in close contact with the side walls of the container body by setting the lid to the bent state when inserting the lid into the storage space of the container body so as to reduce the projected area and then setting the lid to the flat state (by pushing the hinge, which is located substantially at the center, toward the storage space or pulling the hinge up from the storage space side) thereby to increase the projected area in the storage space.

[0021] In the heat insulating container according to the present invention, the hinge can be placed in the vicinity of the peripheral edge of the lid. In such a case, the projected area of the lid is set larger than the projected area of the opening of the container body when the lid is in the flat state, and then the lid is shifted from the flat state to the bent state when inserting the lid into the storage space through the opening of the container body, thereby making it possible to reduce the projected area of the lid to be substantially the same as the projected area of the opening.

[0022] When such a configuration is adopted, the projected area of the lid is set larger than the projected area of the opening of the container body when the lid is in the flat state, and the projected area thereof is reduced to be substantially the same as the projected area of the opening when the lid is shifted from the flat state to the bent state at the time of being inserted into the storage space through the opening of the container body. The lid having such a configuration is bent by the hinge located in the vicinity of the peripheral edge when the lid is inserted into the storage space of the container body so as to set the projected area thereof to be substantially the same as the projected area of the opening of the container body, thus allowing the peripheral edge to come in close contact with the side walls of the container body.

[0023] In the heat insulating container according to the present invention, a grip to be grasped by a user can be provided on the surface of at least a part of the lid.

[0024] Adopting such a configuration enables a user to grasp the grip provided on the surface of a section, which constitutes the lid, thereby to deform the lid. This makes it easy to deform the lid (compressing the connecting elastic part, releasing the compression of the connecting elastic part, shifting from the bent state to the flat state, shifting from the flat state to the bent state, and the like).

[0025] In the heat insulating container according to the present invention, a peripheral elastic part can be provided in at least a part of the peripheral edge of the lid.

[0026] When such a configuration is adopted, since the peripheral elastic part is provided in at least a part of the peripheral edge of the lid, the peripheral elastic part of the lid is compressed when the lid is inserted into the storage space of the container body thereby to reduce the projected area of the lid, and then the compression of the peripheral elastic part is released in the storage space thereby to increase the projected area, thus allowing the peripheral edge (or the peripheral elastic part in the case of the peripheral edge provided with the peripheral elastic part) to come in close contact with the inner surfaces of the side walls.

Advantageous Effects of Invention

[0027] According to the present invention, it is possible to provide a heat insulating container capable of suppressing the deterioration of heat insulation efficiency even when the volume of an object stored decreases.

Brief Description of Drawings

[0028]

Fig. 1 is a perspective view of a heat insulating container according to a first embodiment of the present invention.

Fig. 2 is a plan view of a lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 3 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 4 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 5 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 6 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 7 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 8 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 9 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 10 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 11 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 12 is a plan view of a modified example of the lid of the heat insulating container according to the first embodiment of the present invention.
Fig. 13 is an explanatory diagram for explaining the working effect of the heat insulating container according to the first embodiment of the present invention.
Fig. 14 presents side views of the lid of a heat insulating container according to a second embodiment of the present invention ((A) illustrating a bent state, and (B) illustrating a flat state).
Fig. 15 presents perspective views of a hinge of the lid of the heat insulating container according to the second embodiment of the present invention ((A) illustrating the bent state, and (B) illustrating the flat state).
Fig. 16 presents side views of the hinge of the lid of the heat insulating container according to the second embodiment of the present invention ((A) illustrating the bent state, and (B) illustrating the flat state).
Fig. 17 is a plan view of the lid of a heat insulating container according to an example which does not form part of the present invention.
Fig. 18 is a plan view of a modified example of the lid of the heat insulating container according to an example which does not form part of the present invention.
Fig. 19 is a plan view of a modified example of the lid of the heat insulating container according to the third embodiment of the present invention.
Fig. 20 is a plan view of the lid of a heat insulating container according to a fourth embodiment of the present invention.

Description of Embodiments

[0029] The following will describe the embodiments of the present invention with reference to the accompanying drawings. The embodiments described below are merely preferred application examples, and the scope of application of the present invention is not limited thereto.

<First Embodiment>

[0030] First, referring to Fig. 1 to Fig. 13, the configuration of a heat insulating container 1 according to a first embodiment of the present invention will be described. The heat insulating container 1 according to the present embodiment includes a container body 10 and a lid 20 as illustrated in Fig. 1, and is used to store an object such as food together with a cold storage material therein for transportation and storage.

[0031] As illustrated in Fig. 1, the container body 10 has a bottom wall 11, which has a substantially rectangular shape in plan view, and four side walls 12 connected in such a manner as to rise from the sides of the bottom wall 11, and is configured in a substantially rectangular parallelepiped shape. A storage space 13 having a substantially rectangular parallelepiped shape is formed by the bottom wall 11 and the side walls 12 of the container body 10, and an opening 14 continuous to the storage space 13 is formed in the top of the storage space 13.

[0032] Both the bottom wall 11 and the side walls 12 of the container body 10 are composed of heat insulating material panels having a predetermined thickness and having a substantially rectangular shape in plan view. As such heat insulating material panels, for example, heat insulating material panels composed of a heat insulating material having a heat resistance of 50 $m^{2\cdot}$ KI/W or less and a bending strength of 0.15 N/mm^2 or more can be adopted. The vertical and horizontal dimensions and thickness of the heat insulating panels constituting the bottom wall 11 and the side walls 12 can be appropriately set according to the type or the like of an object stored in the heat insulating container 1.

[0033] The lid 20 is a deformable, plate-shaped member, and is configured such that at least a part thereof is deformed when the lid 20 is inserted into the storage space 13 through the opening 14 of the container body 10 thereby to bring peripheral edges 21 into close contact with the inner surfaces of the side wall 12 of the container body 10. As illustrated in Fig. 2, the lid 20 in the present embodiment is divided into a plurality of sections (a first section 20A and a second section 20B), and is configured by connecting the first section 20A and the second section 20B to each other by a belt-shaped connecting elastic

part 22 extending in a first direction (in the vertical direction on the paper surface) D_1 in plan view, and has a planar shape which is substantially rectangular to fit the planar shape of the opening 14 of the container body 10.

[0034] The lid 20 is configured such that the connecting elastic part 22 is compressed thereby to reduce the interval between the first section 20A and the second section 20B so as to reduce the projected area thereof (consequently reducing the projected area of the lid 20 to be equal to or smaller than the area of the opening 14 of the container body 10, or reducing the length of one side of the lid 20 to be equal to or less than the length of the corresponding one side of the opening 14), and when the compression of the connecting elastic part 22 is released, the interval between the first section 20A and the second section 20B is increased thereby to increase the projected area thereof (consequently increasing the projected area of the lid 20 to be equal to or larger than the area of the opening 14 of the container body 10, or increasing the length of one side of the lid 20 to be equal to or more than the corresponding one side of the opening 14). In the present specification, the term "projected area" refers to the area of a shadow formed when light is applied from directly above an object being projected (e.g., the lid 20).

[0035] As with the bottom wall 11 and the side walls 12 of the container body 10, both the first section 20A and the second section 20B constituting the lid 20 can be configured using heat insulating material panels which have a predetermined thickness and are substantially rectangular in plan view. For the connecting elastic part 22 connecting the first section 20A and the second section 20B, a bellows structure composed of a polyurethane sponge and aluminum-deposited PET (polyethylene terephthalate) can be adopted. The combination of the air layer contained in the polyurethane sponge and the highly airtight aluminum-deposited PET can provide high heat insulation performance.

[0036] The vertical and horizontal dimensions and the thickness of the heat insulating material panels constituting the sections 20A and 20B of the lid 20, and the thickness of the connecting elastic part 22 when released from compression can be appropriately set according to the size of the opening 14 of the container body 10. In the present embodiment, the vertical and horizontal dimensions of the first section 20A and the second section 20B and the thickness of the connecting elastic part 22 when released from compression are set such that the projected area of the lid 20 in the state in which the connecting elastic part 22 is not being compressed is slightly larger than the projected area of the opening 14 of the container body 10.

[0037] Fig. 3 to Fig. 12 illustrate the modified examples of the present embodiment.

[0038] The planar shapes of the first section 20A and the second section 20B constituting the lid 20 do not necessarily have to be the same, and for example, the area of the first section 20A may be set smaller and the area of the second section 20B may be set larger as illustrated in Fig. 3. Further, the planar shapes of the first section 20A and the second section 20B constituting the lid 20 do not necessarily have to be rectangular, and for example, the planar shapes of the first section 20A and the second section 20B may be trapezoidal as illustrated in Fig. 4, and these may be combined to constitute the lid 20 having a substantially rectangular shape in plan view. The surface of at least one part of the lid 20 (only the first section 20A in Fig. 3, or the first section 20A and the second section 20B in Fig. 4) can be provided with a grip or grips 23 to be grasped by a user.

[0039] The number of the sections constituting the lid 20 does not necessarily have to be two, and the lid 20 may be divided, for example, into four sections (the first section 20A, the second section 20B, a third section 20C, and a fourth section 20D), as illustrated in Fig. 5 to Fig. 8, and these four sections may be connected by the connecting elastic parts 22. Fig. 5 illustrates a modified example in which all the four sections have the same planar shape and the same area, Fig. 6 illustrates a modified example in which the areas of two of the four sections are set smaller and the areas of the remaining two sections are set larger, and Fig. 7 illustrates a modified example in which all the four sections have different planar shapes and different areas. Further, while Fig. 5 to Fig. 7 illustrate the modified examples in which the planar shapes of the four sections are all rectangular (oblong), it is possible to set two of the four sections to have pentagonal planar shapes and to set the remaining two to have triangular planar shapes, as in the modified example of Fig. 8. In any case, the planar shape of the lid 20 is substantially rectangular to fit the planar shape of the opening 14 of the container body 10.

[0040] Further, as illustrated in Fig. 9 and Fig. 10, the three sections (the first section 20A, the second section 20B, and the third section 20C) may be connected by the connecting elastic parts 22 to configure the lid 20 having a substantially rectangular shape in plan view. Fig. 9 illustrates a modified example in which the sections having relatively small areas (the first section 20A and the third section 20C) are placed on both ends in the longitudinal direction of the lid 20, and are connected with the section having a relatively large area (the second section 20B) placed at the center in the longitudinal direction, and the grips 23 are provided on the surfaces of the two sections (the first section 20A and the third section 20C) placed on both ends in the longitudinal direction. Fig. 10 illustrates a modified example in which all three sections have different planar shapes and areas. In any case, the planar shape of the lid 20 has a substantially rectangular shape to fit the planar shape of the opening 14 of the container body 10.

[0041] Further, the peripheral edges 21 of the lid 20 do not necessarily have to contact the inner surface of the side walls 12 of the container body 10 over the entire periphery. For example, as illustrated in Fig. 11, the corners of the first section 20A and the second section 20B

constituting the lid 20 may be cut off to form gaps between the four corners of the lid 20 and the container body 10. In this case, the projected area of the lid 20 does not necessarily have to become larger than the area of the opening 14 of the container body 10 when the compression of the connecting elastic part 22 is released, causing the interval between the first section 20A and the second section 20B to be increased; however, an arrangement is made such that, for example, when the compression along a second direction (the lateral direction on the paper surface) D_2 orthogonal to the extending direction of the connecting elastic part 22 (a first direction D_1) is released, the lengths of sides 21A and 21B of the lid 20 along the second direction D_2 are increased to be equal to or more than the lengths of sides (corresponding sides) 14A and 14B of the opening 14 of the container body 10 that correspond to the sides 21A and 21B, as illustrated in Fig. 11. Thus, sides 21C and 21D orthogonal to the sides 21A and 21B of the lid 20 come in close contact with the inner surfaces of the side walls 12 at sides 14C and 14D of the opening 14 of the container body 10 that correspond to the sides 21C and 21D, thereby fixing the lid 20 to the container body 10. An arrangement is made such that, when the lid 20 is compressed along the second direction D_2 of the connecting elastic part 22, the lengths of the sides 21A and 21B of the lid 20 along second direction D_2 are reduced to be equal to or less than the lengths of the corresponding sides 14A and 14B of the opening 14 of the container body 10. The extending direction (the first direction D_1) and the compressing direction (the second direction D_2) of the connecting elastic part 22 do not necessarily have to be orthogonal to each other as long as these directions intersect with each other. For example, in the case where the extending direction of the connecting elastic part 22 is slightly inclined rather than being orthogonal with respect to the upper and lower sides on the paper surface as illustrated in Fig. 4 and Fig. 8, the connecting elastic part 22 may be compressed in a direction parallel to the upper and lower sides on the paper surface. In this case, the extending direction (the first direction D_1) and the compressing direction (the second direction D_2) of the connecting elastic part 22 intersect with each other although not being orthogonal to each other.

[0042] Further, as illustrated in Fig. 12, a first projection 24 protruding from the first side 21C in a direction away from the connecting elastic part 22 can be formed on the side (the first side) 21C positioned on the opposite side from the connecting elastic part 22 in the first section 20A of the lid 20, while a second projection 25 protruding from the second side 21D in a direction away from the connecting elastic part 22 can be formed on the side (the second side) 21D positioned on the opposite side from the connecting elastic part 22 in the second section 20B of the lid 20. In this case, as illustrated in Fig. 12, the first projection 24 can be placed adjacently to one end in the first direction D_1, and the second projection 25 can be placed adjacently to the other end in the first direction D_1, (i.e., the first projection 24 and the second projection 25 are placed on the diagonal line of the lid 20). Further, an arrangement is made such that, when the compression of the connecting elastic part 22 along the second direction D_2 is released, the first projection 24 comes in close contact with the inner surface of the side wall on the side 14C of the opening 14 of the container body 10 that corresponds thereto, and the second projection 25 comes in close contact with the inner surface of the side wall on the side 14D of the opening 14 of the container body 10 that corresponds thereto. Thus, the lid 20 is fixed to the container body 10. An arrangement is made such that, when the lid 20 is compressed along the second direction D_2 of the connecting elastic part 22, the close contact between the first projection 24 and the second projection 25 and the sides 14C and 14D of the opening 14 of the container body 10 is released to allow the lid 20 to be detached from the container body 10. The number of the projections is not limited to two, and the projection may be provided only on one of the sides as long as the lid 20 can be fixed to the container body 10. For example, the first projection 24 is provided only on the side 21C, and when the compression of the connecting elastic part 22 is released, the first projection 24 is brought into close contact with the inner surface of the side wall 12 of a part of the one side 14C of the opening 14 of the container body 10 that corresponds thereto, while the side 21 D located on the opposite side from the first projection 24 of the lid 20 is brought into close contact with the inner surface of the side wall 12 of the side 14D of the opening 14 of the container body 10 that corresponds thereto, thus allowing the lid 20 to be fixed to the container body 10.

[0043] In the heat insulating container 1 according to the embodiment described above, the lid 20 is configured such that at least a part of the lid 20 is deformed in a state of being inserted into the storage space 13 through the opening 14 of the container body 10, thereby bringing the peripheral edges 21 into close contact with the inner surfaces of the side walls 12 of the container body 10. This makes it possible to form, inside the storage space 13, the heat-insulated closed space composed of the bottom wall 11 of the container body 10, a part of the side walls 12 (a part close to the bottom wall 11) of the container body 10, and the lid 20, so that an object can be stored in the heat-insulated closed space for transportation or the like. In this case, the volume of the heat-insulated closed space can be changed by changing the position of the lid 20 (the position where the peripheral edges 21 of the lid 20 come in close contact with the side walls 12 of the container body 10) according to the volume of an object stored. For example, when the volume of an object stored is reduced, the peripheral edges 21 of the lid 20 are brought into close contact with the side walls 12 of the container body 10 in a state in which the position of the lid 20 has been shifted toward the bottom wall 11 of the container body 10, thereby making it possible to form the heat-insulated closed space having a

relatively small volume. Therefore, even when the volume of an object stored changes, the volume of the heat-insulated closed space can be changed accordingly, so that the presence of air, which has high specific heat, in the heat-insulated closed space can be suppressed, thus making it possible to suppress the deterioration of heat insulation efficiency.

[0044] Further, in the heat insulating container 1 according to the embodiment described above, the lid 20 is configured by being divided into a plurality of sections (such as the first section 20A and the second section 20B) and by connecting these sections by the connecting elastic part 22. In addition, the projected area of the lid 20 is reduced when the connecting elastic part 22 is compressed so as to reduce the interval between the sections (consequently reducing the projected area of the lid 20 to be equal to or smaller than the area of the opening 14 of the container body 10, or the length of one side of the lid 20 to be equal to or less than the length of corresponding one side of the opening 14), while the projected area thereof is increased when the compression of the connecting elastic part 22 is released so as to increase the interval between the sections (consequently increasing the projected area of the lid to be equal to or larger than the area of the opening 14 of the container body 10, or the length of one side of the lid to be equal to or more than the length of corresponding one side of the opening). In the lid 20 having such a configuration, the projected area thereof is reduced (to be equal to or smaller than the area of the opening 14 of the container body 10) by compressing the connecting elastic part 22 when the lid 20 is inserted into the storage space 13 of the container body 10, and then the projected area is increased (to be equal to or larger than the area of the opening 14 of the container body 10) by releasing the compression of the connecting elastic part 22 in the storage space 13, thus allowing the peripheral edges 21 to come in close contact with the side walls 12 of the container body 10.

[0045] In addition, the heat insulating container 1 according to the embodiment described above adopts the lid 20 configured by connecting the plurality of sections (such as the first section 20A and the second section 20B) by the connecting elastic part 22, so that the height of the first section 20A and the height of the second section 20B can be made different at the connecting elastic part 22 serving as the boundary. Therefore, as illustrated in Fig. 13, even if the objects C_1 and C_2 stored in the container body 10 have different heights, the height of the first section 20A and the height of the second section 20B can be changed according to the heights of the objects C_1 and C_2 so as to bring the lid 20 close to the objects C_1 and C_2 (or to bring the lid 20 into close contact with the objects C_1 and C_2). As a result, the space generated between the objects C_1 and C_2 having different heights and the lid 20 can be reduced (or the space can be substantially eliminated), thus making it possible to effectively suppress the deterioration of the heat insulation efficiency.

[0046] Further, in the heat insulating container 1 according to the embodiment described above, the surface of at least one part of the lid 20 is provided with the grip 23 to be grasped by a user, thus enabling the user to deform the lid 20 by grasping the grip 23 provided on the surface of the part constituting the lid 20. This makes it easy to deform the lid 20 (by compressing the connecting elastic part 22 and releasing the compression).

<Second Embodiment>

[0047] Referring now to Fig. 14 to Fig. 16, the configuration of a heat insulating container according to a second embodiment of the present invention will be described. The heat insulating container according to the present embodiment modifies the configuration of the lid 20 of the heat insulating container 1 according to the first embodiment, and the configuration of the container body 10 is substantially the same as that of the first embodiment. Therefore, a different configuration (a lid 30) will be mainly described, and a common configuration (a container body 10) will be assigned the same reference sign and a detailed description thereof will be omitted.

[0048] The lid 30 of the heat insulating container according to the present embodiment is a deformable plate-shaped member, as with the first embodiment, and is configured such that at least a part thereof is deformed in a state of being inserted into a storage space 13 through an opening 14 of the container body 10 thereby to bring peripheral edges 31 thereof into close contact with the inner surfaces of side walls 12 of the container body 10.

[0049] As illustrated in Fig. 14, the lid 30 in the present embodiment is divided into a plurality of sections (a first section 30A and a second section 30B), and configured to be deformable between a bent state (Fig. 14 (A)) and a flat state (Fig. 14 (B)) by connecting the first section 30A and the second section 30B by a hinge 32. The planar shape of the lid 30 in the flat state is substantially rectangular to fit the planar shape of the opening 14 of the container body 10.

[0050] The lid 30 is configured such that the projected area thereof is reduced by being set to the bent state as illustrated in Fig. 14 (A) when the lid 30 is inserted into the storage space 13 through the opening 14 of the container body 10, while the projected area thereof is increased when the lid 30 is set to the flat state as illustrated in Fig. 14 (B) after being inserted into the storage space 13 of the container body 10.

[0051] The first section 30A and the second section 30B constituting the lid 30 can be both composed of heat insulating material panels having a predetermined thickness and having a substantially rectangular shape in plan view, as with a bottom wall 11 and the side walls 12 of the container body 10. The vertical and horizontal dimensions and the thicknesses of the heat insulating material panels constituting the sections 30A and 30B of the lid 30 can be appropriately set according to the size of the

opening 14 of the container body 10.

[0052] In the present embodiment, the vertical and horizontal dimensions of the first section 30A and the second section 30B are set such that the projected area when the lid 30 is in the flat state (Fig. 14 (B)) is substantially the same as (or slightly larger than) the projected area of the opening 14 of the container body 10.

[0053] The hinge 32 is placed substantially at the center of the lid 30 in plan view, and has a plate-shaped first fixed part 32A fixed to the first section 30A of the lid 30 and a plate-shaped second fixed part 32B fixed to the second section 30B of the lid 30, which are rotatably connected by a rotating shaft 32C, as illustrated in Fig. 15 and Fig. 16. The first fixed part 32A of the hinge 32 is fixed to the first section 30A of the lid 30 and the second fixed part 32B of the hinge 32 is fixed to the second section 30B of the lid 30, thereby enabling the lid 30 to deform between the bent state (Fig. 14 (A)) and the flat state (Fig. 14 (B)).

[0054] The surfaces of the first section 30A and the second section 30B of the lid 30 can be provided with grips 33 to be grasped by a user, as illustrated in FIG. 14. In addition, the rear side of the hinge 32 connecting the first section 30A and the second section 30B of the lid 30 are provided with a connecting elastic part 34 (e.g., a bellows structure composed of a polyurethane sponge and aluminum-deposited PET) like the one described in the first embodiment.

[0055] In the heat insulating container according to the embodiment described above, the lid 30 is configured such that at least a part thereof is deformed in a state of being inserted into the storage space 13 through the opening 14 of the container body 10, thereby bringing the peripheral edges 31 into close contact with the inner surfaces of the side walls 12 of the container body 10. This makes it possible to form, inside the storage space 13, the heat-insulated closed space composed of the bottom wall 11 of the container body 10, a part of the side walls 12 (a part close to the bottom wall 11) of the container body 10, and the lid 30, so that an object can be stored in the heat-insulated closed space for transportation or the like. In this case, the volume of the heat-insulated closed space can be changed by changing the position of the lid 30 (the position where the peripheral edges 31 of the lid 30 come in close contact with the side walls 12 of the container body 10) according to the volume of an object stored. For example, when the volume of an object stored is reduced, the peripheral edges 31 of the lid 30 are brought into close contact with the side walls 12 of the container body 10 in a state in which the position of the lid 30 has been shifted toward the bottom wall 11 of the container body 10, thereby making it possible to form a heat-insulated closed space having a relatively small volume. Therefore, even when the volume of an object stored changes, the volume of the heat-insulated closed space can be changed accordingly, so that the presence of air, which has high specific heat, in the heat-insulated closed space can be suppressed, thus making it possible to suppress the deterioration of heat insulation efficiency.

[0056] Further, in the heat insulating container according to the embodiment described above, the lid 30 is divided into a plurality of sections (the first section 30A and the second section 30B) and configured such that the sections are connected by the hinge 32 thereby to be deformable between the bent state and the flat state, thus making it possible to bring the peripheral edges 31 into close contact with the side walls 12 of the container body 10 by appropriately deforming the lid 30 according to the size of the opening 14 of the container body 10. In particular, the projected area of the lid 30 in the present embodiment is reduced by being set to the bent state when the lid 30 is inserted into the storage space 13 through the opening 14 of the container body 10, while the projected area is increased when the lid 30 is set to the flat state after being inserted into the storage space 13. Therefore, the lid 30 is set to the bent state so as to reduce the projected area when inserting the lid 30 into the storage space 13 of the container body 10, and then the lid 30 is set to the flat state by a user pulling the grips 33 upward thereby to increase the projected area in the storage space 13, thus making it possible to bring the peripheral edges 31 into close contact with the side walls 12 of the container body 10.

[0057] Further, in the heat insulating container according to the embodiment described above, since the surface of at least one section of the lid 30 is provided with the grip 33 to be grasped by a user, the user can deform the lid 30 by grasping the grip 33 provided on the surface of the section constituting the lid 30. This makes it easy to deform the lid 30 (shifting from the bent state to the flat state and shifting from the flat state to the bent state).

<Third Embodiment>

[0058] Referring now to Fig. 17 and Fig. 18, the configuration of a heat insulating container according to an example which does not form part of the present invention will be described. The heat insulating container according to the present embodiment modifies the configuration of the lid 20 of the heat insulating container 1 according to the first embodiment, and the configuration of the container body 10 is substantially the same as that of the first embodiment. Therefore, a different configuration (a lid 40) will be mainly described, and a detailed description of a common configuration (a container body 10) will be omitted.

[0059] The lid 40 of the heat insulating container according to the present embodiment is a deformable plate-shaped member, as with the first embodiment, and is configured such that at least a part thereof is deformed in a state of being inserted into a storage space 13 through an opening 14 of the container body 10 thereby to bring peripheral edges 41 (or peripheral elastic parts 42 to be described later) into close contact with the inner surfaces of side walls 12 of the container body 10.

[0060] The lid 40 in the present example has a first section 40A composed of a heat insulating material panel having a predetermined thickness and having a substantially rectangular shape in plan view, and the peripheral edge 41 of the first section 40A is provided with the peripheral elastic part 42. For example, a sponge made of polyurethane, which contains an air layer and has excellent heat insulation performance, can be used for the peripheral elastic part 42.

[0061] The vertical and horizontal dimensions and the thickness of the heat insulating material panel constituting the first section 40A of the lid 40, and the thickness of the peripheral elastic parts 42 when released from compression can be appropriately set according to the size of the opening 14 of the container body 10. In the present embodiment, the vertical and horizontal dimensions of the first section 40A and the thickness of the peripheral elastic parts 42 when released from compression are set such that the projected area of the lid 40 in a state in which the peripheral elastic parts 42 are not being compressed is slightly larger than the projected area of the opening 14 of the container body 10.

[0062] Fig. 18 and Fig. 19 illustrate modified configurations of the present example.

[0063] Fig. 17 illustrates an example in which the peripheral elastic parts 42 are provided on all the peripheral edges 41 of the first section 40A of the lid 40; however, the peripheral elastic parts 42 may be provided on a part (a pair of opposing sides) of the peripheral elastic parts 42 of the first section 40A, as illustrated in Fig. 18 and Fig. 19.

[0064] In addition, in a third embodiment of the present invention as illustrated in Fig. 19, the lid 40 is divided into a plurality of sections (the first section 40A, a second section 40B, and a third section 40C), and configured such that the sections are connected by hinges 43 so as to allow the lid 40 to be deformed between a bent state and a flat state. In this case, the hinges 43 can be placed in the vicinity of the peripheral edges 41 of the lid 40, and the peripheral elastic parts 42 can be provided on the peripheral edges 41 in the vicinity of the hinges 43. When such a configuration is adopted, the projected area of the lid 40 in the flat state is set to be larger than the projected area of the opening 14 of the container body 10, and the lid 40 is shifted from the flat state to the bent state when inserted into a storage space 13 through the opening 14 of the container body 10 thereby to reduce the projected area to be substantially the same as the projected area of the opening 14.

[0065] In the heat insulating container according to the examples described above, the lid 40 is configured such that at least a part of the lid 40 in a state of being inserted into the storage space 13 through the opening 14 of the container body 10 is deformed, thereby bringing the peripheral edges 41 (or the peripheral elastic parts 42) into close contact with the inner surfaces of the side walls 12 of the container body 10. This makes it possible to form, inside the storage space 13, the heat-insulated closed space composed of the bottom wall 11 of the container body 10, a part of the side walls 12 (a part close to the bottom wall 11) of the container body 10, and the lid 40, so that an object can be stored in the heat-insulated closed space for transportation or the like. In this case, the volume of the heat-insulated closed space can be changed by changing the position of the lid 40 (the position where the peripheral edges 41 of the lid 40 come in close contact with the side walls 12 of the container body 10) according to the volume of an object stored. For example, when the volume of an object stored is reduced, the peripheral edges 41 of the lid 40 are brought into close contact with the side walls 12 of the container body 10 in a state in which the position of the lid 40 has been shifted toward the bottom wall 11 of the container body 10, thereby making it possible to form the heat-insulated closed space having a relatively small volume. Consequently, even when the volume of an object stored changes, the volume of the heat-insulated closed space can be changed accordingly, so that the presence of air, which has high specific heat, in the heat-insulated closed space can be suppressed, thus making it possible to suppress the deterioration of heat insulation efficiency.

[0066] Further, in the heat insulating container according to the examples described above, at least a part of the peripheral edges 41 of the lid 40 is provided with the peripheral elastic parts 42, so that the peripheral elastic parts 42 of the lid 40 are compressed to reduce the projected area of the lid 40 when the lid 40 is inserted into the storage space 13 of the container body 10, and then the compression of the peripheral elastic parts 42 is released inside the storage space 13 so as to increase the projected area, thus making it possible to bring the peripheral edges 41 (or the peripheral elastic parts 42 in the case where the peripheral edges 41 are provided with the peripheral elastic parts 42) into close contact with the inner surfaces of the side walls 12.

[0067] Further, in the heat insulating container according to the third embodiment of Fig. 19, the lid 40 is divided into a plurality of sections (the first section 40A, the second section 40B, and the third section 40C), and configured such that the sections are connected by the hinges 43 so as to be deformable between the bent state and the flat state. This makes it possible to appropriately deform the lid 40 according to the size of the opening 14 of the container body 10 so as to bring the peripheral edges 41 into close contact with the side walls 12 of the container body 10. In particular, the projected area of the lid 40 in the present modified example is set to be larger than the projected area of the opening 14 of the container body 10 in the flat state, and the flat state is replaced by the bent state when the lid 40 is inserted into the storage space 13 through the opening 14 of the container body 10 thereby to reduce the projected area to be substantially the same as the projected area of the opening 14. This makes it possible to bend the lid 40 by the hinges 43 located in the vicinity of the peripheral edges 41 when inserting the lid 40 into the storage space 13 of the con-

tainer body 10 so as to set the projected area of the lid 40 to be substantially the same as the projected area of the opening 14 of the container body 10, thus allowing the peripheral edges 41 (or the peripheral elastic parts 42 in the case where the peripheral edges 41 are provided with the peripheral elastic parts 42) to come in close contact with the side walls 12 of the container body 10.

<Fourth Embodiment>

[0068] Referring now to Fig. 20, the configuration of a heat insulating container according to a fourth embodiment of the present invention will be described. The heat insulating container according to the present embodiment modifies the configuration of the lid 20 of the heat insulating container 1 according to the first embodiment, and the configuration of the container body 10 is substantially the same as that of the first embodiment. Therefore, a different configuration (a lid 50) will be mainly described, and a detailed description of a common configuration (a container body 10) will be omitted.

[0069] The lid 50 in the present embodiment is a deformable plate-shaped member, and is configured such that at least a part thereof is deformed in a state of being inserted into a storage space 13 through an opening 14 of the container body 10 thereby to bring peripheral edges 51 (or peripheral elastic parts 53) into close contact with the inner surfaces of side walls 12 of the container body 10.

[0070] The lid 50 in the present embodiment has a configuration that combines the configuration of the lid 20 in the first embodiment (Fig. 2) and the configuration of the lid 40 in the example of Fig. 18. More specifically, as illustrated in Fig. 20, the lid 50 is divided into two sections (a first section 50A and a second section 50B), configured such that the first section 50A and the second section 50B are connected by a connecting elastic part 52, and the planar shape thereof is substantially rectangular to fit the planar shape of the opening 14 of the container body 10. Further, the lid 50 is configured such that the projected area thereof is reduced when the connecting elastic part 52 is compressed thereby to reduce the interval between the first section 50A and the second section 50B, while the projected area thereof is increased when the compression of the connecting elastic part 52 is released thereby to increase the interval between the first section 50A and the second section 50B. Further, in the peripheral edges 51 of the lid 50, the two sides orthogonal to the connecting elastic part 52 are provided with the peripheral elastic parts 53. The connecting elastic part 52 and the peripheral elastic parts 53 have already been described in the first embodiment and the third embodiment, so that detailed descriptions thereof will be omitted. The surfaces of the first section 50A and the second section 50B of the lid 50 are provided with grips 54 to be grasped by a user.

[0071] In the heat insulating container according to the embodiment described above, the lid 50 is configured such that at least a part thereof is deformed in a state of being inserted into the storage space 13 through the opening 14 of the container body 10, thereby bringing the peripheral edges 51 (or the peripheral elastic parts 53) into close contact with the inner surfaces of the side walls 12 of the container body 10. This makes it possible to form, inside the storage space 13, a heat-insulated closed space composed of the bottom wall 11 of the container body 10, a part of the side walls 12 (a part close to the bottom wall 11) of the container body 10, and the lid 50, so that an object can be stored in the heat-insulated closed space for transportation or the like. In this case, the volume of the heat-insulated closed space can be changed by changing the position of the lid 50 (the position where the peripheral edges 51 of the lid 50 come in close contact with the side walls 12 of the container body 10) according to the volume of an object stored. For example, when the volume of an object stored is reduced, the peripheral edges 51 of the lid 50 are brought into close contact with the side walls 12 of the container body 10 in a state in which the position of the lid 50 has been shifted toward the bottom wall 11 of the container body 10, thereby making it possible to form the heat-insulated closed space having a relatively small volume. Consequently, even when the volume of an object stored changes, the volume of the heat-insulated closed space can be changed accordingly, so that the presence of air, which has high specific heat, in the heat-insulated closed space can be suppressed, thus making it possible to suppress the deterioration of heat insulation efficiency.

[0072] Further, in the heat insulating container according to the embodiment described above, the lid 50 is divided into a plurality of sections (the first section 50A and the second section 50B), and configured by connecting these sections by the connecting elastic part 52. In addition, the projected area of the lid 50 is reduced when the connecting elastic part 52 is compressed thereby to reduce the interval between the sections, while the projected area thereof is increased when the compression of the connecting elastic part 52 is released thereby to increase the interval between the sections. In the lid 50 having such a configuration, the connecting elastic part 52 is compressed to reduce the projected area of the lid 50 when the lid 50 is inserted into the storage space 13 of the container body 10, and then the compression of the connecting elastic part 52 is released inside the storage space 13 so as to increase the projected area, thus making it possible to bring the peripheral edges 51 (or the peripheral elastic parts 53) into close contact with the side walls 12 of the container body 10.

[0073] Further, in the heat insulating container according to the embodiment described above, a part of the peripheral edges 51 of the lid 50 is provided with the peripheral elastic parts 53, so that the projected area of the lid 50 can be reduced by compressing the peripheral elastic parts 53 of the lid 50 when the lid 50 is inserted into the storage space 13 of the container body 10, and then the projected area can be increased by releasing

the compression of the peripheral elastic parts 53 in the storage space 13 so as to allow the peripheral edges 51 (the peripheral elastic parts 53 in the case of the peripheral edges 51 provided with the peripheral elastic parts 53) to be brought into close contact with the inner surfaces of the side walls 12.

[0074] Further, in the heat insulating container according to the embodiment described above, the surfaces of the plurality of sections of the lid 50 are provided with the grips 54 to be grasped by a user, thus enabling the user to grasp the grips 54 provided on the surfaces of the sections constituting the lid 50 to deform the lid 50. This makes it easy to deform the lid 50 (by compressing the connecting elastic part 52 and releasing the compression).

[0075] The present invention is not limited to the embodiments described above, and any design modifications added as appropriate by those skilled in the art to these embodiments are also included in the scope of the present invention as long as such modifications have the features of the present invention. More specifically, each element provided in each of the above embodiments and its placement, material, conditions, shape, size, and the like are not limited to those illustrated and can be changed as appropriate. In addition, each element provided in each of the above-described embodiments can be combined to a technically possible extent, and any combinations of these are also included in the scope of the present invention as long as the combinations include the features of the present invention.

Reference Signs List

[0076]

1 ... heat insulating container
10 ... container body
11 ... bottom wall
12 ... side wall
13 ... storage space
14 ... opening
14A, 14B ... corresponding side (side corresponding to a side along the second direction of the lid)
20 · 30 · 40 · 50 ... lid
20A to D · 30A to B · 40A to C · 50A to B ... a plurality of sections
21 · 31 · 41 · 51 ... peripheral edge
21A · 21B ... side along the second direction
21C ... first side
21D ... second side
22 · 52 ... connecting elastic part
23 · 33 · 54 ... grip
24 ... first projection
25 ... second projection
32 · 43 ... hinge
42 · 53 ... peripheral elastic part
D_1 ... first direction
D_2 ... second direction

Claims

1. A heat insulating container (1) comprising: a container body (10) having a storage space (13) formed by a bottom wall (11) and side walls (12), and an opening (14) continuous to the storage space (13); and a deformable plate-shaped lid (20, 30, 40, 50),

   wherein the lid (20, 30, 40, 50) is configured such that at least a part thereof is deformed in a state of being inserted into the storage space (13) through the opening (14) of the container body (10) thereby to bring a peripheral edge (21, 31, 41, 51) of the lid (20, 30, 40, 50) into close contact with inner surfaces of the side walls (12), and
   characterized in that
   the lid (20, 30, 40, 50) is configured by connecting a plurality of sections (20A-D, 30A-B, 40A-C, 50A-B) by a connecting elastic part (22, 52), and a projected area thereof is reduced by compressing the connecting elastic part (22, 52) so as to reduce an interval between the sections (20A-D, 30A-B, 40A-C, 50A-B), while the projected area thereof is increased by releasing the compression of the connecting elastic part (22, 52) so as to increase the interval between the sections (20A-D, 30A-B, 40A-C, 50A-B).

2. The heat insulating container (1) according to claim 1, wherein the projected area of the lid (20, 30, 40, 50) becomes equal to or smaller than an area of the opening (14) by compressing the connecting elastic part (22, 52) so as to reduce the interval between the sections (20A-D, 30A-B, 40A-C, 50A-B), while the projected area thereof becomes equal to or larger than the area of the opening (14) by releasing the compression of the connecting elastic parts (22, 52) so as to increase the interval between the sections (20A-D, 30A-B, 40A-C, 50A-B).

3. The heat insulating container (1) according to claim 1, wherein in the lid (20, 30, 40, 50), the interval between the sections is reduced by compressing the connecting elastic part (22, 52) so as to cause a length of at least one side of the lid (20, 30, 40, 50) to become equal to or less than a length of a corresponding one side of the opening (14), while the interval between the sections (20A-D, 30A-B, 40A-C, 50A-B) is increased by releasing the compression of the connecting elastic part (22, 52) so as to cause the length of the one side to become equal to or more than the length of the corresponding one side of the opening (14).

4. The heat insulating container (1) according to claim 1, wherein the lid (20, 30, 40, 50) is configured to have a substantially rectangular shape in plan view by connecting the plurality of sections (20A-D, 30A-

B, 40A-C, 50A-B) by the connecting elastic part (22, 52) shaped like a belt extending in a first direction (D_1) in plan view, and also configured such that the length of a side of the lid (20, 30, 40, 50) along a second direction (D_2) is reduced to be equal to or less than the length of a corresponding side (14a, 14b) of the opening (14) by compressing the connecting elastic part (22, 52) along the second direction (D_2) intersecting with the first direction (D_1), while the length of the side of the lid (20, 30, 40, 50) along the second direction (D_2) is extended to be equal to or more than the length of the corresponding side (14a, 14b) by releasing the compression of the connecting elastic part (22, 52) along the second direction.

5. The heat insulating container (1) according to claim 1,

wherein the lid (20) is configured by connecting a first section (20A) and a second section (20B), each having a substantially rectangular shape in plan view, by the connecting elastic part (22), a projection (24, 25) protruding in a direction away from the connecting elastic part (22) is formed on at least either a first side (21C) positioned on the opposite side from the connecting elastic part (22) in the first section (20A) and a second side (21D) positioned on the opposite side from the connecting elastic part (22) in the second section (20B), and
the lid (20) is configured such that the projection is brought into close contact with at least a part of one side of the opening (14) by releasing the compression of the connecting elastic part (22).

6. The heat insulating container (1) according to claim 5,

wherein the connecting elastic part (22) is formed in a belt shape extending in a first direction (D_1) in plan view,
the projection includes a first projection (24) protruding from the first side (21C) and a second projection (25) protruding from the second side (21D),
the first projection (24) is placed closer to one end portion in the first direction (D_1), and
the second projection (25) is placed closer to the other end portion in the first direction (D_1).

7. The heat insulating container (1) according to any one of claims 1 to 6, wherein the connecting elastic part (22) has a bellows structure.

8. The heat insulating container (1) according to claim 1, wherein the lid (30, 40) is divided into a plurality of sections (30A-B, 40A-C) and is configured by connecting the sections by a hinge (32, 43) so as to be deformable between a bent state and a flat state.

9. The heat insulating container (1) according to claim 8,

wherein the hinge (32) is placed substantially at a center of the lid (30) in plan view, and
the lid (30) is set to the bent state at the time of being inserted into the storage space (13) through the opening (14) of the container body (10) thereby to reduce the projected area thereof, while the lid (30) is set to the flat state after being inserted into the storage space (13) thereby to increase the projected area thereof.

10. The heat insulating container (1) according to claim 8, wherein the hinge (43) is placed in the vicinity of the peripheral edge (41) of the lid (40), and the projected area of the lid (40) in the flat state is set to be larger than the projected area of the opening (14) of the container body (10), and the projected area is reduced to be substantially the same as the projected area of the opening (14) by shifting the flat state to the bent state at the time of being inserted into the storage space (13) through the opening (14) of the container body (10).

11. The heat insulating container (1) according to any one of claims 1 to 10, wherein a surface of the at least one section of the lid (20, 30, 40, 50) is provided with a grip (23, 33, 54) to be grasped by a user.

12. The heat insulating container (1) according to any one of claims 1 to 11, wherein at least a part of the peripheral edge (21, 31, 41, 51) of the lid (20, 30, 40, 50) is provided with a peripheral elastic part (42, 53).

Patentansprüche

1. Wärmeisolierender Behälter (1), umfassend: einen Behälterkörper (10), der einen Speicherraum (13) aufweist, der aus einer Bodenwand (11) und Seitenwänden (12) gebildet ist, und eine zu dem Speicherraum (13) durchgehende Öffnung (14); und einen verformbaren plattenförmigen Deckel (20, 30, 40, 50),

wobei der Deckel (20, 30, 40, 50) so konfiguriert ist, dass mindestens ein Teil davon in einem Zustand, in dem er in den Speicherraum (13) durch die Öffnung (14) des Behälterkörpers (10) eingesetzt wird, verformt wird, um dadurch eine Umfangskante (21, 31, 41, 51) des Deckels (20, 30, 40, 50) in engen Kontakt mit Innenflächen der Seitenwände (12) zu bringen, und

dadurch gekennzeichnet ist, dass
der Deckel (20, 30, 40, 50) konfiguriert ist durch Verbinden einer Vielzahl von Abschnitten (20A-D, 30A-B, 40A-C, 50A-B) durch einen elastischen Verbindungsteil (22, 52), und eine daraus vorstehende Fläche durch Komprimieren des elastischen Verbindungsteils (22, 52) so verringert wird, dass ein Abstand zwischen den Abschnitten (20A-D, 30A-B, 40A-C, 50A-B) verringert wird, während die daraus vorstehende Fläche durch Lösen der Kompression des elastischen Verbindungsteils (22, 52) so vergrößert wird, dass der Abstand zwischen den Abschnitten (20A-D, 30A-B, 40A-C, 50A-B) vergrößert wird.

2. Wärmeisolierender Behälter (1) nach Anspruch 1, wobei die vorstehende Fläche des Deckels (20, 30, 40, 50) durch Komprimieren des elastischen Verbindungsteils (22, 52) gleich groß oder kleiner als eine Fläche der Öffnung (14) wird, um den Abstand zwischen den Abschnitten (20A-D, 30A-B, 40A-C, 50A-B) zu verringern, während die daraus vorstehende Fläche durch Lösen der Kompression elastischen Verbindungsteile (22, 52) gleich groß oder größer als die Fläche der Öffnung (14) wird, so dass der Abstand zwischen den Abschnitten (20A-D, 30A-B, 40A-C, 50A-B) vergrößert wird.

3. Wärmeisolierender Behälter (1) nach Anspruch 1, wobei im Deckel (20, 30, 40, 50) der Abstand zwischen den Abschnitten durch Komprimieren des elastischen Verbindungsteils (22, 52) verringert wird, um zu veranlassen, dass eine Länge von mindestens einer Seite des Deckels (20, 30, 40, 50) gleich groß oder kleine als eine Länge einer entsprechenden einen Seite der Öffnung (14) wird, während der Abstand zwischen den Abschnitten (20A-D, 30A-B, 40A-C, 50A-B) durch Lösen der Kompression des elastischen Verbindungsteils (22, 52) vergrößert wird, um zu veranlassen, dass die Länge der einen Seite gleich oder mehr als die Länge der entsprechenden einen Seite der Öffnung (14) wird.

4. Wärmeisolierender Behälter (1) nach Anspruch 1, wobei der Deckel (20, 30, 40, 50) so konfiguriert ist, dass er in der Draufsicht durch Verbinden der Vielzahl von Abschnitten (20A-D, 30A-B, 40A-C, 50A-B) durch den elastischen Verbindungsteil (22, 52), der in der Draufsicht ähnlich einem Riemen geformt ist, der sich in eine erste Richtung (D_1) erstreckt, eine im Wesentlichen rechteckige Form aufweist, und auch so konfiguriert ist, dass die Länge an einer Seite des Deckels (20, 30, 40, 50) entlang einer zweiten Richtung (D_2) durch Komprimieren des elastischen Verbindungsteils (22, 52) entlang der zweiten Richtung (D_2), die die erste Richtung (D_1) kreuzt, verringert wird, um gleich oder weniger als die Länge einer entsprechenden Seite (14a, 14b) der Öffnung (14) zu sein, während die Länge der Seite des Deckels (20, 30, 40, 50) entlang der zweiten Richtung (D_2) verlängert wird, um durch Lösen der Kompression des elastischen Verbindungsteils (22, 52) entlang der zweiten Richtung gleich oder mehr als die Länge der entsprechenden Seite (14a, 14b) zu sein.

5. Wärmeisolierender Behälter (1) nach Anspruch 1,

wobei der Deckel (20) so konfiguriert ist, dass durch Verbinden eines ersten Abschnitts (20A) und eines zweiten Abschnitts (20B), die in Draufsicht jeweils eine im Wesentlichen rechteckige Form aufweisen, durch den elastischen Verbindungsteil (22),
ein Vorsprung (24, 25), der in einer Richtung vom elastischen Verbindungsteil (22) weg vorsteht, mindestens entweder an einer ersten Seite (21C), die an der gegenüberliegenden Seite des elastischen Verbindungsteils (22) im ersten Abschnitt (20A) positioniert ist, und einer zweiten Seite (21D), die an der gegenüberliegenden Seite vom elastischen Verbindungsteil (22) im zweiten Abschnitt (20B) positioniert ist, gebildet wird, und
der Deckel (20) so konfiguriert ist, dass der Vorsprung durch Lösen der Kompression des elastischen Verbindungsteils (22) in engen Kontakt mit mindestens einem Teil der einen Seite der Öffnung (14) gebracht wird.

6. Wärmeisolierender Behälter (1) nach Anspruch 5,

wobei der elastische Verbindungsteil (22) in einer Riemenform gebildet ist, die sich in Draufsicht in einer ersten Richtung (D_1) erstreckt,
der Vorsprung einen ersten Vorsprung (24) einschließt, der von der ersten Seite (21C) vorsteht, und einen zweiten Vorsprung (25), der von der zweiten Seite (21D) vorsteht,
wobei der erste Vorsprung (24) näher an einem Endabschnitt in der ersten Richtung (D_1) positioniert ist, und
der zweite Vorsprung (25) näher am anderen Endabschnitt in der ersten Richtung (D_1) positioniert ist.

7. Wärmeisolierender Behälter (1) nach einem der Ansprüche 1 bis 6, wobei der elastische Verbindungsteil (22) eine Balgstruktur aufweist.

8. Wärmeisolierender Behälter (1) nach Anspruch 1, wobei der Deckel (30, 40) in eine Vielzahl von Abschnitten (30A-B, 40A-C) unterteilt ist und durch Verbinden der Abschnitte durch ein Scharnier (32, 43) so konfiguriert ist, dass er zwischen einem gekrümmten Zustand und einem flachen Zustand ver-

formbar ist.

9. Wärmeisolierender Behälter (1) nach Anspruch 8,

wobei das Scharnier (32) in Draufsicht im Wesentlichen in einer Mitte des Deckels (30) positioniert ist, und
der Deckel (30) zu dem Zeitpunkt, zu dem er durch die Öffnung (14) des Behälterkörpers (10) in den Speicherraum (13) eingesetzt wird, in den gekrümmten Zustand versetzt wird, um dadurch die daraus vorstehende Fläche zu verringern, während der Deckel (30), nachdem er in den Speicherraum (13) eingesetzt wurde, in den flachen Zustand versetzt wird, um dadurch die daraus vorstehende Fläche zu vergrößern.

10. Wärmeisolierender Behälter (1) nach Anspruch 8,

wobei das Scharnier (43) in der Nähe der Umfangskante (41) des Deckels (40) positioniert ist und
die vorstehende Fläche des Deckels (40) im flachen Zustand dazu versetzt wird, größer zu sein als die vorstehende Fläche der Öffnung (14) des Behälterkörpers (10), und die vorstehende Fläche durch Umstellen des flachen Zustands in den gekrümmten Zustand zu dem Zeitpunkt, zu dem er in den Speicherraum (13) durch die Öffnung (14) des Behälterkörpers (10) eingesetzt wird, verringert wird, um im Wesentlichen gleich groß wie die vorstehende Fläche der Öffnung (14) zu sein.

11. Wärmeisolierender Behälter (1) nach einem der Ansprüche 1 bis 10, wobei eine Oberfläche des mindestens einen Abschnitts des Deckels (20, 30, 40, 50) mit einem Griff (23, 33, 54) bereitgestellt ist, um von einem Benutzer ergriffen zu werden.

12. Wärmeisolierender Behälter (1) nach einem der Ansprüche 1 bis 11, wobei mindestens ein Teil der Umfangskante (21, 31, 41, 51) des Deckels (20, 30, 40, 50) mit einem elastischen Umfangsteil (42, 53) bereitgestellt ist.

Revendications

1. Contenant d'isolation thermique (1) comprenant : un corps de contenant (10) présentant un espace de stockage (13) formé par une paroi inférieure (11) et des parois latérales (12), et une ouverture (14) continue avec l'espace de stockage (13) ; et un couvercle en forme de plaque déformable (20, 30, 40, 50),

dans lequel le couvercle (20, 30, 40, 50) est configuré de telle sorte qu'au moins une partie de celui-ci est déformée dans un état d'insertion dans l'espace de stockage (13) à travers l'ouverture (14) du corps de contenant (10) pour ainsi amener un bord périphérique (21, 31, 41, 51) du couvercle (20, 30, 40, 50) en contact étroit avec des surfaces intérieures des parois latérales (12), et
caractérisé en ce que
le couvercle (20, 30, 40, 50) est configuré en reliant une pluralité de sections (20A-D, 30A-B, 40A-C, 50A-B) par une partie élastique de liaison (22, 52), et une surface projetée de celui-ci est réduite en comprimant la partie élastique de liaison (22, 52) de manière à réduire un intervalle entre les sections (20A-D, 30A-B, 40A-C, 50A-B), tandis que la surface projetée de celui-ci est augmentée en relâchant la compression de la partie élastique de liaison (22, 52) de manière à augmenter l'intervalle entre les sections (20A-D, 30A-B, 40A-C, 50A-B).

2. Contenant d'isolation thermique (1) selon la revendication 1, dans lequel la surface projetée du couvercle (20, 30, 40, 50) devient égale ou inférieure à une surface de l'ouverture (14) en comprimant la partie élastique de liaison (22, 52) de manière à réduire l'intervalle entre les sections (20A-D, 30A-B, 40A-C, 50A-B), tandis que la surface projetée de celui-ci devient égale ou supérieure à la surface de l'ouverture (14) en relâchant la compression des parties élastiques de liaison (22, 52) de manière à augmenter l'intervalle entre les sections (20A-D, 30A-B, 40A-C, 50A-B).

3. Contenant d'isolation thermique (1) selon la revendication 1, dans lequel dans le couvercle (20, 30, 40, 50), l'intervalle entre les sections est réduit en comprimant la partie élastique de liaison (22, 52) de manière à amener une longueur d'au moins un côté du couvercle (20, 30, 40, 50) à devenir égale ou inférieure à une longueur d'un côté correspondant de l'ouverture (14), tandis que l'intervalle entre les sections (20A-D, 30A-B, 40A-C, 50A-B) est augmenté en relâchant la compression de la partie élastique de liaison (22, 52) de manière à amener la longueur du côté à devenir égale ou supérieure à la longueur du côté correspondant de l'ouverture (14).

4. Contenant d'isolation thermique (1) selon la revendication 1, dans lequel le couvercle (20, 30, 40, 50) est configuré pour avoir une forme sensiblement rectangulaire en vue en plan en reliant la pluralité de sections (20A-D, 30A-B, 40A-C, 50A-B) par la partie élastique de liaison (22, 52) en forme de ceinture s'étendant dans une première direction (D_1) en vue en plan, et est également configuré de telle sorte que la longueur d'un côté du couvercle (20, 30, 40, 50) le long d'une seconde direction (D_2) est réduite

pour être égale ou inférieure à la longueur d'un côté correspondant (14a, 14b) de l'ouverture (14) en comprimant la partie élastique de liaison (22, 52) le long de la seconde direction (D_2) coupant la première direction (D_1), tandis que la longueur du côté du couvercle (20, 30, 40, 50) le long de la seconde direction (D_2) est étendue pour être égale ou supérieure à la longueur du côté correspondant (14a, 14b) en relâchant la compression de la partie élastique de liaison (22, 52) le long de la seconde direction.

5. Contenant d'isolation thermique (1) selon la revendication 1,

dans lequel le couvercle (20) est configuré en reliant une première section (20A) et une seconde section (20B), chacune présentant une forme sensiblement rectangulaire en vue en plan, par la partie élastique de liaison (22),
une protubérance (24, 25) faisant saillie dans une direction opposée à la partie élastique de liaison (22) est formée sur au moins l'un d'un premier côté (21C) positionné du côté opposé à la partie élastique de liaison (22) dans la première section (20A) et d'un second côté (21D) positionné du côté opposé à la partie élastique de liaison (22) dans la seconde section (20B), et le couvercle (20) est configuré de telle sorte que la protubérance est amenée en contact étroit avec au moins une partie d'un côté de l'ouverture (14) en relâchant la compression de la partie élastique de liaison (22).

6. Contenant d'isolation thermique (1) selon la revendication 5,

dans lequel la partie élastique de liaison (22) se présente sous la forme d'une ceinture s'étendant dans une première direction (D_1) en vue en plan,
la protubérance inclut une première protubérance (24) faisant saillie depuis le premier côté (21C) et une seconde protubérance (25) faisant saillie depuis le second côté (21D),
la première protubérance (24) est placée plus près d'une partie d'extrémité dans la première direction (D_1), et
la seconde protubérance (25) est placée plus près de l'autre partie d'extrémité dans la première direction (D_1).

7. Contenant d'isolation thermique (1) selon l'une quelconque des revendications 1 à 6, dans lequel la partie élastique de liaison (22) présente une structure à soufflet.

8. Contenant d'isolation thermique (1) selon la revendication 1, dans lequel le couvercle (30, 40) est divisé en une pluralité de sections (30A-B, 40A-C) et est configuré en reliant les sections par une charnière (32, 43) de manière à être déformable entre un état plié et un état plat.

9. Contenant d'isolation thermique (1) selon la revendication 8,

dans lequel la charnière (32) est placée sensiblement au centre du couvercle (30) en vue en plan, et
le couvercle (30) est mis à l'état plié au moment de son introduction dans l'espace de stockage (13) à travers l'ouverture (14) du corps de contenant (10), ce qui permet de réduire sa surface projetée, tandis que le couvercle (30) est mis à l'état plat après avoir été inséré dans l'espace de stockage (13), permettant ainsi d'augmenter la surface projetée de celui-ci.

10. Contenant d'isolation thermique (1) selon la revendication 8,

dans lequel la charnière (43) est placée à proximité du bord périphérique (41) du couvercle (40), et
la surface projetée du couvercle (40) à l'état plat est prévue pour être plus grande que la surface projetée de l'ouverture (14) du corps de contenant (10), et la surface projetée est réduite pour être sensiblement identique à la surface projetée de l'ouverture (14) en passant de l'état plat à l'état plié au moment de l'insertion dans l'espace de stockage (13) à travers l'ouverture (14) du corps de contenant (10).

11. Contenant d'isolation thermique (1) selon l'une quelconque des revendications 1 à 10, dans lequel une surface de l'au moins une section du couvercle (20, 30, 40, 50) est dotée d'une poignée (23, 33, 54) destinée à être saisie par un utilisateur.

12. Contenant d'isolation thermique (1) selon l'une quelconque des revendications 1 à 11, dans lequel au moins une partie du bord périphérique (21, 31, 41, 51) du couvercle (20, 30, 40, 50) est dotée d'une partie élastique périphérique (42, 53).

Fig. 1

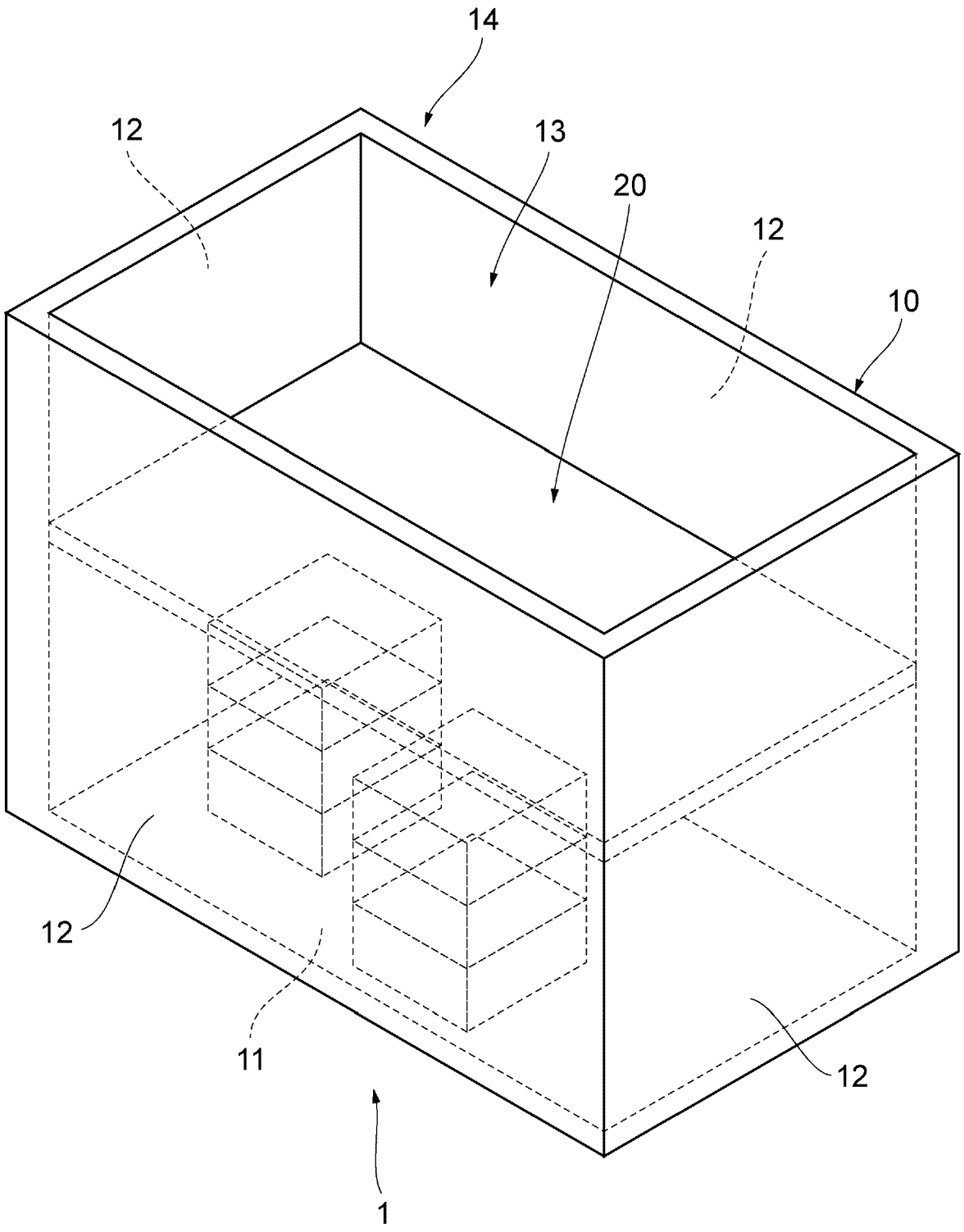


Fig. 2

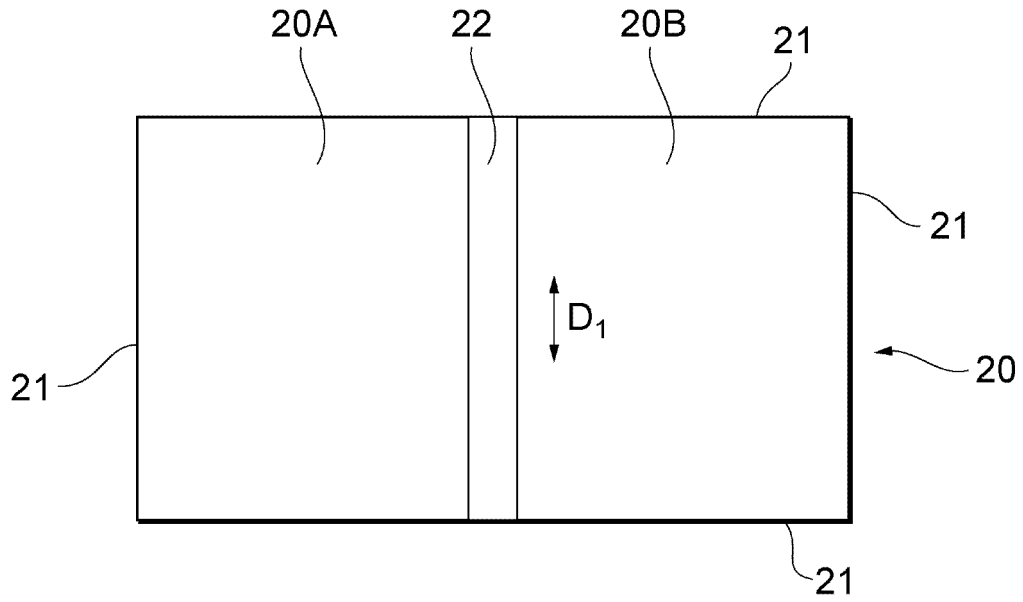


Fig. 3

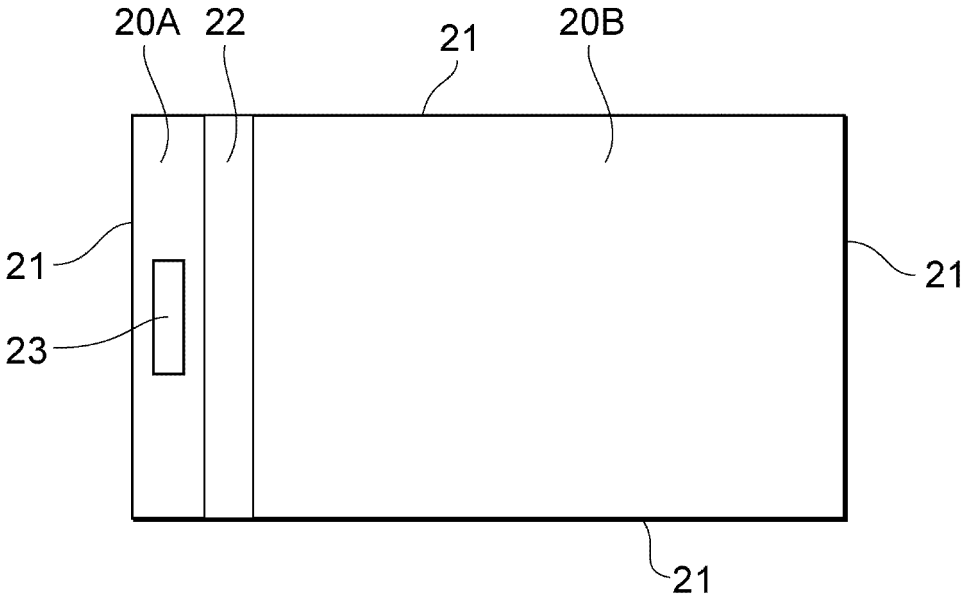


Fig. 4

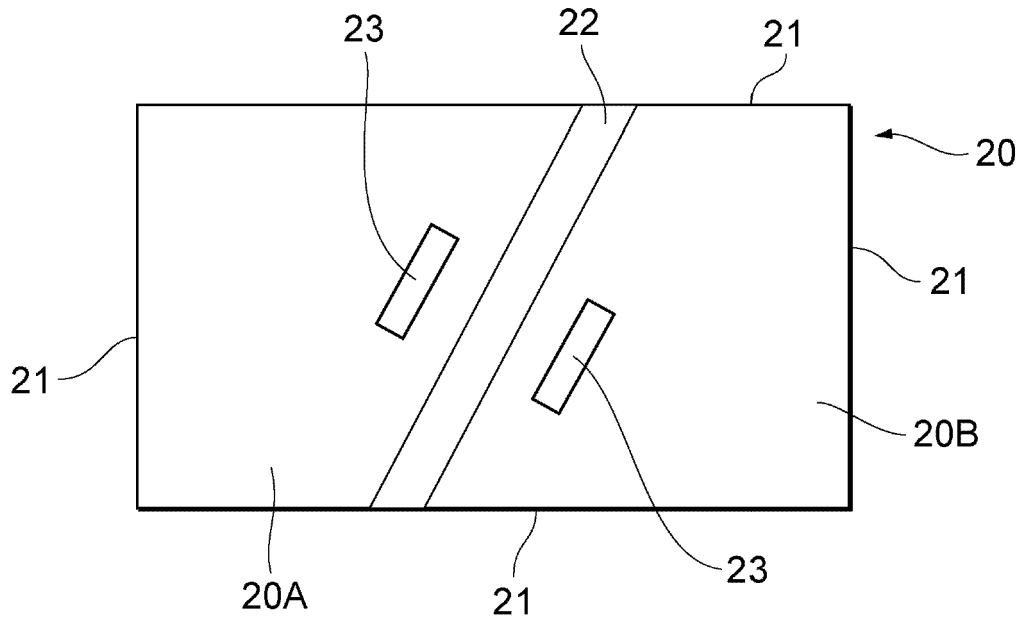


Fig. 5

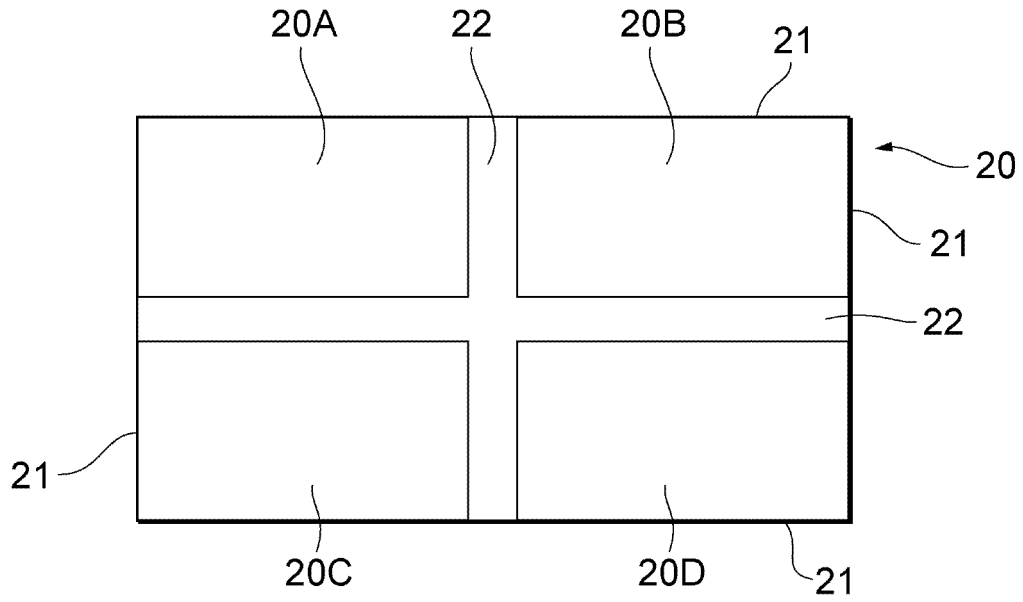


Fig. 6

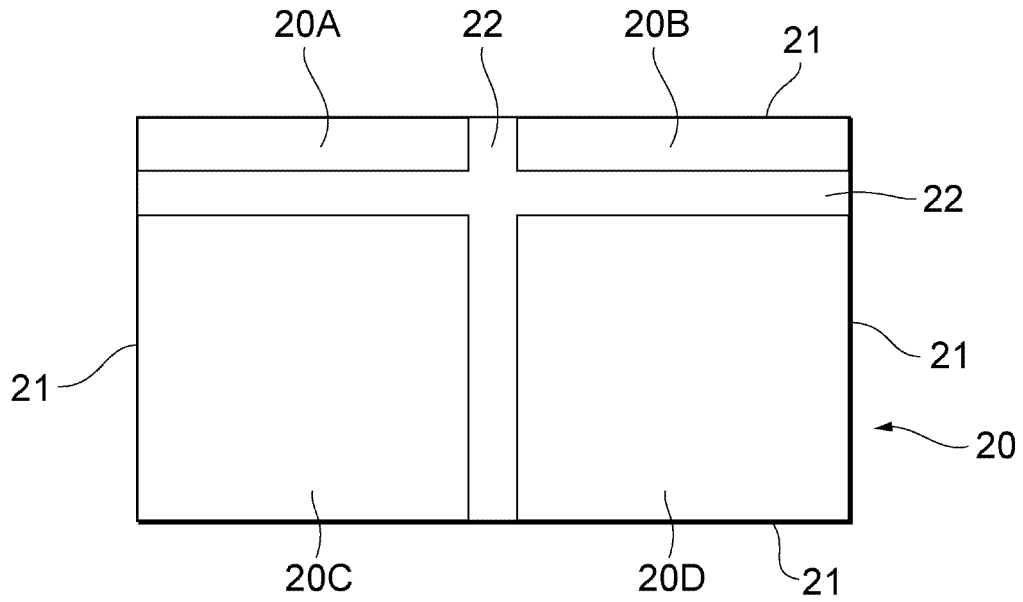


Fig. 7

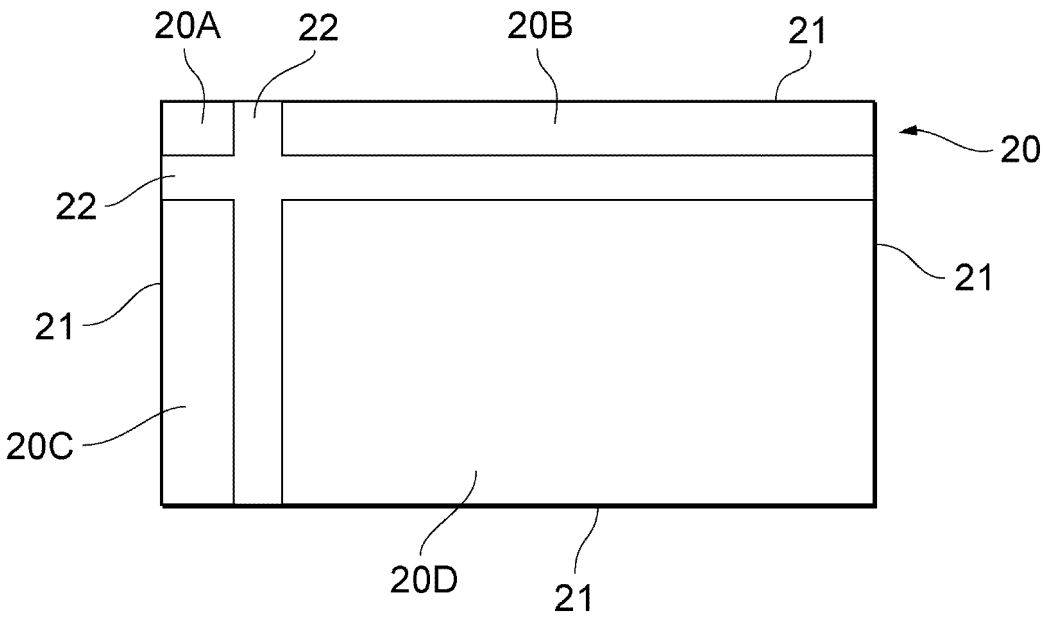


Fig. 8

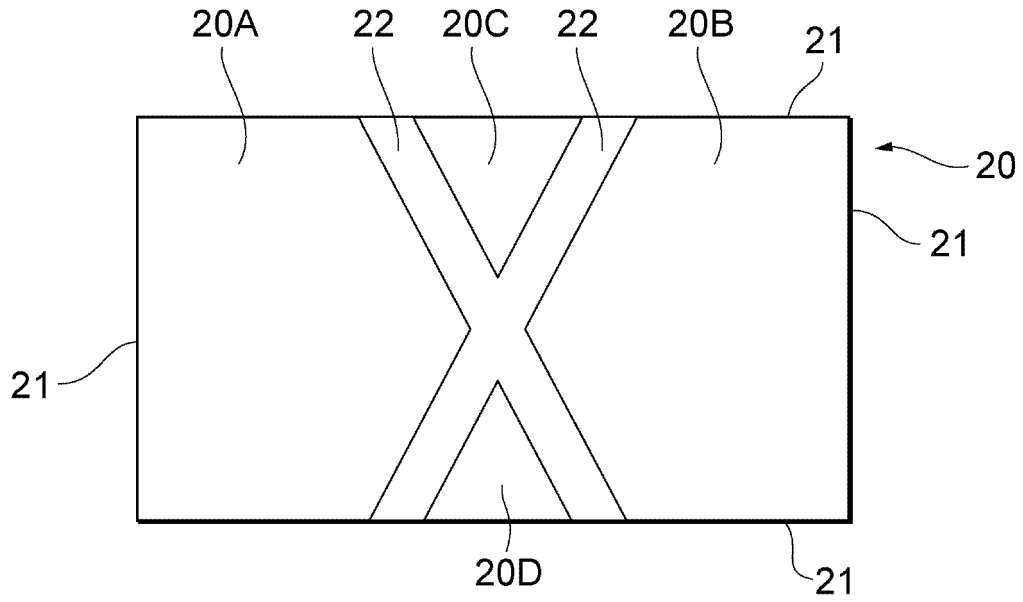


Fig. 9

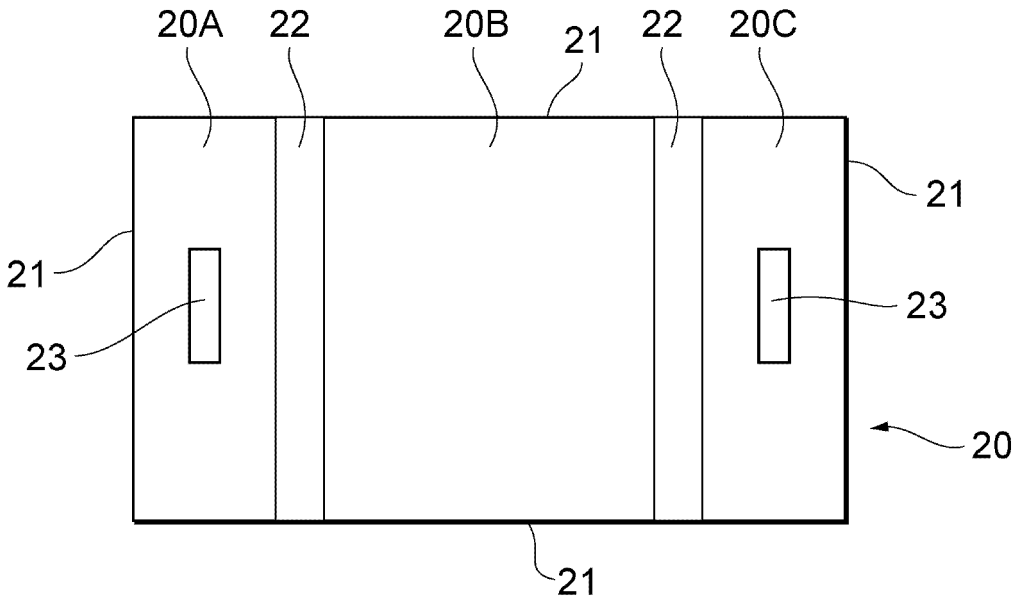


Fig. 10

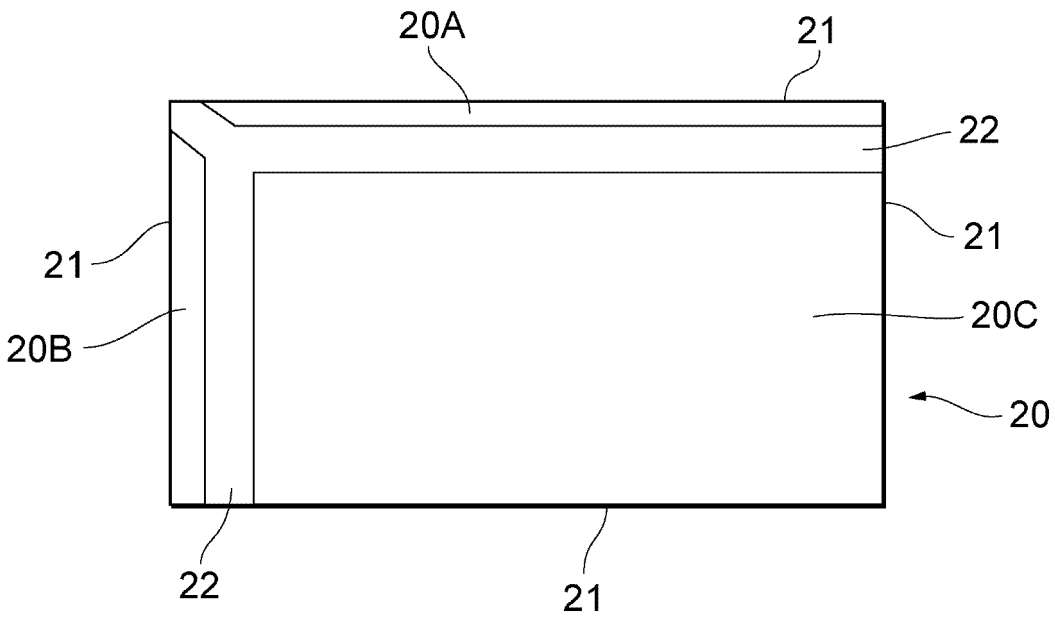


Fig. 11

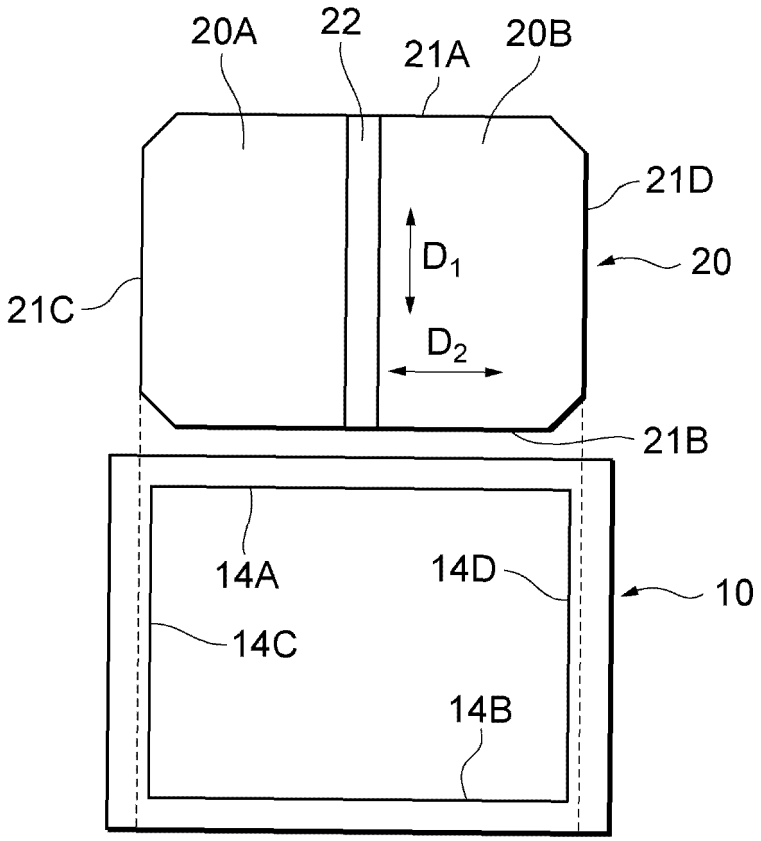


Fig. 12

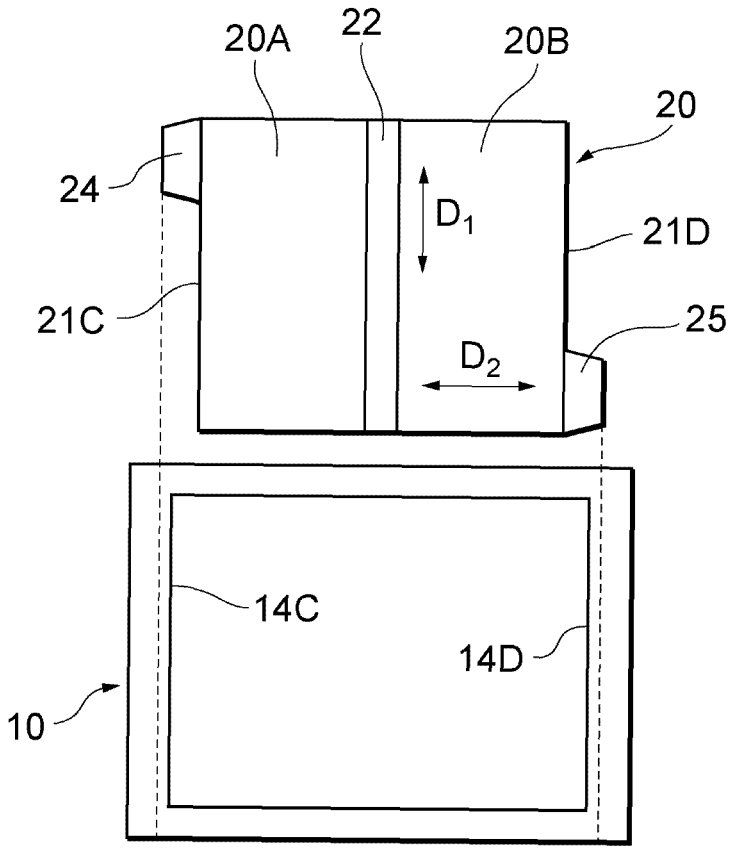


Fig. 13

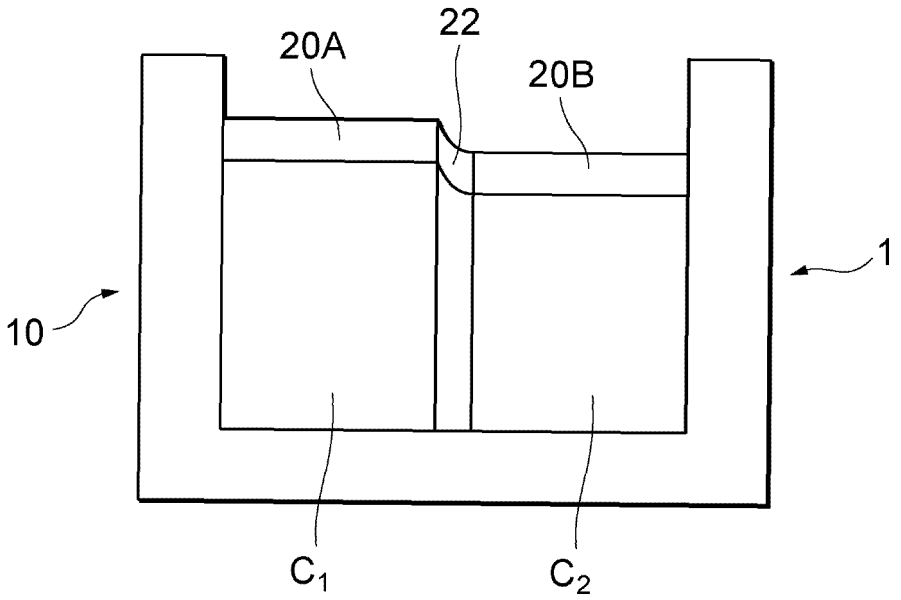
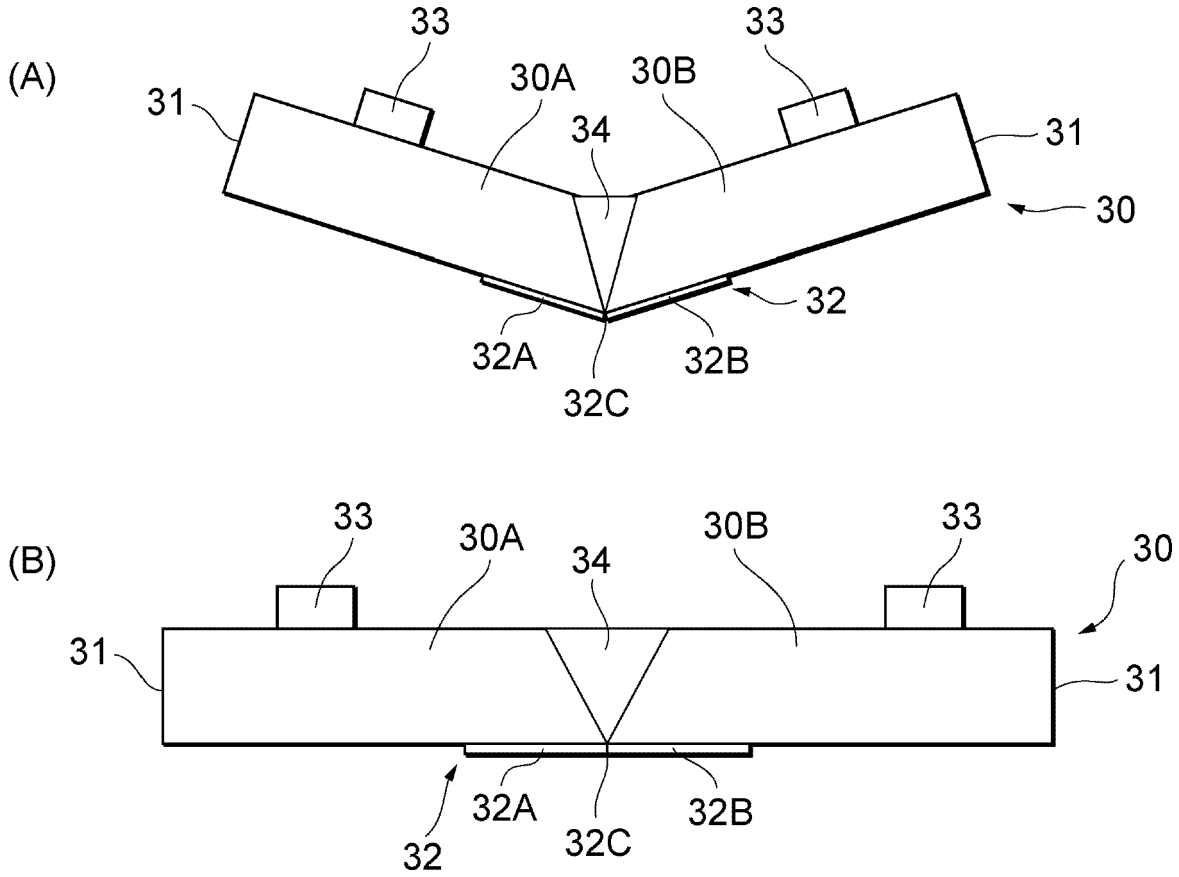


Fig. 14


(A)
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30A
30B
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34
31
30
32
32A
32B
32C
(B)
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31
31
32
32A
32C
32B

Fig. 15

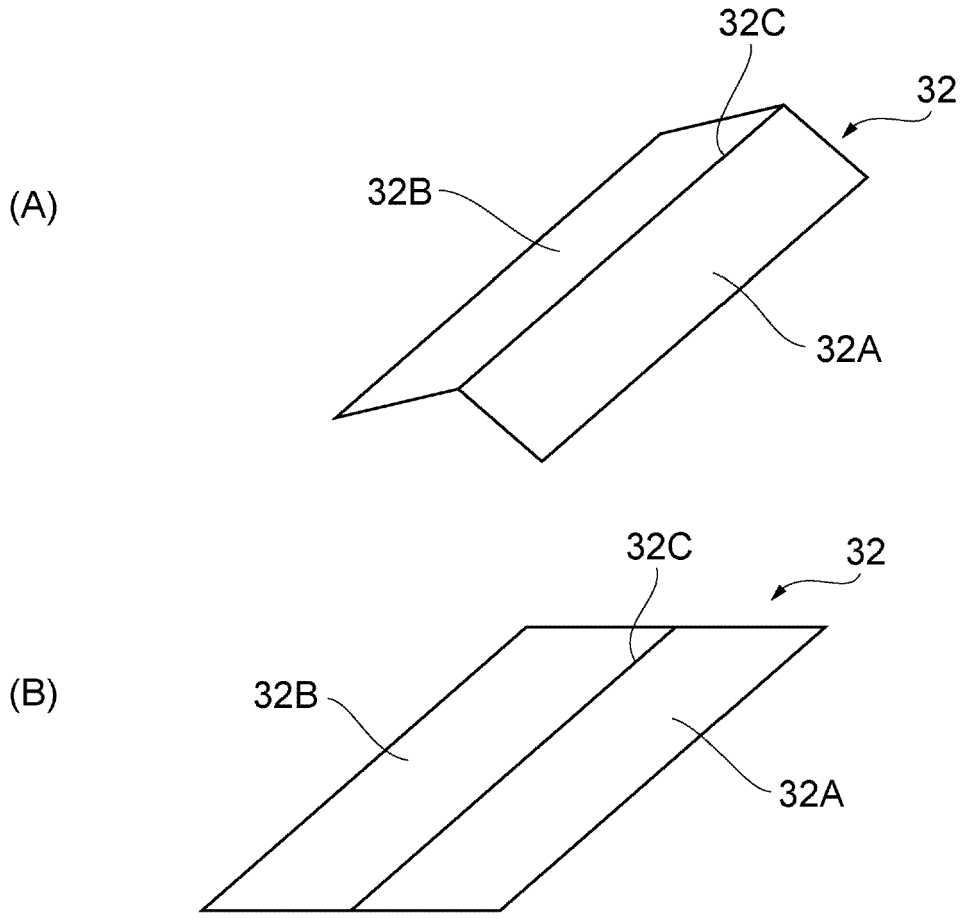


Fig. 16

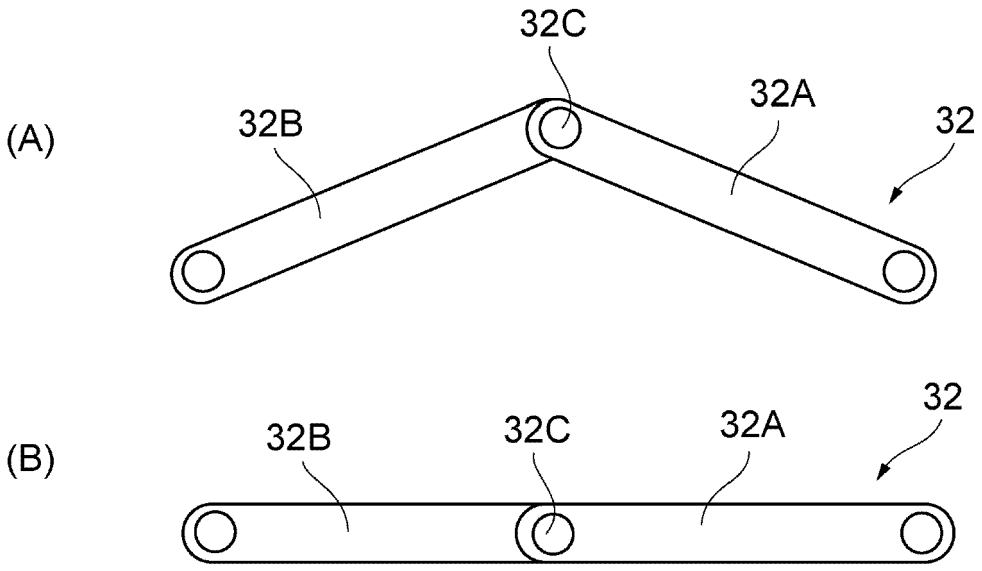


Fig. 17

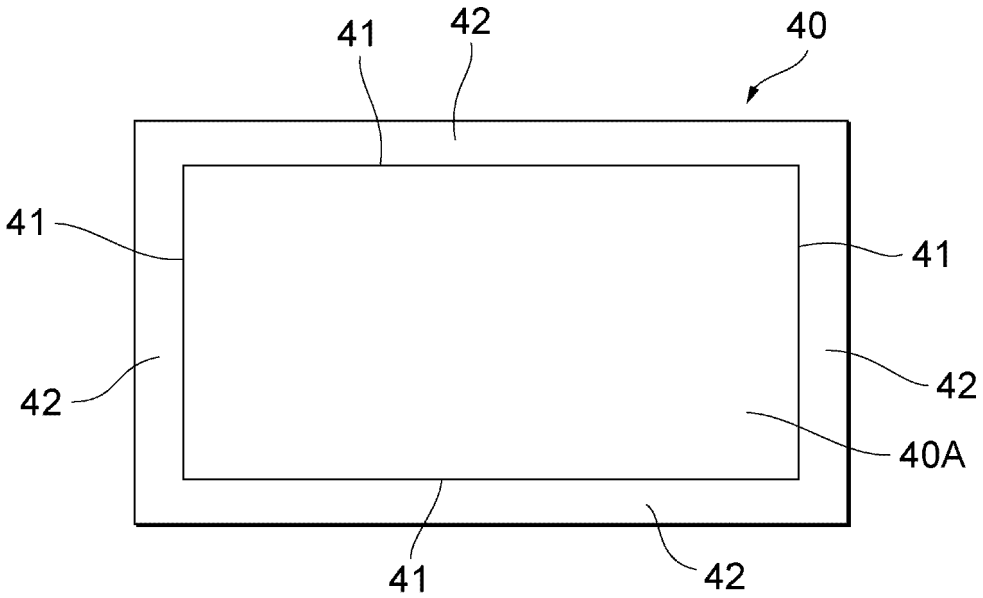


Fig. 18

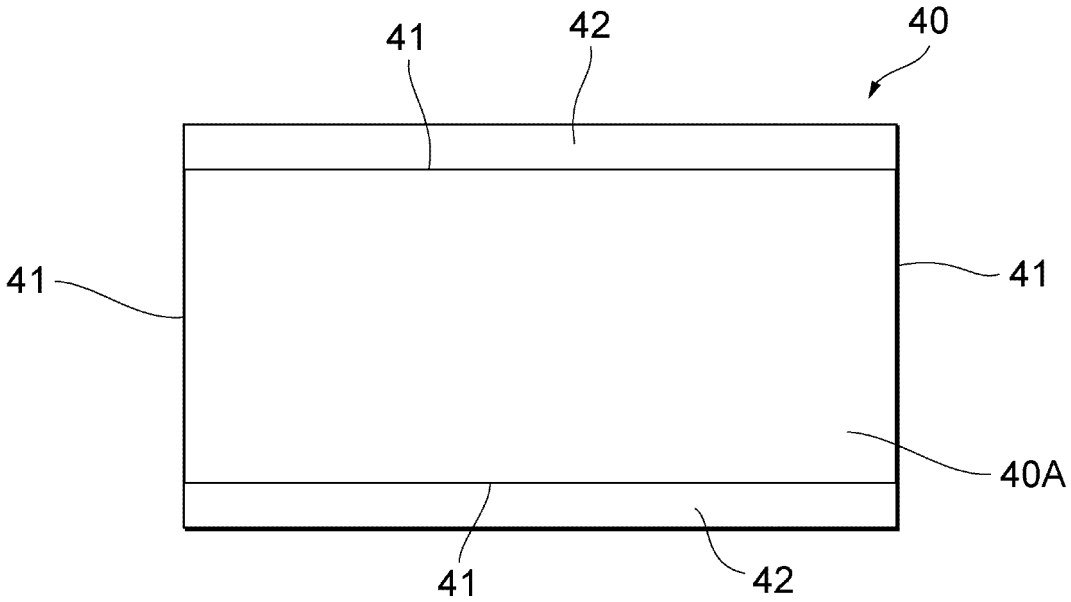


Fig. 19

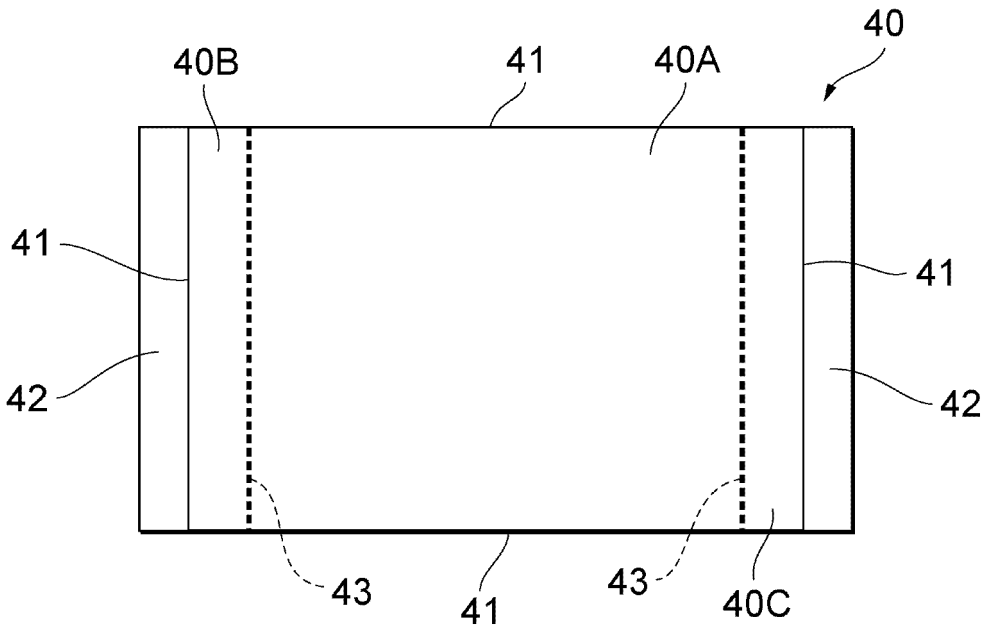
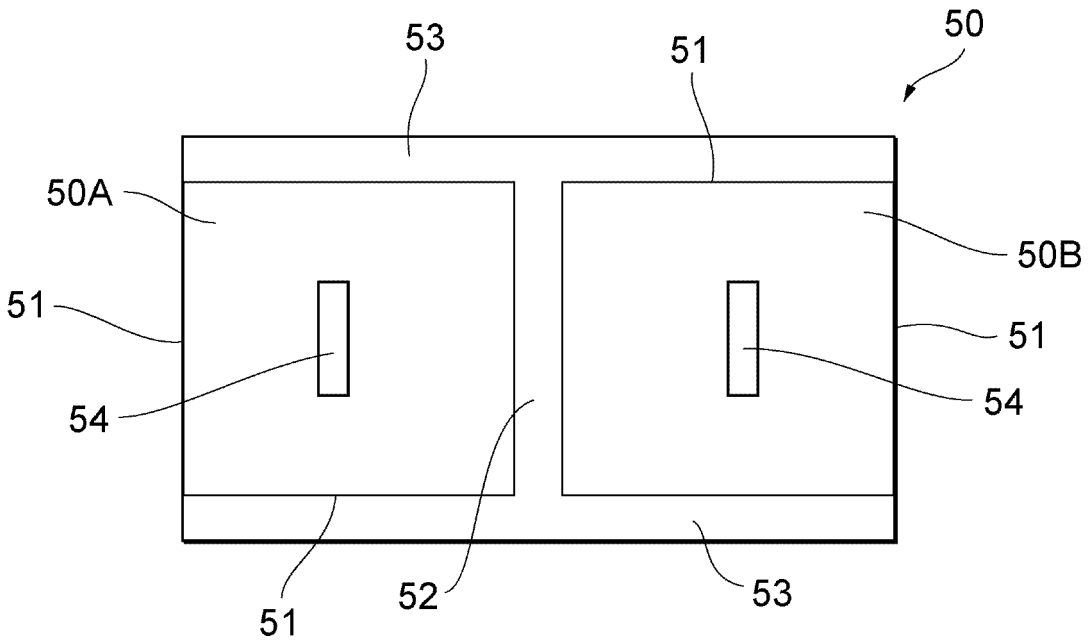


Fig. 20



REFERENCES CITED IN THE DESCRIPTION

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