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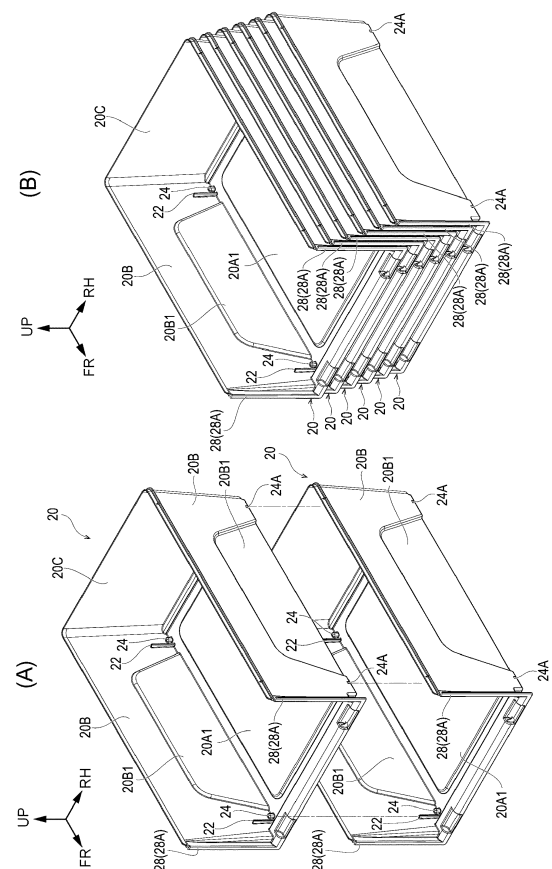
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(54) **STORAGE BOX**

(57) A box body 20 has fitting ribs 22 and fitting target portions 24 that are provided on a lower end portion of side walls 20B of the box body 20 and used when a plurality of box bodies 20 are nested. The lower end portions of the side walls 20B are connected to the bottom wall 20A of the box body 20. In other words, the fitting ribs 22 and the fitting target portions 24 are provided on the side walls 20B at areas subjected to a relatively small amount of displacement. Therefore, the amount of displacement of the fitting ribs 22 and the fitting target portions 24, which may occur when the sidewalls 20B are subjected to deflection deformation, can be significantly reduced. Therefore, even when the box body 20 has a substantially rectangular parallelepiped box shape opening upward and forward, the box bodies 20 in the nested state achieve reliable stability.

Figure 1



Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a storage box.

Description of the Related Art

[0002] A shoe packaging box (storage box) described in PTL 1 includes a box body opening upward and a lid that closes an opening of the box body. The box body is made of a transparent resin sheet. When in use, the box body can be folded into a box shape, and when not in use, the box body can be folded and stored. Accordingly, for example, an improvement of transportation efficiency when a box body is transported may be achieved.

[0003] In addition, some of the storage boxes, for example, have a box body formed into a box shape opening upward and forward in order to provide an openable and closable lid at a front end portion of the storage box.

Citation List

Patent Literature

[0004] PTL 1: JP-A-2010-189005

[0005] In the box-shaped storage box, the box body is typically configured to be unfoldable in order to achieve rigidity of the box body. Therefore, for example, in order to improve transportation efficiency, it is preferable to configure the box body to be nestable so as to allow other box bodies to be stacked inside one box body. Furthermore, in this case, it is desirable to have a structure that achieves stability of the box bodies in a nested state.

SUMMARY OF THE INVENTION

[0006] In view of the above circumstances, it is an object of the invention to provide storage boxes that provide reliable stability when their box bodies are nested.

[0007] Mode 1: One or more embodiments of the invention provide a storage box including: a box body formed into a box shape opening upward and forward, the box body having an interior configured as a storage section; and an upper cover detachably attached to the box body, the upper cover being configured to close an opening on an upper side of the box body, wherein the box body is configured to be nestable with another box body in such a manner as to allow the box bodies to be stacked in a vertical direction, and a lower end portion of a side wall of the box body includes a fitting portion and a fitting target portion formed to be fitted to each other when the box bodies are nested.

[0008] Mode 2: One or more embodiments of the invention provide a storage box in which the fitting portion is formed into a rib shape protruding widthwise inward of

the box body from the side wall and extending in the vertical direction, and the fitting target portion includes an groove portion opening widthwise outward and downward of the box body. When the box bodies are nested, an upper end portion of the fitting portion of the box body disposed below is inserted into an interior of the groove portion of the box body disposed above.

[0009] Mode 3: One or more embodiments of the invention provide a storage box in which an upper end surface of the fitting portion and an upper end surface of the groove portion are inclined upward in front view as it goes widthwise inward of the box body.

[0010] Mode 4: One or more embodiments of the invention provide a storage box further including a lid that is detachably attached to the box body for opening and closing an opening on a front side of the box body, wherein the upper cover is provided with a holding mechanism on a lower surface of the upper cover, and the holding mechanism holds the lid in a state of being detached from the box body.

[0011] Mode 5: One of more embodiments of the invention provide a storage box in which the holding mechanism includes a holding claw engageable with an outer peripheral edge portion of the lid.

[0012] Mode 6: One or more embodiments of the invention provide a storage box including a supporting portion at a front end portion of a bottom wall of the box body, the supporting portion being configured to rotatably support the lid, in which the supporting portion is formed in a recessed shape opening downward in side view, and extends over an entire width of the box body.

[0013] Mode 7: One or more embodiments of the invention provide a storage box further including a drawer stored in the storage section so as to be slidable in the front-back direction, the drawer being formed into a box shape opening upward and forward or upward, in which the drawer is configured to be nestable with another drawer in such a manner as to allow the drawers to be stacked in the vertical direction.

[0014] Mode 8: One or more embodiments of the invention provides a storage box in which the drawer is formed into a box-shape opening upward and forward, a front cover is detachably attached to the drawer, the front cover covers the opening on the front side of the drawer, and the front cover has a thickness dimension smaller than a height dimension of the fitting portion in the vertical direction.

[0015] Mode 9: One or more embodiments of the invention provide a storage box in which the drawer is formed into a box-shape opening upward and forward, a front cover is detachably attached to the drawer, the front cover closes the opening on the front side of the drawer, and the bottom wall of the box body is provided with a cover storage section, and the cover storage section is configured to store the front cover in a state of being detached from the drawer.

[0016] Mode 10: One or more embodiments of the invention provide a storage box further including a frame

member configured to cover the box body and the upper cover, the frame member being detachably attached to front end portions of the box body and the upper cover, the frame member being provided with an insertion portion that allows insertion of the drawer when the drawer is slid, in which the frame member has a thickness dimension smaller than a height dimension of the fitting portion in the vertical direction.

[0017] Mode 11: One or more embodiments of the invention provide a storage box further including a frame member configured to cover the box body and the upper cover, the frame member being detachably attached to front end portions of the box body and the upper cover, the frame member being provided with an insertion portion that allows insertion of the drawer when the drawer is slid, in which the bottom wall of the box body is provided with a frame member storage section, and the frame member storage section is configured to store the frame member in a state of being detached from the box body and the upper cover.

Advantageous Effects of Invention

[0018] According to one or more embodiments of the invention, reliable stability is provided when the box bodies are nested.

BRIEF DESCRIPTION OF DRAWINGS

[0019]

Fig. 1A is a perspective view of box bodies of storage boxes according to a first embodiment, illustrating a state before nesting the box bodies; Fig. 1B is a perspective view of the box bodies illustrated in Fig. 1A in a nested state;

Fig. 2A is a perspective view illustrating the storage box according to the first embodiment;

Fig. 2B is an exploded perspective view illustrating the storage box in Fig. 2A in a disassembled state; Fig. 3 is a perspective view of the box body illustrated in Fig. 2;

Fig. 4A is a plan view of the box body illustrated in Fig. 3;

Fig. 4B is a front view of the box body;

Fig. 5A is a cross-sectional view (a cross-sectional view taken along the line 5A-5A in Fig. 4A) of a fitting rib illustrated in Fig. 4A;

Fig. 5B is a cross-sectional view (a cross-sectional view taken along the line 5B-5B in Fig. 4A) illustrating a fitting target portion in Fig. 4A; Fig. 5C is a cross-sectional view illustrating a fitting state between the fitting rib and a groove portion of the fitting target portion when the box bodies are nested;

Fig. 6 is a perspective view of a door illustrated in Figs. 2A and 2B;

Fig. 7 is a perspective view of an upper cover illustrated in Figs. 2A and 2B when viewed from a lower

side;

Fig. 8 is a perspective view illustrating a state in which the door is attached to the upper cover;

Fig. 9 is a perspective view illustrating a state in which a plurality of the storage boxes illustrated in Fig. 2A are stacked;

Fig. 10A is a left side view of front portions of the box bodies illustrated in Fig. 3 for explaining an initial state of nesting of the box bodies;

Fig. 10B is a left side view of the front portions of the box bodies illustrated in Fig. 3 for explaining a state of completion of nesting of the box bodies;

Fig. 11A is a perspective view illustrating a storage box according to a second embodiment;

Fig. 11B is a cross-sectional side view (a cross-sectional view taken along the line 11B-11B in Fig. 11A) of the storage box illustrated in Fig. 11A;

Fig. 12 is an exploded perspective view illustrating a state in which the storage box illustrated in Fig. 11A is disassembled;

Fig. 13 is a cross-sectional side view illustrating the plurality of the box bodies and drawers of the storage boxes illustrated in Fig. 11A in a nested state;

Fig. 14 is a perspective view, partly exploded, of a box body of a storage box according to a modified example of the second embodiment;

Fig. 15 is a cross-sectional side view illustrating a plurality of the box bodies and drawers of the storage boxes according to the modified example of the second embodiment in a nested state;

Fig. 16A is a perspective view illustrating a storage box according to a third embodiment;

Fig. 16B is a cross-sectional side view (a cross-sectional view taken along the line 16B-16B in Fig. 16A) of the storage box illustrated in Fig. 16A;

Fig. 17 is an exploded perspective view of the storage box illustrated in Fig. 16A;

Fig. 18 is a cross-sectional side view illustrating a plurality of the box bodies and drawers of the storage boxes illustrated in Fig. 17A in a nested state;

Fig. 19 is a perspective view, partly exploded, of a box body of a storage box according to a modified example of the third embodiment; and

Fig. 20 is a cross-sectional side view illustrating a plurality of the box bodies and drawers of the storage boxes according to the modified example of the third embodiment in a nested state.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

First Embodiment

[0020] Referring now to Fig. 1A to Fig. 10B, a storage box 10 as a "storage box" according to a first embodiment will be described. Arrows UP, arrows FR, and arrows RH indicated as needed in the drawings represent an upper side, a front side, and a right side (one side in a width

direction) of the storage box 10, respectively. In the following description, up, down, front, rear, left, and right indicate upward and downward directions, forward and rearward directions, and leftward and rightward directions of the storage box 10 unless otherwise specifically indicated.

Overall Configuration of Storage Box

[0021] As illustrated in Figs. 2A and 2B, the storage box 10 is formed into a hollow and substantially rectangular parallelepiped box shape. In the present embodiment, the storage box 10 is configured as a storage box for storing, for example, shoes and clothes. The storage box 10 includes a box body 20 as a "box body" that constitutes a main body of the storage box 10, an upper cover 50 that constitutes an upper end portion of the storage box 10, and a door 40 as a "lid" configured to be openable and closable at a front end portion of the storage box 10. The upper cover 50 and the door 40 are detachably (removably) attached to the box body 20.

[0022] The storage box 10 is configured to be stackable so as to allow a plurality of the storage boxes 10 to be stacked in the vertical direction. In addition, in the state in which the storage boxes 10 are disassembled, the box bodies 20 are configured to be nestable so as to allow a plurality of the box bodies 20 to be stacked in the vertical direction by accommodating other box bodies 20 in one box body 20 (see Fig. 1B). Further, in a state in which the storage box 10 is disassembled, the upper cover 50 is configured to allow a plurality of the upper covers 50 to be stacked in the vertical direction. Respective configurations of the storage box 10 will be described below.

Box Body

[0023] As illustrated in Fig. 3 and Figs. 4A and 4B, the box body 20 is made of a resin material (polypropylene (PP) in the present embodiment), and is formed in a substantially rectangular parallelepiped box shape opening upward and forward. Specifically, the box body 20 includes a substantially rectangular plate-shaped bottom wall 20A having a thickness direction in the vertical direction and the longitudinal direction in the front-back direction, a pair of left and right side walls 20B extending upward from both end portions of the bottom wall 20A in the width direction, and a rear wall 20C extending upward from a rear end portion of the bottom wall 20A. An interior of the box body 20 is a storage section 20D for storing contents (illustration is omitted) such as shoes as an object to be stored.

[0024] The side walls 20B of the box body 20 are inclined widthwise inward of the box body 20 as it goes downward in front view. Accordingly, the box bodies 20 are configured to be nestable in a state in which the storage box 10 is disassembled. The rear wall 20C of the box body 20 is inclined forward as it goes downward in side view. The angle of inclination to the vertical direction

of the side walls 20B is set larger than the angle of inclination to the vertical direction of the rear wall 20C. Alternatively, out of the side walls 20B and the rear wall 20C, only the side walls 20B may be inclined, and the rear wall 20C may be vertical without being inclined.

[0025] Each of the lower end portions of the side walls 20B of the box body 20 is provided with a fitting rib 22 as a "fitting portion" and a fitting target portion 24 used when a plurality of the box bodies 20 are nested. The fitting rib 22 and the fitting target portion 24 form a pair, and the fitting rib 22 and the fitting target portion 24 forming the pair are formed at four places in the box body 20. Specifically, the pairs of fitting rib 22 and fitting target portion 24 are formed respectively on front end portions (two places) and rear end portions (two places) at the lower end portions of the left and right side walls 20B.

[0026] As illustrated in Fig. 5A, the fitting rib 22 protrudes widthwise inward of the box body 20 from the lower end portion of the side wall 20B and extends upward from the bottom wall 20A. An upper end surface of the fitting rib 22 is inclined upward as it goes widthwise inward of the box body 20 in front view.

[0027] As illustrated in Fig. 3 and Fig. 4A, the fitting target portion 24 is disposed close to a rear side of the fitting rib 22. The fitting target portions 24 protrude widthwise inward of the box body 20 from the side walls 20B to and upward from the bottom wall 20A. As illustrated in Figs. 3 and 5 (B), the fitting target portions 24 are each provided with a groove portion 24A, and the groove portion 24A is open widthwise outward and downward of the box body 20. That is, the groove portions 24A are exposed to the exterior at lower corners of the box body 20 (storage box 10). The groove portion 24A is disposed rearward of the fitting rib 22 by a distance L1 (see Fig. 10A).

[0028] Also, an upper end surface of the groove portion 24A is inclined upward as it goes widthwise inward of the box body 20, corresponding to the upper end surface of the fitting rib 22. Accordingly, an upper end surface of the fitting target portion 24 is also inclined upward and widthwise inward of the box body 20 corresponding to the upper end surface of the groove portion 24A. Therefore, when the fitting rib 22 is in contact with and is fitted to the groove portion 24A, the nested state is maintained even when a load from above (the longitudinal direction) is applied, and the buckling of the fitting rib 22 is prevented. Furthermore, the groove width of the groove portion 24A is set to be slightly larger than the thickness dimension (the dimension in the front-back direction) of the fitting rib 22, and the groove depth dimension of the groove portion 24A in the vertical direction is set to be smaller than the height dimension of the fitting rib 22 in the vertical direction. The thickness dimension of the fitting rib 22 is set to be smaller as it goes upward. In other words, side surfaces of the fitting rib 22 are slightly inclined so as to approach each other as it goes upward.

[0029] Then, as illustrated in Fig. 5C, in the state where the box bodies 20 are nested, the upper end portion of

the fitting rib 22 in the lower (one) box body 20 is inserted into the groove portion 24A of the upper (the other) box body 20. Accordingly, when the box bodies 20 are nested, the upper box body 20 is supported from the lower side by the fitting rib 22 of the lower box body 20 and is placed apart upward from the lower box body 20. Further, in this state, the upper box body 20 is placed at a position shifted forward by the distance L1 between the groove portion 24A and the fitting rib 22 with respect to the lower box body 20 (see Fig. 1B and Fig. 10B). Furthermore, in this state, the fitting rib 22 comes into contact with an inner peripheral surface of the groove portion 24A, whereby the relative displacement of the upper box body 20 with respect to the lower box body 20 in the front-back direction is suppressed.

[0030] As illustrated in Fig. 3 and Figs. 4A and 4B, the box body 20 includes a flange 26 for fixing the upper cover 50 described later on an upper end portion thereof. The flange 26 is projected to the outside of the box body 20 and is extended over the entire circumference of the box body 20 in plan view. In other words, the flange 26 extends in the front-back direction on the left and right side walls 20B and extend in the left-right direction on the rear wall 20C.

[0031] In addition, flange portions 28 are formed in the front end of the left and right side walls 20B and extend widthwise outward of the box body 20. The flange portions 28 are formed in a step-like shape. This forms a front side shouldered portion 28A on the flange portion 28. Furthermore, the dimension (thickness dimension) L2 (see Fig. 10A) in the front-back direction of the flange portion 28 (including the front side shouldered portion 28A) is set to be the same as the distance L1 between the groove portion 24A and the fitting rib 22. When the box bodies 20 are nested, the flange portions 28 of the nested box bodies 20 are placed adjacent to each other in the front-back direction. In other words, the flange portions 28 function as guide portions during the operation for nesting the box bodies 20. In addition, the front surface portions of the flange portions 28 are provided so that the front appearance of the box body when viewed from the front becomes rectangular even when the side walls 20B are inclined. Note that the maximum dimension of the thickness of the fitting rib 22 described above may be 1/5 to 3/5 of the distance L1 between the groove portion 24A and the fitting rib 22.

[0032] Further, a supporting portion 30 for rotatably supporting a door 40, which will be described later, is formed at the front end portion of the bottom wall 20A of the box body 20. The supporting portion 30 is formed in a substantially inverted U shape (recessed shape) opening downward in side view and extends over the entire width of the box body 20. Specifically, the supporting portion 30 includes a support rear wall portion 30A extending upward from the bottom wall 20A of the box body 20, a support top wall portion 30B extending forward from the upper end portion of the support rear wall portion 30A, and a support front wall portion 30C extending downward

from the front end portion of the support top wall portion 30B. The support front wall portion 30C is connected to the flange portions 28 so that a front surface of the support front wall portion 30C and front surfaces of the flange portions 28 described above are flush with each other. Furthermore, a lower end of the support front wall portion 30C is disposed above lower surface of the bottom wall 20A of the box body 20. Also, the front surfaces of the support front wall portion 30C and the flange portions 28 are arranged along a plane orthogonal to the front-back direction. Note that the height of the supporting portion 30 is set lower than the height of the fitting rib 22.

[0033] The supporting portion 30 is formed with a pair of left and right supporting recesses 30D, and the supporting recesses 30D are disposed at positions symmetrical with respect to the widthwise center of the box body 20. The supporting recesses 30D are formed into a recessed shape opening upward and forward. A support hole 30D1 is formed to penetrate through a side wall of the supporting recess 30D on the widthwise center side of the box body 20. The support hole 30D1 extends in the vertical direction, and an upper edge of the support hole 30D1 is curved into a semicircular shape opening downward. Also, a lower end portion of the support hole 30D1 extends to an end of a bottom wall of the supporting recess 30D.

[0034] On the other hand, a rear shouldered portion 32 is formed at the rear end portion of the bottom wall 20A of the box body 20. The rear shouldered portion 32 is raised one step upward. Further, a bottom drawn part 20A1 which is raised one step upward is formed on the bottom wall 20A of the box body 20. The bottom drawn part 20A1 is formed into a rectangular shape substantially similar to the bottom wall 20A in plan view. Accordingly, the bottom drawn part 20A1 is configured to provide the bottom wall 20A with sufficient rigidity. Furthermore, a side drawn part 20B1 protruding widthwise inward of the box body 20 is formed at the lower end portion of each side wall 20B of the box body 20 in an intermediate portion in the front-back direction (specifically, at a position between the front side fitting rib 22 and the fitting target portion 24 and the rear side fitting rib 22 and the fitting target portion 24). The side drawn part 20B1 is formed in a substantially trapezoidal shape in side view. Accordingly, the side drawn part 20B1 provides sufficient rigidity for the side wall 20B.

Door

[0035] As shown in Fig. 6, the door 40 is made of a resin material (polypropylene (PP) in the present embodiment). In addition, the door 40 is formed in a substantially rectangular plate shape having a thickness direction in a front-back direction and a longitudinal direction in a left-right direction, and is disposed above the supporting portion 30 of the box body 20 and between the left and right front side shouldered portions 28A. A pair of left and right hinge portions 42 are integrally formed on a lower end

portion of the door 40, and the hinge portions 42 protrude downward from the door 40 and are disposed at positions corresponding to the supporting recesses 30D of the box body 20. The hinge portion 42 is formed in a substantially rectangular shape having a longitudinal direction in the left-right direction in front view, and is formed in a recessed shape opening rearward. In other words, the hinge portion 42 includes a pair of left and right hinge side walls 42A.

[0036] The hinge portion 42 is provided with a hinge axis 42B integrally formed on the hinge side wall 42A on a widthwise center side of the door 40. The hinge axis 42B is formed in a substantially cylindrical shape and protrudes from the hinge side wall 42A toward the widthwise center of the door 40. An inclined surface 42B1 is formed at the lower end portion of a distal end portion of the hinge axis 42B, and the inclined surface 42B1 is inclined downward as it goes toward the proximal end of the hinge axis 42B. The hinge axis 42B is inserted into the support hole 30D1 of the box body 20, and is rotatably supported by the support hole 30D1 (see Figs. 2A and 2B). This makes the door 40 rotatably mounted on the box body 20, and the opening on the front side of the box body 20 openable by the door 40.

[0037] A handle 44 is formed integrally with the upper end portion of the door 40 at the widthwise center portion thereof. The handle 44 is formed in a plate shape having a thickness direction in the vertical direction, and protrudes forward from the door 40. A front end portion of the handle 44 is curved in a substantially arc shape that is convex toward the front in plan view. A door hook 46 protruding upward is integrally formed with the handle 44 at the widthwise center thereof, and the door hook 46 extends in the left-right direction. A rear surface of the door hook 46 is inclined downward as it goes toward the rear. When the door hook 46 engages with an upper cover 50 described later, the door 40 keeps the opening of the box body 20 closed.

[0038] A pair of left and right notches 40A are formed in an upper end portion of the door 40 at positions widthwise outside of the handle 44, and the notches 40A are formed in a groove shape opening upward in front view. Further, a portion between the pair of left and right notches 40A in the upper end portion of the door 40 is a deformable portion 48, and the deformable portion 48 is configured to be elastically deformable in the front-back direction (thickness direction of the door 40). Then, the user holds the handle 44 and presses the handle 44 downward, so that the deformable portion 48 is elastically deformed in the front-back direction.

Upper Cover

[0039] As shown in Figs. 2A, 2B and Fig. 7, the upper cover 50 is made of a resin material (polypropylene (PP) in the present embodiment). The upper cover 50 is formed into a relatively shallow rectangular parallelepiped box shape opening downward. Specifically, the up-

per cover 50 includes a cover body 52 having a thickness direction in the vertical direction and a longitudinal direction in the front-back direction and a surrounding wall 54 extending downward from an outer peripheral edge portion of the cover body 52. The surrounding wall 54 is configured to extend around an entire circumferential direction of the cover body 52.

[0040] Engaging hook portions 54A are formed on left and right side walls of the surrounding wall 54 at front end and rear end portions, respectively. In other words, in the surrounding wall 54, the four engaging hook portions 54A are formed. The engaging hook portion 54A protrudes widthwise inward of the upper cover 50 from a distal end portion (lower end portion) of the surrounding wall 54 and extends in the front-back direction. Also, the surrounding wall 54 is formed with an engaging hook portion 54B at a widthwise center portion of the back wall thereof. The engaging hook portion 54B protrudes forward from the distal end portion (lower end portion) of the surrounding wall 54 and extends in the left-right direction. The surrounding wall 54 is placed outside the upper end portion of the box body 20, and the engaging hook portions 54A and 54B are placed adjacently under the flange 26 of the box body 20 and engage the flange 26 in the vertical direction. This makes the upper cover 50 assembled to the box body 20 in a state in which an upward movement of the upper cover 50 is limited, and makes the upper cover 50 close the upper opening of the upper cover 50.

[0041] Also, in the assembled state of the upper cover 50 to the box body 20, the length of the surrounding wall 54 protruding from the cover body 52 is set so as to allow the lower end portion of the surrounding wall 54 to engage the door hook 46 of the door 40. This makes the lower end portion of the front wall of the surrounding wall 54 engage the door hook 46 of the door 40, and thus maintains a state of the door 40 remain closing the front opening of the box body 20.

[0042] The cover body 52 is provided with a mounting recess 52A that is one step lower on the lower side over a portion excluding an outer periphery. The mounting recess 52A is formed in a substantially rectangular shape corresponding to the bottom wall 20A (specifically, the bottom wall 20A excluding the supporting portion 30 and the rear shouldered portion 32) of the box body 20 in plan view. Then, when the storage boxes 10 are stacked with each other, the bottom wall 20A of the box body 20 of the upper storage box 10 is placed on the mounting recess 52A of the cover body 52 of the lower storage box 10 and fitted into the mounting recess 52A (see Fig. 9).

[0043] Further, the cover body 52 includes a fitting mechanism 60 to be fitted with the upper end portion of the box body 20 and a holding mechanism 80 for housing and holding the door 40 in a disassembled state inside the cover body 52. Hereinafter, the fitting mechanism 60 and the holding mechanism 80 will be described.

Fitting mechanism

[0044] The fitting mechanism 60 includes pairs of left and right first protrusions 62, second protrusions 64, third protrusions 66, fourth protrusions 68, and fifth protrusions 70. The first protrusions 62 to the fifth protrusions 70 are provided on the outer periphery of a lower surface of the cover body 52.

First Protrusion

[0045] The pair of left and right first protrusions 62 are provided on a rear end portion on the lower surface of the upper cover 50 and disposed outside the engaging hook portion 54B with respect to the width direction of the upper cover 50, and protrude downward from the cover body 52. The first protrusion 62 is formed in a substantially U-shape opening rearward, as viewed from the lower side, and connected to the rear wall of the surrounding wall 54. Specifically, the first protrusion 62 includes a pair of left and right fitting wall portions 62A having a thickness direction in the left-right direction and extending forward from the surrounding wall 54, and a connecting wall portion 62B having a thickness direction in the front-back direction and extending in the left-right direction. Front end portions of the pair of left and right fitting wall portions 62A are connected by the connecting wall portion 62B.

[0046] The pair of fitting wall portions 62A are each provided with a fitting groove 62C opening downward. Then, in the assembled state of the upper cover 50 to the box body 20, the upper end portion of the rear wall 20C of the box body 20 is fitted into the fitting grooves 62C from the lower side. Further, in this assembled state, the upper end of the rear wall 20C of the box body 20 is in contact with bottom surfaces of the pair of fitting grooves 62C. Accordingly, a downward movement of the rear end portion of the upper cover 50 is limited in the assembled state of the upper cover 50 to the box body 20.

[0047] Also, in the first protrusion 62, a front portion with respect to the fitting groove 62C protrudes downward further than the lower end of the surrounding wall 54, and the rear portion with respect to the fitting groove 62C is disposed above a lower end of the surrounding wall 54C. Then, when the upper covers 50 are stacked, the lower ends of the first protrusions 62 abut on the outer periphery of the rear end of the lower cover body 52.

Second Protrusion

[0048] The pair of left and right second protrusions 64 are provided at the rear corner portions of the lower surface of the upper cover 50 and protrude downward from the cover body 52. The second protrusions 64 are each formed in a substantially L shape, as viewed from the lower side, and connected to the surrounding wall 54. Specifically, the second protrusion 64 includes a fitting wall portion 64A having a thickness direction in the left-

right direction and extending forward from the rear wall of the surrounding wall 54 and fitting wall portion 64B having a thickness direction in the front-back direction and extending widthwise inward of the upper cover 50 from the side wall of the surrounding wall 54.

[0049] The fitting wall portion 64A is provided with a fitting groove 64C opening downward, and the fitting wall portion 64B is provided with a fitting groove 64D opening downward. Then, in the assembled state of the upper cover 50 to the box body 20, the upper end portion of the rear wall 20C of the box body 20 is fitted into the fitting grooves 64C from the lower side, and the upper end portions of the side walls 20B of the box body 20 are fitted into the fitting grooves 64D from the lower side. Furthermore, in this assembled state, the upper end of the box body 20 is in contact with bottom surfaces of the fitting grooves 64C and the fitting grooves 64D. Accordingly, a downward movement of the upper cover 50 at the rear corner portions is limited in the assembled state of the upper cover 50 to the box body 20.

[0050] Also, in the second protrusion 64, a portion on the front side of the fitting groove 64C and on the right side of the fitting groove 64C protrudes downward further than the lower end of the surrounding wall 54, and the position of a lower end of the second protrusion 64 in the vertical direction is aligned with the position of a lower end of the first protrusion 62. Accordingly, when the upper covers 50 are stacked, the lower ends of the second protrusion 64 come into contact with the rear both corner portions of the lower cover body 52.

Third Protrusion

[0051] The pair of left and right third protrusions 66 are provided at front corner portions of the lower surface of the upper cover 50 and protrude downward from the cover body 52. The third protrusion 66 is formed in a substantially U-shape opening widthwise outward of the upper cover 50 as viewed from below, and is connected to the side wall of the surrounding wall 54. Specifically, the third protrusion 66 includes a pair of front and rear fitting wall portions 66A having a thickness direction in the front-back direction and extending widthwise inward of the upper cover 50 from the side wall of the surrounding wall 54, and a connecting wall portion 66B having a thickness direction in the left-right direction and extending in the front-back direction. Inner end portions of the pair of fitting wall portions 66A in the width direction of the upper cover 50 are connected by the connecting wall portion 66B.

[0052] The pair of fitting wall portions 66A are each provided with a fitting groove 66C opening downward. In the assembled state of the upper cover 50 to the box body 20, the upper end portions of the side walls 20B of the box body 20 are fitted into the fitting grooves 66C from the lower side. Furthermore, in this assembled state, the upper end of the box body 20 is in contact with the bottom surfaces of the fitting grooves 66C. Accordingly, a downward movement of the upper cover 50 at front

corner portions is limited in the assembled state of the upper cover 50 to the box body 20.

[0053] Also, an inner portion of the third protrusion 66 from the fitting groove 66C in the width direction of the upper cover 50 protrudes downward further than the lower end of the surrounding wall 54, and an outer portion of the third protrusion 66 from the fitting groove 66C in the width direction of the upper cover 50 is disposed above the lower end of the surrounding wall 54. Furthermore, the position of the lower end of the third protrusion 66 in the vertical direction is aligned with the position of the lower end of the first protrusion 62. This brings the lower ends of the third protrusions 66 into contact with the front corner portions of the lower cover body 52 when the upper covers 50 are stacked.

Fourth Protrusion

[0054] The pair of left and right fourth protrusions 68 are provided at both end portions of the lower surface of the upper cover 50 in the width direction, and protrude downward from the intermediate portion of the upper cover 50 in the front-back direction. The fourth protrusion 68 is formed in a substantially U-shape opening widthwise outward of the upper cover 50 as viewed from the lower side, and is connected to the side wall of the surrounding wall 54. Specifically, the fourth protrusion 68 includes a pair of front and rear fitting wall portions 68A having a thickness direction in the front-back direction and extending widthwise inward of the upper cover 50 from the side wall of the surrounding wall 54, and a connecting wall portion 68B having a thickness direction in the left-right direction. The inner end portions of the pair of fitting wall portions 68A in the width direction of the upper cover 50 are connected by the connecting wall portion 68B.

[0055] The pair of fitting wall portions 68A are each provided with a fitting groove 68C opening downward. In the assembled state of the upper cover 50 to the box body 20, the upper end portions of the side walls 20B of the box body 20 are fitted into the fitting grooves 68C from the lower side. Furthermore, in this assembled state, the upper end of the box body 20 is in contact with a bottom surfaces of the fitting grooves 68C. Accordingly, a downward movement of the intermediate portion in the front-back direction at the both end portions of the upper cover 50 in the width direction is limited in the assembled state of the upper cover 50 to the box body 20.

[0056] Also, an inner portion of the fourth protrusion 68 with respect to the fitting groove 68C of the fitting wall portion 68A in the width direction of the upper cover 50 protrudes downward further than the lower end of the surrounding wall 54, and an outer portion of the fitting wall portion 68A with respect to the fitting groove 68C in the width direction of the upper cover 50 is disposed above the lower end of the surrounding wall 54. The position of a lower end of the fitting wall portion 68A in the vertical direction is aligned with the position of the lower end of the first protrusion 62. This brings the lower ends

of the fitting wall portions 68A into contact with the outer periphery widthwise outside of the lower cover body 52 when the upper covers 50 are stacked.

[0057] Furthermore, in the fourth protrusion 68, a lower end portion of the connecting wall portion 68B protrudes downward further than the lower ends of the pair of fitting wall portions 68A. When a plurality of the upper covers 50 are stacked, the lower end portions of the connecting wall portions 68B are placed widthwise inside of the upper cover 50 and adjacently to left and right edge portions of the mounting recess 52A of the cover body 52 disposed below. Accordingly, when a plurality of the upper covers 50 are stacked, the movement in the left-right direction of the upper cover 50 located above with respect to the upper cover 50 disposed below is limited by the connecting wall portion 68B.

Fifth Protrusion

[0058] A pair of left and right fifth protrusions 70 are provided at both end portions of the lower surface of the upper cover 50 in the width direction and protrude downward from the cover body 52 between the third protrusion 66 and the fourth protrusion 68. The fifth protrusions 70 is configured in the same manner as the fourth protrusion 68. In other words, the fifth protrusions 70 each include a pair of front and rear fitting wall portions 70A having a thickness direction in the front-back direction and extending widthwise inward of the upper cover 50 from the side wall of the surrounding wall 54, and a connecting wall portion 70B having a thickness direction in the left-right direction and extending in the front-back direction. Inner ends of the pair of fitting wall portions 70A in the width direction of the upper cover 50 are connected by the connecting wall portion 70B.

[0059] The pair of fitting wall portions 70A are each provided with a fitting groove 70C opening downward. In the assembled state of the upper cover 50 to the box body 20, the upper end portions of the side walls 20B of the box body 20 are fitted into the fitting grooves 70C from the lower side. Furthermore, in this assembled state, the upper end of the box body 20 is in contact with the bottom surfaces of the fitting grooves 70C. Accordingly, a downward movement of the front portion of the both end portions of the upper cover 50 in the width direction is limited in the assembled state of the upper cover 50 to the box body 20.

[0060] Also, an inner portion of the fitting wall portion 70A in the width direction of the upper cover 50 with respect to the fitting groove 70C protrudes downward further than the lower end of the surrounding wall 54, and an outer portion of the fitting wall portion 70A in the width direction of the upper cover 50 with respect to the fitting groove 70C is disposed above the lower end of the surrounding wall 54. The position of a lower end of the fitting wall portion 70A in the vertical direction is aligned with the position of the lower end of the first protrusion 62. Accordingly, the lower ends of the fitting wall portions

70A are brought into contact with the outer periphery widthwise outside of the cover body 52 on the lower side when a plurality of the upper covers 50 are stacked.

[0061] Furthermore, in the fifth protrusions 70, a lower end portion of the connecting wall portion 70B protrudes downward further than the lower ends of the pair of fitting wall portions 70A. When a plurality of the upper covers 50 are stacked, the lower end portions of the connecting wall portions 70B are placed widthwise inside of and adjacently to the upper cover 50 with respect to left and right edge portions of the mounting recess 52A of the lower cover body 52. Accordingly, when a plurality of the upper covers 50 are stacked, the movement in the left-right direction of the upper cover 50 located above with respect to the upper cover 50 disposed below is limited by the connecting wall portion 70B.

Holding Mechanism

[0062] A holding mechanism 80 includes rear holding claws 82 as a pair of left and right "holding claws" and front holding claws 84 as a pair of left and right "holding claws". The rear holding claws 82 and the front holding claws 84 are provided on the lower surface of the cover body 52.

Rear Holding Claws

[0063] The pair of left and right rear holding claws 82 are provided at the rear end portion of the upper cover 50 and are disposed in the proximity to the first protrusions 62 at positions widthwise outside of the upper cover 50. The rear holding claws 82 each include a holding strip 82A having a thickness direction in the front-back direction and extending downward from the cover body 52, and a holding hook 82B protruding forward from a lower end portion of the holding strip 82A. The rear holding claws 82 each are configured to be elastically deformable in the front-back direction.

Front Holding Claws

[0064] The pair of left and right front holding claws 84 are provided at the both end portions of the upper cover 50 in the width direction, are disposed at positions apart from the rear holding claws 82 forward by a predetermined distance, and are disposed outside of the rear holding claws 82 in the width direction of the upper cover 50. The front holding claws 84 each include a holding strip 84A having a thickness direction in the front-back direction and extending downward from the cover body 52, and a holding hook 84B protruding rearward from a lower end portion of the holding strip 84A. The front holding claws 84 are configured to be elastically deformable in the front-back direction.

[0065] The dimension in the front-back direction between the holding strip 82A of the rear holding claws 82 and the holding strip 84A of the front holding claws 84 is

set to be slightly larger than the dimension of the door 40 in the vertical direction. In addition, a space between the rear holding claws 82 and the front holding claws 84 in the interior of the upper cover 50 is a door housing 86 for storing the door 40. In the disassembled state of the storage box 10, the door 40 can be stored in the door housing 86. Specifically, the lower end portion of the door 40 engages the holding hook 82B of the rear holding claws 82 and the upper end portion of the door 40 engages the holding hook 84B of the front holding claws 84, so that the door 40 is held in the door housing 86 (see Fig. 8).

[0066] In the state in which the door 40 is stored in the door housing 86, the hinge portion 42 of the door 40 is arranged between the rear holding claws 82 and the second protrusion 64. In addition, when the upper covers 50 are stacked in this state, the distal end portion of the handle 44 of the door 40 is placed in the mounting recess 52A of the upper cover 50 on the lower side, so that interference between the handle 44 of the door 40 and the upper cover 50 is avoided.

Operation and Effects

[0067] Subsequently, an operation and effects of the present embodiment will be shown by describing a procedure of nesting the box bodies 20 and a procedure of assembling the door 40 to the upper cover 50 when the storage box 10 is in a disassembled state.

[0068] In the storage box 10 configured in this manner, the door 40 is rotatably provided at the front end portion of the storage box 10. Therefore, when contents such as shoes are stored in the storage box 10, the user grips the handle 44 of the door 40 and releases an engaged state between the door hook 46 of the door 40 and the surrounding wall 54 of the upper cover 50, so that the opening at the front end portion of the storage box 10 will be opened. Accordingly, the contents such as shoes are stored in the storage box 10 through the opening.

Nesting of Box Bodies

[0069] As illustrated in Fig. 1A, in order to nest a plurality of the box bodies 20 in a state in which the storage box 10 is disassembled, one box body 20 is placed on top of the other box body 20. Then, the lower end portion of the one box body 20 is inserted into the interior of the upper end portion of the other box body 20 from above as illustrated in Fig. 10A. In this case, the one box body 20 is inserted into the other box body 20 with the groove portion 24A of the fitting target portion 24 of the one box body 20 aligned with the fitting rib 22 of the other box body 20. At this time, a rear surface of the flange portion 28 (specifically, the front side shouldered portion 28A) of the one box body 20 is placed at a position adjacent to the front side of the flange portion 28 of the other box body 20. Accordingly, the flange portion 28 (specifically, the front side shouldered portion 28A) which constitutes

the front end portion of the box body 20 functions as a positioning portion for determining the relative position between the upper and lower box bodies 20 during the nesting operation.

[0070] Then, from the state illustrated in Fig. 10 (A), the one box body 20 is moved downward. Specifically, the one box body 20 is moved downward with a rear surface of the flange portion 28 (the front side shouldered portion 28A) of the one box body 20 moved along a front surface of the flange portion 28 of the other box body 20. Accordingly, the flange portion 28 (the front side shouldered portion 28A) which constitutes the front end portion of the box body 20 functions as a guide portion during the nesting operation.

[0071] Then, by moving the one box body 20 downward to a position indicated in Fig. 10B, the upper end portion of the fitting rib 22 of the other box body 20 is inserted into the groove portion 24A of the one box body 20, and the upper end surface of the fitting rib 22 comes into contact with the upper end surface of the groove portion 24A. Accordingly, nesting is completed in a state in which the one box body 20 is supported by the fitting rib 22 of the other box body 20 from the lower side. Then, by repeating the nesting operation described above as illustrated in Fig. 1B, a plurality of the box bodies 20 are nested in the vertical direction (six box bodies 20 are nested in the vertical direction in the example illustrated in Fig. 1B). Further, when the box bodies 20 are nested, the upper box body 20 is placed at a position shifted forward by the front-back distance L1 between the groove portion 24A and the fitting rib 22 with respect to the lower box body 20. In other words, when the box bodies 20 are nested, it is not necessary to invert, in the front-back direction, the upper box body 20 with respect to the lower box body 20, and the upper and lower box bodies 20 are placed in the same orientation. Therefore, operability during the nesting operation is improved.

Attachment of Door 40 to Upper Cover 50

[0072] When attaching the door 40 to the upper cover 50 in a state in which the storage box 10 is disassembled, the door 40 is placed in the door housing 86 of the door 40. Specifically, the door 40 is placed substantially parallel to the upper cover 50 so that the rear surface of the door 40 faces the lower surface of the upper cover 50. Also, in this state, the door 40 is disposed such that the hinge portion 42 of the door 40 is positioned between the rear holding claw 82 of the upper cover 50 and the second protrusion 64. In this state, when the door 40 is moved closer to the upper cover 50, the lower end portion of the door 40 comes into contact with the holding hooks 82B of the rear holding claws 82, and the rear holding claws 82 elastically deform rearward. At this time, the upper end portion of the door 40 comes into contact with the holding hooks 84B of the front holding claws 84, and the front holding claws 84 elastically deform forward.

[0073] From this state, when the door 40 is moved clos-

er to the upper cover 50, the lower end portion of the door 40 engages with the holding hooks 82B of the rear holding claws 82, and the upper end portion of the door 40 engages the holding hook 84B of the front holding claws 84. Accordingly, the door 40 is assembled to the upper cover 50 and is held by the upper cover 50 (see Fig. 8).

[0074] Here, in the box body 20 of the storage box 10, the fitting ribs 22 and the fitting target portions 24 used when nesting the box body 20 are provided on the lower end portion of the side walls 20B of the box body 20. For this reason, the stability of the box bodies 20 in the nested state is achieved

[0075] In other words, the box body 20 is formed in a substantially rectangular parallelepiped box shape opening upward and forward. For this reason, in the box body 20, the upper end portion of the box body 20 corresponds to an open end, and thus the bending rigidity of the side walls 20B of the box body 20 is relatively low. Thus, when an external force acts on the side walls 20B of the box body 20 and the side walls 20B bend in the left-right direction, the upper end portion of the side wall 20B is significantly displaced in the left-right direction. In particular, the amount of displacement at the front end of the upper end portions of the side walls 20B is increased. That is, the box body 20 formed into a substantially rectangular parallelepiped box shape opening upward and forward has a structure in which the amount of displacement of the upper end portions of the side walls 20B due to the deflection deformation of the side walls 20B is increased.

[0076] Therefore, assuming that the fitting portion and the fitting target portion used for nesting the box bodies 20 are provided at the upper end portions of the side walls 20B of the box bodies 20 (hereinafter, this case is referred to as comparative example), the state of the nested box bodies 20 may become unstable. In other words, in the box bodies 20 in this comparative example, for example, when the side walls 20B of the box body 20 are subjected to deflection deformation by an external force, the upper end portions of the side walls 20B are significantly displaced. Consequently, in the nested state, the fitting state between the fitting portion and the fitting target portion of the box bodies 20 may be released. Accordingly, for example, when a plurality of the box bodies 20 are transported or stored in a nested state, there is a possibility that the nested state of the box bodies 20 may be broken.

[0077] Also, for example, in the case of the box body 20 of the comparative example, when the box bodies 20 are nested in three or more stages, it is required to fit the upper end portions of the side walls 20B of the box bodies 20 in the third and upper stages to the upper end portions of the side walls 20B of the box bodies 20 in the already nested state. Then, at the time of this fitting operation, an external force acts on the upper end portions of the side walls 20B of the box bodies 20 in the already nested state from the box bodies 20 to be newly nested. For this reason, there is a possibility that the fitting state of the box bodies 20 in the already nested state is released. In

this case, it is necessary to fit the new box body 20 to the lower box bodies 20 with an operation of restoring the box bodies 20 in the non-fitting state back to the fitting state. Therefore, the operation of nesting the box bodies 20 may become complicated.

[0078] In contrast, according to the box body 20 of the present embodiment, the fitting ribs 22 and the fitting target portions 24, which are to be used when nesting the box bodies 20, are provided at the lower end portions of the side walls 20B of the box body 20. The lower end portions of the side walls 20B are connected to the bottom wall 20A of the box body 20. In other words, according to the present embodiment, the fitting ribs 22 and the fitting target portions 24 are provided on the side walls 20B at areas subjected to a relatively small amount of displacement. Therefore, the amount of displacement of the fitting ribs 22 and the fitting target portions 24 when the side walls 20B are deformed by deflection can be significantly reduced with respect to the comparative example described above. Therefore, even with the box body 20 having a substantially rectangular parallelepiped box shape opening upward and forward, the stability of the box bodies 20 in the nested state is achieved.

[0079] Also, in the present embodiment, upper end portions of the side walls 20B of the box bodies 20 are not fitted together as in the comparative example. Therefore, even when the box bodies 20 are nested in three or more stages, it is possible to suppress an external force by the new box body 20 acting on the upper end portions of the side walls 20B of the box bodies 20 in the already nested state. Therefore, when a new box body 20 is nested in the box bodies 20 in the already nested state, unintended release of the fitting state of the box bodies 20 in the already nested state may be suppressed. Accordingly, unlike the comparative example described above, it is possible to suppress the need for performing the operation of restoring the box bodies 20 that are in the non-fitting state back to the fitting state again. As a result, suppression of the complexity of the operation of nesting the box bodies 20 in three or more stages as well as improvement of the operability for the user are both achieved.

[0080] Further, in the present embodiment, the box bodies 20 can be nested together by fitting the upper end portions of the fitting ribs 22 of one box body 20 into the groove portion 24A of the other box body 20. In other words, a plurality of the box bodies 20 can be nested by groove fitting. Therefore, a plurality of the box bodies 20 can be nested with a simple configuration.

[0081] Also, the fitting ribs 22 protrude widthwise inward of the box body 20 at the lower end portions of the side walls 20B and extend upward from the bottom wall 20A. Therefore, the fitting ribs 22 also act as reinforcement ribs for the side walls 20B. Therefore, reinforcement of the side walls 20B is achieved by utilizing the fitting ribs 22 used for nesting.

[0082] Furthermore, the fitting ribs 22 protrude widthwise inward of the box body 20. Therefore, the fitting ribs

22 can be made invisible from the outside of the storage box 10. Also, the groove portions 24A of the fitting target portions 24 to which the fitting ribs 22 are fitted are exposed to the outside at a lower corner of the box body 20 (storage box 10). Therefore, in the storage box 10, the groove portions 24A exposed to the outside can be disposed at a relatively inconspicuous positions. Furthermore, the depth of the vertical direction in the groove portion 24A is set smaller than the dimension of the vertical direction of the fitting rib 22. Therefore, the area for providing the groove portion 24A exposed to outside the storage box 10 can be made relatively small. As described above, the fitting ribs 22 and the fitting target portions 24 (the groove portions 24A) can be provided on the box body 20 with the design of the storage box 10 maintained.

[0083] Further, the upper end surfaces of the fitting ribs 22 and the upper end surfaces of the groove portions 24A in the fitting target portions 24 are inclined upward in front view as it goes widthwise inward of the box body 20. Therefore, when the fitting ribs 22 are fitted in the groove portions 24A, the upper end surfaces of the fitting ribs 22 and the upper end surfaces of the groove portions 24A are brought into contact with each other. Accordingly, when nesting a plurality of the box bodies 20, the fitting ribs 22 and the groove portions 24A engage in the left-right direction. Therefore, when the fitting rib 22 is in contact with and is fitted to the groove portion 24A, the nested state is maintained even when a load from above (the longitudinal direction) is applied, and the buckling of the fitting rib 22 is prevented. Therefore, the stability of the box bodies 20 in the nested state is achieved further reliably. As a result, the fitting state of the fitting ribs 22 and the groove portions 24A can be maintained desirably. Therefore, the stability of the box bodies 20 in the nested state is achieved further reliably.

[0084] Further, the upper cover 50 includes the door housing 86 for storing the door 40 disassembled from the box body 20 and the holding mechanism 80 for holding the door 40. For this reason, in the state in which the storage box 10 is disassembled, the door 40 can be held in the state assembled to the upper cover 50. Accordingly, for example, packaging performance for transporting the storage boxes 10 in a disassembled state is improved. Further, for example, for storing the storage box 10 in a disassembled state when the storage box 10 is not used, storage is achieved with the door 40 assembled to the upper cover 50 and stored. Accordingly, the storage performance of the upper cover 50 and the door 40 is improved, and the loss of the door 40 is prevented.

[0085] Also, the holding mechanism 80 is configured to include the rear holding claws 82 and the front holding claws 84. Then, the rear holding claws 82 engage the lower end portion of the door 40, and the front holding claws 84 engage the upper end portion of the door 40, whereby the door 40 is held by the upper cover 50. Therefore, the door 40 can be held by the upper cover 50 with a simple configuration.

[0086] Furthermore, in the present embodiment, when the upper covers 50 in a state of having the door 40 assembled are stacked, the distal end portion of the handle 44 of the door 40 is disposed within the mounting recess 52A of the lower upper cover 50. Therefore, interference between the door 40 and the upper cover 50 is avoided. Therefore, even with a configuration in which the door 40 is held by the upper cover 50, the door 40 can be held by the upper cover 50 with the stacking performance of the upper cover 50 maintained.

[0087] Further, in the box body 20, the supporting portion 30 for rotatably supporting the door 40 is provided at the front end portion of the bottom wall 20A. In addition, the supporting portion 30 is formed in a substantially U shape opening downward in side view, and extends over the entire width of the box body 20. This makes it possible to reinforce the front end portion of the box body 20 by utilizing the supporting portion 30 for supporting the door 40 in a rotatable manner. In other words, the bending rigidity of the front end portion of the box body 20 can be increased by utilizing the supporting portion 30, and the rigidity of the whole box body 20 can be increased accordingly. As a result, the posture of each box body 20 in the nested state can be stabilized, and the stability of the box bodies 20 in the nested state can be further enhanced.

Second Embodiment

[0088] Referring now to Fig. 11A to Fig. 13, a storage box 100 as a "storage box" according to a second embodiment will be described. The storage box 100 is configured in the same manner as the storage box 10 of the first embodiment except for the following points. Note that like members of the storage box 100 those of the first embodiment are designated by the same reference numerals in Fig. 11A to Fig. 13.

[0089] In other words, the door 40 of the storage box 10 of the first embodiment is omitted in the storage box 100. In addition, in the storage box 100, a drawer 110 is stored in an interior of a storage section 20D of the box body 20 in a manner slidably in the front-back direction. Specifically, the entire drawer 110 is stored in the interior of the storage section 20D (at a position indicated in Fig. 11B, and the position of the drawer 110 will be referred to as a "storage position", hereinafter), the drawer 110 is configured to slide forward (be drawn) from the storage position.

[0090] The drawer 110 is made of a resin material (polypropylene (PP) in the present embodiment), and is formed in a substantially rectangular parallelepiped box shape opening upward and forward. Specifically, the drawer 110 includes a substantially rectangular plate-shaped bottom wall 110A having a thickness direction in the vertical direction and the longitudinal direction in the front-back direction, a pair of left and right side walls 110B extending upward from both end portions of the bottom wall 110A in the width direction, and a rear wall 110C

extending upward from a rear end portion of the bottom wall 110A. An interior of the drawer 110 is configured to be a storage space 110D for storing contents such as shoes or clothes as an object to be stored. The width dimension of the drawer 110 is set to be smaller than the width dimension of the box body 20. The vertical dimension (height dimension) of the drawer 110 is set to be smaller than the vertical dimension (height dimension) of the box body 20.

[0091] The side walls 110B of the drawer 110 are inclined widthwise inward of the drawer 110 as it goes downward in front view. The rear wall 110C is inclined forward as it goes downward in side view. An angle of inclination of the side walls 110B with respect to the vertical direction is set to be substantially the same as an angle of inclination of the rear wall 110C. Accordingly, the drawer 110 is configured to be nestable so as to allow one drawer 110 to be stacked in another drawer 110 in the vertical direction (see Fig. 13). Specifically, when the drawers 110 are nested in the vertical direction, the drawers 110 are nested in the vertical direction with the side walls 110B and the rear wall 110C of the upper drawer 110 in contact with the side walls 110B and the rear wall 110C of the lower drawer 110.

[0092] A front cover 120 is detachably (removably) attached to a front end portion of the drawer 110. Accordingly, an opening on the front side of the drawer 110 is closed with the front cover 120. The front cover 120 is made of a resin material (polypropylene (PP) in the present embodiment), and is formed in a substantially rectangular parallelepiped box shape opening rearward and relatively shallow. A thickness dimension T1 (which is a dimension in the front-back direction, see Fig. 12) of the front cover 120 is set to be smaller than a height dimension H1 (see Fig. 5) of the fitting rib 22 of the box body 20 in the vertical direction. Specifically, The thickness dimension T1 of the front cover 120 is set to be smaller than the dimension obtained by subtracting a height dimension H2 from the height dimension H1 of the fitting rib 22, where H2 is a height dimension (see Fig. 5) from the lower surface of the box body 20 to the upper end of the groove portion 24A.

[0093] In the second embodiment, the supporting portion 30 of the box body 20 is omitted. In the same manner as the first embodiment, the fitting ribs 22 and the fitting target portions 24 in pairs, which are to be used when nesting the box bodies 20, are provided at front end portions (two places) and rear end portions (two places) of the lower end portions of the left and right side walls 20B of the box body 20. Therefore, in the second embodiment as well, the stability of the box bodies 20 in the nested state is achieved as in the first embodiment.

[0094] In addition, in the second embodiment, the drawer 110 is slidably stored in the interior of the storage section 20D of the storage box 100. Therefore, predetermined contents such as clothes and shoes can be stored in the storage space 110D of the drawer 110 by pulling the drawer 110 out forward from the storage position.

Therefore, improved convenience as the drawer for users is achieved.

[0095] In the second embodiment, the drawers 110 are configured to be nestable in the vertical direction. Therefore, as illustrated in Fig. 13, in a state in which the storage box 100 is disassembled, the nested drawers 110 may be stored in the interior of the uppermost one of the nested box bodies 20. Accordingly, for example, in the storage box 100 having the drawer 110, improved transportation efficiency of the storage box 100 and improved storage performance of the storage box 100 are achieved.

[0096] Also, in the second embodiment, the thickness dimension T1 of the front cover 120 is set to be smaller than the height dimension of the fitting rib 22 of the box body 20 in the vertical direction. Specifically, the thickness dimension T1 is set to be smaller than the dimension obtained by subtracting the height dimension H2 from the height dimension H1 of the fitting rib 22. Therefore, the thickness dimension T1 of the front cover 120 is set to be smaller than the distance between the bottom walls 20A of the box bodies 20 facing each other in the vertical direction when a plurality of the box bodies 20 are nested. Accordingly, as illustrated in Fig. 13, a plurality of the box bodies 20 can be nested in the vertical direction with the front cover 120 placed on the bottom wall 20A of each box body 20. Therefore, for example, the storage box 100 provides further improved transport efficiency and further improved storage performance.

[0097] In the second embodiment, the drawers 110 are configured to be nestable in the vertical direction. However, the drawer 110 may be provided with the fitting ribs 22 and the fitting target portions 24 in pairs like those on the box body 20 on lower end portions of the side walls 110B of the drawer 110 in the second embodiment. Accordingly, the stability of the drawers 110 in the nested state is increased, and the drawers 110 may be prevented from being collapsed by an application of a load from above (vertical direction), so that the nested state may be maintained.

Modified Example of Second Embodiment

[0098] Referring now to Fig. 14 and Fig. 15, a modified example of the storage box 100 according to the second embodiment will be described. In this modified example, the drawing height of the bottom drawn part 20A1 of the bottom wall 20A of the box body 20 is larger than those of the first and second embodiments, and the front end of the bottom drawn part 20A1 extends to the front end of the box body 20. The drawing height of the bottom drawn part 20A1 is set to be larger than the thickness dimension T1 of the front cover 120 and smaller than the height dimension H1 of the fitting rib 22. The drawer 110 is configured to slide over the bottom drawn part 20A1. At the front end portion of the bottom drawn part 20A1 of the box body 20, a pair of front and rear reinforcement ribs 20A2 extending downward are integrally provided.

The reinforcement ribs 20A2 extend in the left-right direction.

[0099] The bottom drawn part 20A1 is provided at the center portion thereof with a storage recess 20A3 as a "cover storage section" for storing the front cover 120. The storage recess 20A3 is formed in a recessed shape protruding downward from the bottom drawn part 20A1 and opening upward, and is formed in a substantially rectangular shape having a longitudinal direction in the front-back direction in plan view. In addition, an outer shape of the storage recess 20A3 in plan view is set to be slightly larger than the outer shape of the front cover 120, and the storage recess 20A3 is configured to allow storage of the front cover 120 in the interior thereof. Further, the storage recess 20A3 includes a hole portion 20A4 formed to penetrate through a bottom wall thereof, and the hole portion 20A4 is formed in a substantially rectangular shape which is similar to the storage recess 20A3. In this configuration, when molding the box body 20 and the front cover 120 with a mold, composite mold (set mold) is available. The bottom wall of the storage recess 20A3 is disposed at a position slightly above the bottom wall 20A of the box body 20, and the bottom wall is configured not to protrude downward from the bottom wall 20A of the box body 20.

[0100] As illustrated in Fig. 15, in a state in which the storage box 100 is disassembled, the nested drawers 110 may be stored in the interior of the uppermost one of the nested box bodies 20 in the modified example of the second embodiment as well. Accordingly, for example, in the storage box 100 having the drawer 110, improved transportation efficiency of the storage box 100 and improved storage performance of the storage box 100 are achieved.

[0101] In the modified example of the second embodiment, the storage recess 20A3 for storing the front cover 120 is formed on the bottom wall 20A of the box body 20. Accordingly, a plurality of the box bodies 20 can be nested in the vertical direction with the front cover 120 stored and held in the interior of the storage recess 20A3. Therefore, for example, the storage box 100 may be transported and stored in a state in which the front cover 120 is stored in the storage recess 20A3 of the box body 20 in a stable manner.

Third Embodiment

[0102] Referring now to Fig. 16A to Fig. 18, a storage box 200 as a "storage box" according to a third embodiment will be described. The storage box 200 is configured in the same manner as the storage box 100 of the second embodiment except for the following points. Note that like members in the storage box 200 those of the second embodiment are designated by the same reference numerals in Fig. 16A to Fig. 18.

[0103] In the other words, in the storage box 200, the drawer 110 is formed into a substantially rectangular parallelepiped box shape opening only upward. Therefore,

the drawer 110 is provided with a front wall 110E extending upward from a front end portion of the bottom wall 110A. In the third embodiment, the angles of inclination of the side walls 110B and the rear wall 110C of the drawer 110 with respect to the vertical direction are set to be larger than those of the second embodiment, and are set to be larger than an angle of inclination of the front wall 110E with respect to the vertical direction. Accordingly, in the third embodiment as well, the drawer 110 is configured to be nestable in the vertical direction (see Fig. 18). Specifically, when a plurality of the drawers 110 are nested in the vertical direction, the drawers 110 are nested with the side walls 110B, the rear wall 110C, and the front wall 110E of the upper drawer 110 in contact with the side walls 110B, the rear wall 110C, and the front wall 110E of the lower drawer 110.

[0104] In the third embodiment, the drawing height of the bottom drawn part 20A1 of the bottom wall 20A of the box body 20 is larger than those of the first and second embodiments, and the front end of the bottom drawn part 20A1 extends to the front end of the box body 20 in the same manner as the modified example of the second embodiment. The drawer 110 is configured to slide over the bottom drawn part 20A1. At the front end portion of the bottom drawn part 20A1 of the box body 20, the pair of front and rear reinforcement ribs 20A2 extending downward are integrally provided. The reinforcement ribs 20A2 extends in the left-right direction.

[0105] Further, in the third embodiment, a shouldered portion 50A, which is one step lower, is formed on an upper surface of a front end portion of the upper cover 50.

[0106] In the third embodiment, a frame member 210 having a substantially rectangular frame shape is provided at a front end portion of the storage box 200. The frame member 210 is made of a resin material (polypropylene (PP) in the present embodiment). The frame member 210 includes a panel portion 212 of a substantially rectangular plate shape having a thickness direction in the front-back direction, and an outer peripheral wall 214 extending rearward from the outer peripheral edge portion of the panel portion 212. The reinforcement ribs 20A2 of the box body 20 and the shouldered portion 50A of the upper cover 50 are fitted inside the outer peripheral wall 214 of the frame member 210, and the frame member 210 is detachably attached to the box body 20 and the upper cover 50.

[0107] The panel portion 212 is also provided with an insertion portion 212A having a substantially rectangular tubular shape, and an interior of the insertion portion 212A penetrates therethrough in the front-back direction. The insertion portion 212A has a similar shape to the shape of the drawer 110 in front view. When the drawer 110 is slid, the drawer 110 is inserted through the interior of the insertion portion 212A.

[0108] A thickness dimension T2 (which is a dimension in the front-back direction, see Fig. 17) of the frame member 210 is set to be smaller than the height dimension H1 (see Fig. 5) of the fitting rib 22 of the box body 20 in

the vertical direction. Specifically, the thickness dimension T2 of the frame member 210 is set to be smaller than the dimension obtained by subtracting the height dimension H2 from the lower surface of the box body 20 to the upper end of the groove portion 24A from the height dimension H1 of the fitting rib 22.

[0109] In the same manner as the first and second embodiments, the fitting ribs 22 and the fitting target portions 24 in pairs, which are to be used when nesting the box bodies 20, are provided at front end portions (two places) and rear end portions (two places) at the lower end portions of the left and right side walls 20B of the box body 20. Therefore, in the third embodiment as well, the stability of the box bodies 20 in the nested state is achieved as in the first and second embodiments.

[0110] In addition, in the third embodiment, the drawer 110 is slidably stored in an interior of the storage section 20D of the storage box 200. Therefore, in the same manner as the second embodiment, contents such as shoes can be stored in the storage space 110D of the drawer 110 by pulling the drawer 110 out forward from the storage position. Therefore, improved convenience for users is achieved.

[0111] In the third embodiment, the drawer 110 is configured to be nestable in the vertical direction. Therefore, as illustrated in Fig. 18, in a state in which the storage box 200 is disassembled, the nested drawers 110 may be stored in the interior of the uppermost one of the nested box bodies 20. Accordingly, for example, in the storage box 200 having the drawer 110, improved transportation efficiency of the storage box 200 and improved storage performance of the storage box 200 are achieved.

[0112] In the third embodiment, the frame member 210 having a substantially rectangular frame shape is provided at a front end portion of the storage box 200. The reinforcement ribs 20A2 of the box body 20 and the shouldered portion 50A of the upper cover 50 are fitted inside the outer peripheral wall 214 of the frame member 210 and the frame member 210 is detachably attached to the box body 20 and the upper cover 50. Accordingly, reinforcement of the front end portion of the storage box 200 is achieved by using the frame member 210 configured to close the opening on the front side of the storage box 200.

[0113] Also, in the third embodiment, the thickness dimension T2 of the frame member 210 is set to be smaller than the height dimension H1 of the fitting rib 22 of the box body 20 in the vertical direction. Specifically, the thickness dimension T2 of the frame member 210 is set to be smaller than the dimension obtained by subtracting the height dimension H2 from the height dimension H1 of the fitting rib 22. Therefore, the thickness dimension T2 of the frame member 210 is set to be smaller than the distance between the bottom walls 20A (bottom drawn part 20A1) of the box bodies 20 facing each other in the vertical direction when a plurality of the box bodies 20 are nested. Accordingly, as illustrated in Fig. 18, a plu-

ality of the box bodies 20 can be nested in the vertical direction with the frame member 210 placed on the bottom wall 20A (bottom drawn part 20A1) of each box body 20. Therefore, for example, further improved transportation efficiency of the storage box 200 having the frame member 210 and further improved storage performance of the storage box 200 are achieved.

Modified Example of Third Embodiment

[0114] Referring now to Fig. 19 and Fig. 20, a modified example of the storage box 200 according to the third embodiment will be described. In this modified example, the drawing height of the bottom drawn part 20A1 of the box body 20 is set to be larger than the thickness dimension T2 of the frame member 210. The bottom drawn part 20A1 is provided at the center portion thereof with a storage recess 20A5 as a "frame member storage section" for storing the frame member 210. The storage recess 20A5 is formed in a recessed shape protruding downward from the bottom drawn part 20A1 and opening upward, and is formed in a substantially rectangular shape having a longitudinal direction in the front-back direction in plan view. In addition, an outer shape of the storage recess 20A5 in plan view is set to be slightly larger than the outer shape of the frame member 210, and the storage recess 20A5 is configured to allow storage of the frame member 210. Further, the storage recess 20A5 includes a hole portion 20A6 formed to penetrate through the bottom wall thereof, and the hole portion 20A6 is formed in a substantially rectangular shape which is similar to the storage recess 20A5. In this configuration, when molding the box body 20 and the frame member 210 with a mold, composite mold (set mold) is available. The bottom wall of the storage recess 20A5 is disposed at a position slightly above the bottom wall 20A of the box body 20, and the bottom wall is configured not to protrude downward from the bottom wall 20A of the box body 20.

[0115] In a state in which the storage box 200 is disassembled, the nested drawers 110 may be stored in the interior of the uppermost one of the nested box bodies 20 in the modified example of the third embodiment as well. Accordingly, for example, in the storage box 200 having the drawer 110, improved transportation efficiency of the storage box 200 and improved storage performance of the storage box 200 are achieved.

[0116] In the modified example of the third embodiment, the storage recess 20A5 for storing the frame member 210 is formed on the bottom wall 20A of the box body 20. Accordingly, a plurality of the box bodies 20 can be nested in the vertical direction with the frame member 210 stored and held in the interior of the storage recess 20A5. Therefore, for example, the storage box 200 may be transported and stored in a state in which the frame member 210 is stored in the storage recess 20A5 of the box body 20 in a stable manner.

[0117] Note that the first to the third embodiments (in-

cluding modified examples of the second and third embodiments) propose a fitting structure such that the fitting ribs 22 of the lower box body 20 are fitted into the groove portions 24A of the upper box body 20 when the box bodies 20 are nested. However, the fitting structure is not limited thereto. For example, a configuration in which the fitting ribs of the upper box body 20 fit the groove portions of the lower box body 20 is also applicable. In this case, fitting ribs protruding widthwise outward of the box body 20 are formed at lower end portions of the side walls 20B of the box body 20. Further, at the lower end portions of the side walls 20B of the box body 20, fitting target portions having a groove portion opening widthwise inward of the box body 20 protrude widthwise inward of the box body 20 from the lower end portions of the side walls 20B.

[0118] In the first to the third embodiments (including the modified examples of the second and third embodiments), the upper end surfaces of the fitting ribs 22 of the box body 20 and the upper end surfaces of the groove portions 24A are disposed so as to incline upward as it goes inward in the width direction of the box body 20 in front view. However, the upper end surfaces of the fitting ribs 22 and the upper end surfaces of the groove portions 24A may be formed along a surface orthogonal to the vertical direction (that is, a horizontal surface).

[0119] In the first embodiment, the holding mechanism 80 for holding the door 40 on the upper cover 50 includes the rear holding claws 82 and the front holding claws 84 configured to engage the outer periphery of the door 40. However, the configuration of the holding mechanism 80 is not limited thereto. For example, in the holding mechanism 80, one of the rear holding claws 82 and the front holding claws 84 may be omitted and instead of the omitted holding claws, a hook-like member configured to lock the outer peripheral end portion of the door 40 may be provided on the upper cover 50.

[0120] In the first to the third embodiments (including the modified examples of the second and the third embodiments), the box body 20, the door 40, the upper cover 50, the drawer 110, the front cover 120, and the frame member 210 are made of PP. However, these members may be made of a resin material such as ABS and PE.

[0121] In the first to the third embodiments (including the modified examples of the second and the third embodiments), plate thicknesses of the box body 20, the door 40, the upper cover 50, the drawer 110, the front cover 120, and the frame member 210 are not specifically limited. However, the plate thicknesses of these members may be set in a range from 0.5 mm to 6 mm, preferably from 0.6 mm to 3.5 mm, more preferably from 0.8 mm to 2.5 mm. In a case where these members are made of ABS, the plate thicknesses of these members may range from 0.5 mm to 1.6 mm.

[0122] In the first to the third embodiments (including the modified examples of the second and the third embodiments), pairs of the fitting ribs 22 and the fitting target portions 24 are provided on the front end portions and

the rear end portions of the lower end portions of the side walls 20B of the box bodies 20. However, the pairs of the fitting ribs 22 and the fitting target portions 24 may be provided at positions depending on the size of the entire storage box. The pairs of the fitting rib 22 and the fitting target portion 24 may be provided either one of the front and the rear, that is, only at the front (two places on the left and right) or only at the rear (two places on the left and right) at the lower end portions of the left and right side walls 20B of the box bodies 20, or may be provided only near the intermediate portions in the front-back direction (two places on the left and right).

[0123] In the second embodiment, the front cover 120 is detachably attached to the front end portion of the drawer 110, and in the third embodiment, the frame member 210 is detachably attached to the box body 20 and the upper cover 50. However, the storage box may be configured to have a combined configuration including the second embodiment and the third embodiment. In other words, such a configuration is also applicable in which the drawer 110 is formed in a substantially rectangular parallelepiped box shape opening forward and upward, the front cover 120 is provided at the front end portion of the drawer 110, and the frame member 210 is attached to the box body 20 and the upper cover 50. In this case, in the same manner as the modified example of the third embodiment, the storage recess 20A5 may be formed in the bottom wall 20A of the box body 20 to store the front cover 120 and the frame member 210 in the interior of the storage recess 20A5 during the operation of nesting a plurality of the box bodies 20.

[0124] The storage boxes 10, 100, and 200 according to the first to the third embodiments (including the modified examples of the second and third embodiments) are configured as the storage box for storing not only shoes, but also for storing various things such as small articles or clothes. Therefore, application of the storage boxes 10, 100, and 200 are not limited for storing shoes. For example, the storage boxes 10, 100, and 200 may be used as a storage box for storing tools and articles for daily use.

Reference Signs List

[0125]

10	Storage box
20	Box body
20A3	Storage recess (cover storage section)
20A5	Storage recess (frame member storage section)
20D	Storage section
22	Fitting rib (fitting portion)
24	Fitting target portion
24A	Groove portion
40	Door (lid)
50	Upper cover
80	Holding mechanism

82	Rear holding claw (holding claw)
82B	Holding hook
84	Front holding claw (holding claw)
100	Storage box
110	Drawer
120	Front cover
200	Storage box
210	Frame member

Claims

1. A storage box comprising:

a box body formed into a box shape opening upward and forward, the box body having an interior configured as a storage section; and an upper cover detachably attached to the box body, the upper cover being configured to close an opening on an upper side of the box body, wherein the box body is configured to be nestable with another box body in such a manner as to allow the box bodies to be stacked in a vertical direction, and a lower end portion of a side wall of the box body includes a fitting portion and a fitting target portion formed to be fitted to each other when the box bodies are nested.

2. The storage box according to claim 1, wherein the fitting portion protrudes widthwise inward of the box body from the side wall and is formed into a rib shape extending in the vertical direction, the fitting target portion includes a groove portion opening widthwise outward of the box body and downward, and when the box bodies are nested, an upper end portion of the fitting portion of the box body disposed below is inserted into an interior of the groove portion of the box body disposed above.

3. The storage box according to claim 2, wherein an upper end surface of the fitting portion and an upper end surface of the groove portion are inclined upward in front view as they go widthwise inward of the box body.

4. The storage box according to any one of claims 1 to 3, further comprising a lid that is detachably attached to the box body for opening and closing an opening on a front side of the box body, wherein the upper cover is provided with a holding mechanism on a lower surface of the upper cover, and the holding mechanism holds the lid in a state of being detached from the box body.

5. The storage box according to claim 4, wherein the

holding mechanism includes a holding claw engageable with an outer peripheral edge portion of the lid.

6. The storage box according to any one of claims 4 and 5, further comprising:

a supporting portion at a front end portion of a bottom wall of the box body, the supporting portion being configured to rotatably support the lid, wherein the supporting portion is formed in a recessed shape opening downward in side view, and extends over an entire width of the box body.

7. The storage box according to any one of claims 1 to 3, further comprising:

a drawer slidably stored in the storage section so as to be movable in the front-back direction, the drawer being formed into a box shape opening upward and forward or upward, wherein the drawer is configured to be nestable with another drawer in such a manner as to allow the drawers to be stacked in the vertical direction.

8. The storage box according to claim 7, wherein the drawer is formed into a box-shape opening upward and forward, a front cover is detachably attached to the drawer, the front cover closes the opening on the front side of the drawer, and the front cover has a thickness dimension smaller than a height dimension of the fitting portion in the vertical direction.

9. The storage box according to claim 7, wherein the drawer is formed into a box shape opening upward and forward, a front cover is detachably attached to the drawer, the front cover closes the opening on the front side of the drawer, the bottom wall of the box body is provided with a cover storage section, and the cover storage section is configured to store the front cover in a state of being detached from the drawer.

10. The storage box according to claim 7, further comprising:

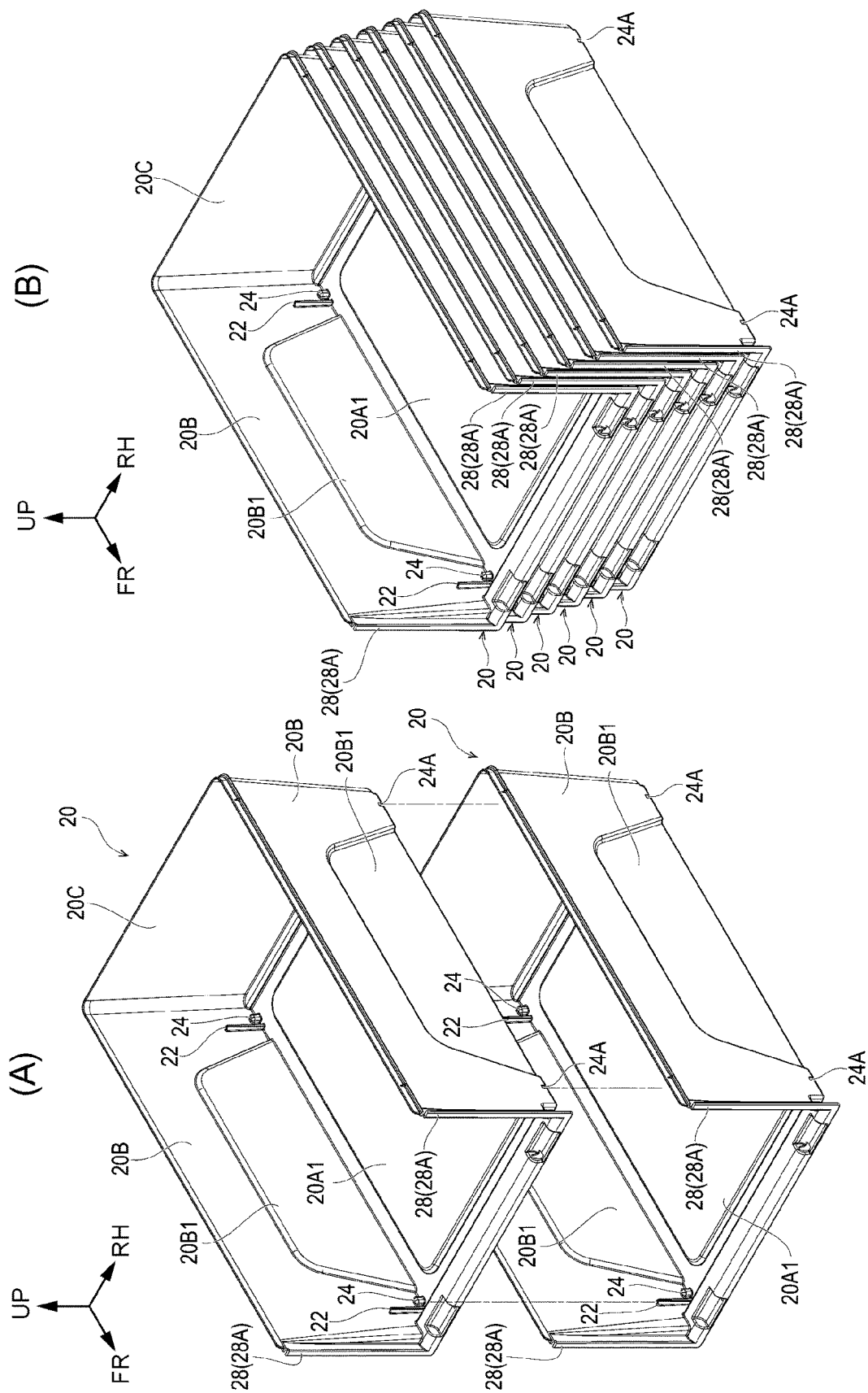
a frame member configured to cover the box body and the upper cover, the frame member being detachably attached to front end portions of the boxy body and the upper cover, the frame member being provided with an insertion portion that allows insertion of the drawer when the drawer is slid, wherein the frame member has a thickness dimension

smaller than a height dimension of the fitting portion in the vertical direction.

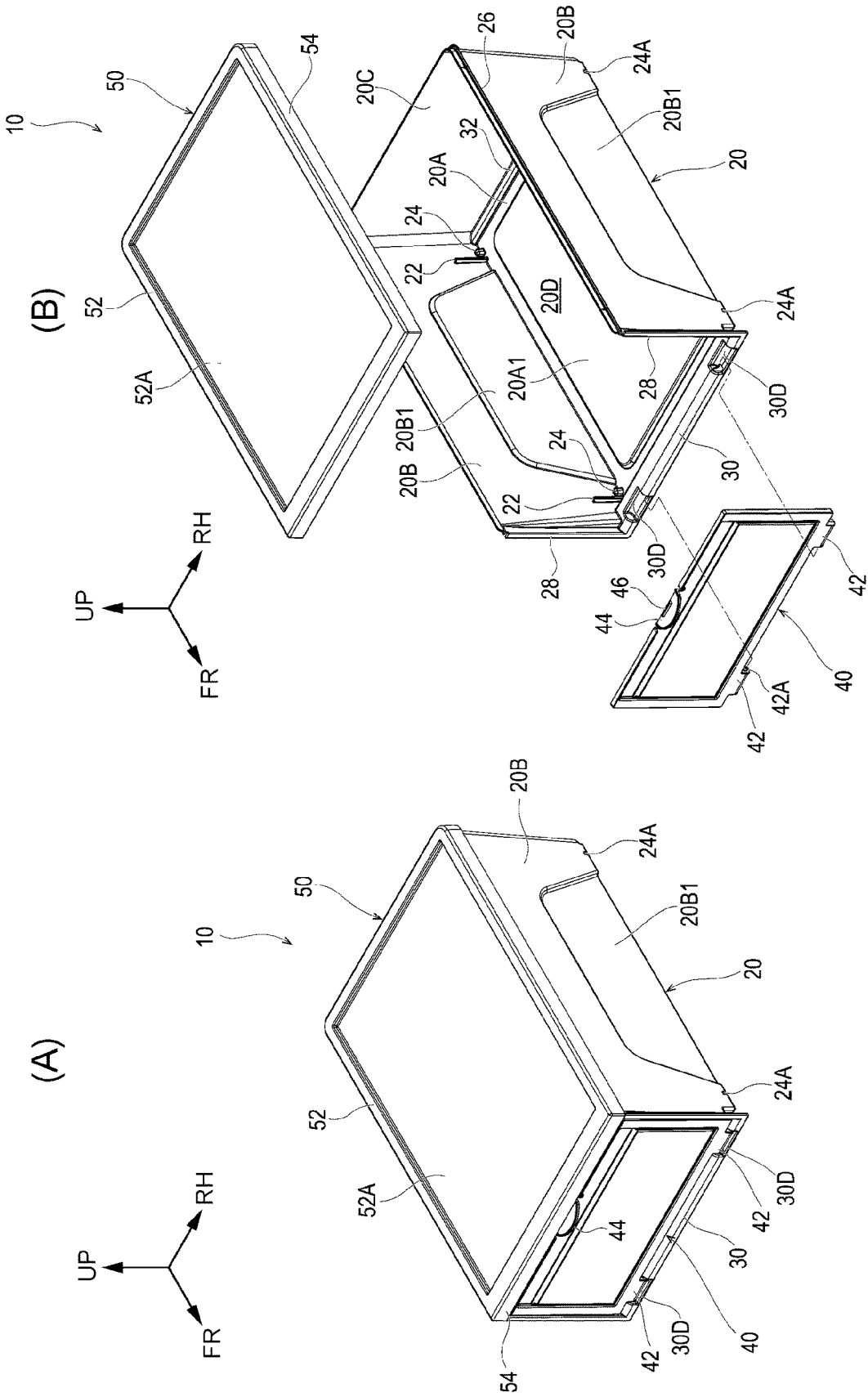
11. The storage box according to claim 7, further comprising:

a frame member configured to cover the box body and the upper cover, the frame member being detachably attached to front end portions of the boxy body and the upper cover, the frame member being provided with an insertion portion that allows insertion of the drawer when the drawer is slid, wherein the bottom wall of the box body is provided with a frame member storage section, and the cover storage section is configured to store the frame member in a state of being detached from the box body and the upper cover.

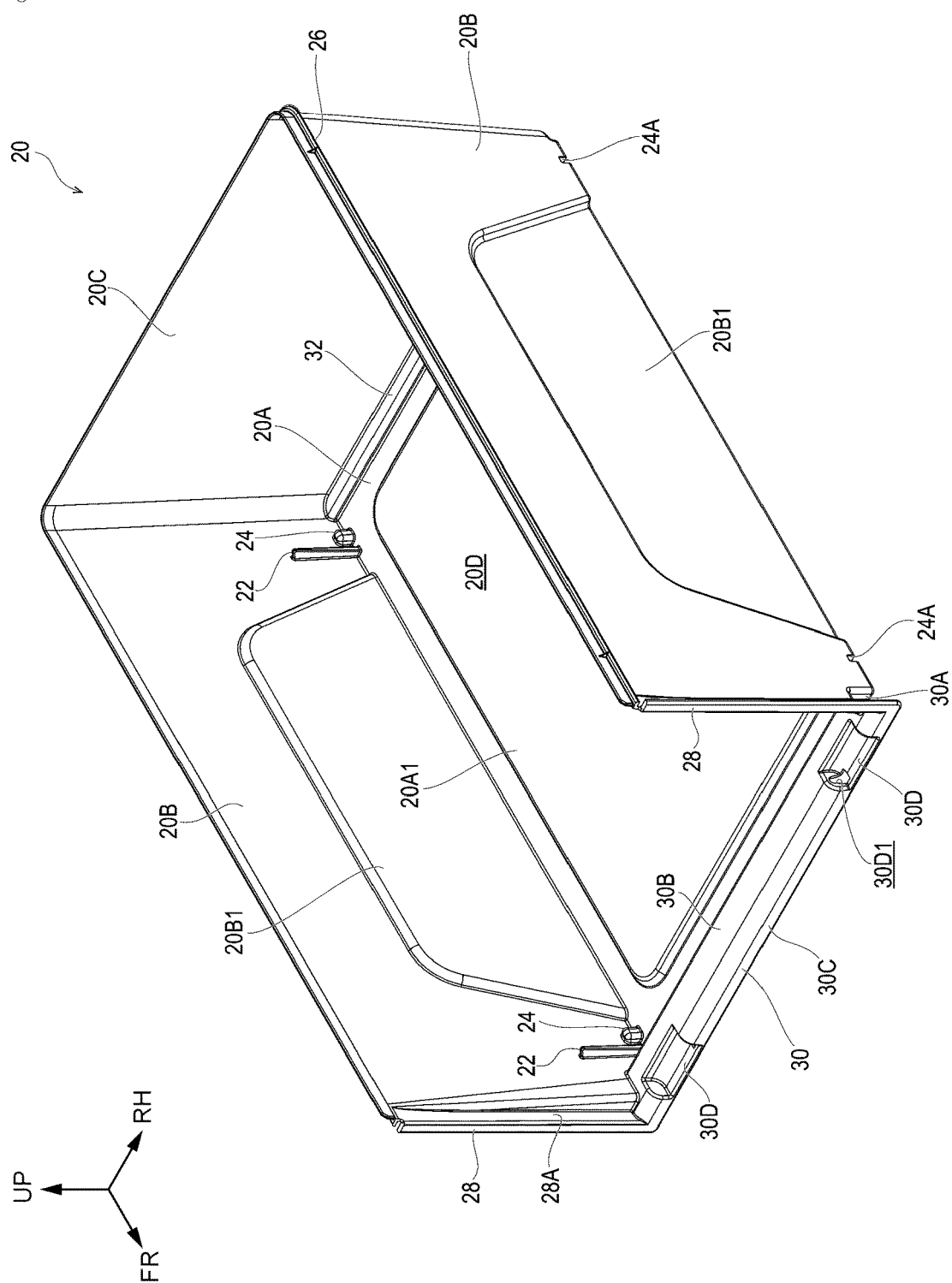
Figure 1



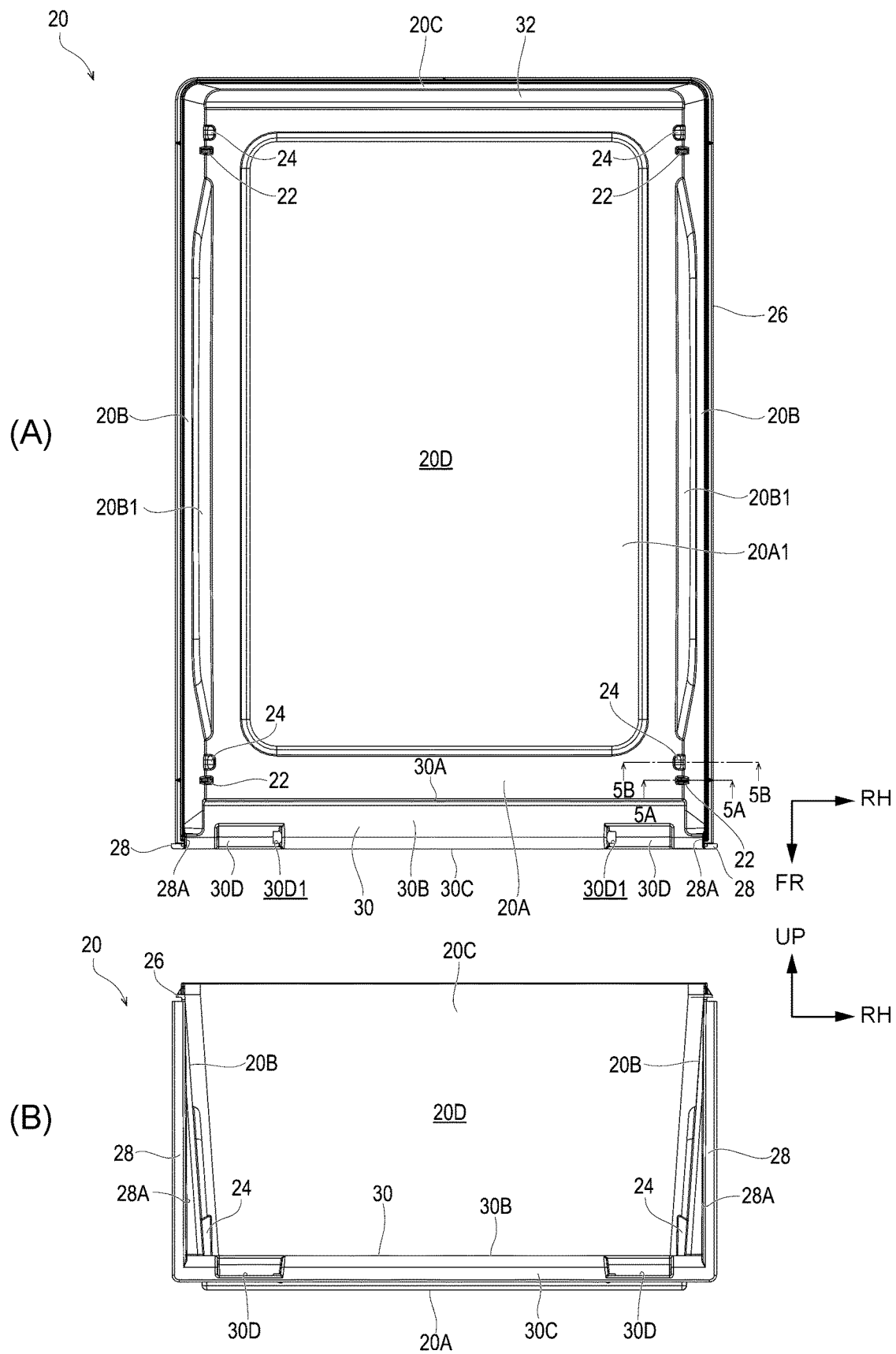
Figur 2



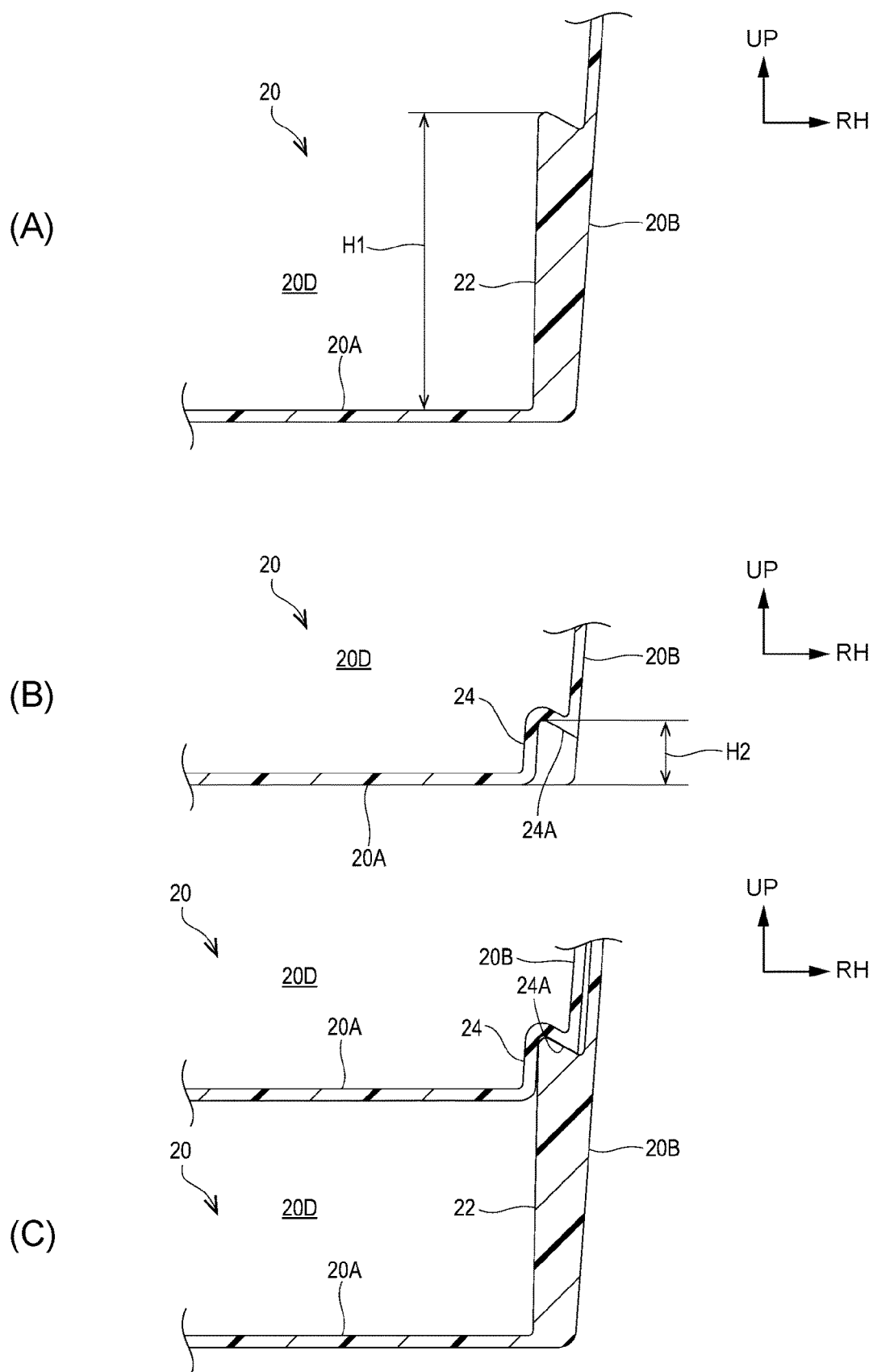
Figur 3



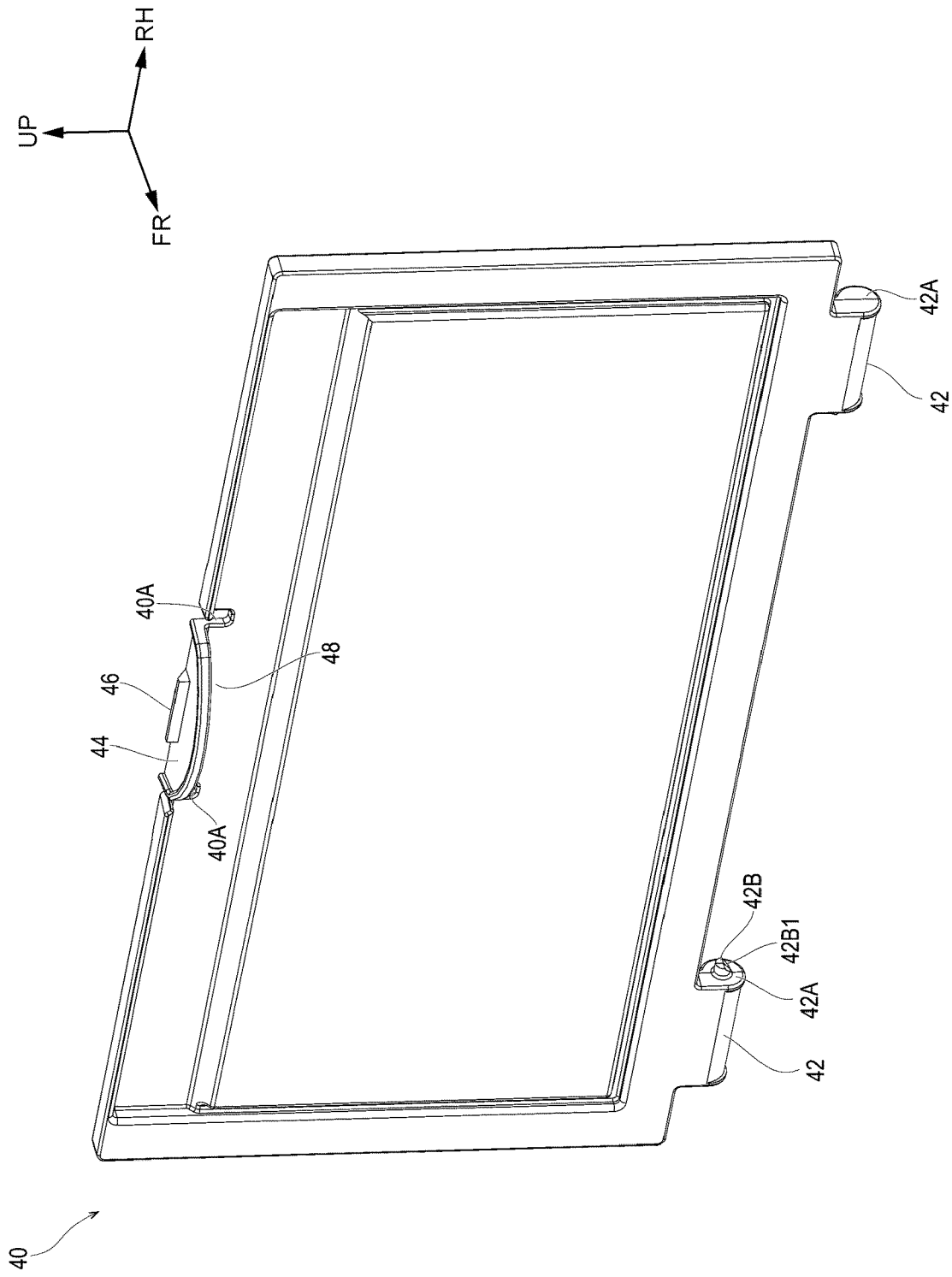
Figur 4



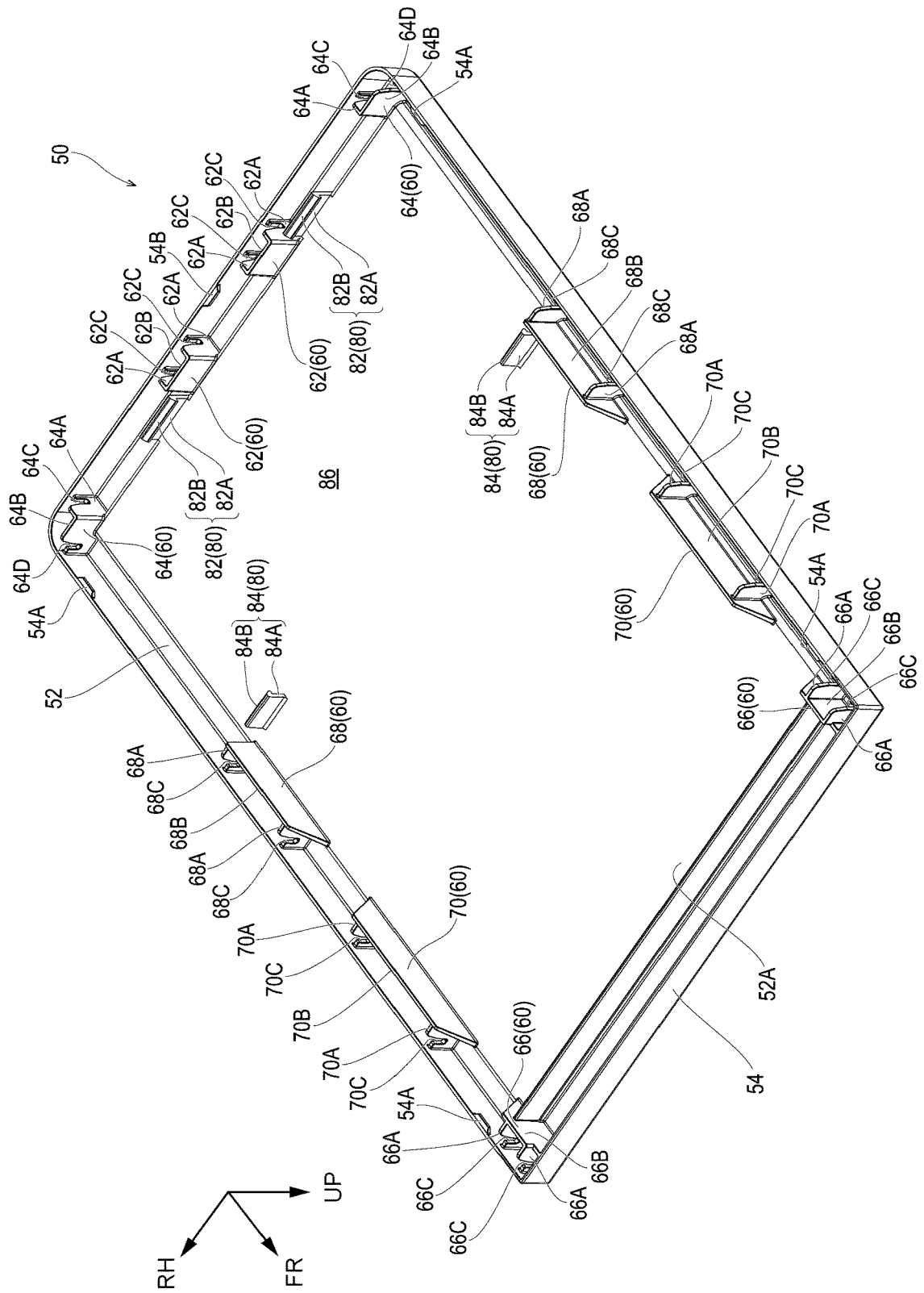
Figur 5



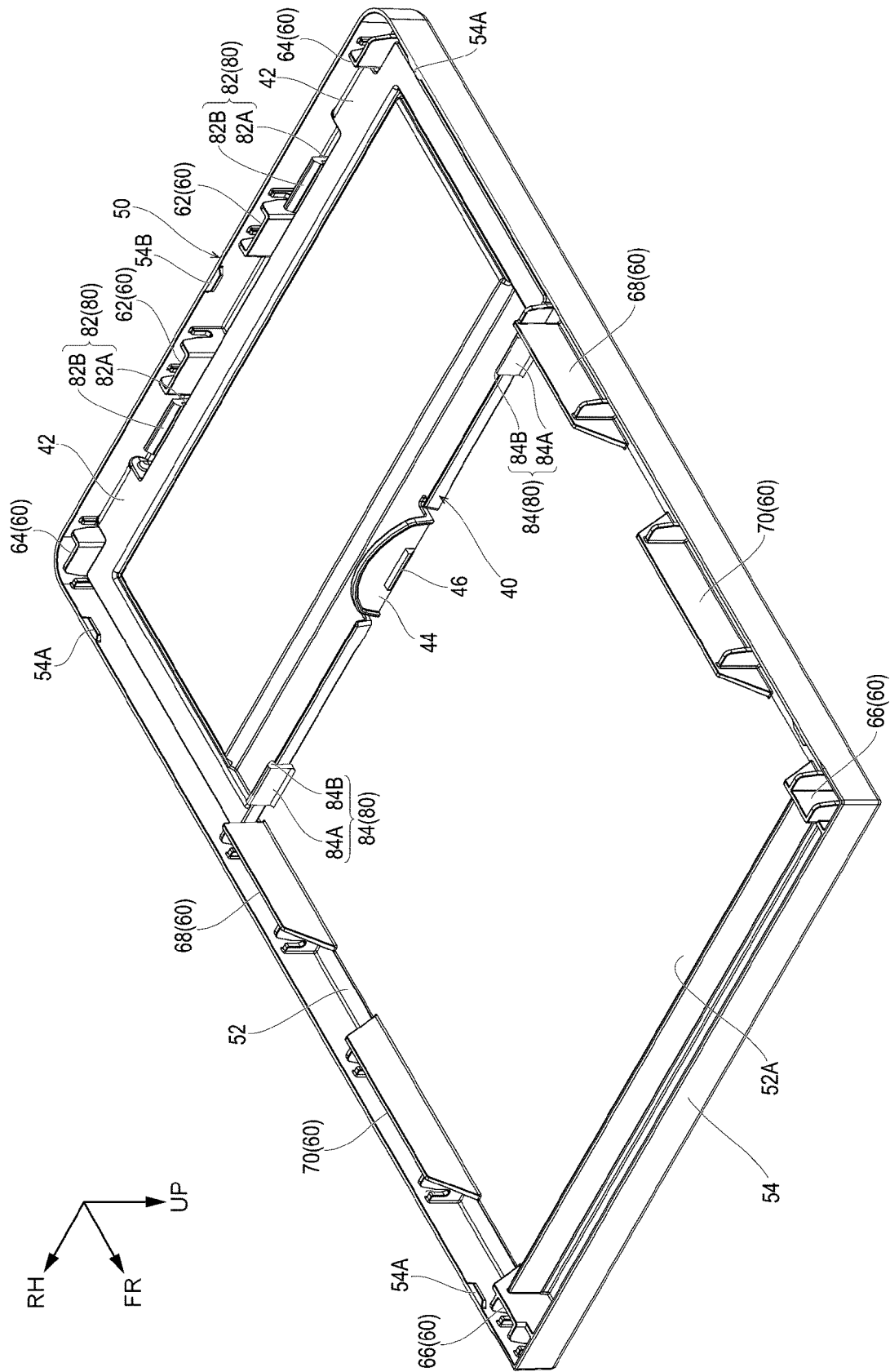
Figur 6



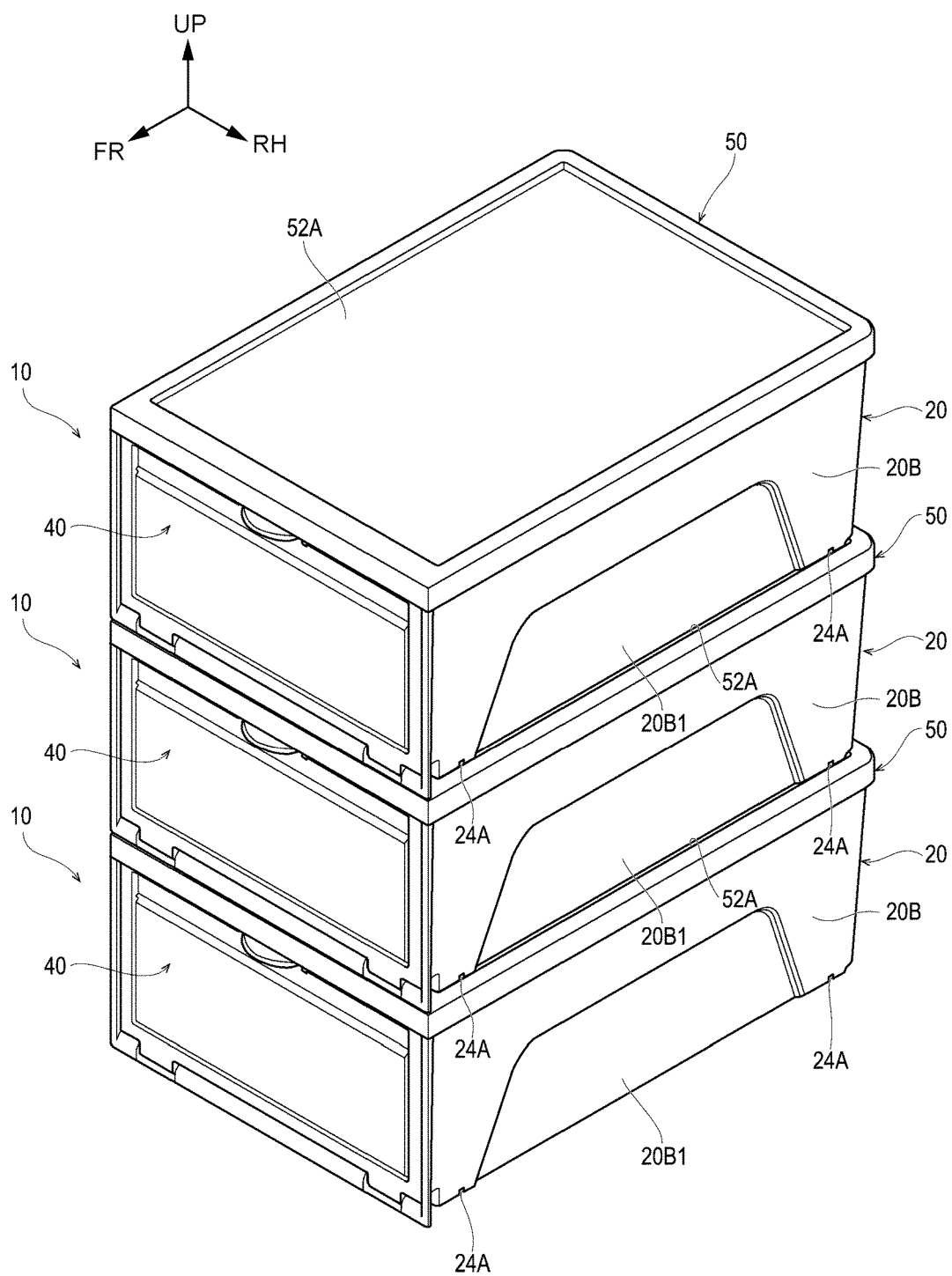
Figur 7



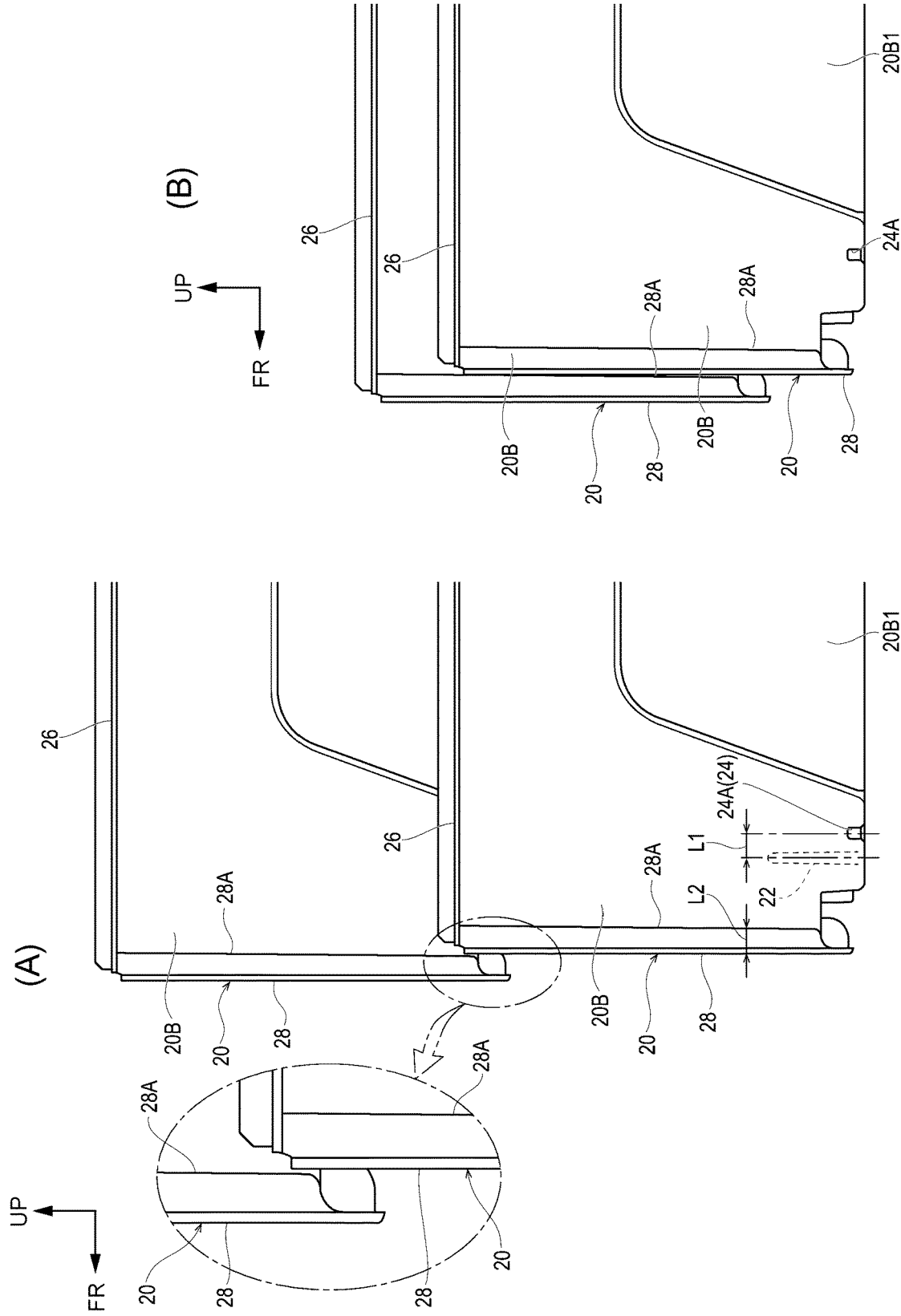
Figur 8



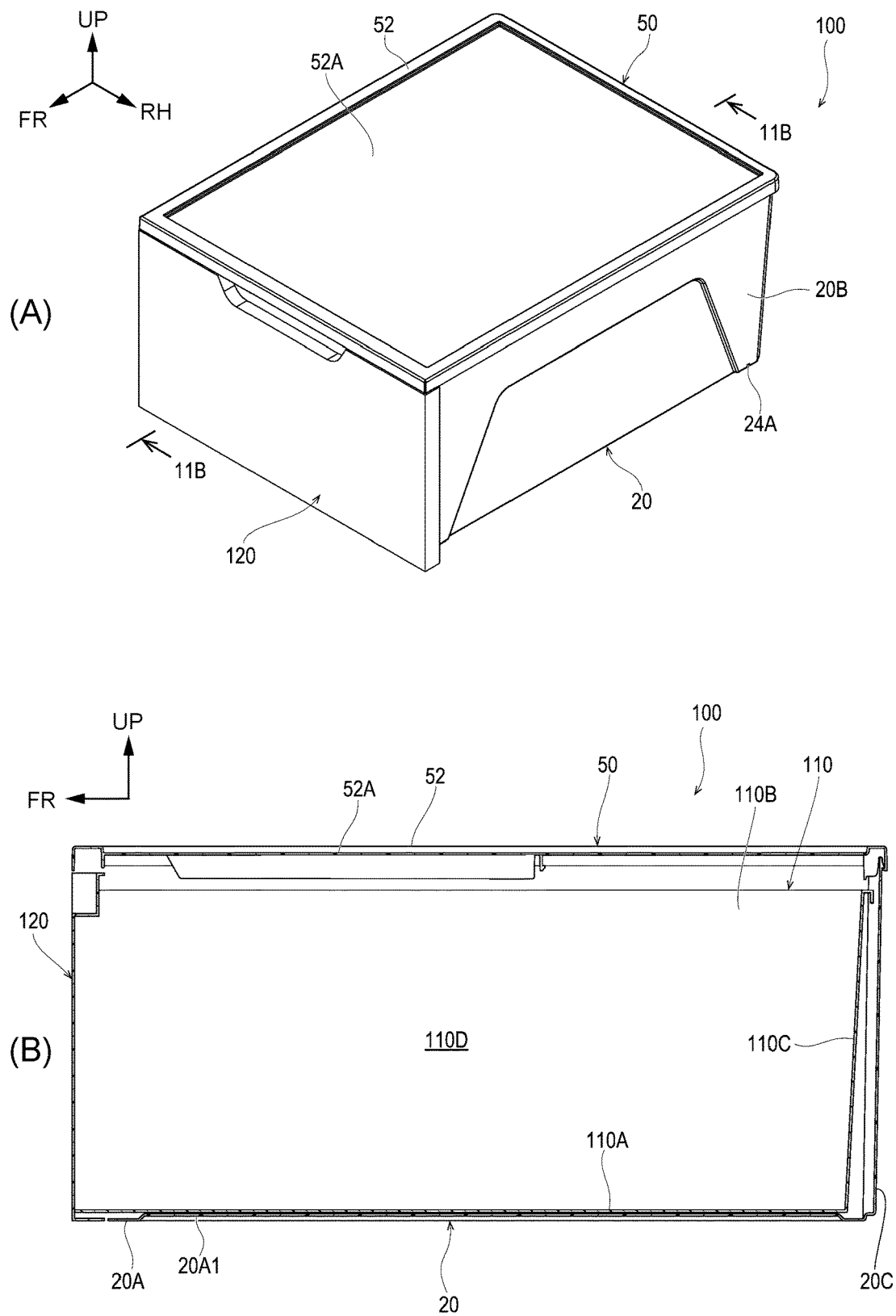
Figur 9



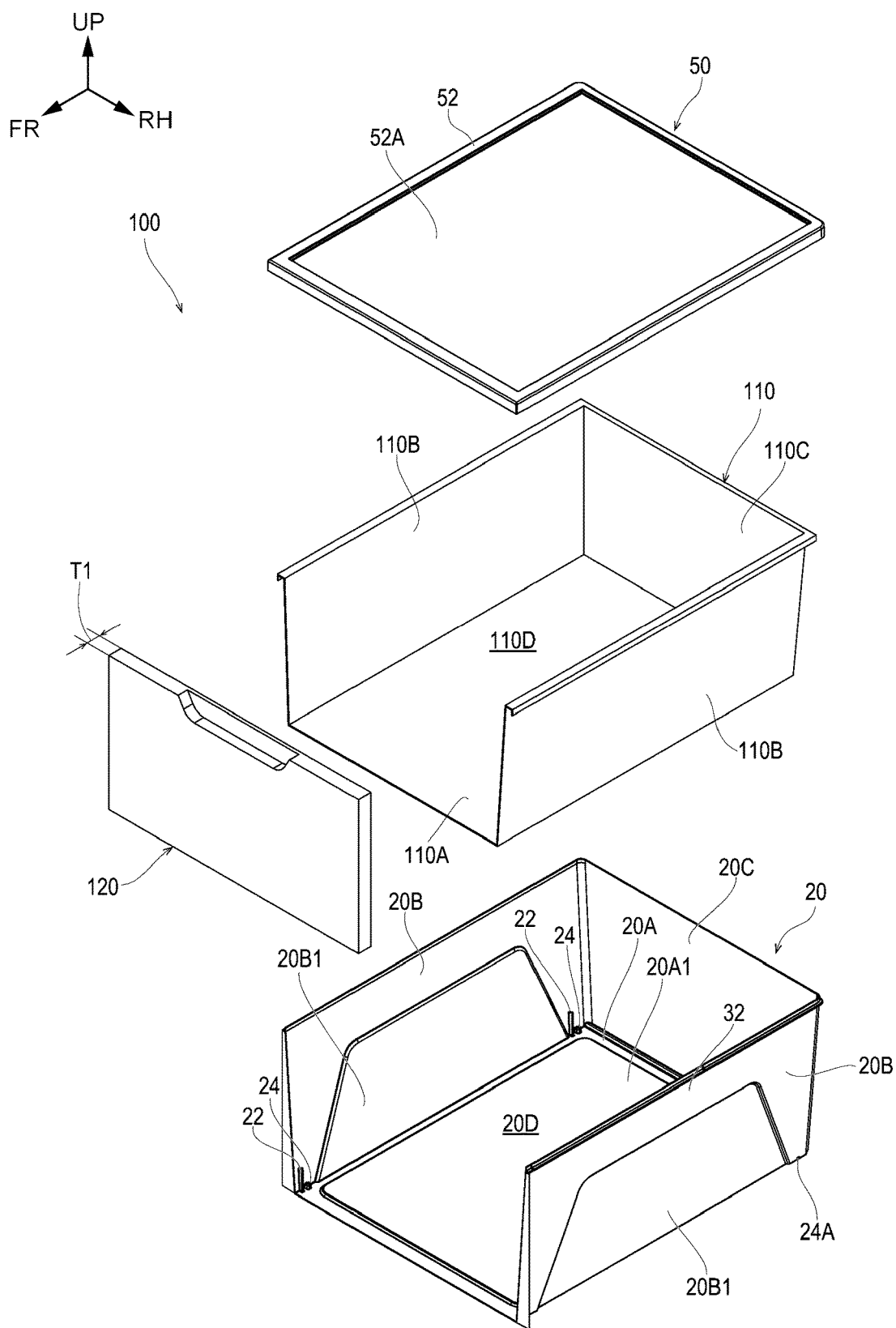
Figur 10



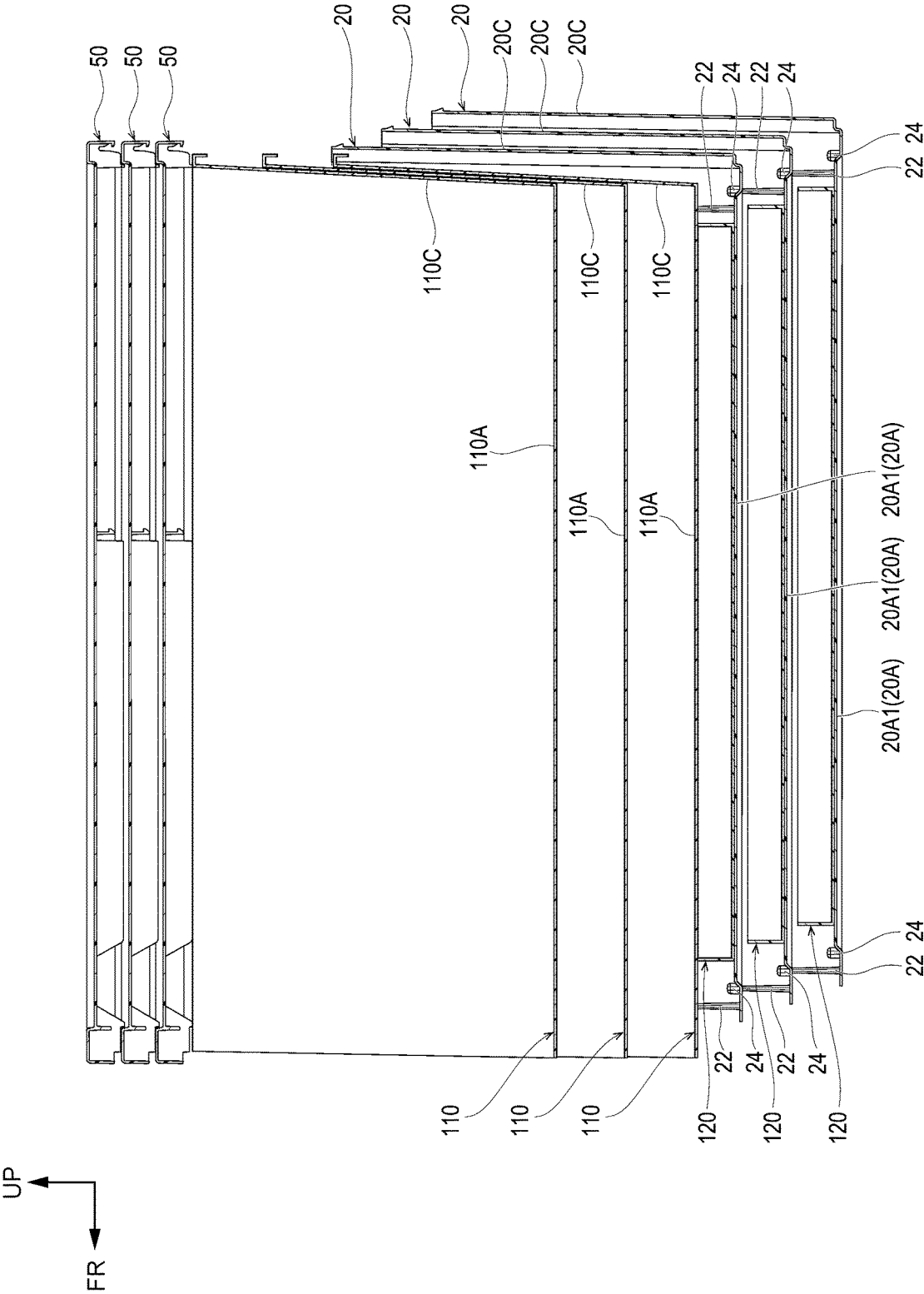
Figur 11



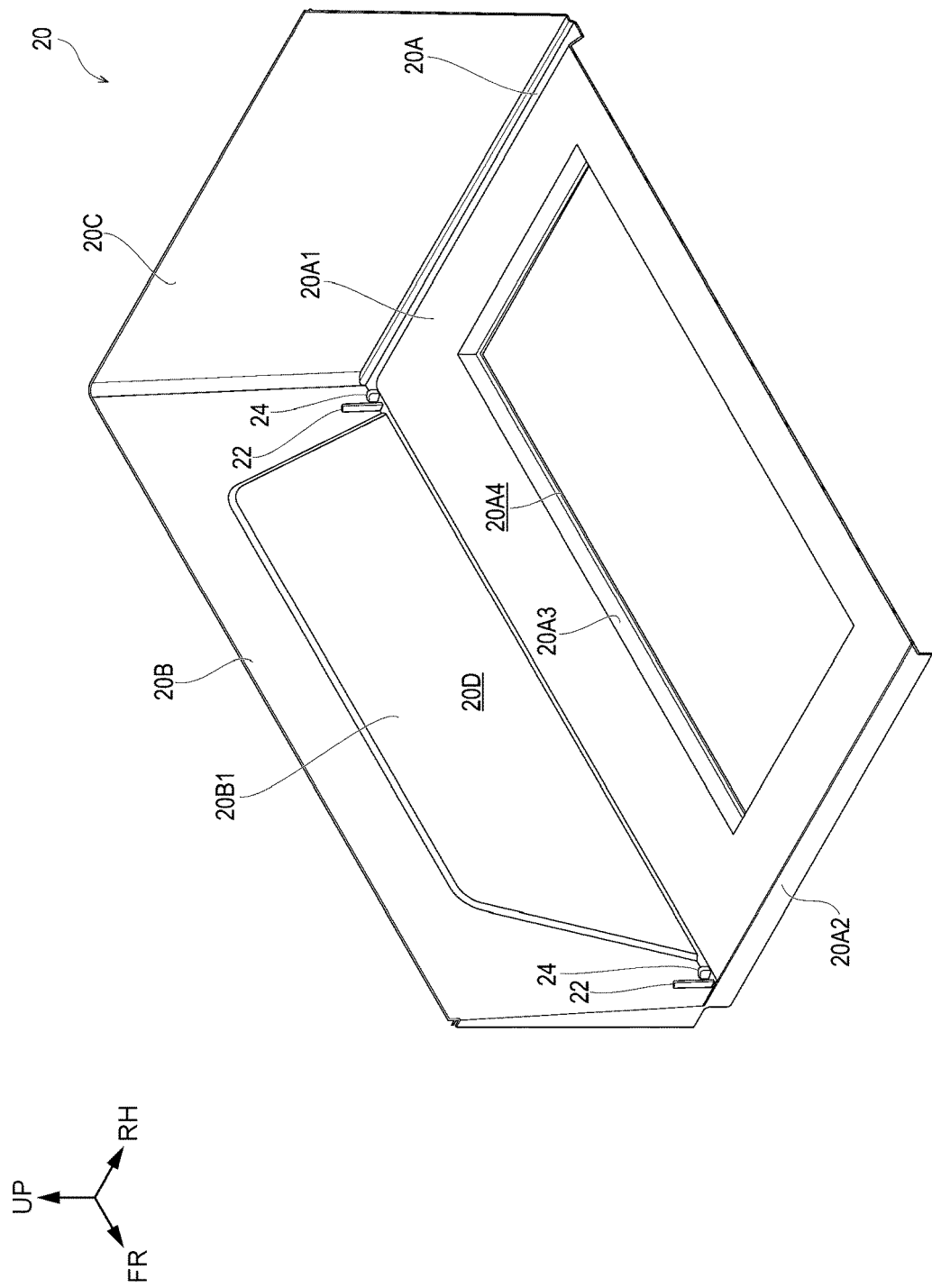
Figur 12



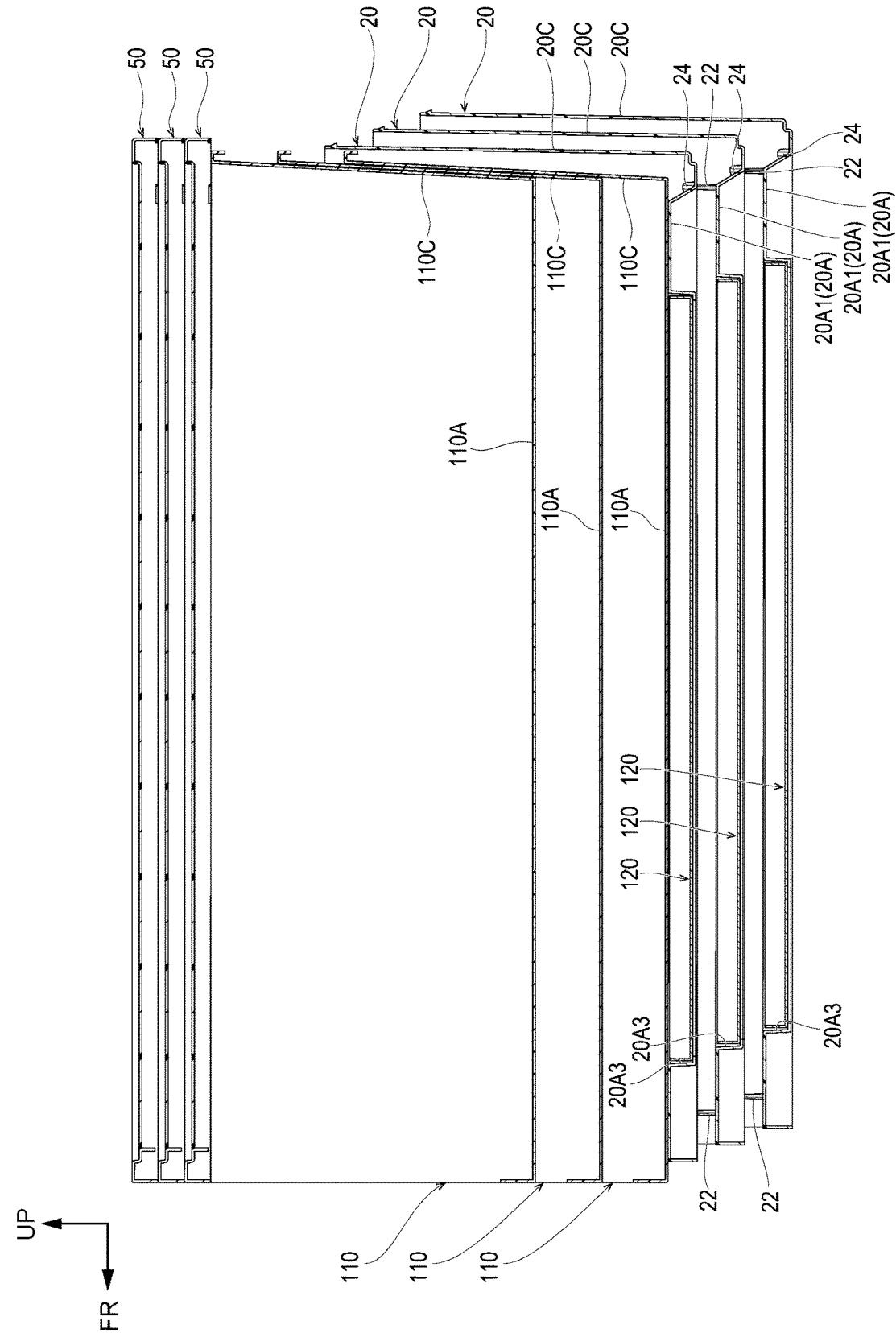
Figur 13



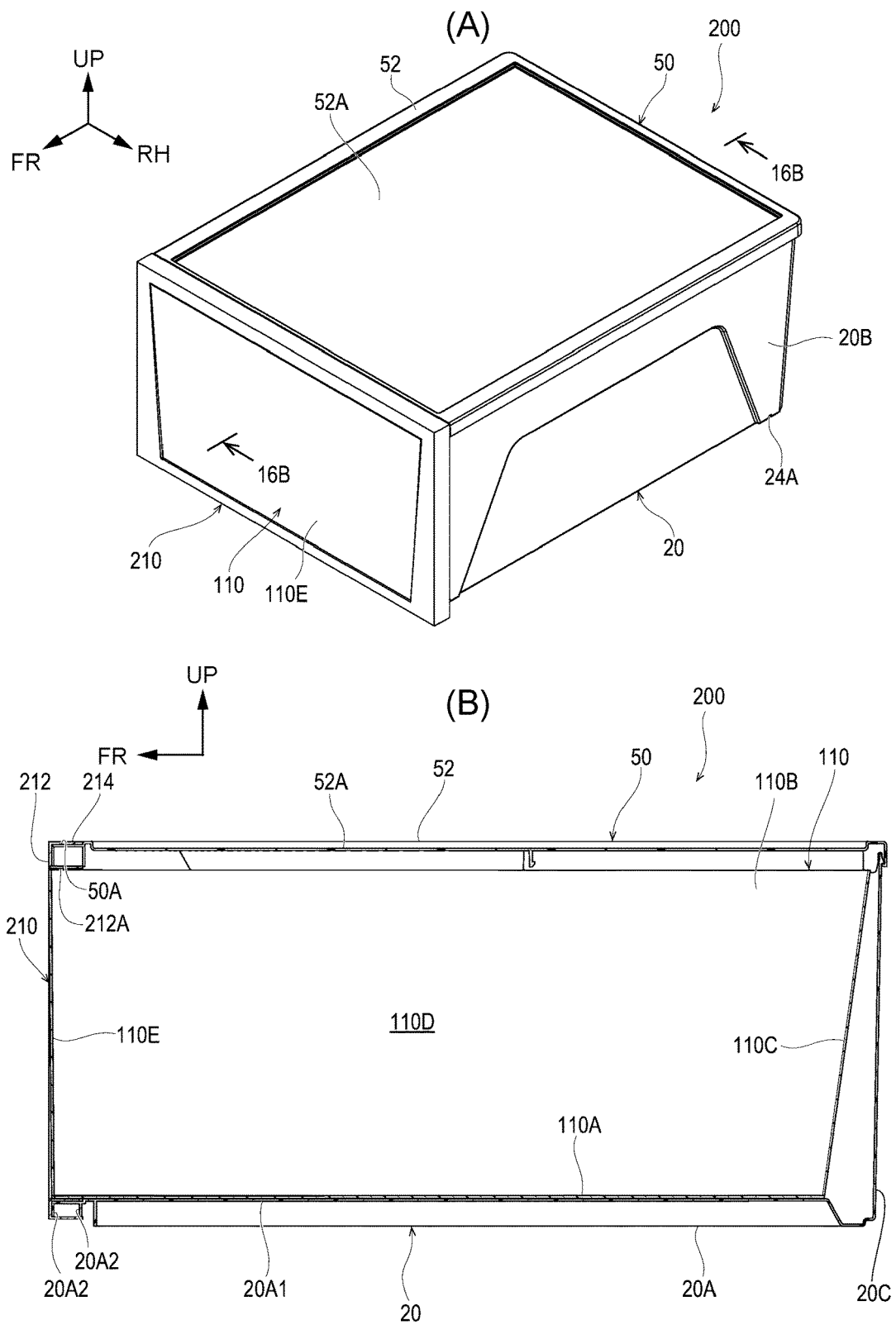
Figur 14



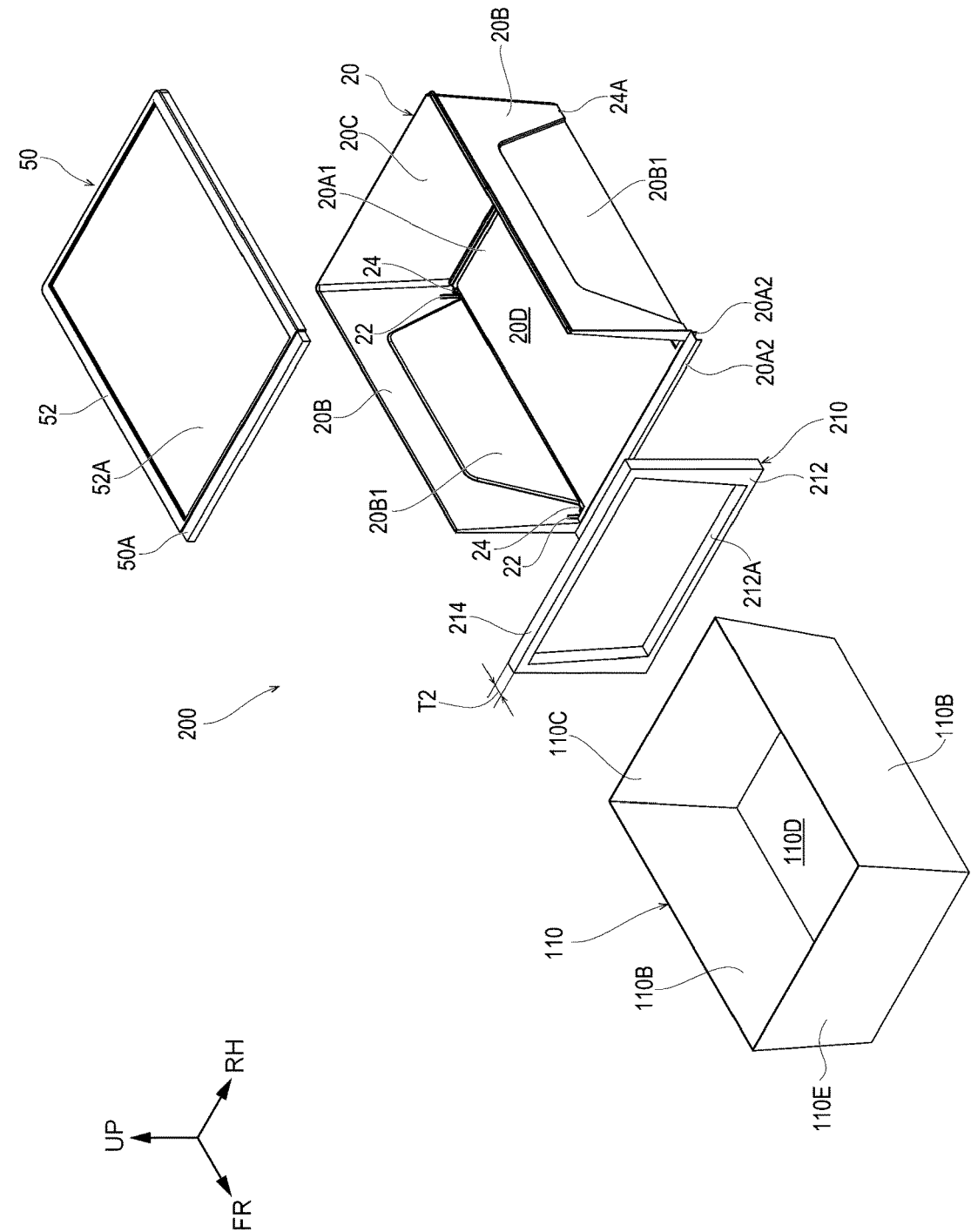
Figur 15



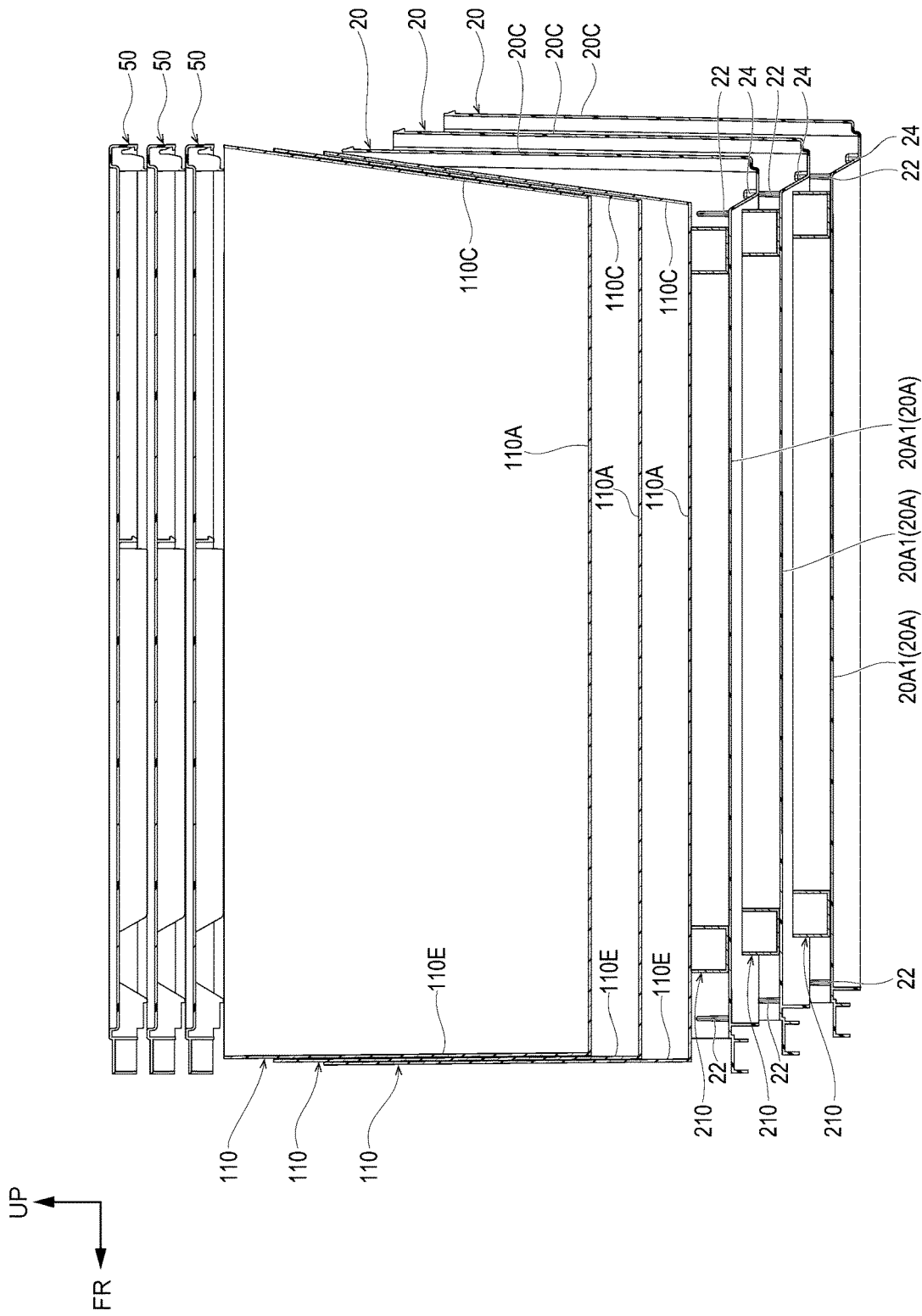
Figur 16



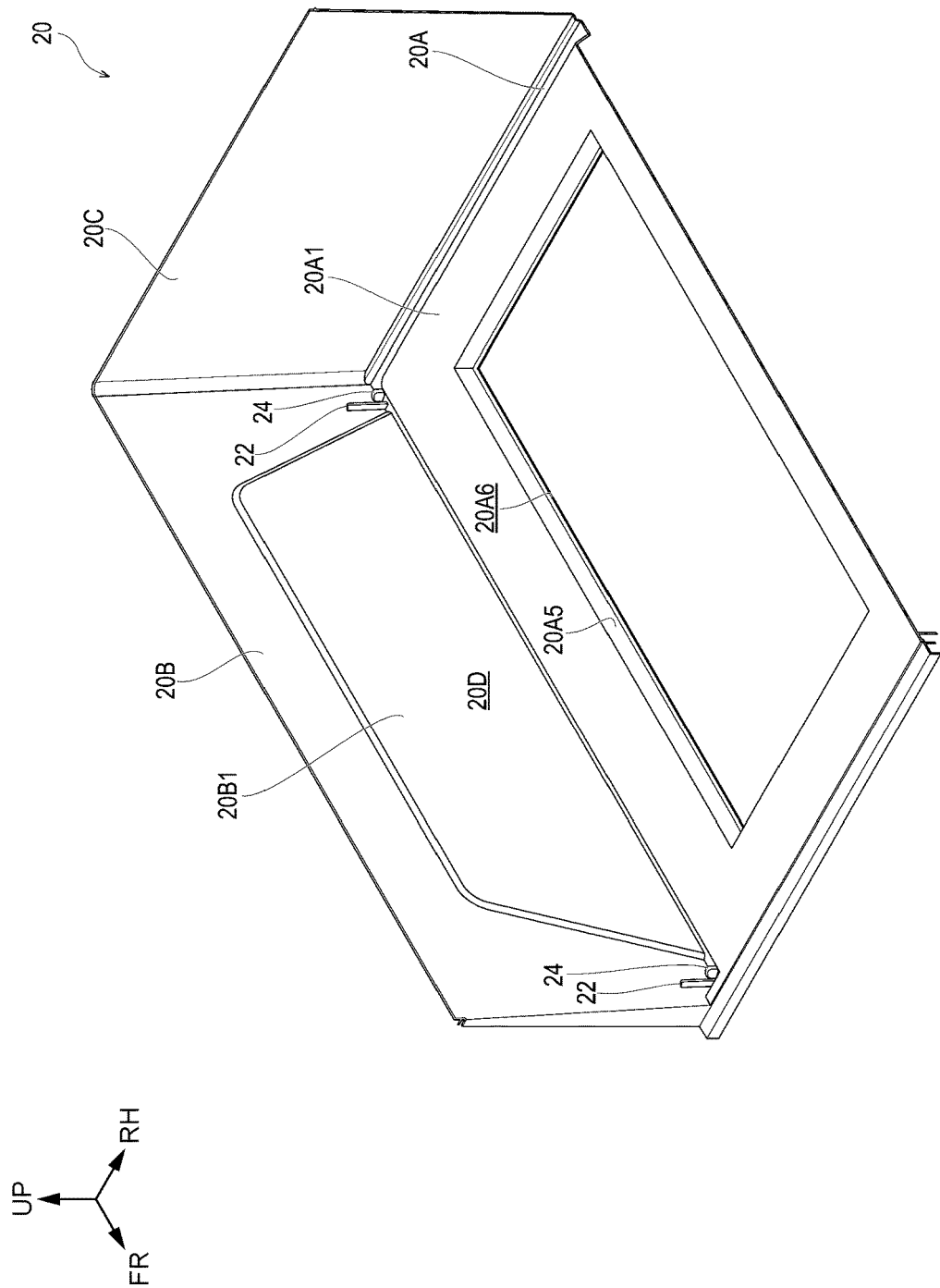
Figur 17



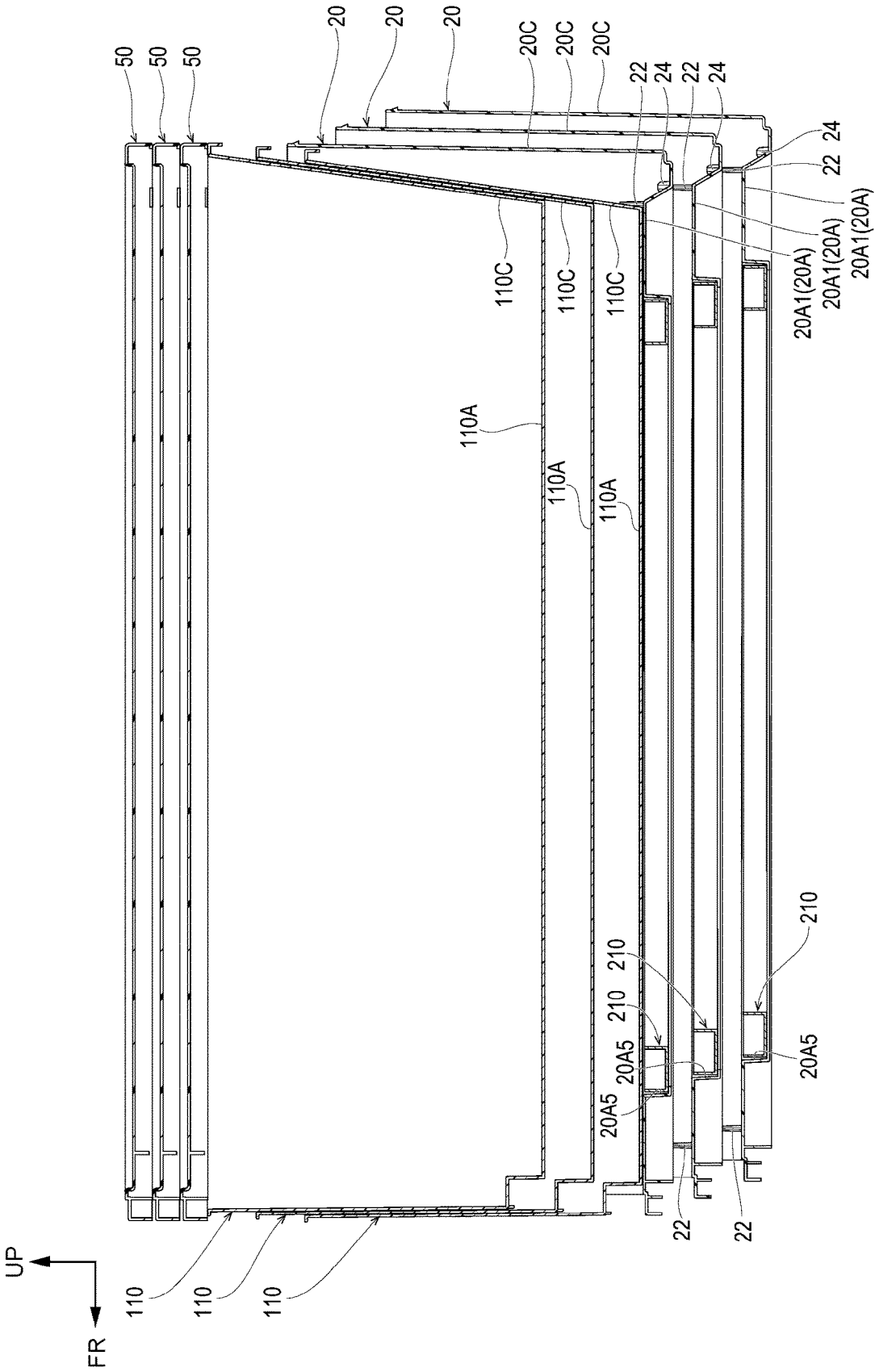
Figur 18



Figur 19



Figur 20





EUROPEAN SEARCH REPORT

 Application Number
 EP 19 16 1193

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A	DE 299 00 982 U1 (LUX GMBH & CO KG EMIL [DE]) 6 July 2000 (2000-07-06) * page 5; figures 1-4 *	1-11	
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			B65D B25H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 1 July 2019	Examiner Derrien, Yannick
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ON EUROPEAN PATENT APPLICATION NO.**

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01-07-2019

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