



(11)

EP 2 977 330 A1

(12)

EUROPEAN PATENT APPLICATION

published in accordance with Art. 153(4) EPC

(43) Date of publication:
27.01.2016 Bulletin 2016/04

(51) Int Cl.: **B65D 21/04** ^(2006.01) **H01L 21/56** ^(2006.01)

(21) Application number: **14768890.7**

(86) International application number:
PCT/JP2014/050957

(22) Date of filing: **20.01.2014**

(87) International publication number:
WO 2014/148082 (25.09.2014 Gazette 2014/39)

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

(30) Priority: **21.03.2013 JP 2013058719**

(71) Applicant: **Nitto Denko Corporation**
Ibaraki-shi, Osaka 567-8680 (JP)

(72) Inventors:

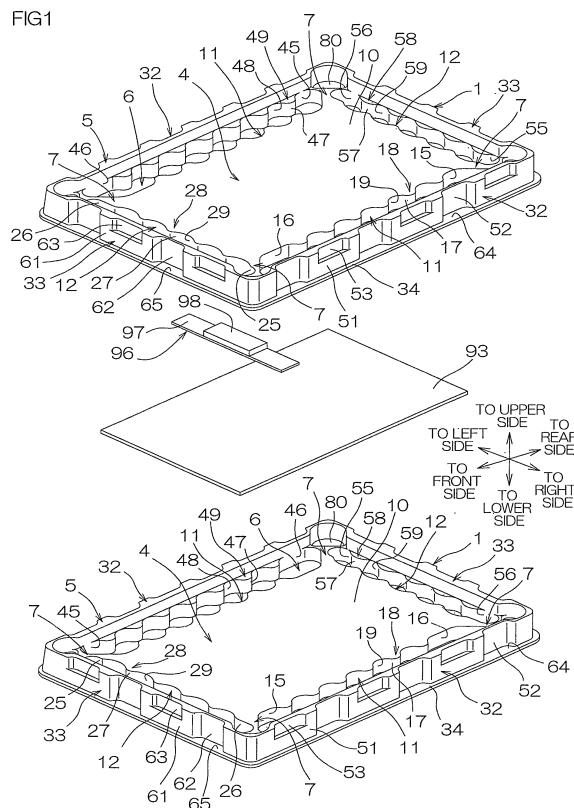
- **MATSUDA, Hirokazu**
Ibaraki-shi
Osaka 567-8680 (JP)
- **JIKE, Senji**
Ibaraki-shi
Osaka 567-8680 (JP)

(74) Representative: **Hoffmann Eitle**
Patent- und Rechtsanwälte PartmbB
Arabellastraße 30
81925 München (DE)

(54) **SEALING SHEET CONTAINER**

(57) Two encapsulating sheet containers can selectively be stacked in a containing position or a stacking position in a thickness direction. In the containing position, a center portion of the encapsulating sheet container located on one side in the thickness direction is brought relatively away from a center portion of the encapsulating sheet container located on the other side in the thickness direction. In the stacking position, the center portion of the encapsulating sheet container located on the one side in the thickness direction is brought relatively closer to the center portion of the encapsulating sheet container located on the other side in the thickness direction.

FIG1



Description

TECHNICAL FIELD

[0001] The present invention relates to an encapsulating sheet container, and more particularly to an encapsulating sheet container which contains an encapsulating sheet.

BACKGROUND ART

[0002] It has conventionally been known to encapsulate an electronic element or the like with an encapsulating sheet and constitute an electronic device.

[0003] As such an encapsulating sheet, an encapsulating sheet including a resin film and a release sheet temporarily attached to a surface of the resin film is known (see, e.g., Patent Document 1 shown below).

[0004] When such an encapsulating sheet is shipped, a surface of a resin film is protected by a release sheet.

[0005] When the encapsulating sheet is used, the release sheet is peeled from the resin film to expose the resin film. The encapsulating sheet is used by being stuck to an electronic element or the like to encapsulate the electronic element or the like.

Prior Art Document

Patent Document

[0006] Patent Document 1: Japanese Unexamined Patent No. 2009-0141020

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0007] However, the encapsulating sheet described in Patent Document 1 mentioned above has a problem in that, when a highly tacky resin is used for the resin film, the release sheet cannot be temporarily attached to the resin film, and the resin film cannot be protected.

[0008] When a surface of the resin film is not protected, a problem arises in that the resin film no longer serves as the encapsulating sheet as a result of contact with dust in air or another member.

[0009] For the protection of the encapsulating sheet, it is examined to store the encapsulating sheet in a dedicated packing container having a space for preventing contact between the resin film and another member. However, in such a dedicated packing container, it is necessary to form the space in which the encapsulating sheet is contained. Accordingly, when such dedicated packing containers in which no encapsulating sheet is contained are stacked to be stored, shipped, and transported, the stacked packing containers become more bulky and need a larger space.

[0010] It is therefore an object of the present invention

to provide an encapsulating sheet container which can contain an encapsulating sheet with a simple configuration and save space when no encapsulating sheet is contained therein.

MEANS FOR SOLVING THE PROBLEMS

[0011] An encapsulating sheet container of the present invention is capable of containing an encapsulating sheet and includes a center portion having a predetermined thickness and extending along a first direction perpendicular to a thickness direction, a pair of end portions disposed on both external sides of the center portion in the first direction so as to be spaced apart from the center portion in the thickness direction, and a pair of connecting portions connecting the center portion and the pair of end portions along the thickness direction. Each of the pair of connecting portions includes at least one projecting portion which projects outwardly in the first direction, and at least one recessed portion which is recessed inwardly in the first direction. Two of the encapsulating sheet containers can selectively be stacked in a containing position or a stacking position in the thickness direction. In the containing position, when projected in the thickness direction, the projecting portion of the encapsulating sheet container located on one side in the thickness direction overlaps the recessed portion of the encapsulating sheet container located on the other side in the thickness direction, the recessed portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the projecting portion of the encapsulating sheet container located on the other side in the thickness direction, and the pairs of connecting portions are positioned so as to be aligned in the thickness direction to bring the center portion of the encapsulating sheet container located on the one side in the thickness direction relatively away from the center portion of the encapsulating sheet container located on the other side in the thickness direction and thus form a space capable of containing the encapsulating sheet. In the stacking position, when projected in the first direction, the projecting portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the projecting portion of the encapsulating sheet container located on the other side in the thickness direction, the recessed portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the recessed portion of the encapsulating sheet container located on the other side in the thickness direction, and the pairs of connecting portions are positioned so as to be arranged in the first direction to bring the center portion of the encapsulating sheet container located on the one side in the thickness direction relatively closer to the center portion of the encapsulating sheet container located on the other side in the thickness direction and thus result in a stacking length of the two encapsulating sheet containers which is shorter than in the containing position.

[0012] When two of such encapsulating sheet contain-

ers are stacked in the containing position, the respective pairs of connecting portions of the two encapsulating sheet containers are positioned so as to be aligned in the thickness direction to bring the respective center portions of the two encapsulating sheet containers relatively away from each other. As a result, the space capable of containing the encapsulating sheet is formed. On the other hand, when the two encapsulating sheet containers are stacked in the stacking position, the respective pairs of connecting portions of the two encapsulating sheet containers are positioned so as to be arranged in the first direction to bring the respective center portions of the two encapsulating sheet containers relatively closer to each other. As a result, the stacking length of the two encapsulating sheet containers is shorter than in the containing position.

[0013] That is, from the two encapsulating sheet containers, the containing position in which the space capable of containing the encapsulating sheet is formed and the stacking position in which the stacking length of the two encapsulating sheet containers is shorter than in the containing position can be configured.

[0014] By thus stacking the two encapsulating sheet containers, in the containing position, the encapsulating sheet can be contained/protected in the space capable of containing the encapsulating sheet. In the stacking position, there is no need to store the encapsulating sheet and therefore it is possible to shorten the stacking length of the two encapsulating sheet containers and save space.

[0015] Also, in the containing position, the projecting portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the recessed portion of the encapsulating sheet container located on the other side in the thickness direction, and the recessed portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the projecting portion of the encapsulating sheet container located on the other side in the thickness direction. In other words, the end portion of the projecting portion of the encapsulating sheet container located on the one side in the thickness direction which is located on the other side in the thickness direction is out of contact with the end portion of the recessed portion of the encapsulating sheet container located on the other side in the thickness direction which is located on the one side in the thickness direction, while the end portion of the recessed portion of the encapsulating sheet container located on the one side in the thickness direction which is located on the other side in the thickness direction is in contact with the end portion of the projecting portion of the encapsulating sheet container located on the other side in the thickness direction which is located on the one side in the thickness direction.

[0016] For example, when the encapsulating sheet is placed in the space capable of containing the encapsulating sheet in the containing position, a fixation sheet for fixing the encapsulating sheet may be used.

[0017] In such a case, the fixation sheet is disposed so as to overlap the recessed portion and the projecting portion of the encapsulating sheet container located on the other side in the thickness direction when projected in the thickness direction. As a result, it is possible to allow a part of the fixation sheet to be held between the recessed portion of the encapsulating sheet container located on the one side in the thickness direction and the projecting portion of the encapsulating sheet container located on the other side in the thickness direction and fixed.

[0018] This allows the fixation sheet to be fixed using the recessed portion and the projecting portion of the pair of connecting portions for forming the space and allows the encapsulating sheet to be more efficiently contained in the encapsulating sheet container.

[0019] In the encapsulating sheet container of the present invention, it is preferable that, when projected in the thickness direction, the pair of connecting portions are formed line-symmetrically relative to an imaginary line along a second direction which is perpendicular to both of the thickness direction and the first direction at a middle between the pair of connecting portions.

[0020] In each of such encapsulating sheet containers, the pair of connecting portions are formed line-symmetrically relative to the imaginary line. By thus merely disposing either one of the encapsulating sheet container located on the one side in the thickness direction and the encapsulating sheet container located on the other side in the thickness direction such that one and the other of the pair of connecting portions of the encapsulating sheet containers are interchanged, it is possible to switch the two encapsulating sheet containers between the containing position and the stacking position.

[0021] This allows the encapsulating sheet containers to be selectively stacked in the containing position or the stacking position by a simple operation.

[0022] In addition, by forming the pair of connecting portions line-symmetrically relative to the imaginary line, the pair of connecting portions can be formed into identical shapes.

[0023] In the encapsulating sheet container of the present invention, it is preferable that, in each of the pair of connecting portions, a plurality of the recessed portions and a plurality of the projecting portions are formed to form a waveform shape along a second direction which is perpendicular to both of the thickness direction and the first direction.

[0024] In the case where such two encapsulating sheet containers are stacked in the containing position, when projected in the thickness direction, the plurality of recessed portions of the encapsulating sheet container located on the one side in the thickness direction and the plurality of projecting portions of the encapsulating sheet container located on the other side in the thickness direction are positioned so as to overlap each other.

[0025] This allows the two encapsulating sheet containers to be stacked so as to have a plurality of portions

in contact with each other. Therefore, it is possible to stably form the space capable of containing the encapsulating sheet using the two encapsulating sheet containers.

[0026] Even though each of the encapsulating sheet containers is provided with the plurality of projecting portions and the plurality of recessed portions, in the case where the two encapsulating sheet containers are stacked in the stacking position, the respective projecting portions of the two encapsulating sheet containers are positioned so as to overlap each other and the respective recessed portions of the two encapsulating sheet containers are positioned so as to overlap each other when projected in the first direction.

[0027] Accordingly, irrespective of the numbers of the projecting portions and the recessed portions, the respective pairs of connecting portions of the two encapsulating sheet containers can be positioned so as to be arranged in the first direction. This can shorten the stacking length of the two encapsulating sheet containers.

[0028] As a result, when the two encapsulating sheet containers are stacked in the containing position, it is possible to stably form the space in which the encapsulating sheet is contained. On the other hand, when the two encapsulating sheet containers are stacked in the stacking position, it is possible to retain the short stacking length of the two encapsulating sheet containers when the encapsulating sheet is not contained.

[0029] This allows the quality of the encapsulating sheet to be reliably retained.

[0030] It is preferable that the encapsulating sheet container of the present invention further includes positioning portions for positioning the two encapsulating sheet containers when the two encapsulating sheet containers are stacked, the positioning portions being provided on both external sides of the pair of end portions in the first direction.

[0031] When such two encapsulating sheet containers are stacked, the positioning portions are used. This allows reliable positioning to be performed such that, in the containing position, when projected in the thickness direction, the projecting portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the recessed portion of the encapsulating sheet container located on the other side in the thickness direction and the recessed portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the projecting portion of the encapsulating sheet container located on the other side in the thickness direction.

[0032] The use of the positioning portions also allows reliable positioning to be performed such that, in the stacking position, when projected in the first direction, the projecting portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the projecting portion of the encapsulating sheet container located on the other side in the thickness direction and the recessed portion of the encapsulating

sheet container located on the one side in the thickness direction overlaps the recessed portion of the encapsulating sheet container located on the other side in the thickness direction.

[0033] As a result, it is possible to stably stack the two encapsulating sheet containers in each of the containing position and the stacking position

EFFECT OF THE INVENTION

[0034] The encapsulating sheet container of the present invention can contain an encapsulating sheet with a simple configuration and save space when no encapsulating sheet is contained therein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035]

[FIG. 1] FIG. 1 is an exploded perspective view of encapsulating sheet containers in an embodiment of the present invention, a fixation sheet, and an encapsulating sheet. Note that, for the sake of convenience, the directional arrows shown in FIG. 1 are assumed to show the directions of the encapsulating sheet container illustrated on the lower part of the paper sheet with the drawing.

[FIG. 2] FIG. 2 is a plan view of each of the encapsulating sheet containers shown in FIG. 1.

[FIGS. 3] FIG. 3A shows an A-A cross-sectional view of the encapsulating sheet container shown in FIG. 2, and FIG. 3B shows a B-B cross-sectional view of the encapsulating sheet container shown in FIG. 2.

[FIGS. 4] FIG. 4C shows a C-C cross-sectional view of the encapsulating sheet container shown in FIG. 2, and FIG. 4D shows a D-D cross-sectional view of the encapsulating sheet container shown in FIG. 2.

[FIG. 5] FIG. 5 shows a state where the encapsulating sheet containers shown in FIG. 1 are stacked in a containing position.

[FIG. 6] FIG. 6 is a plan view of the encapsulating sheet containers in the containing position shown in FIG. 5.

[FIGS. 7] FIG. 7A shows an A'-A' cross-sectional view of the encapsulating sheet containers in the containing position shown in FIG. 6, and FIG. 7B shows a B'-B' cross-sectional view thereof in the containing position shown in FIG. 6.

[FIGS. 8] FIG. 8C shows a C'-C' cross-sectional view of the encapsulating sheet containers in the containing positions shown in FIG. 6, and FIG. 8D shows a D'-D' cross-sectional view of the encapsulating sheet containers in the containing position shown in FIG. 6.

[FIG. 9] FIG. 9 shows a state where the encapsulating sheet containers shown in FIG. 1 are stacked in a stacking position.

[FIGS. 10] FIG. 10A shows a cross-sectional view

of the encapsulating sheet containers in the stacking position shown in FIG. 9 at the same position as that of the A-A cross section in FIG. 2, and FIG. 10B shows a cross-sectional view of the encapsulating sheet containers in the stacking position shown in FIG. 9 at the same position as that of the B-B cross section in FIG. 2.

[FIGS. 11] FIG. 11C shows a cross-sectional view of the encapsulating sheet containers in the stacking position shown in FIG. 9 at the same position as that of the C-C cross section in FIG. 2, and FIG. 10D shows a cross-sectional view of the encapsulating sheet containers in the stacking position shown in FIG. 9 at the same position as that of the D-D cross section in FIG. 2.

[FIGS. 12] FIG. 12A shows a state where the plurality of encapsulating sheet containers shown in FIG. 1 are stacked in the containing position, and FIG. 12B shows a state where the plurality of encapsulating sheet containers shown in FIG. 1 are stacked in the stacking position.

[FIG. 13] FIGS. 13 show states where a plurality of encapsulating sheets are placed in an encapsulating sheet mounting region, of which FIG. 13A shows generally rectangular encapsulating sheets, and FIG. 13B shows generally circular encapsulating sheets.

EMBODIMENTS FOR CARRYING OUT THE INVENTION

1. Configuration of Encapsulating Sheet Container

[0036] As shown in FIG. 1, two encapsulating sheet containers 1 in an embodiment of the present invention are stacked to contain an encapsulating sheet 96 (described later). Each of the encapsulating sheet containers 1 is formed of a resin such as, e.g., a polyester-based resin such as polyethylene terephthalate (PET) or a polyolefin-based resin such as polyethylene (PE) or polystyrene (PS) into a generally rectangular thin plate shape in plan view having a given thickness (of, e.g., 0.3 to 1.0 mm).

[0037] Note that, when directions are mentioned with regard to the encapsulating sheet containers 1, the directions are based on directions when each of the encapsulating sheet containers 1 is placed in a horizontal direction. Specifically, the directions are based on the arrow directions shown in each of the drawings. It is assumed that the arrow directions shown in FIG. 1 are applied to the encapsulating sheet container 1 shown on the lower part of the paper sheet with FIG. 1. The following will describe the lower encapsulating sheet container 1 in detail.

[0038] The encapsulating sheet container 1 integrally includes a containing portion 4, a frame portion 5, a groove portion 6, and a plurality of (four) bridge portions 7.

[0039] As shown in FIGS. 2 and 3, the containing por-

tion 4 is an inner portion of the encapsulating sheet container 1 and formed into a generally boxy shape having an open lower end.

[0040] As shown in FIGS. 1 and 3, the frame portion 5 is the peripheral edge portion of the encapsulating sheet container 1. The frame portion 5 is formed in a generally rectangular frame shape in plan view disposed to be outwardly spaced apart from the outer peripheral edge of the containing portion 4 in each of a front-rear direction and a left-right direction and protrude upwardly. The frame portion 5 is disposed such that the lower end portion thereof is at generally the same position as that of the lower end portion (lower end portions of a pair of first connecting walls 11 and a pair of second connecting walls 12 each described later) of the containing portion 4 in the upper-lower direction (thickness direction). The frame portion 5 is also disposed such that the upper end portion thereof is located above the upper end portion (ceiling wall 10 described later) of the containing portion 4.

[0041] The groove portion 6 is formed in a generally rectangular frame shape in plan view connecting the outer peripheral edge of the lower end of the containing portion 4 and the inner peripheral edge of the lower end of the frame portion 5.

[0042] As shown in FIGS. 1 and 2, the bridge portions 7 are formed to project upwardly from the four individual corners of the groove portion 6 in plan view and provide bridges between the four individual corners of the containing portion 4 and the four individual corners of the frame portion 5 adjacent to the four individual corners of the containing portion 4. The bridge portions 7 are also disposed such that the upper end portions thereof are at generally the same positions as that of the upper end portion (ceiling wall 10 described later) of the containing portion 4 in the upper-lower direction.

(1) Containing Portion

[0043] As shown in FIGS. 2 and 3, the containing portion 4 includes the ceiling wall 10 as an example of a center portion, and the pair of first connecting walls 11 (left/right connecting walls) as an example of a pair of connecting portions. As shown in FIGS. 2 and 4, the containing portion 4 also includes the pair of second connecting walls 12 (front/rear connecting walls) as an example of the pair of connecting portions.

[0044] The ceiling wall 10 is an upper portion of the containing portion 4 and is formed in a generally rectangular flat plate shape in plan view which is long in the front-rear direction.

[0045] As shown in FIGS. 2 and 3, the pair of first connecting walls 11 are formed in generally rectangular flat plate shapes in side view which are disposed to be spaced apart from each other in the left-right direction (i.e., in a first direction) and extend continuously downwardly from the both outer end edges of the ceiling wall 10 in the left-right direction. That is, as shown in FIG. 2, the left-side first connecting wall 11 (one of the pair of

first connecting walls 11) is disposed so as to extend between the left-front-side bridge portion 7 and the left-rear-side bridge portion 7, while the right-side first connecting wall 11 (the other of the pair of first connecting walls 11) is disposed to extend between the right-front-side bridge portion 7 and the right-rear-side bridge portion 7. As shown in FIG. 3, the pair of first connecting walls 11 are formed so as to be slightly inclined inwardly in the left-right direction as the height thereof increases. As shown in FIG. 2, each of the first connecting walls 11 includes a first shorter portion 15, a first longer portion 16, a plurality of (six) first projecting portions 17 (containing-portion-side left-right projecting portions) as an example of a projecting portion, and a plurality of (five) first recessed portions 19 (containing-portion-side left-right recessed portions) as an example of a recessed portion.

[0046] The first shorter portion 15 is a front-side portion of each of the first connecting walls 11 and is formed in a generally linear flat plate shape in plan view.

[0047] The first longer portion 16 is a rear-side portion of each of the first connecting walls 11 and is formed in a generally linear flat plate shape in plan view. The length of the first longer portion 16 in the front-rear direction (i.e., a second direction) is longer than the length of the first shorter portion 15 in the front-rear direction.

[0048] The six first projecting portions 17 are equidistantly arranged along the front-rear direction between the first shorter portion 15 and the first longer portion 16 in each of the first connecting walls 11. Note that the front-most first projecting portion 17 is continued to the first shorter portion 15, while the rearmost first projecting portion 17 is continued to the first longer portion 16. As shown in FIGS. 1 and 2, each of the first projecting portions 17 is formed in a generally semi-circular shape in plan view which projects outwardly in the left-right direction so as to be curved and extends over the entire range of the first connecting wall 11 in the upper-lower direction. As shown in FIG. 2, the outer end portion of each of the first projecting portions 17 in the left-right direction is located to be external of each of the first shorter portion 15 and the first longer portion 16 in the left-right direction.

[0049] The five first recessed portions 19 are equidistantly arranged along the front-rear direction between the first shorter portion 15 and the first longer portion 16 in each of the first connecting walls 11. As shown in FIGS. 1 and 2, each of the first recessed portions 19 is disposed continuously to and between the first projecting portions 17 adjacent to each other in the front-rear direction and formed in a generally semi-circular shape in plan view which is recessed inwardly in the left-right direction so as to be curved and extends over the entire range of the first connecting wall 11 in the upper-lower direction. As shown in FIG. 2, each of the first recessed portions 19 is disposed such that the inner end portion thereof in the left-right direction is at generally the same position as that of each of the first shorter portion 15 and the first longer portion 16 in the left-right direction.

[0050] Thus, in the end portions of each of the first

connecting walls 11 in the front-rear direction, the first shorter portion 15 and the first longer portion 16 are formed and, continuously to and between the first shorter portion 15 and the first longer portion 16, the plurality of first projecting portions 17 and the plurality of first recessed portions 19 are alternately formed. Consequently, the both outer end edges of the ceiling wall 10 in the left-right direction are formed such that, in plan view, the both end portions thereof in the front-rear direction have generally linear shapes along the front-rear direction and generally middle portions thereof in the front-rear direction have waveform shapes along the front-rear direction.

[0051] When projected in the upper-lower direction, the generally-semi-circular portions of the ceiling wall 10 which are surrounded by the first projecting portions 17 are defined as first-projecting-portion upper surfaces 18. That is, the six first-projecting-portion upper surfaces 18 are defined along the front-rear direction in each of the outer portions of the ceiling wall 10 in the left-right direction in correspondence to the plurality of first projecting portions 17.

[0052] Thus, in the containing portion 4, the pair of first connecting walls 11 are formed line-asymmetrically relative to an imaginary line X (see the imaginary lines in FIG. 2) along the left-right direction at the middle between the pair of second connecting walls 12 and line-symmetrically relative to an imaginary line Y (see the imaginary lines in FIG. 2) along the front-rear direction at the middle between the pair of first connecting walls 11.

[0053] As shown in FIGS. 2 and 4, the pair of second connecting walls 12 are formed in generally rectangular flat plate shapes in front view which are disposed to be spaced apart from each other in the front-rear direction and extend continuously downwardly from the both outer end edges of the ceiling wall 10 in the front-rear direction. That is, as shown in FIG. 2, the front-side second connecting wall 12 (one of the pair of second connecting walls 12) is disposed so as to extend between the left-front-side bridge portion 7 and the right-front-side bridge portion 7, while the rear-side second connecting wall 12 (the other of the pair of second connecting walls 12) is disposed so as to extend between the left-rear-side bridge portion 7 and the right-rear-side bridge portion 7. The length of each of the second connecting walls 12 in the left-right direction is shorter than the length of each of the first connecting walls 11 in the front-rear direction. As shown in FIG. 4, the pair of second connecting walls 12 are formed so as to be slightly inclined inwardly in the front-rear direction as the height thereof increases. As shown in FIG. 2, each of the second connecting walls 12 includes a second shorter portion 25, a second longer portion 26, a plurality of (five) second recessed portions 29 (containing-portion-side front-rear recessed portions) as an example of the recessed portion, and a plurality of (four) second projecting portions 27 (containing-portion-side front-rear projecting portions) as an example of the projecting portion.

[0054] The second shorter portion 25 is a left-side por-

tion of each of the second connecting walls 12 and is formed in a generally linear flat plate shape in plan view.

[0055] The second longer portion 26 is a right-side portion of each of the second connecting walls 12 and is formed in a generally linear flat plate shape in plan view. The length of the second longer portion 26 in the left-right direction is longer than the length of the second shorter portion 25 in the left-right direction.

[0056] The five second recessed portions 29 are equidistantly arranged along the left-right direction between the second shorter portion 25 and the second longer portion 26 in each of the second connecting walls 12. Note that the leftmost second recessed portion 29 is continued to the second shorter portion 25, while the rightmost second recessed portion 29 is continued to the second longer portion 26. As shown in FIGS. 1 and 2, each of the second recessed portions 29 is formed in a generally semi-circular shape in plan view which is recessed inwardly in the front-rear direction so as to be curved and extends over the entire range of the second connecting wall 12 in the upper-lower direction. As shown in FIG. 2, the inner end portion of each of the second recessed portions 29 in the front-rear direction is located to be internal of each of the second shorter portion 25 and the second longer portion 26 in the front-rear direction.

[0057] The four second projecting portions 27 are equidistantly arranged along the left-right direction between the second shorter portion 25 and the second longer portion 26 in each of the second connecting walls 12. As shown in FIGS. 1 and 2, each of the second projecting portions 27 is disposed continuously to and between the second recessed portions 29 adjacent to each other in the left-right direction and formed in a generally semi-circular shape in plan view which projects outwardly in the front-rear direction so as to be curved and extends over the entire range of the second connecting wall 12 in the upper-lower direction. As shown in FIG. 2, each of the second projecting portions 27 is disposed such that the outer end portion thereof in the front-rear direction is at generally the same position as that of each of the second shorter portion 25 and the second longer portion 26 in the front-rear direction.

[0058] Thus, in the end portions of each of the second connecting walls 12, the second shorter portion 25 and the second longer portion 26 are formed and, continuously to and between the second shorter portion 25 and the second longer portion 26, the plurality of second recessed portions 29 and the plurality of second projecting portions 27 are alternately formed. Consequently, the both outer end edges of the ceiling wall 10 in the front-rear direction are formed such that, in plan view, the both end portions thereof in the left-right direction have generally linear shapes along the left-right direction and generally middle portions thereof in the left-right direction have waveform shapes along the left-right direction.

[0059] When projected in the upper-lower direction, the generally-semi-circular portions of the ceiling wall 10 which are surrounded by the second projecting portions

27 are defined as second-projecting-portion upper surfaces 28. Also, the right-side portion of the ceiling wall 10 which is adjacent to the rightmost second recessed portion 29 and the second longer portion 26 is defined as the second-projecting-portion upper surface 28. That is, the five second-projecting-portion upper surfaces 28 are defined along the left-right direction in each of the outer portions of the ceiling wall 10 in the front-rear direction.

[0060] Thus, in the containing portion 4, the pair of second connecting walls 12 are formed line-asymmetrically relative to the imaginary line Y (see the imaginary lines in FIG. 2) and line-symmetrically relative to the imaginary line X (see the imaginary lines in FIG. 2).

[0061] Note that, in the containing portion 4, in the ceiling wall 10, a fixation sheet mounting region 84 and an encapsulating sheet mounting region 85 are defined.

[0062] In the ceiling wall 10, the fixation sheet mounting region 84 is defined as a region where the length thereof in the left-right direction is shorter than the distance between the outer end portions of the respective first projecting portions 17 of the pair of first connecting walls 11 in the left-right direction and longer than the distance between the inner end portions of the respective first recessed portions 19 of the pair of first connecting walls 11 in the left-right direction, and the length thereof in the front-rear direction is shorter than the distance between the outer end portions of the respective second projecting portions 27 of the pair of second connecting walls 12 in the front-rear direction and longer than the distance between the inner end portions of the respective second recessed portions 29 of the pair of second connecting walls 12 in the front-rear direction.

[0063] In the ceiling wall 10, the encapsulating sheet mounting region 85 is defined within the fixation sheet mounting region 84. The encapsulating sheet mounting region 85 is defined as a region where the length thereof in the left-right direction is slightly shorter than the distance between the inner end portions of the respective first recessed portions 19 of the pair of first connecting walls 11 in the left-right direction, and the length thereof in the front-rear direction is slightly shorter than the distance between the inner end portions of the respective second recessed portions 29 of the pair of second connecting walls 12 in the front-rear direction.

(2) Frame Portion

[0064] As shown in FIGS. 2 and 3, the frame portion 5 includes a pair of first positioning portions 32 as an example of a positioning portion, a pair of second positioning portions 33 (see FIG. 4) as an example of the positioning portion, and a flange portion 34.

(2-1) First Positioning Portions

[0065] The pair of first positioning portions 32 are disposed to be spaced apart from each other in the left-right

direction and formed so as to extend along the front-rear direction. Note that, in the case of distinguishing the pair of first positioning portions 32 from each other, the left-side first positioning portion 32 is assumed to be one of the pair of first positioning portions 32 and the right-side first positioning portion 32 is assumed to be the other of the pair of first positioning portions 32. As shown in FIG. 3, each of the first positioning portions 32 includes a first inner wall 37, a first outer wall 38 facing the first inner wall 37 in the left-right direction, and a first upper wall 39 connecting the upper end portion of the first inner wall 37 and the upper end portion of the first outer wall 38.

[0066] The first inner wall 37 is formed in a generally rectangular flat plate shape in side view. The first inner wall 37 is formed so as to be inclined slightly outwardly in the left-right direction as the height thereof increases. Note that the lower end edge of the first inner wall 37 is connected to the groove portion 6 (specifically, a first bottom wall 69 described later).

[0067] The first outer wall 38 is formed in a generally rectangular flat plate shape in side view. The first outer wall 38 is formed so as to be inclined slightly inwardly in the left-right direction as the height thereof increases.

[0068] The first upper wall 39 is formed in a generally rectangular flat plate shape in plan view connecting the upper end edge of the first inner wall 37 and the upper end edge of the first outer wall 38.

[0069] That is, each of the first positioning portions 32 is formed of the first inner wall 37, the first outer wall 38, and the first inner wall 37 into a generally trapezoidal shape in front sectional view having an upwardly decreasing width.

(2-1-1) First Inner Walls

[0070] As shown in FIG. 2, each of the first inner walls 37 includes a third shorter portion 45, a third longer portion 46, a plurality of (seven) third projecting portions 47 (frame-portion-side left-right projecting portions), and a plurality of (six) third recessed portions 49 (frame-portion-side left-right recessed portions).

[0071] The third shorter portion 45 is a front-side portion of the first inner wall 37 and is formed in a generally linear flat plate shape in plan view.

[0072] The third longer portion 46 is a rear-side portion of the first inner wall 37 and is formed in a generally linear flat plate shape in plan view. The length of the third longer portion 46 in the front-rear direction is longer than the length of the third shorter portion 45 in the front-rear direction.

[0073] The seven third projecting portions 47 are equidistantly arranged along the front-rear direction between the third shorter portion 45 and the third longer portion 46 in each of the first inner walls 37. Note that the front-most third projecting portion 47 is continued to the third shorter portion 45, while the rearmost third projecting portion 47 is continued to the third longer portion 46. As shown in FIGS. 1 and 2, each of the third projecting por-

tions 47 is formed in a generally semi-circular shape in plan view which projects inwardly in the left-right direction from the inner portion of the first inner wall 37 in the left-right direction except for the upper portion thereof so as to be curved. As shown in FIG. 2, the inner end portion of each of the third projecting portions 47 in the left-right direction is located to be internal of each of the third shorter portion 45 and the third longer portion 46 in the left-right direction.

[0074] The six third recessed portions 49 are equidistantly arranged along the front-rear direction between the third shorter portion 45 and the third longer portion 46 in each of the first inner walls 37. As shown in FIGS. 1 and 2, each of the third recessed portions 49 is disposed continuously to and between the third projecting portions 47 adjacent to each other in the front-rear direction and formed in a generally semi-circular shape in plan view which is recessed outwardly in the left-right direction so as to be curved. As shown in FIG. 2, each of the third recessed portions 49 is disposed such that the outer end portion thereof in the left-right direction is at generally the same position as that of each of the third shorter portion 45 and the third longer portion 46 in the left-right direction.

[0075] Thus, in the end portions of each of the first inner walls 37 in the front-rear direction, the third shorter portion 45 and the third longer portion 46 are formed and, continuously to and between the third shorter portion 45 and the third longer portion 46, the plurality of third projecting portions 47 and the plurality of third recessed portions 49 are alternately formed. Consequently, each of the first inner walls 37 is formed such that, in plan view, the both end portions thereof in the front-rear direction have generally linear shapes along the front-rear direction and the generally middle portion thereof in the front-rear direction has a waveform shape along the front-rear direction. Note that the first inner wall 37 is formed in a waveform shape such that the third projecting portions 47 thereof face the first recessed portions 19 of the first connecting wall 11 in the left-right direction and the third recessed portions 49 thereof face the first projecting portions 17 of the first connecting wall 11 in the left-right direction. That is, the waveform shape (the plurality of third projecting portions 47 and the plurality of third recessed portions 49) of the first inner wall 37 and the waveform shape (the plurality of first recessed portions 19 and the plurality of second projecting portions 27) of the first connecting wall 11 are formed so as to interlock along the front-rear direction.

[0076] When projected in the upper-lower direction, the generally semi-circular portions of the first inner wall 37 which are surrounded by the third projecting portions 47 are defined as third-projecting-portion upper surfaces 48. That is, in each of the first inner walls 37 of the pair of first positioning portions 32, the seven third-projecting-portion upper surfaces 48 are defined along the front-rear direction in correspondence to the plurality of third projecting portions 47. As shown in FIG. 3, each of the third-projecting-portion upper surfaces 48 is located at

generally the same position as that of the ceiling wall 10 of the containing portion 4 in the upper-lower direction.

(2-1-2) First Outer Walls

[0077] As shown in FIG. 2, each of the first outer walls 38 includes a plurality of (three) first large recessed portions 52 and a plurality of (three) first large projecting portions 51.

[0078] In each of the first outer walls 38, the three first large recessed portions 52 are equidistantly arranged along the front-rear direction. As shown in FIGS. 1 and 2, each of the first large recessed portions 52 is formed so as to be recessed inwardly in the left-right direction into a generally rectangular shape in plan view and extend over the entire range of the first outer wall 38 in the upper-lower direction.

[0079] As shown in FIG. 2, in each of the first outer walls 38, the three first large projecting portions 51 are equidistantly arranged along the front-rear direction. Of the first large projecting portions 51, two are disposed continuously to and between the first large recessed portions 52 adjacent to each other in the front-rear direction and one is disposed on the front side of the frontmost first large recessed portion 52 so as to be continued thereto. As shown in FIGS. 1 and 2, each of the first large projecting portions 51 is formed so as to project outwardly in the left-right direction into a generally rectangular shape in plan view and extend over the entire range of the first outer wall 38 in the upper-lower direction. The length of each of the first large projecting portions 51 in the front-rear direction is longer than the length of each of the first large recessed portions 52 in the front-rear direction. In addition, the first large projecting portions 51 include first supporting portions 53.

[0080] Each of the first supporting portions 53 is formed so as to be recessed inwardly in the left-right direction from the upper portion of the first large projecting portion 51 at generally a middle in the front-rear direction into a generally rectangular shape in plan view. The length of each of the first supporting portions 53 in the front-rear direction is generally the same as the length of each of the first large recessed portions 52 in the front-rear direction. As shown in FIG. 3, the first supporting portion 53 is disposed such that the lower surface thereof is at generally the same position as that of the ceiling wall 10 of the containing portion 4 in the upper-lower direction.

[0081] Note that the distance from the front end of the encapsulating sheet container 1 to the frontmost first supporting portion 53 is generally the same as the distance from the rear end of the encapsulating sheet container 1 to the rearmost first large recessed portion 52.

(2-2) Second Positioning Portions

[0082] The pair of second positioning portions 33 are disposed to be spaced apart from each other in the front-rear direction and extend between the front end portions

of the pair of first positioning portions 32 and the rear end portions thereof. The pair of second positioning portions 33 are formed so as to extend along the left-right direction. Note that, in the case of distinguishing the pair of second positioning portions 33 from each other, the front-side second positioning portion 33 is assumed to be one of the pair of second positioning portions 33 and the rear-side second positioning portion 33 is assumed to be the other of the pair of second positioning portions 33. The length of each of the second positioning portions 33 in the left-right direction is shorter than the length of each of the first positioning portions 32 in the front-rear direction. As shown in FIG. 4, each of the second positioning portions 33 includes a second inner wall 40, a second outer wall 41 facing the second inner wall 40 in the front-rear direction, and a second upper wall 42 connecting the upper end portion of the second inner wall 40 and the upper end portion of the second outer wall 41.

[0083] The second inner wall 40 is formed in a generally rectangular flat plate shape in front view. The second inner wall 40 is formed so as to be inclined slightly outwardly in the front-rear direction as the height thereof increases. Note that the lower end portion of the second inner wall 40 is connected to the groove portion 6 (specifically, a second bottom wall 70 described later in detail).

[0084] The second outer wall 41 is formed in a generally rectangular flat plate shape in front view. The second outer wall 41 is formed so as to be inclined slightly inwardly in the front-rear direction as the height thereof increases.

[0085] The second upper wall 42 is formed in a generally rectangular flat plate shape in plan view connecting the upper end edge of the second inner wall 40 and the upper end edge of the second outer wall 41.

[0086] That is, each of the second positioning portions 33 is formed of the second inner wall 40, the second outer wall 41, and the second upper wall 42 into a generally trapezoidal shape in side sectional view having an upwardly decreasing width.

(2-2-1) Second Inner Walls

[0087] As shown in FIG. 2, each of the second inner walls 40 includes a fourth shorter portion 55, a fourth longer portion 56, a plurality of (five) fourth projecting portions 57 (frame-portion-side front-rear projecting portions), and a plurality of (four) fourth recessed portions 49 (frame-portion-side front-rear recessed portions).

[0088] The fourth shorter portion 55 is a left-side portion of the second inner wall 40 and is formed in a generally linear flat plate shape in plan view.

[0089] The fourth longer portion 56 is a right-side portion of the second inner wall 40 and is formed in a generally linear flat plate shape in plan view. The length of the fourth longer portion 56 in the left-right direction is longer than the length of the fourth longer portion 56 in the left-right direction.

[0090] The five fourth projecting portions 57 are equidistantly arranged along the left-right direction between the fourth shorter portion 55 and the fourth longer portion 56 in each of the second inner walls 40. Note that the leftmost fourth projecting portion 57 is continued to the fourth shorter portion 55, while the rightmost fourth projecting portion 57 is continued to the fourth longer portion 56. As shown in FIGS. 1 and 2, each of the fourth projecting portions 57 is formed in a generally semi-circular shape in plan view which projects inwardly in the front-rear direction from the inner portion of the second inner wall 40 in the front-rear direction except for the upper portion thereof so as to be curved. As shown in FIG. 2, the inner end portion of each of the fourth projecting portions 57 in the front-rear direction is located to be internal of each of the fourth shorter portion 55 and the fourth longer portion 56 in the front-rear direction.

[0091] The four fourth recessed portions 59 are equidistantly arranged along the left-right direction between the fourth shorter portion 55 and the fourth longer portion 56 in each of the second inner walls 40. As shown in FIGS. 1 and 2, each of the fourth recessed portions 59 is disposed continuously to and between the fourth projecting portions 57 adjacent to each other in the left-right direction and formed in a generally semi-circular shape in plan view which is recessed outwardly in the front-rear direction so as to be curved. As shown in FIG. 2, each of the fourth recessed portions 59 is disposed such that the outer end portion thereof in the front-rear direction is at generally the same position as that of each of the fourth shorter portion 55 and the fourth longer portion 56 in the front-rear direction.

[0092] Thus, in the end portions of each of the second inner walls 40 in the left-right direction, the fourth shorter portion 55 and the fourth longer portion 56 are formed and, continuously to and between the fourth shorter portion 55 and the fourth longer portion 56, the plurality of fourth projecting portions 57 and the plurality of third recessed portions 49 are alternately formed. Consequently, each of the second inner walls 40 is formed such that, in plan view, the both end portions thereof in the left-right direction have generally linear shapes along the left-right direction and the generally middle portion thereof in the left-right direction has a waveform shape along the left-right direction. Note that the second inner wall 40 is formed in a waveform shape such that the fourth projecting portions 57 thereof face the second recessed portions 29 of the second connecting wall 12 in the front-rear direction and the fourth recessed portions 59 thereof face the second projecting portions 27 of the first connecting wall 11 in the front-rear direction. That is, the waveform shape (the plurality of fourth projecting portions 57 and the plurality of fourth recessed portions 59) of the second inner wall 40 and the waveform shape (the plurality of second recessed portions 29 and the plurality of second projecting portions 27) of the second connecting wall 12 are formed so as to interlock along the left-right direction.

[0093] When projected in the upper-lower direction,

the generally semi-circular portions of the second inner walls 40 which are surrounded by the fourth projecting portions 57 are defined as fourth-projecting-portion upper surfaces 58. That is, in each of the first inner walls 37 of the pair of second positioning portions 33, the five fourth-projecting-portion upper surfaces 58 are defined along the left-right direction in correspondence to the plurality of fourth projecting portions 57. As shown in FIG. 4, each of the fourth-projecting-portion upper surfaces 58 is located at generally the same position as that of the ceiling wall 10 of the containing portion 4 in the upper-lower direction.

(2-2-2) Second Outer Walls

[0094] As shown in FIG. 2, each of the second outer walls 41 includes a plurality of (two) second large recessed portions 62 and a plurality of (two) second large projecting portions 61.

[0095] In each of the second outer walls 41, the two second large recessed portions 62 are arranged along the left-right direction to be spaced apart from each other. As shown in FIG. 1 or 2, each of the second large recessed portions 62 is formed so as to be recessed inwardly in the front-rear direction into a generally rectangular shape in plan view and extend over the entire range of the second outer wall 41 in the upper-lower direction.

[0096] As shown in FIG. 2, in each of the second outer walls 41, the two second large projecting portions 61 are arranged along the left-right direction to be spaced apart from each other. Of the second large projecting portions 61, one is disposed continuously to and between the second large recessed portions 62 adjacent to each other in the left-right direction and the other is disposed on the left side of the left-side second large recessed portion 62. As shown in FIGS. 1 and 2, each of the second large projecting portions 61 is formed so as to project outwardly in the front-rear direction into a generally rectangular shape in plan view and extend over the entire range of the second outer wall 41 in the upper-lower direction. The length of each of the second large projecting portions 61 in the left-right direction is longer than the length of each of the second large recessed portions 62 in the left-right direction. In addition, the second large projecting portions 61 include second supporting portions 63.

[0097] Each of the second supporting portions 63 is formed so as to be recessed inwardly in the front-rear direction from the upper portion of the second large projecting portion 61 at generally a middle in the left-right direction into a generally rectangular shape in plan view. The length of each of the second supporting portions 63 in the left-right direction is generally the same as the length of each of the second large recessed portions 62 in the left-right direction. As shown in FIG. 4, the second supporting portion 63 is disposed such that the lower surface thereof is at generally the same position as that of the ceiling wall 10 of the containing portion 4 in the upper-lower direction.

[0098] Note that the distance from the left end of the encapsulating sheet container 1 to the left-side supporting portion 63 is generally the same as the distance from the right end of the encapsulating sheet container 1 to the right-side second large recessed portion 62.

(2-3) Flange Portion

[0099] As shown in FIGS. 1 and 2, the flange portion 34 is the peripheral edge portion of the frame portion 5. The flange portion 34 is formed in a flat plate shape in the form of a generally rectangular frame in plan view which is continued to the lower end edges of the first outer walls 38 of the pair of first positioning portions 32 and to the lower end edges of the second outer walls 41 of the pair of second positioning portions 33. As shown in FIGS. 3, the flange portion 34 is disposed at generally the same position as that of the groove portion 6 (specifically, a pair of first bottom walls 69 and a pair of second bottom walls 70 each described later) in the upper-lower direction. As shown in FIG. 2, the generally rectangular portions of the flange portion 34 which are surrounded by the first large recessed portions 52 when projected in the upper-lower direction are defined as first supported portions 64. That is, the three first supported portions 64 are defined on either side of the flange portion 34 in the left-right direction in correspondence to the plurality of first supporting portions 53. On the other hand, the generally rectangular portions of the flange portion 34 which are surrounded by the second large recessed portion 62 when projected in the upper-lower direction are defined as second supported portions 65. That is, the two second supported portions 65 are defined on either side of the flange portion 34 in the front-rear direction in correspondence to the plurality of second supporting portions 63.

(3) Groove Portion

[0100] The groove portion 6 includes the pair of first bottom walls 69 as an example of a pair of end portions and the pair of second bottom walls 70 as an example of the pair of end portions.

[0101] The pair of first bottom walls 69 are left-side and right-side portions of the groove portion 6 and disposed to be spaced apart from each other in the left-right direction.

[0102] Specifically, the left-side first bottom wall 69 (one of the pair of first bottom walls 69) is formed in a generally rectangular flat plate shape in plan view which is long in the front-rear direction to connect the respective lower end portions of the left-front-side and left-rear-side bridge portions 7 and also connect the respective lower end portions of the left-side first connecting wall 11 (the other of the pair of first bottom walls 69) and the left-side first inner wall 37. The right-side first bottom wall 69 is formed in a generally rectangular flat plate shape in plan view which is long in the front-rear direction to connect the respective lower end portions of the right-front-side

and right-rear-side bridge portions 7 and also connect the respective lower end portions of the right-side first connecting wall 11 and the right-side first inner wall 37.

[0103] Note that, in each of the first bottom walls 69, the generally semi-circular portions which are surrounded by the first recessed portions 19 of the first connecting wall 11 when projected in the upper-lower direction are defined as first-recessed-portion lower surfaces 73. Also, of the rear-side part of each of the first bottom walls 69, the portion adjacent to the rearmost first projecting portion 17 and a front-side portion of the first longer portion 16 is defined as the first-recessed-portion lower surface 73. That is, the six first-recessed-portion lower surfaces 73 are defined along the front-rear direction in each of the inner portions of the pair of first bottom walls 69 in the left-right direction.

[0104] Additionally, in each of the first bottom walls 69, the generally semi-circular portions which are surrounded by the third recessed portions 49 of the first inner wall 49 when projected in the upper-lower direction are defined as third-recessed-portion lower surfaces 76. Also, of the rear-side part of each of the first bottom walls 69, the portion adjacent to the rearmost third projecting portion 47 and a front-side portion of the third longer portion 46 is defined as the third-recessed-portion lower surface 76. That is, the seven third-recessed-portion lower surfaces 76 are defined along the front-rear direction in each of the outer portions of the pair of first bottom walls 69 in the left-right direction.

[0105] The pair of second bottom walls 70 are front-side and rear-side portions of the groove portion 6 and disposed to be spaced apart from each other in the front-rear direction.

[0106] Specifically, the front-side second bottom wall 70 (one of the pair of second bottom walls 70) is formed in a generally rectangular flat plate shape in plan view which is long in the left-right direction to connect the respective lower end portions of the left-front-side and right-front-side bridge portions 7 and also connect the respective lower end portions of the front-side second connecting wall 12 and the front-side second inner wall 40. The rear-side second bottom wall 70 (the other of the pair of second bottom walls 70) is formed in a generally rectangular flat plate shape in plan view which is long in the left-right direction and connect the respective lower end portions of the left-rear-side and right-rear-side bridge portions 7 and also connect the respective lower end portions of the rear-side second connecting wall 12 and the rear-side second inner wall 40.

[0107] Note that, in each of the second bottom walls 70, the generally semi-circular portions which are surrounded by the second recessed portions 29 of the second connecting wall 12 when projected in the upper-lower direction are defined as second-recessed-portion lower surfaces 74. That is, the five second-recessed-portion lower surfaces 74 are defined along the left-right direction in each of the inner portions of the pair of second bottom walls 70 in the front-rear direction.

[0108] Additionally, in each of the second bottom walls 70, the generally semi-circular portions which are surrounded by the fourth recessed portions 59 of the second inner wall 40 when projected in the upper-lower direction are defined as fourth-recessed-portion lower surfaces 77. Also, of the right-side part of each of the second bottom walls 70, the portion adjacent to the rightmost fourth projecting portion 57 and a left-side portion of the fourth longer portion 56 is defined as the fourth-recessed-portion lower surface 77. That is, the five fourth-recessed-portion lower-surfaces 77 are defined along the left-right direction in each of the outer portions of the pair of second bottom walls 70 in the front-rear direction.

(4) Bridge Portions

[0109] The bridge portions 7 are disposed at the four individual corners of the containing portion 4 so as to extend along the diagonal lines of the encapsulating sheet container 1 and provide bridges between the containing portion 4 and the frame portion 5. Each of the bridge portions 7 is formed in a generally trapezoidal shape in cross-sectional view having an upwardly decreasing width. The bridge portions 7 include receptacle portions 80.

[0110] The receptacle portions 80 are outer portions of the bridge portions 7 which are disposed so as to be adjacent to the four corners (connecting portions between the pair of first positioning portions 32 and the pair of second positioning portions 33) of the frame portion 5 from inside the encapsulating sheet container 1 and formed so as to be recessed downward into generally semi-circular shapes.

2. Configuration of Fixation sheet

[0111] As shown in FIG. 1, the fixation sheet 93 is made of, e.g., polyethylene terephthalate (PET) and formed in a flexible thin plate shape having a given thickness (of, e.g., 0.02 to 0.20 mm) in the upper-lower direction and extending in each of the front-rear direction and the left-right direction. The lengths of the fixation sheet 93 in the front-rear direction and in the left-right direction are the same as the lengths of the fixation sheet mounting region 84 in the front-rear direction and in the left-right direction.

[0112] The fixation sheet 93 is formed of a single-sided adhesive sheet having an upper surface with surface tack. To prevent the fixation sheet 93 from adhering to the encapsulating sheet container 1 upon mere contact of the first-recessed-portion lower surfaces 73 and the second-recessed-portion lower surfaces 74 of the encapsulating sheet container 1 with the fixation sheet 93 from above, the adhesive force of the fixation sheet 93 is set to a value in a range of, e.g., not less than 1 Pa, or preferably not less than 5 Pa and, e.g., not more than 100 Pa, or preferably not more than 50 Pa. Note that, when the adhesive force of the fixation sheet 93 is larger than 100 Pa, in the case where the encapsulating sheet con-

tainer 1 is upwardly lifted while the first-recessed-portion lower surfaces 73 and the second-recessed-portion lower surfaces 74 of the encapsulating sheet container 1 are in contact with the fixation sheet 93, the fixation sheet 93 may be lifted together with the encapsulating sheet container 1. When the adhesive force of the fixation sheet 93 is smaller than 1 Pa, it is difficult to fix the fixation sheet 93 with the encapsulating sheet container 1 (encapsulating sheet container 1B described later) in a stacking position described later. As a result, the encapsulating sheet 96 (described later) may not be able to be stably shipped and transported. Preferably, the adhesive force of the fixation sheet 93 to the encapsulating sheet 96 (described later) is larger than the adhesive force of the fixation sheet 93 to the encapsulating sheet container 1.

3. Configuration of Encapsulating Sheet

[0113] As shown in FIG. 13A, the encapsulating sheet 96 includes a base material 97 and an encapsulating layer 98.

[0114] The base material 97 is made of a resin film or the like and formed in a generally rectangular thin plate shape in plan view which is long in the left-right direction and has a given thickness (of, e.g., 0.02 to 1.50 mm) in the upper-lower direction.

[0115] The encapsulating layer 98 is made of a resin (adhesive) having adhesion and formed in a generally rectangular thin plate shape in plan view which is laminated on a generally middle portion of the base material 97 in plan view.

[0116] Note that, in the encapsulating sheet 96, the shape and size of the base material 97 and the shape and size of the encapsulating layer 98 are not particularly limited. Each of the base material 97 and the encapsulating layer 98 may have any shape as long as the base material 97 is smaller than the encapsulating sheet mounting region 85 and the encapsulating layer 98 is smaller than the base material 97. For example, as shown in FIG. 13B, the encapsulating sheet 96 may also be formed in a generally circular thin plate shape in plan view. Alternatively, the encapsulating sheet 96 may also be formed in, e.g., a generally triangular thin plate shape in plan view, a generally L-shaped thin plate shape in plan view, a generally star-like thin plate shape in plan view, or the like, though not shown.

4. Stacking of Encapsulating Sheet Containers

[0117] Two or more of the foregoing encapsulating sheet containers 1 can be stacked in the upper-lower direction. As shown in FIG. 5, the encapsulating sheet containers 1 can selectively be stacked in a containing position in which the encapsulating sheet 96 described above can be contained and the stacking position in which the encapsulating sheet 96 is not contained.

[0118] In describing the stacking of the encapsulating

sheet containers 1, it is assumed that, in FIGS. 5 to 11, the lower encapsulating sheet container 1 is an encapsulating sheet container 1A, each of the members belonging to the encapsulating sheet container 1A has A at the end of its reference numeral, the upper encapsulating sheet container 1 is an encapsulating sheet container 1B, and each of the members belonging to the encapsulating sheet container 1B has B at the end of its reference numeral to distinguish the two encapsulating sheet containers 1 from each other.

(1) Containing Position

[0119] To stack the encapsulating sheet containers 1 in the containing position in which the encapsulating sheet container 96 can be contained, first, two of the encapsulating sheet containers 1 having identical shapes, the fixation sheet 93, and the encapsulating sheet 96 are prepared.

[0120] Then, as shown in FIG. 6, the fixation sheet 93 is placed on the ceiling wall 10A of the encapsulating sheet container 1A.

[0121] To place the fixation sheet 93 on the ceiling wall 10A, the fixation sheet 93 is placed from above such that the non-adhesive surface (lower surface) of the fixation sheet 93 is brought into contact with the fixation sheet mounting region 84A of the ceiling wall 10A. Thus, the fixation sheet 93 is placed on the fixation sheet mounting region 84A of the ceiling wall 10A.

[0122] Then, on the fixation sheet 93, the encapsulating sheet 96 is placed.

[0123] To place the encapsulating sheet 96 on the fixation sheet 93, the encapsulating sheet 96 is placed from above such that, within the encapsulating sheet mounting region 85A of the ceiling wall 10A, the base member 97 of the encapsulating sheet 96 is brought into contact with the fixation sheet 93. Thus, the encapsulating sheet 96 is placed on the encapsulating sheet mounting region 85A of the ceiling wall 10A.

[0124] The method of placing the fixation sheet 93 and the encapsulating sheet 96 on the ceiling wall 10A is not limited to the order shown above. It is also possible to place the encapsulating sheet 96 on the fixation sheet 93 first, and then place the fixation sheet 93 on which the encapsulating sheet 96 has been placed on the ceiling wall 10A.

[0125] Note that, as shown in FIG. 13, a plurality of the encapsulating sheets 96 of whatever shapes can be placed as long as the encapsulating sheets 96 are contained in the encapsulating sheet mounting region 85.

[0126] Next, as shown in FIG. 5, on the encapsulating sheet container 1A on which the fixation sheet 93 and the encapsulating sheet 96 have been placed, the encapsulating sheet container 1B is stacked from above.

[0127] Specifically, as shown in FIGS. 5 and 6, the encapsulating sheet container 1B is 180° rotated relative to the encapsulating sheet container 1A around a middle point Z along the upper-lower direction extending through

the point of intersection between the diagonal lines (not shown) of the encapsulating sheet container 1 in plan view. That is, the encapsulating sheet container 1B is disposed such that one and the other of the pair of the first connecting walls 11B are interchanged relative to the imaginary line Y and one and the other of the pair of second connecting walls 12B are interchanged relative to the imaginary line X.

[0128] Thus, the encapsulating sheet container 1B is stacked on the encapsulating sheet container 1A from above such that, when projected in the upper-lower direction, one of a pair of first connecting walls 11A, one of a pair of second connecting walls 12A, one of a pair of first positioning portions 32A, and one of a pair of second positioning portions 33A respectively correspond to the other of the pair of first connecting walls 11B, the other of the pair of second connecting walls 12B, the other of a pair of first positioning portions 32B, and the other of a pair of second positioning portions 33B.

[0129] As a result, as shown in FIG. 6, in plan view, the first shorter portions 15A of the first connecting walls 11A overlap the first longer portions 16B of the first connecting walls 11B, and the first longer portions 16A of the first connecting walls 11A overlap the first shorter portions 15B of the first connecting walls 11B. This causes the waveform shape including the first projecting portions 17A and the first recessed portions 19A in each of the first connecting walls 11A to overlap the waveform shape including the first projecting portions 17B and the first recessed portions 19B in each of the first connecting walls 11B in misaligned relation. That is, when projected in the upper-lower direction, the first projecting portions 17A overlap the first recessed portions 19B, and the first recessed portions 19A overlap the first projecting portions 17B.

[0130] Also, in plan view, the second shorter portions 25A of the second connecting walls 12A overlap the second longer portions 26B of the second connecting walls 12B, and the second longer portions 26A of the second connecting walls 12A overlap the second shorter portions 25B of the second connecting walls 12B. This causes the waveform shape including the second projecting portions 27A and the second recessed portions 29A in each of the second connecting walls 12A to overlap the waveform shape including the second projecting portions 27B and the second recessed portions 29B in each of the second connecting walls 12B in misaligned relation. That is, when projected in the upper-lower direction, the second projecting portions 27A overlap the second recessed portions 29B, and the second recessed portions 29A overlap the second projecting portions 27B.

[0131] Also, in plan view, the third shorter portions 45A of the first inner walls 37A overlap the third longer portions 46B of the first inner walls 37B, and the third longer portions 46A of the first inner walls 37A overlap the third shorter portion 45B of the first inner walls 37B. This causes the waveform shape including the third projecting portions 47A and the third recessed portions 49A in each of

the first inner walls 37A to overlap the waveform shape including the third projecting portions 47B and the third recessed portions 49B in each of the first inner walls 37B in misaligned relation. That is, when projected in the upper-lower direction, the third projecting portions 47A overlap the third recessed portions 49B, and the third recessed portions 49A overlap the third projecting portions 47B.

[0132] Also, in plan view, the fourth shorter portions 55A of the second inner walls 40A overlap the fourth longer portions 56B of the second inner walls 40B, and the fourth longer portions 56A of the second inner walls 40A overlap the fourth shorter portions 55B of the second inner walls 40B. This causes the waveform shape including the fourth projecting portions 57A and the fourth recessed portions 59A in each of the second inner walls 40A to overlap the waveform shape including the fourth projecting portions 57B and the fourth recessed portions 59B in each of the second inner walls 40B in misaligned relation. That is, when projected in the upper-lower direction, the fourth projecting portions 57A overlap the fourth projecting portions 57B, and the fourth recessed portions 59A overlap the fourth recessed portions 59B.

[0133] As a result, as shown in FIGS. 7 and 8, the plurality of first-recessed-portion lower surfaces 73B of the encapsulating sheet container 1B are brought into contact with the plurality of first-projecting-portion upper surfaces 18A of the encapsulating sheet container 1A. The plurality of second-recessed-portion lower surfaces 74B of the encapsulating sheet container 1B are brought into contact with the plurality of second-projecting-portion upper surfaces 28A of the encapsulating sheet container 1A. The plurality of third-recessed-portion lower surfaces 76B of the encapsulating sheet container 1B are brought into contact with the plurality of third-projecting-portion upper surfaces 48A of the encapsulating sheet container 1A. The plurality of fourth-recessed-portion lower surfaces 77B of the encapsulating sheet container 1B are brought into contact with the plurality of fourth-projecting-portion upper surfaces 58A of the encapsulating sheet container 1A. That is, the first connecting walls 11A and the first connecting walls 11B are positioned so as to be aligned in the upper-lower direction, and the second connecting walls 12A and the second connecting walls 12B are positioned so as to be aligned in the upper-lower direction. This brings the ceiling walls 10A and 10B relatively away from each other so that the space surrounded by the ceiling wall 10 and the containing portion 4B is defined as a containing space 88.

[0134] The length of the containing space 88 in the upper-lower direction, i.e., a length L1 between the ceiling walls 10A and 10B is in a range of, e.g., not less than 3.0 mm, or preferably not less than 5.0 mm and, e.g., not more than 30.0 mm, or preferably not more than 20.0 mm.

[0135] As a result, the fixation sheet 93 placed on the fixation sheet mounting region 84 has the both end portions thereof in the left-right direction held between the plurality of first-projecting-portion upper surfaces 18A

and the plurality of first-recessed-portion lower surfaces 73B and has the both end portions thereof in the front-rear direction held between the plurality of second-projecting-portion upper surfaces 28A and the plurality of second-recessed-portion lower surfaces 74B to be fixed by the encapsulating sheet containers 1A and 1B. Note that the adhesive force of the fixation sheet 93 has been set to a level which prevents the fixation sheet 93 from following the first-recessed-portion lower surfaces 73B and the second-recessed-portion lower surfaces 74B even when the encapsulating sheet container 1B is moved away from the encapsulating sheet container 1A. Accordingly, there is no movement of the fixation sheet 93 from the fixation sheet mounting region 84.

[0136] In addition, a plurality of first large recessed portions 52B of the encapsulating sheet container 1B are brought into engagement with a plurality of first supporting portions 53A of the encapsulating sheet container 1A. This brings the plurality of first supported portions 64 into contact with the lower surfaces of the plurality of first supporting portions 53A. At the same time, a plurality of second large recessed portions 62B of the encapsulating sheet container 1B are brought into engagement with a plurality of second supporting portions 63A of the encapsulating sheet container 1A. This brings the plurality of second supported portions 65 into contact with the lower surfaces of the plurality of second supporting portions 63A.

[0137] Such engagement of the frame portion 5B with the frame portion 5A restricts the movement of the encapsulating sheet container 1B relative to the encapsulating sheet container 1A in each of the front-rear direction and the left-right direction.

[0138] Thus, the encapsulating sheet container 1B is positioned relative to the encapsulating sheet container 1A.

[0139] In this manner, the two encapsulating sheet containers 1 are stacked in the containing position in which the encapsulating sheet 96 can be contained.

[0140] Note that, as shown in FIG. 12A, by stacking a plurality of the encapsulating sheet containers 1 in the containing position, a large number of the encapsulating sheets 96 can be contained.

(2) Stacking Position

[0141] To stack the encapsulating sheet containers 1 in the stacking position in which the encapsulating sheet 96 is not contained, two of the encapsulating sheet containers 1 having identical shapes are prepared.

[0142] Then, the encapsulating sheet container 1B is stacked on the encapsulating sheet container 1A from above.

[0143] Specifically, the encapsulating sheet container 1B is assembled to the encapsulating sheet container 1A from above such that one of the pair of first connecting walls 11A, one of the pair of second connecting walls 12A, the other of the pair of first positioning portions 32A,

and the other of the pair of second positioning portions 33A respectively correspond to one of the pair of first connecting walls 11B, one of the pair of second connecting walls 12B, the other of the pair of first positioning portions 32B, and the other of the pair of second positioning portions 33B.

[0144] Consequently, as shown in FIG. 10, the pair of first connecting walls 11B are brought into contact with the pair of first connecting walls 11A so as to extend along the slopes of the pair of first connecting walls 11A, and the pair of first positioning portions 32B are brought into contact with the pair of first positioning portions 32A so as to extend along the slopes of the pair of first positioning portions 32A. On the other hand, as shown in FIG. 11, the pair of second connecting walls 12B are brought into contact with the pair of second connecting walls 12A so as to extend along the slopes of the pair of second connecting walls 12A, and the pair of second positioning portions 33B are brought into contact with the pair of second positioning portions 33A so as to extend along the slopes of the pair of second positioning portions 33A.

[0145] Note that, at this time, when projected in the left-right direction, in the first connecting walls 11A and 11B, the first projecting portions 17A and 17B overlap each other and the first recessed portions 19A and 19B overlap each other and, in the first positioning portions 32A and 32B, the third projecting portions 47A and 47B overlap each other and the third recessed portions 49A and 49B overlap each other.

[0146] On the other hand, when projected in the front-rear direction, in the second connecting walls 12A and 12B, the second projecting portions 27A and 27B overlap each other and the second recessed portions 29A and 29B overlap each other and, in the second positioning portions 33A and 33B, the fourth projecting portions 57A and 57B overlap each other and the fourth recessed portions 59A and 59B overlap each other.

[0147] Also, the ceiling wall 10A of the encapsulating sheet container 1A and the ceiling wall 10B of the encapsulating sheet container 1B are brought relatively closer to each other. A distance L2 between the ceiling walls 10A and 10B is in a range of, e.g., not less than 0.1 mm and, e.g., not more than 1.0 mm, or preferably not more than 0.5 mm.

[0148] As a result, the stacking length of the two encapsulating sheet containers 1 is shorter than in the containing position.

[0149] In this manner, the two encapsulating sheet containers 1 are stacked in the stacking position in which the encapsulating sheet 96 is not contained.

[0150] Note that, as shown in FIG. 12B, by stacking a plurality of the encapsulating sheet containers 1 in the stacking position, it is possible to save space when the plurality of encapsulating sheet containers 1 are shipped/transported.

5. Function/Effect

[0151] As shown in FIG. 7, when the two encapsulating sheet containers 1 having identical shapes are stacked in the containing position, the respective pairs of first connecting walls 11 of the two encapsulating sheet containers 1 are positioned so as to be aligned in the upper-lower direction while, as shown in FIG. 8, the respective pairs of second connecting walls 12 of the two encapsulating sheet containers 1 are positioned so as to be aligned in the upper-lower direction. This brings the respective ceiling walls 10 of the two encapsulating sheet containers 1 relatively away from each other, resulting in the formation of the containing space 88 capable of containing the encapsulating sheet 96. On the other hand, as shown in FIG. 10, when the two encapsulating sheet containers 1 are stacked in the stacking position, the respective pairs of the first connecting walls 11 of the two encapsulating sheet containers 1 are positioned so as to be arranged in the left-right direction while, as shown in FIG. 11, the respective pairs of the second connecting walls 12 are positioned so as to be arranged in the front-rear direction. This brings the respective ceiling walls 10 of the two encapsulating sheet containers 1 relatively closer to each other, resulting in the stacking length of the two encapsulating sheet containers 1 which is shorter than in the containing position.

[0152] That is, from the two encapsulating sheet containers 1, the containing position (see FIG. 5) in which the containing space 88 capable of containing the encapsulating sheet 96 is formed and the stacking position (see FIG. 9) in which the stacking length of the two encapsulating sheet containers 1 is shorter than in the containing position can be configured.

[0153] By thus stacking the two encapsulating sheet containers 1, in the containing position, as shown in FIG. 5, the encapsulating sheet 96 can be contained/protected in the containing space 88 capable of containing the encapsulating sheet 96. On the other hand, in the stacking position, as shown in FIG. 9, the encapsulating sheet 96 need not be contained and therefore it is possible to shorten the stacking length of the two encapsulating sheet containers 1 and save space.

[0154] Also, in the containing position, as shown in FIG. 7, the first projecting portions 17B of the encapsulating sheet container 1B overlap the first recessed portions 19A of the encapsulating sheet container 1A, and the first recessed portions 19B of the encapsulating sheet container 1B overlap the first projecting portions 17A of the encapsulating sheet container 1A. In other words, the lower end portions of the first projecting portions 17B of the encapsulating sheet container 1B are out of contact with the upper end portions of the first recessed portions 19A of the encapsulating sheet container 1A, while the lower end portions (i.e., first-recessed-portion lower surfaces 73B) of the first recessed portions 19B of the encapsulating sheet container 1B are brought into contact with the upper end portions (i.e., first-projecting-portion

upper surfaces 18A) of the first projecting portions 17A of the encapsulating sheet container 1A. Also, in the containing position, as shown in FIG. 8, the second projecting portions 27B of the encapsulating sheet container 1B overlap the second recessed portions 29A of the encapsulating sheet container 1A, and the second recessed portions 29B of the encapsulating sheet container 1B overlap the second projecting portions 27A of the encapsulating sheet container 1A. In other words, the lower end portions of the second projecting portions 27B of the encapsulating sheet container 1B are out of contact with the upper end portions of the second recessed portions 29A of the encapsulating sheet container 1A, while the lower end portions (i.e., second-recessed-portion lower surfaces 74B) of the second recessed portions 29B of the encapsulating sheet container 1B are brought into contact with the upper end portions (i.e., second-projecting-portion upper surfaces 28A) of the second projecting portions 27A of the encapsulating sheet container 1A.

[0155] For example, when the encapsulating sheet 96 is placed in the containing space 88 capable of containing the encapsulating sheet 96 in the containing position, the fixation sheet 93 for fixing the encapsulating sheet 96 may be used.

[0156] In such a case, as shown in FIG. 6, the fixation sheet 93 is disposed so as to overlap the first recessed portions 19A and the first projecting portions 17A of the encapsulating sheet container 1A when projected in the upper-lower direction. As a result, as shown in FIG. 7, it is possible to allow a part of the fixation sheet 93 to be held between the first-recessed-portion lower surfaces 73B and the first-projecting-portion upper surfaces 18A and fixed. The fixation sheet 93 is also disposed so as to overlap the second recessed portions 29A and the second projecting portions 27A of the first encapsulating sheet container 1A when projected in the upper-lower direction. As a result, as shown in FIG. 8, it is possible to allow a part of the fixation sheet 93 to be held between the second-recessed-portion lower surfaces 74B and the second-projecting-portion upper surfaces 28A and fixed.

[0157] This allows the fixation sheet 93 to be fixed using the first recessed portions 19 and the first projecting portions 17 of the pair of first connecting walls 11 and the second recessed portions 29 and the second projecting portions 27 of the pair of second connecting walls 12, each for forming the containing space 88, and allows the encapsulating sheet 96 to be more efficiently contained in the encapsulating sheet container 1.

[0158] In the encapsulating sheet container 1, as shown in FIG. 2, the pair of first connecting walls 11 are formed line-symmetrically relative to the imaginary line Y, and the pair of second connecting walls 12 are formed line-symmetrically relative to the imaginary line X.

[0159] As a result, as shown in FIG. 6, by merely disposing the encapsulating sheet container 1B such that one and the other of the pair of first connecting walls 11B of the encapsulating sheet container 11 B are interchanged relative to the imaginary line Y and one and the

other of the pair of second connecting walls 12B of the encapsulating sheet container 11B are interchanged relative to the imaginary line X, it is possible to switch the encapsulating sheet containers 1A and 1 B between the containing position and the stacking position.

[0160] This allows the encapsulating sheet containers 1A and 1B to be selectively stacked in the containing position or the stacking position by a simple operation.

[0161] In addition, by forming the pair of first connecting walls 11 line-symmetrically relative to the imaginary line Y, the pair of first connecting walls 11 can be formed into identical shapes and, by forming the pair of second connecting walls 12 line-symmetrically relative to the imaginary line X, the pair of second connecting walls 12 can be formed into identical shapes.

[0162] As shown in FIG. 6, in the case where the two encapsulating sheet containers 1 having identical shapes are stacked in the containing position, when projected in the upper-lower direction, the plurality of first recessed portions 19B of the encapsulating sheet container 1B and the plurality of first projecting portions 17A of the encapsulating sheet container 1A are positioned so as to overlap each other, and the plurality of second recessed portions 29B of the encapsulating sheet container 1B and the plurality of second projecting portions 27A of the encapsulating sheet container 1A are positioned so as to overlap each other.

[0163] This allows the two encapsulating sheet containers 1 to be stacked so as to have a plurality of portions in contact with each other. Therefore, it is possible to stably form the containing space 88 capable of containing the encapsulating sheet 96 using the two encapsulating sheet containers 1.

[0164] Even though each of the encapsulating sheet containers 1 is provided with the plurality of first projecting portions 17, the plurality of first recessed portions 19, the plurality of second projecting portions 27, and the plurality of second recessed portions 29, when the two encapsulating sheet containers 1 are stacked in the stacking position, as shown in FIG. 10, the respective first projecting portions 17 of the two encapsulating sheet containers 1 are positioned so as to overlap each other and the respective first recessed portions 19 of the two encapsulating sheet containers 1 are positioned so as to overlap each other when projected in the left-right direction. Also, as shown in FIG. 11, the respective second projecting portions 27 of the two encapsulating sheet container 1 are positioned so as to overlap each other and the respective second recessed portions 29 of the two encapsulating sheet containers 1 are positioned to overlap each other when projected in the front-rear direction.

[0165] Accordingly, irrespective of the numbers of the first projecting portions 17 and the first recessed portions 19 or the numbers of the second projecting portions 27 and the second recessed portions 29, the respective pairs of first connecting walls 11 of the two encapsulating sheet containers 1 can be positioned so as to be arranged in the left-right direction, and the respective pairs of sec-

and connecting walls 12 of the two encapsulating sheet containers 1 can be positioned so as to be arranged in the front-rear direction. This can shorten the stacking length of the two encapsulating sheet containers 1.

[0166] As a result, when the two encapsulating sheet containers 1 are stacked in the containing position as shown in FIG. 5, it is possible to stably form the containing space 88 in which the encapsulating sheet 96 is contained. On the other hand, when the two encapsulating sheet containers 1 are stacked in the stacking position as shown in FIG. 9, it is possible to retain the short stacking length of the two encapsulating sheet containers 1 when the encapsulating sheet 96 is not contained.

[0167] This allows the quality of the encapsulating sheet 96 to be reliably retained.

[0168] When the two encapsulating sheet containers 1 are stacked as shown in FIG. 7, the plurality of first large recessed portions 52B of the pair of first positioning portions 32B are brought into engagement with the plurality of first supporting portions 53A of the pair of first positioning portions 32A. This allows reliable positioning to be performed such that, in the containing position, when projected in the upper-lower direction, the first projecting portions 17B of the encapsulating sheet container 1B overlap the first recessed portions 19A of the encapsulating sheet container 1A and the first recessed portions 19B of the encapsulating sheet container 1B overlap the first projecting portions 17A of the encapsulating sheet container 1A. In addition, the plurality of second large recessed portions 62B of the pair of second positioning portions 33B are brought into engagement with the plurality of second supporting portions 63A of the pair of second positioning portions 33A. This allows reliable positioning to be performed such that the second projecting portions 27B of the encapsulating sheet container 1B overlap the second recessed portions 29A of the encapsulating sheet container 1A and the second recessed portions 29B of the encapsulating sheet container 1B overlap the second projecting portions 27A of the encapsulating sheet container 1A.

[0169] As a result, in each of the containing position and the stacking position, the two encapsulating sheet containers 1 can stably be stacked.

[0170] While the illustrative embodiments of the present invention are provided in the above description, such is for illustrative purpose only and it is not to be construed as limiting the scope of the present invention. Modification and variation of the present invention that will be obvious to those skilled in the art is to be covered by the following claims.

INDUSTRIAL APPLICABILITY

[0171] The present invention can be used to store, ship, and transport an encapsulating sheet for encapsulating an electronic element or the like.

REFERENCE SIGNS LIST

[0172]

5	1	encapsulating sheet container
10		ceiling wall
11		first connecting wall
12		second connecting wall
17		first projecting portion
10	19	first recessed portion
27		second projecting portion
29		second recessed portion
32		first positioning portion
33		second positioning portion
15	69	first bottom wall
70		second bottom wall
88		containing space
96		first bottom wall

Claims

1. An encapsulating sheet container capable of containing an encapsulating sheet, comprising:

a center portion having a predetermined thickness and extending along a first direction perpendicular to a thickness direction;
a pair of end portions disposed on both external sides of the center portion in the first direction so as to be spaced apart from the center portion in the thickness direction; and
a pair of connecting portions connecting the center portion and the pair of end portions along the thickness direction, wherein
each of the pair of connecting portions includes:

at least one projecting portion which projects outwardly in the first direction; and
at least one recessed portion which is recessed inwardly in the first direction,
two of the encapsulating sheet containers can selectively be stacked in a containing position or a stacking position in the thickness direction,
in the containing position, when projected in the thickness direction, the projecting portion of the encapsulating sheet container located on one side in the thickness direction overlaps the recessed portion of the encapsulating sheet container located on the other side in the thickness direction, the recessed portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the projecting portion of the encapsulating sheet container located on the other side in the thickness direction, and the pairs of connecting por-

tions are positioned so as to be aligned in the thickness direction to bring the center portion of the encapsulating sheet container located on the one side in the thickness direction relatively away from the center portion of the encapsulating sheet container located on the other side in the thickness direction and thus form a space capable of containing the encapsulating sheet, and in the stacking position, when projected in the first direction, the projecting portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the projecting portion of the encapsulating sheet container located on the other side in the thickness direction, the recessed portion of the encapsulating sheet container located on the one side in the thickness direction overlaps the recessed portion of the encapsulating sheet container located on the other side in the thickness direction, and the pairs of connecting portions are positioned so as to be arranged in the first direction to bring the center portion of the encapsulating sheet container located on the one side in the thickness direction relatively closer to the center portion of the encapsulating sheet container located on the other side in the thickness direction and thus result in a stacking length of the two encapsulating sheet containers which is shorter than in the containing position.

2. An encapsulating sheet container according to Claim 1, wherein, when projected in the thickness direction, the pair of connecting portions are formed line-symmetrically relative to an imaginary line along a second direction which is perpendicular to both of the thickness direction and the first direction at a middle between the pair of connecting portions.
3. An encapsulating sheet container according to Claim 1, wherein, in each of the pair of connecting portions, a plurality of the recessed portions and a plurality of the projecting portions are formed to form a wave-form shape along a second direction which is perpendicular to both of the thickness direction and the first direction.
4. An encapsulating sheet container according to Claim 1, further comprising:

positioning portions for positioning the two encapsulating sheet containers when the two encapsulating sheet containers are stacked, the positioning portions being provided on both external sides of the pair of end portions in the first direction.

FIG1

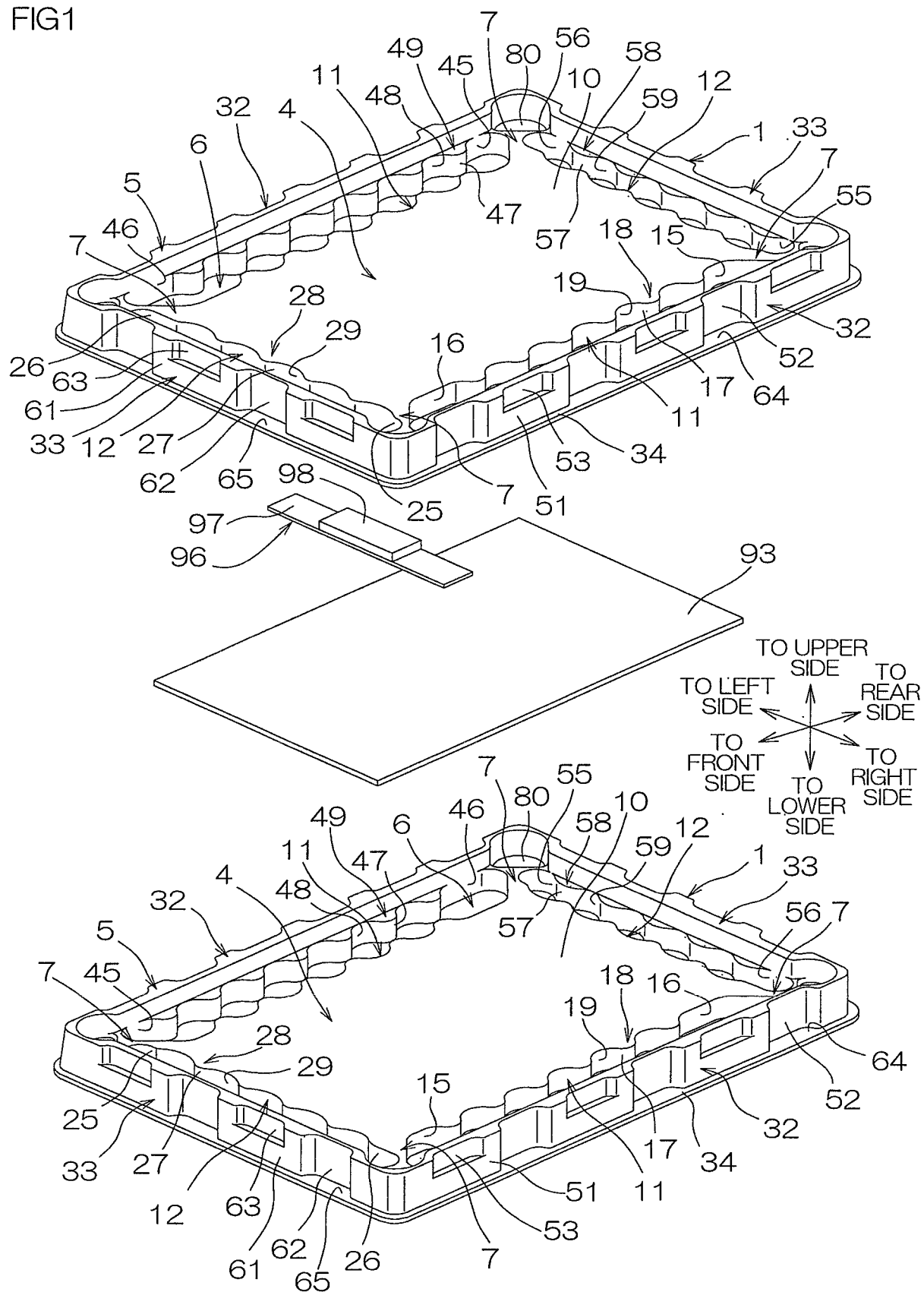
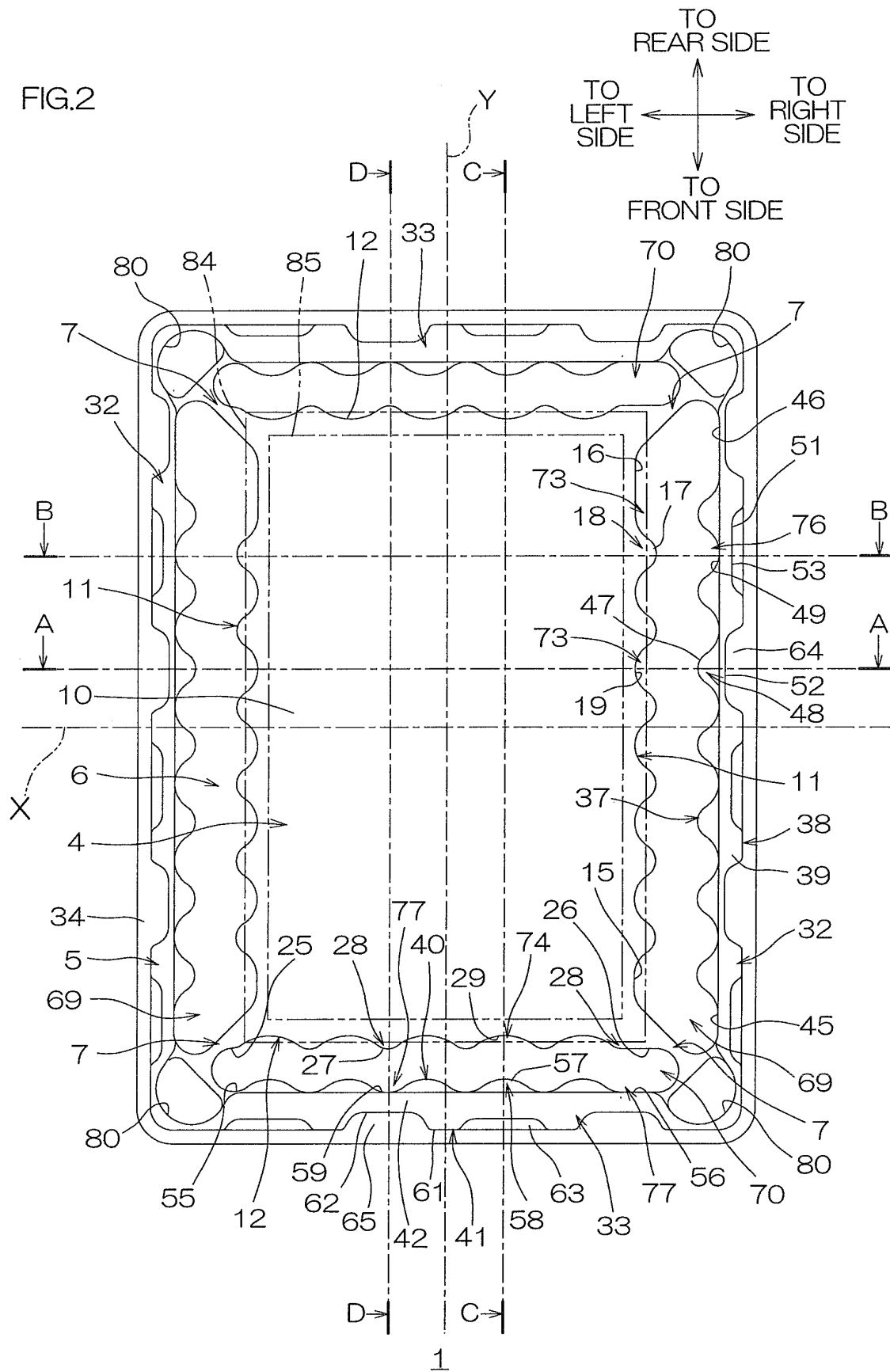


FIG.2



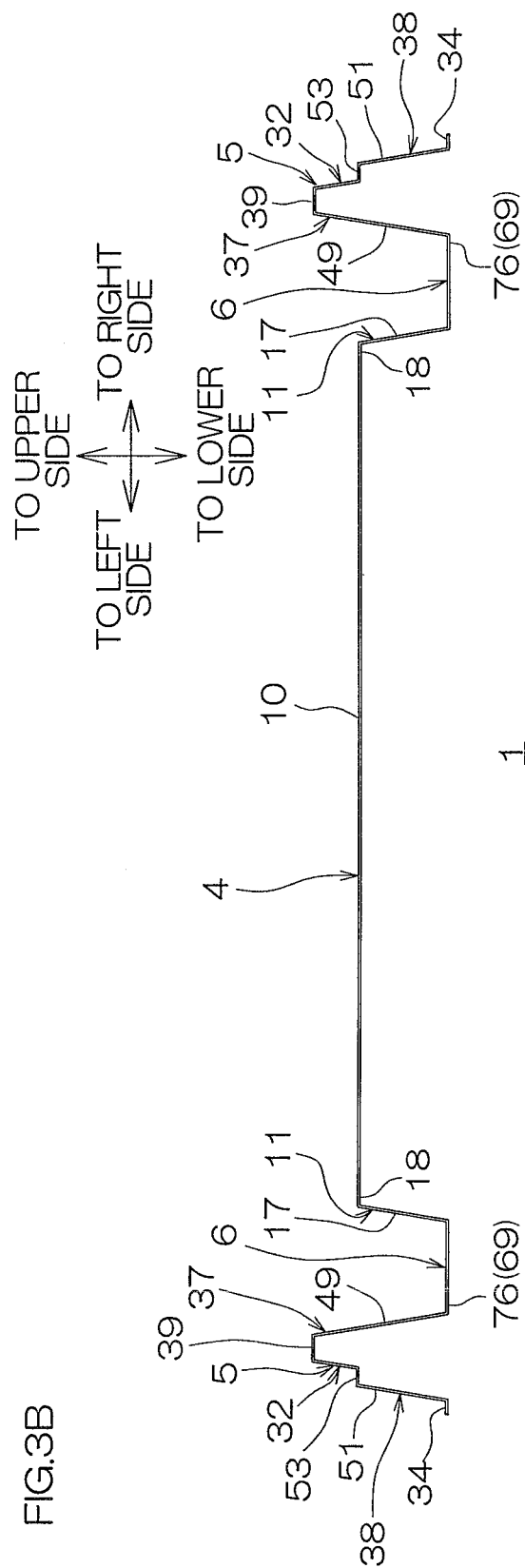
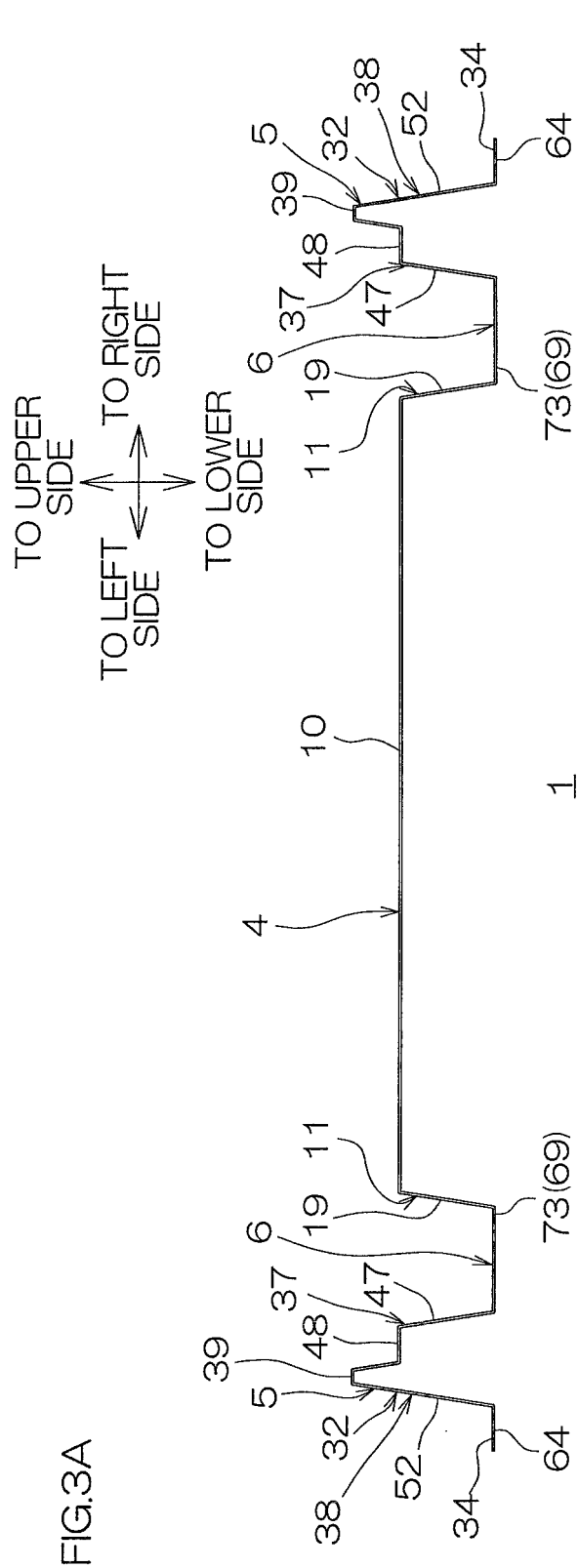


FIG.4C

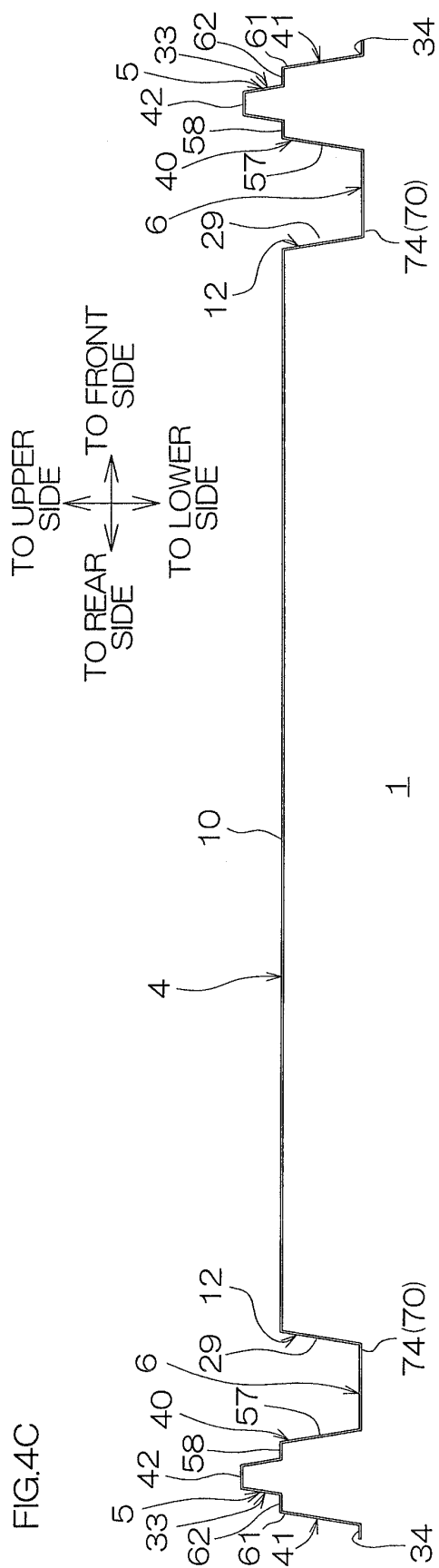


FIG.4D

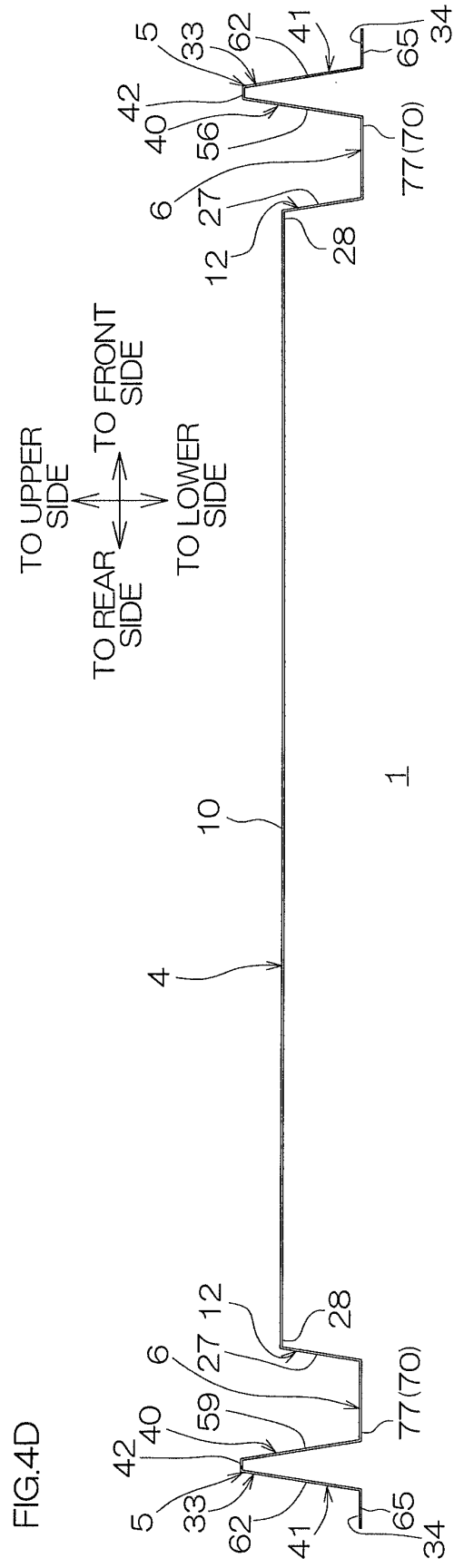


FIG.5

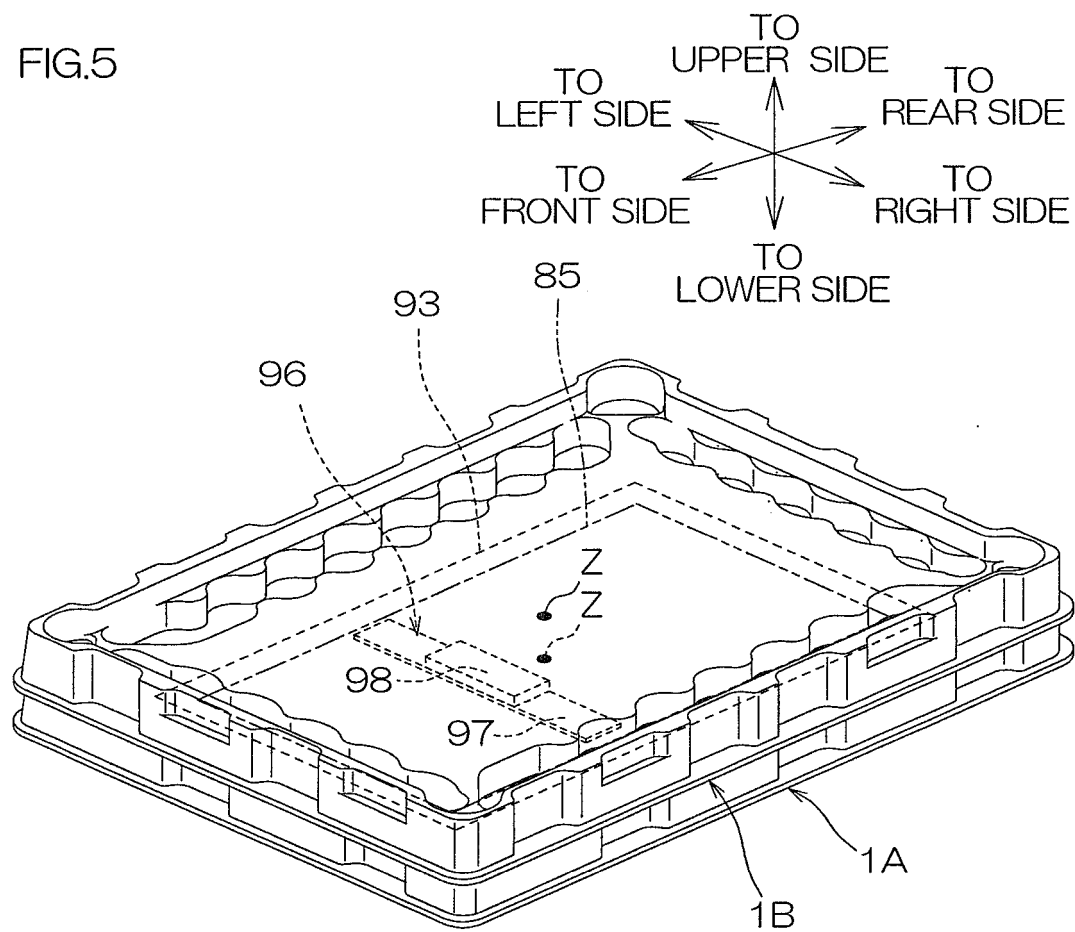
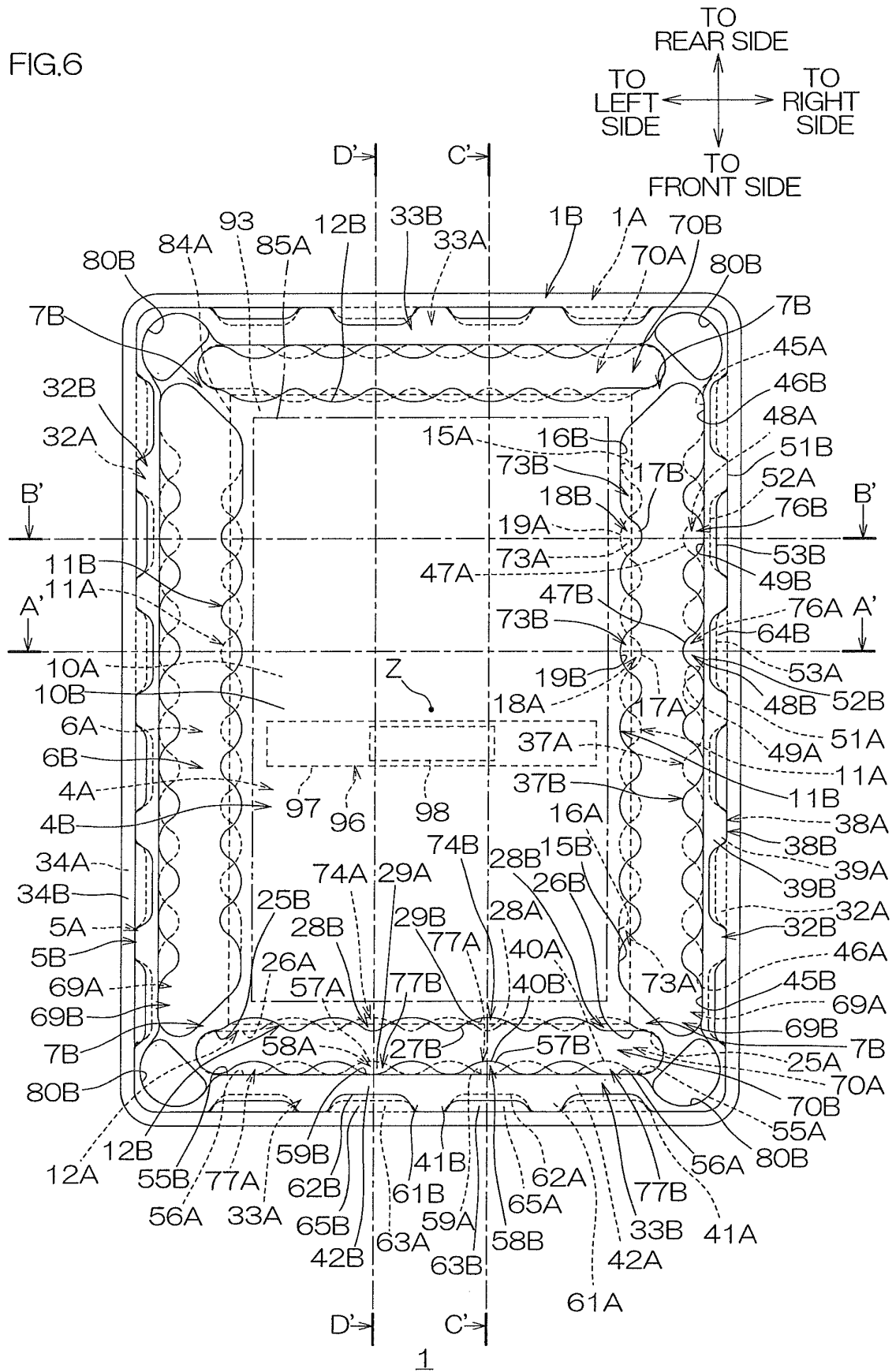
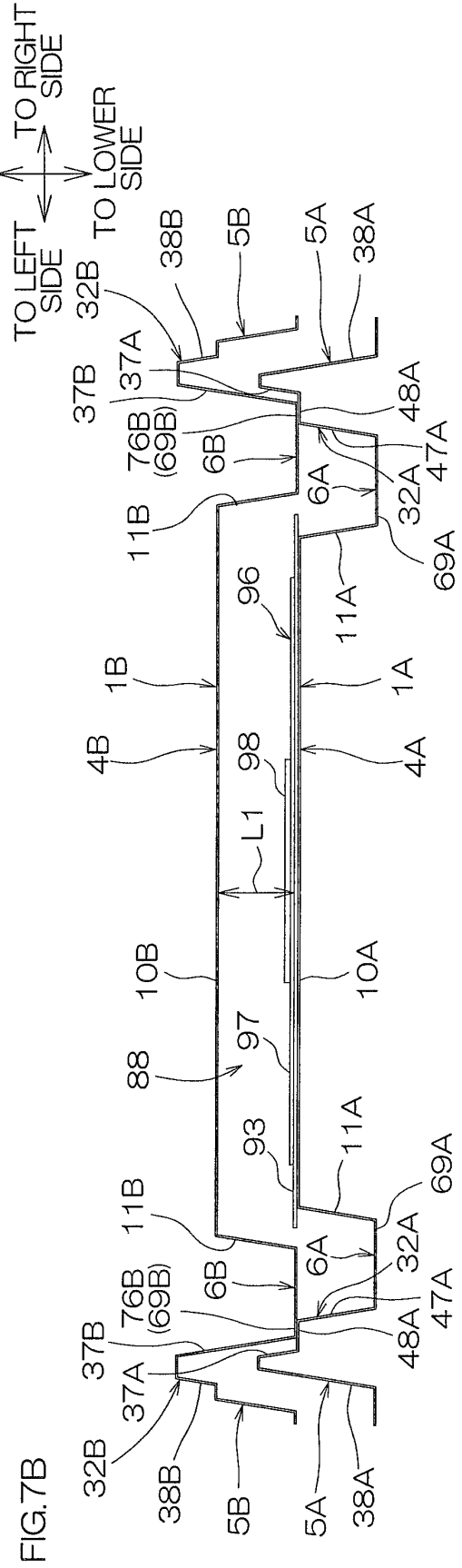
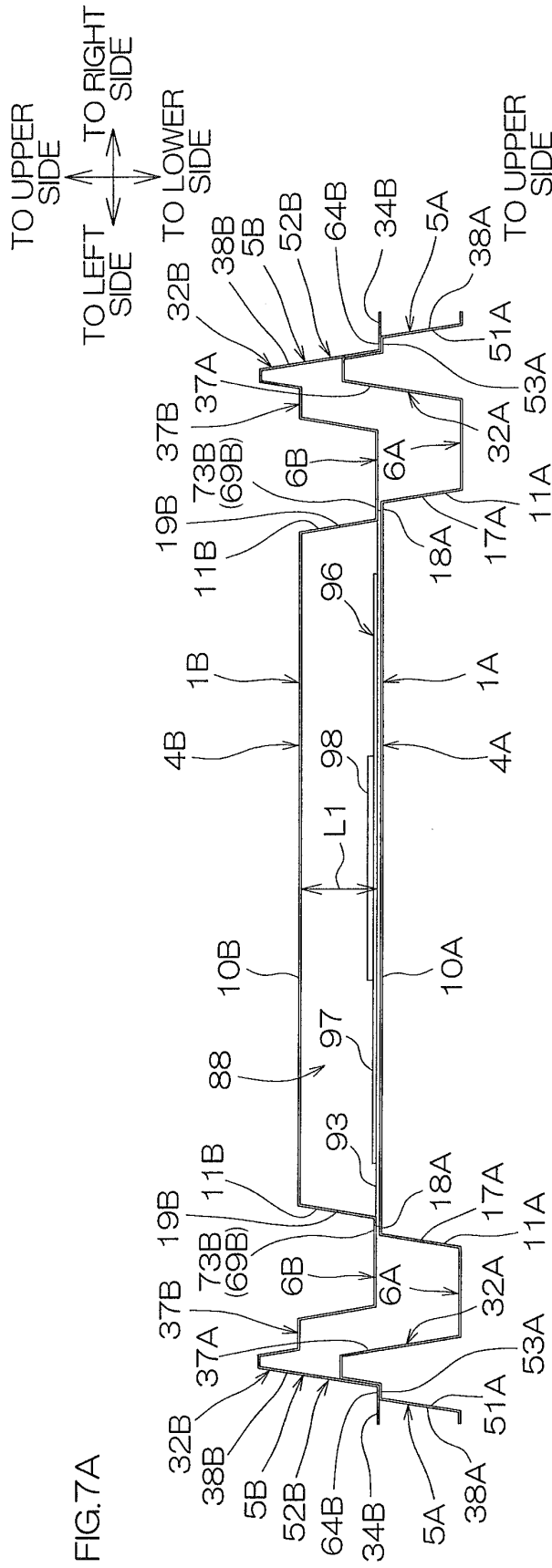


FIG.6





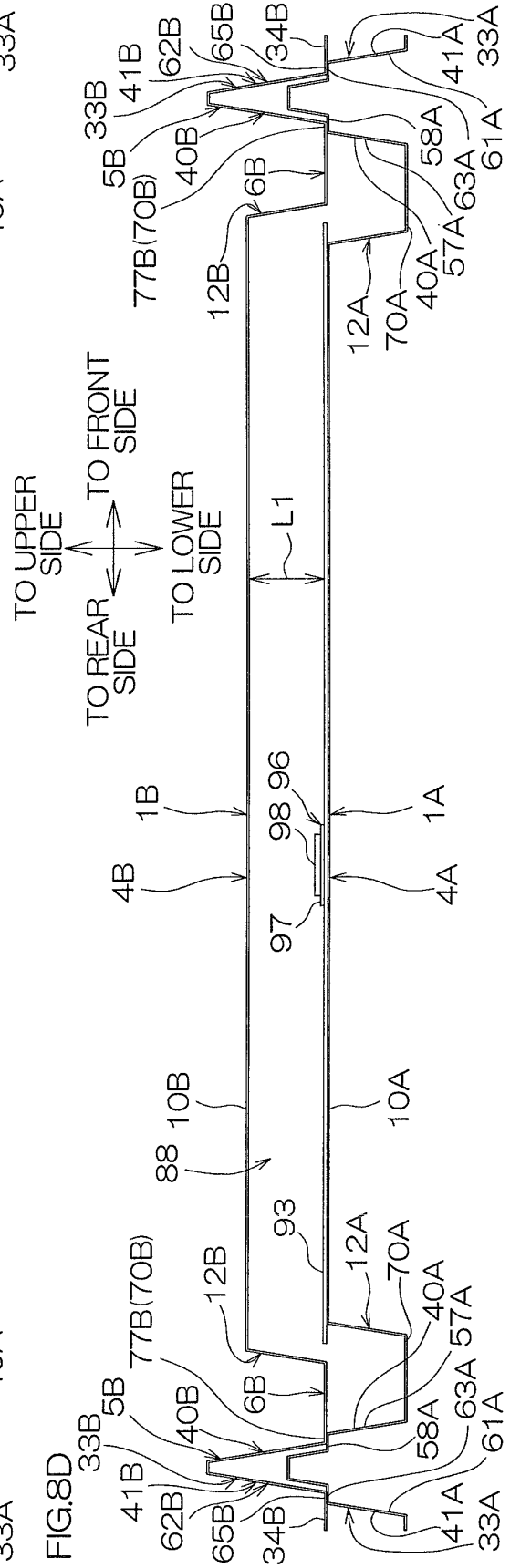
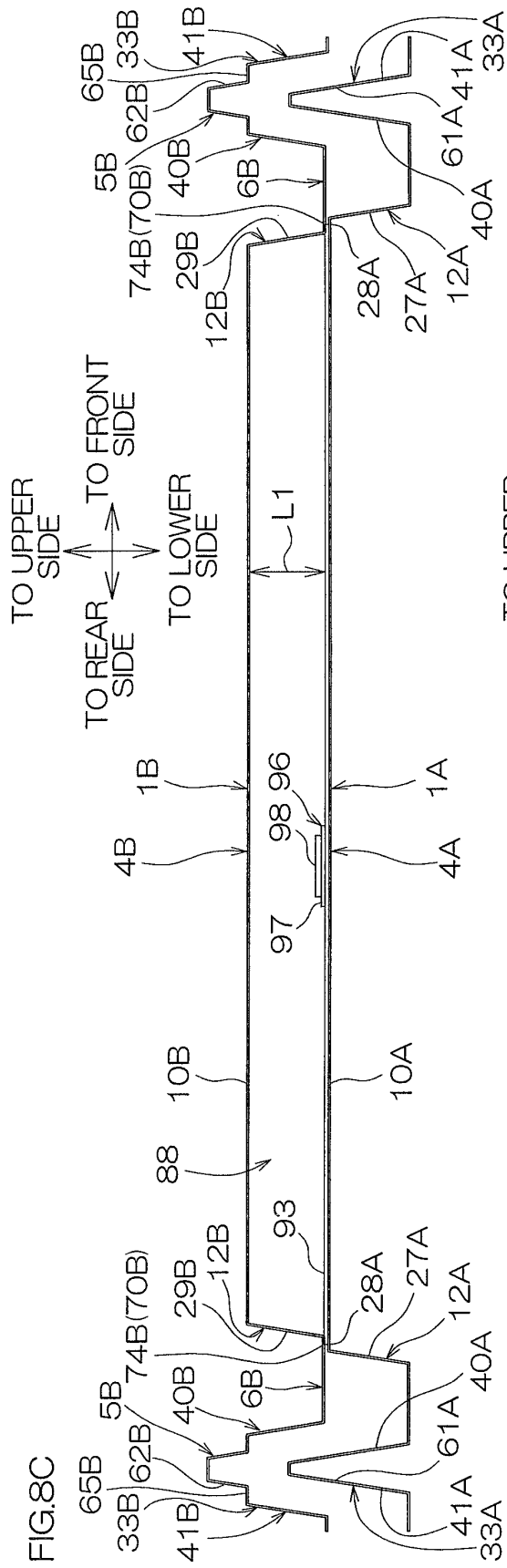
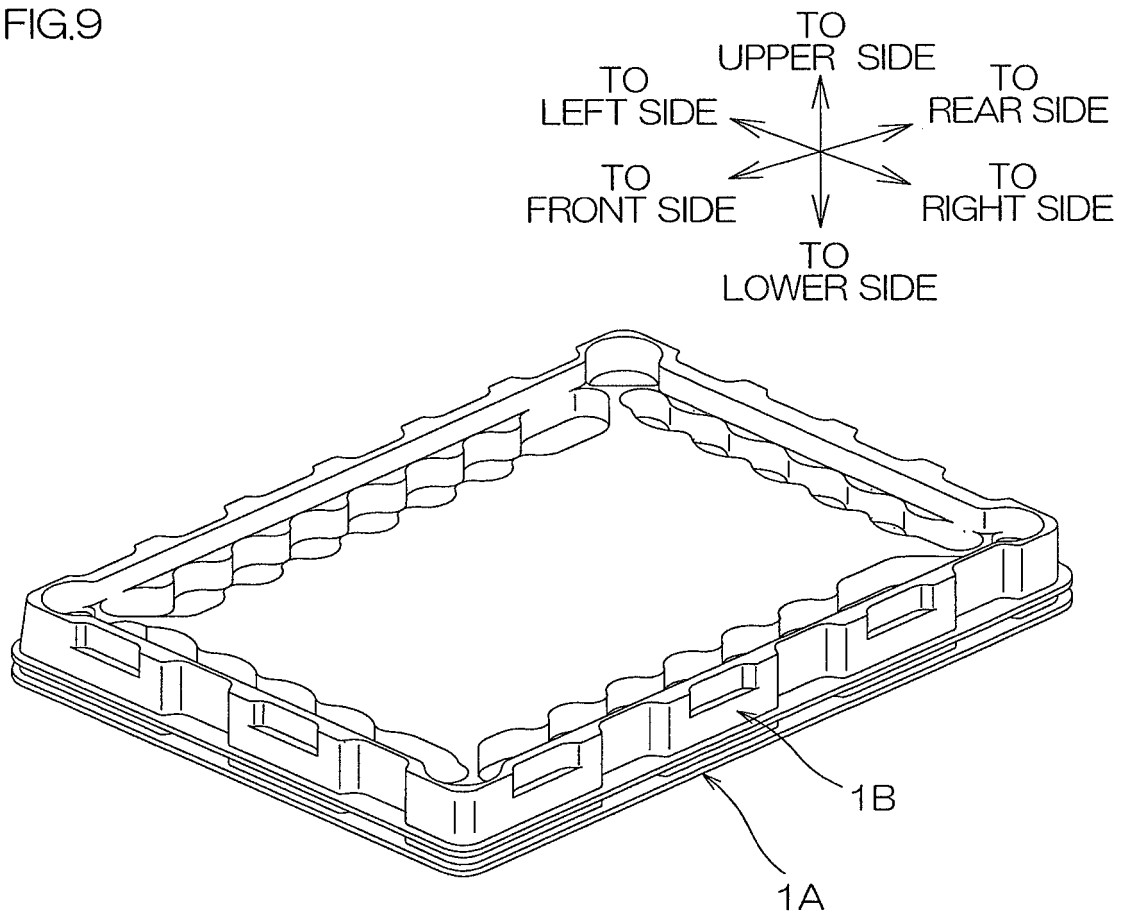
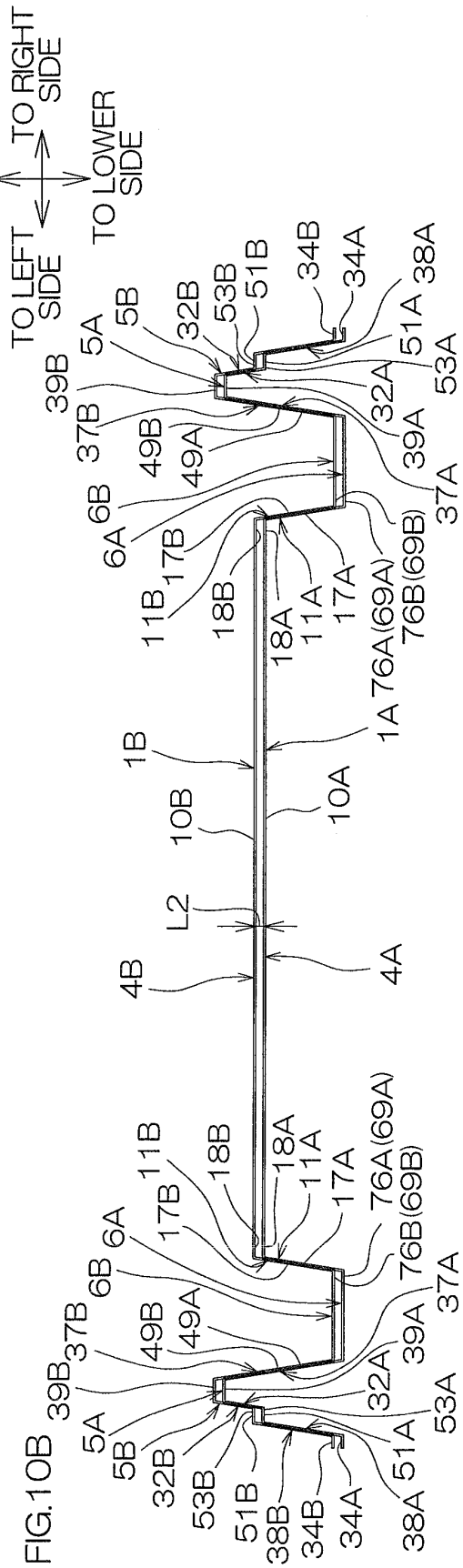
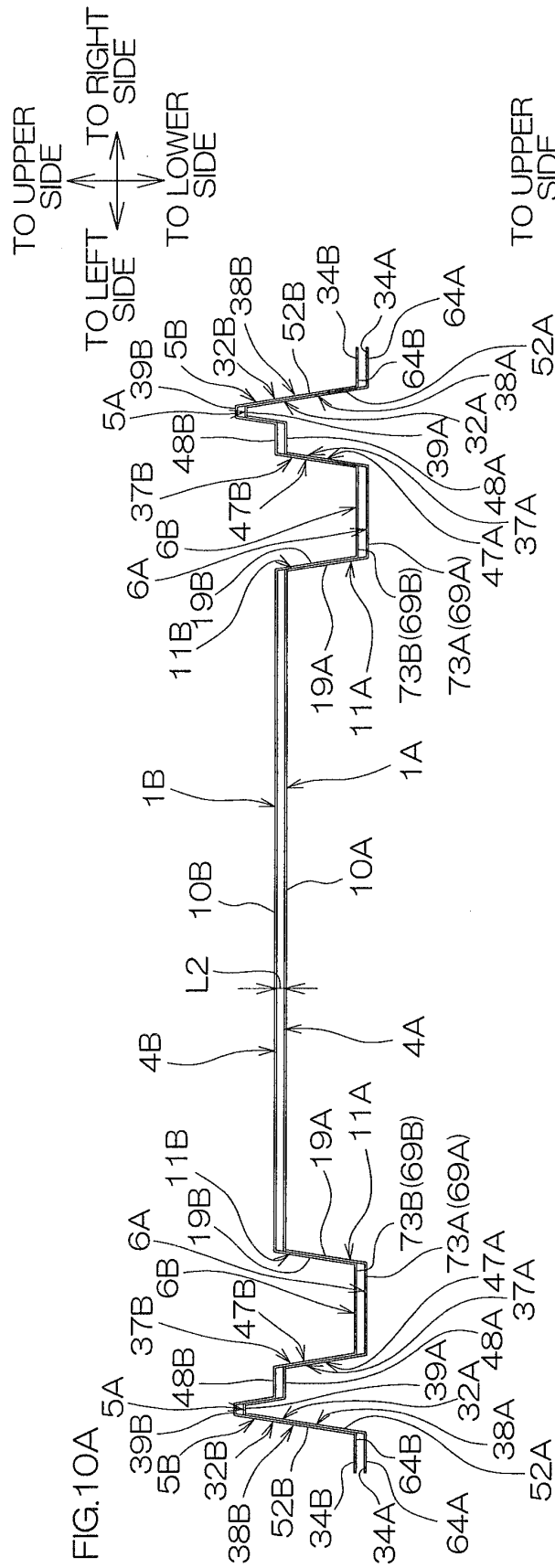


FIG.9





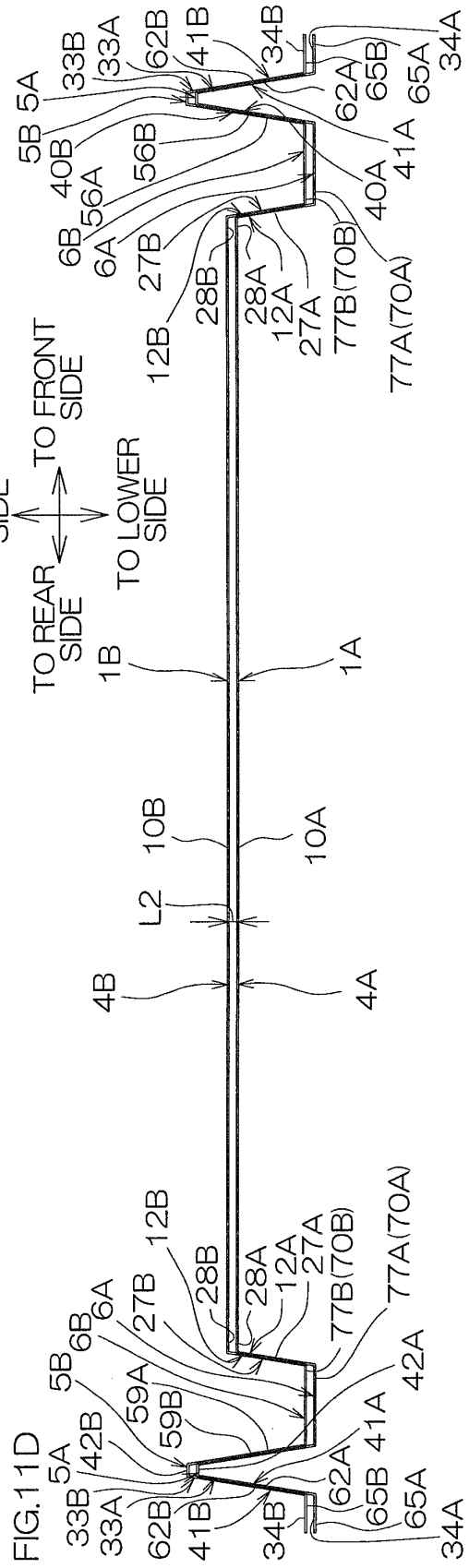
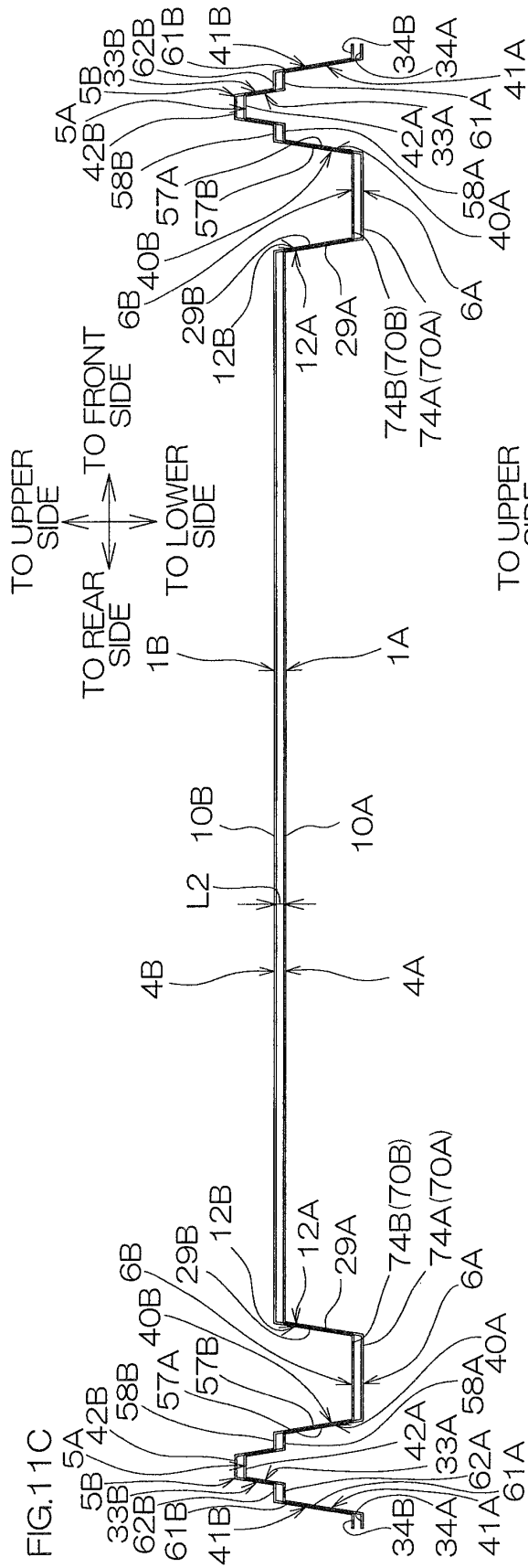


FIG.12A

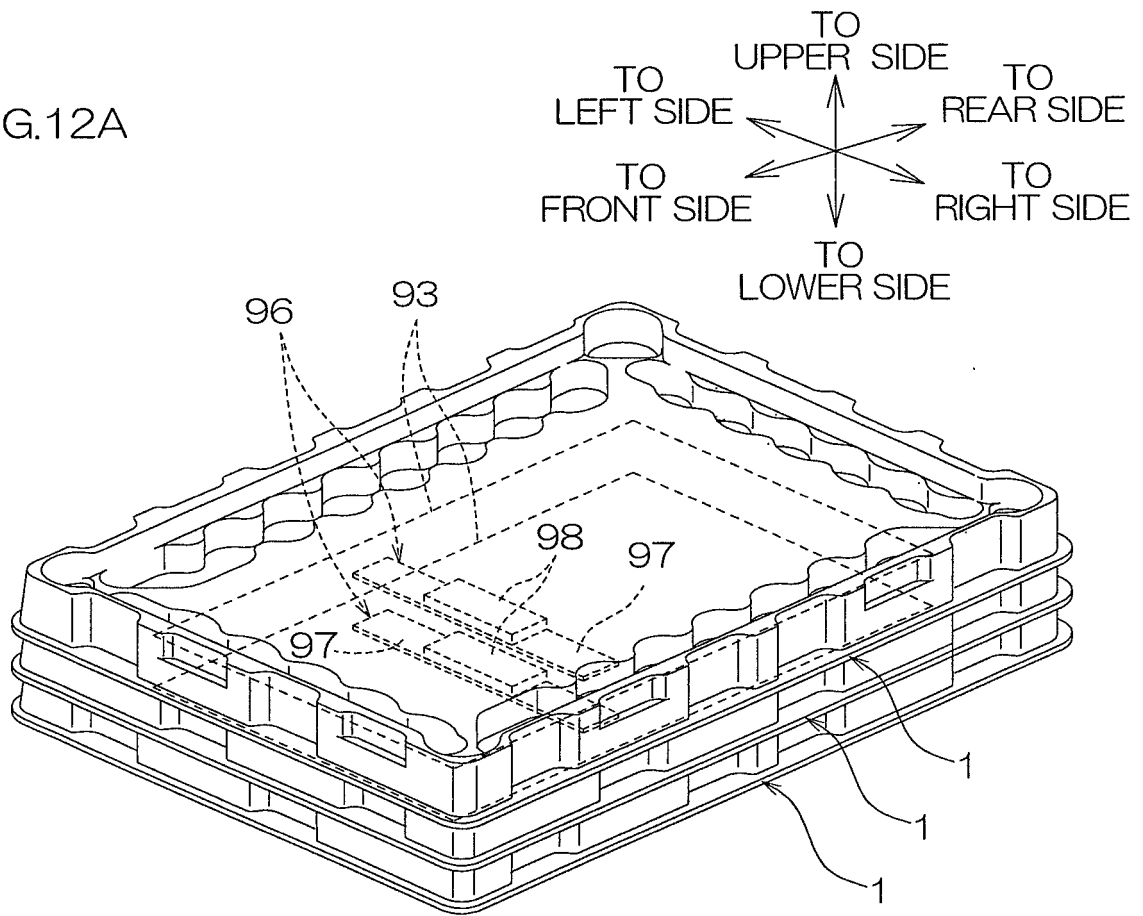


FIG.12B

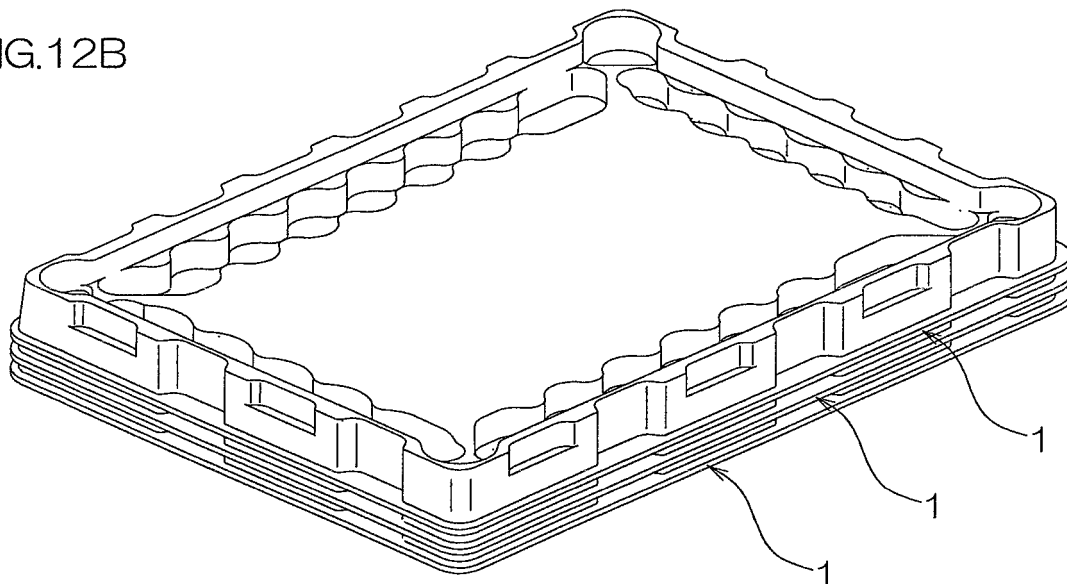


FIG. 13A

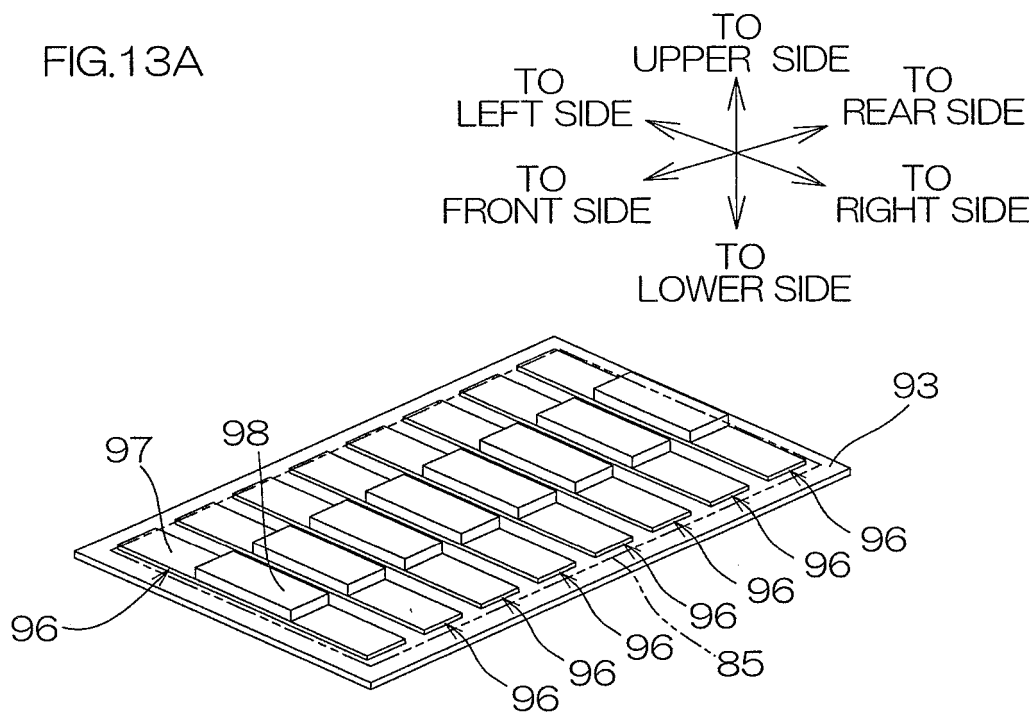
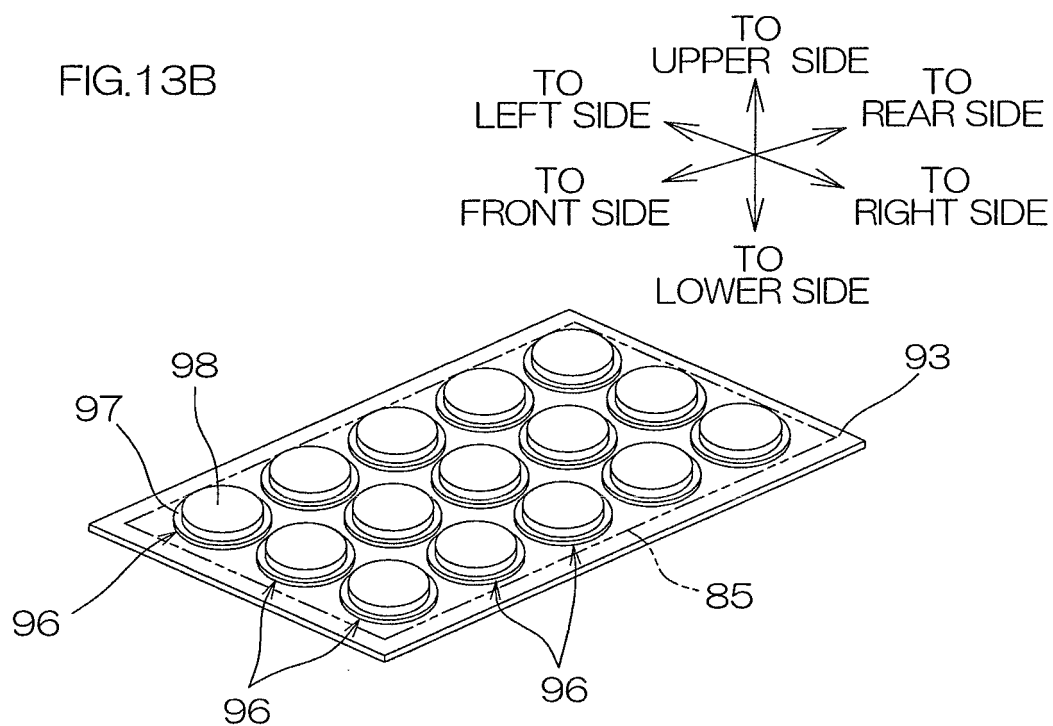


FIG. 13B



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/050957

A. CLASSIFICATION OF SUBJECT MATTER

B65D21/04(2006.01)i, H01L21/56(2006.01)n

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D21/04, H01L21/56

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

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014

Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2549447 A1 (MULTIVAC FRANCE S.A.R.L),	1-3
Y	25 January 1985 (25.01.1985), page 3, line 5 to page 5, line 18; fig. 1 to 3 (Family: none)	4
Y	JP 2006-021796 A (Seiko Epson Corp.), 26 January 2006 (26.01.2006), paragraphs [0034] to [0040]; fig. 1, 9 to 14 (Family: none)	4
A	FR 1383426 A (SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ N.V), 24 December 1964 (24.12.1964), page 1, right column, line 23 to page 2, right column, line 57; fig. 1 to 3 (Family: none)	1-4

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
02 April, 2014 (02.04.14)Date of mailing of the international search report
15 April, 2014 (15.04.14)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/050957

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3191796 A (SHELL OIL CO.), 29 June 1965 (29.06.1965), entire text; all drawings (Family: none)	1-4
A	US 2010/0096288 A1 (Andre FELDMANN), 22 April 2010 (22.04.2010), entire text; all drawings & WO 2007/137774 A1 & DE 102006025198 A & CA 2653505 A & RU 2008150761 A	1-4
A	JP 3180024 U (Kabushiki Kaisha Sekisui Giken), 29 November 2012 (29.11.2012), entire text; all drawings (Family: none)	1-4
A	CD-ROM of the specification and drawings annexed to the request of Japanese Utility Model Application No. 026740/1992 (Laid-open No. 084680/1993) (Taiyo Yuden Co., Ltd.), 16 November 1993 (16.11.1993), entire text; all drawings (Family: none)	1-4
A	JP 2010-222028 A (Sekisui Plastics Co., Ltd.), 07 October 2010 (07.10.2010), entire text; all drawings (Family: none)	1-4
A	JP 2008-044636 A (Yugen Kaisha San'yu Kikaku), 28 February 2008 (28.02.2008), entire text; all drawings (Family: none)	1-4

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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

Patent documents cited in the description

- JP 2009141020 A [0006]