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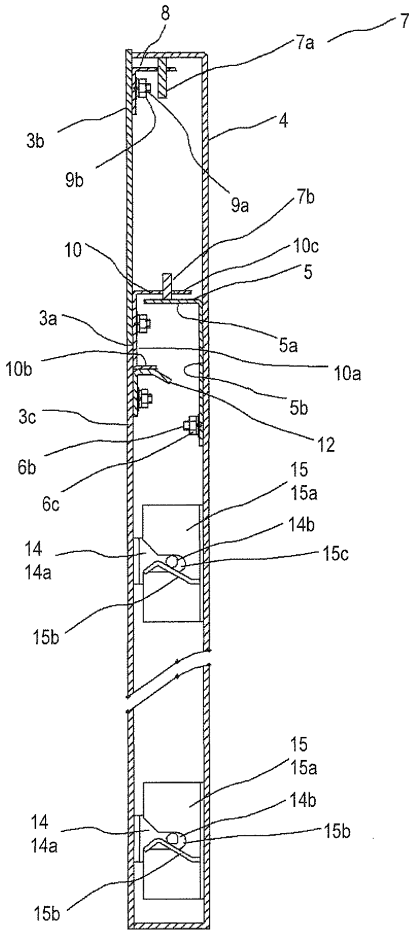
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(54) ELEVATOR CONTROL PANEL

(57) In an elevator control panel having a face cover, which is divided into upper and lower sections, the operation to mount the face cover is made to be simple, and the divided part of the face cover is made with good looks.

To achieve the above object, the control panel comprises: an upper cover which is provided at the upper side of the surface of the control panel and can slide vertically; an fitting member which is disposed below the lower end of the upper cover and provided inside the upper cover, the fitting member having an fitting face extending inwardly in a horizontal direction; a lower cover which is provided at the lower side of the surface of the control panel; and a guide member which is provided inside the lower cover and below the upper end thereof, the guide member having a guide face which fits with the fitting face in such a way that the lower end of the upper cover and the upper end of the lower cover are brought into contact with each other.

FIG.4



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Description

TECHNICAL FIELD

[0001] The invention relates to a control panel for operating an elevator, and more specifically, to an attachment structure of a face cover that is divided into upper and lower sections.

BACKGROUND ART

[0002] An elevator control panel has a face cover at a surface thereof, and the face cover is provided with destination floor buttons for designating a destination-floor, a registration button for calling a car, and the like. According to the related elevator control panel, the face cover is vertically tri-divided, and an upper cover is fixed to a car compartment wall and a central cover is fixed to a bracket attached to the car compartment wall. A frame is attached to a lower side of the central cover and a lower cover is attached to the frame. Like this, the respective covers are independently attached to the attaching members such as the car compartment wall, bracket and frame without attaching the covers each other at the divided parts (for example, refer to Patent Document 1).

[0003]

[Patent Document 1] JP 2006-256736 (page 3 and Fig. 1)

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED

[0004] In the related elevator control panel, the divided covers are independently attached to the attaching members. Accordingly, a gap may be formed at the divided parts depending on attaching positions. When a gap is formed at the divided parts, an appearance of the divided parts of the covers is deteriorated and foreign substances are introduced through the gap. In addition, in order to prevent the gap from being formed at the divided parts, for example, when the central cover is temporarily attached with the upper cover being attached and a gap is thus formed, it is necessary to adjust an attachment position of the central cover and to prevent a gap. Further, even when a gap may be still formed despite that the attachment position of the central cover is adjusted, it is necessary to detach the central cover and to adjust an attachment position of the bracket. Like this, in order to prevent a gap from being formed at the divided parts of the cover, a trial-and-error adjusting operation is required, so that it takes much time to attach the covers.
The invention has been made with consideration of the above problems. The invention is to provide an elevator control panel having a face cover that is divided into upper and lower sections, wherein an operation to mount the face cover is simple and a divided part of the face cover can be made with good looks.

MEANS FOR SOLVING THE PROBLEMS

[0005] An elevator control panel according to the present invention, has a face cover that is divided into upper and lower sections, and the control panel includes: an upper cover, which is provided at an upper side of a surface of the control panel and is slidable up and down; an fitting member, which is disposed below a lower end of the upper cover and is provided inside the upper cover, and which includes an fitting face extending inwardly in a horizontal direction; a lower cover, which is provided at a lower side of the surface of the control panel; and a guide member, which is provided inside the lower cover and below an upper end thereof, and which includes a guide face that is fitted with the fitting face so that the lower end of the upper cover and the upper end of the lower cover contact with each other.

EFFECTS OF THE INVENTION

[0006] Accordingly, when mounting the lower cover, the fitting face is fitted with the guide face and the upper cover is moved upwards, so that the mounting of the lower cover is completed and the upper cover is mounted. Thus, it is possible to simply attach the face cover. In addition, by adjusting a size relation between a position of the fitting face from the lower end of the upper cover and a position of the guide face from the upper end of the lower cover, the guide face is fitted with the fitting face and the lower end of the upper cover and the upper end of the lower cover contact with each other. Accordingly, the divided past is formed as if it were an integral face, so that the face cover can be made with good looks.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

Fig. 1 is a view showing an elevator car to which an elevator control panel is attached, according to a first illustrative embodiment of the invention;
Fig. 2 is a front view showing the elevator control panel, according to the first illustrative embodiment of the invention;
Fig. 3 is an enlarged front view showing a part A of Fig. 2, in which a face cover is removed;
Fig. 4 is a sectional view taken along a line of B-B of Fig. 2;
Fig. 5 is a side sectional view showing an upper cover of the elevator control panel;
Fig. 6 is a side sectional view showing a lower cover of the elevator control panel;
Fig. 7 is a view showing an operation of attaching a face cover of the elevator control panel, in a state before the upper cover is attached;
Fig. 8 is a view showing a state in which the upper

cover is attached;

Fig. 9 is a view showing a state in which the lower cover is being attached;

Fig. 10 is a view showing a state in which an fitting member and a guide member of an elevator control panel are combined, according to a second illustrative embodiment of the invention;

Fig. 11 is a perspective view showing the fitting member of the second illustrative embodiment of the invention;

Fig. 12 is a perspective view showing the guide member of the second illustrative embodiment of the invention;

Fig. 13 is a view showing a state in which an fitting member and a guide member of an elevator control panel are combined, according to a third illustrative embodiment of the invention;

Fig. 14 is a perspective view showing the guide member of the third illustrative embodiment of the invention; and

Fig. 15 is a side sectional view showing the elevator control panel, according to the third illustrative embodiment of the invention.

BRIEF DESCRIPTION OF REFERENCE NUMERALS

[0008] 3: face cover, 3a: divided part, 3b: upper cover, 3c: lower cover, 4: housing, 7: guide, 10: fitting member, 10d: fitting face, 12: guide member, 12c: guide face, 12d: inclined part, 21: convex part, 31: concave part, 35: restraint member, 41: stopper, 41b: fixing part

DESCRIPTION OF PREFERRED ILLUSTRATIVE EMBODIMENTS

[0009] Hereinafter, the illustrative embodiments of the invention will be described in detail.

First Illustrative Embodiment

[0010] Fig. 1 is a view showing an elevator car to which an elevator control panel is attached, according to a first illustrative embodiment of the invention. Fig. 2 is a front view showing the elevator control panel. Fig. 3 is an enlarged front view showing a part A of Fig. 2, in which a face cover is removed. Fig. 4 is a sectional view taken along a line of B-B of Fig. 2. Fig. 5 is a side sectional view showing an upper cover of the elevator control panel. Fig. 6 is a side sectional view showing a lower cover of the elevator control panel.

An elevator car 1 is provided at a side face of an entrance door 1a with a car compartment wall I b and a control panel 2 is attached to the car compartment wall 1b. The control panel 2 is provided at a front face thereof with a face cover 3. The face cover 3 is divided at a divided part 3a into upper and lower sections in which the upper section configures an upper cover 3b and the lower section configures a lower cover 3c. The upper cover 3b and the lower cover 3c are attached to a box-shaped housing 4. The housing 4 is disposed at a rear side of the car compartment wall 1b and the face cover 3 is integrally disposed on a surface of the car compartment wall 1b. The lower cover 3c is provided with destination-floor buttons 3e for designating a destination-floor of the elevator car 1 and buttons 3f for opening and closing the entrance door 1a. In addition, the lower cover 3c is provided with an indicator 3g that displays an operating state and the like of the elevator car 1. Like this, the lower cover 3c serves as a part of operating the elevator and the upper cover 3b is disposed above the lower cover 3c, so that they seems to be integrated with the car compartment wall 1b. As described above, according to the above face cover 3 that is divided into the upper and lower sections, even when a height of the elevator car 1 is different, the lower cover 3c that serves as a part of operating the elevator can be commonly used just by changing a height of the upper cover 3b, so that the lower cover 3c can correspond to the various cars 1.

[0011] A bracket 5 is attached on an inner face of the housing 4 at a widthwise central portion thereof. The bracket 5 has an L-shaped section and has one side piece 5a and the other side piece 5b. The one side piece 5a of the bracket 5 is disposed to face with an upper end face of the housing 4 and the other side piece 5b is disposed below the one side piece 5a and is attached on the inner face of the housing 4. The other side piece 5b is formed with elongated holes 6a that are long in a vertical direction and screw rods 6b corresponding to the elongated holes 6a are mounted upright on the inner face of the housing 4. The screw rods 6b are inserted into the elongated holes 6a, and nuts 6c are screwed on the screw rods 6b, so that the bracket 5 is fitted with the housing 4. A rod-shaped guide 7a is mounted upright on an inner side of an upper end part of the housing 4 at a widthwise central portion thereof. A lower guide 7b is mounted upright on the one side piece 5a of the bracket 5 so as to face with the upper guide 7a. The upper guide 7a and the lower guide 7b configure a guide 7.

[0012] An attaching member 8 is provided inside an upper part of the upper cover 3b. The attaching member 8 has an L-shaped section and has one side piece that is disposed to face with the upper end face of the housing 4 and the other side piece that is attached to the upper cover 3b. Attaching holes is formed at both sides of the other side piece of the attaching member 8 and screw rods 9a corresponding to the attaching holes are mounted upright on a backside of the upper cover 3b. The screw rods 9a are inserted into the attaching holes of the attaching member 8, and nuts 9b are screwed on the screw rods 9a, so that the attaching member 8 is fitted with the upper cover 3b. In addition, the attaching member 8 is formed at a widthwise central portion of the one side piece thereof with a guide hole 8a. The upper guide 7a is inserted into the guide hole 8a, so that the attaching member 8 slides up and down with respect to the upper guide 7a.

[0013] In addition, a fitting member 10 is provided inside a lower part of the upper cover 3b. The fitting member 10 has a U-shaped section and has an extending part 10a, and an fitting piece 10b and an attaching piece 10c protruding horizontally are integrated at upper and lower sides of the extending part. The extending part 10a is attached on the backside of the upper cover 3b and extends more downwards than a lower end of the upper cover 3b. The extending part 10a is disposed on a backside of the divided part 3a between the lower end of the upper cover 3b and an upper end of the lower cover 3c. In addition, the extending part 10a is overlapped with a substantially whole width of the upper cover 3b and is disposed inside the width direction of the housing 4. The fitting piece 10b is disposed below the lower end of the upper cover 3b and extends inwardly in the horizontal direction. In the meantime, a lower face of the fitting piece 10b is a fitting face 10d. In addition, a height from the lower end of the upper cover 3b to the fitting face 10d has a size C.

[0014] The attaching piece 10c extends inwardly in the horizontal direction and faces to the upper side of the one side piece 5a of the bracket 5. In addition, the attaching piece 14c is formed with a guide hole 10e at a widthwise central portion. The lower guide 7b is inserted into the guide hole 10e and the fitting member 10 is slid up and down with respect to the lower guide 7b. In the meantime, the extending part 10a is formed with attaching holes, and screw rods 11a corresponding to the attaching holes are mounted upright on the inner face of the upper cover 3b. The screw rods 11a are inserted into the attaching holes of the extending part 10a, and nuts 11b are screwed on the screw rods 11a, so that the fitting member 10 is fitted with the upper cover 3b. Like this, the upper cover 3b is adapted to slide up and down with respect to the housing 4 by the guide 7.

[0015] A guide member 12 is provided inside the upper part of the lower cover 3c. The guide member 12 has an L-shaped section and has a guide piece 12a and an attaching piece 12b. The guide piece 12a is disposed below the upper end of the lower cover 3c and extends inwardly in the horizontal direction. The attaching piece 12b is disposed below the guide piece 12a and is attached on the backside of the lower cover 3c. In addition, the guide piece 12a is disposed on a lower side of the fitting piece 10b, so that an upper face of the guide piece 12a is fitted with the fitting face 10d. In the meantime, the upper face of the guide piece 12 is a guide face 12c. In addition, a height from the upper end of the lower cover 3c to the guide face 12c has a size D. The size D is equal to or smaller than the size C. Furthermore, a leading end portion of the guide piece 12a forms an inclined part 12d that is inclined downwardly. In the meantime, the attaching piece 12b of the guide member 12 is formed with attaching holes, and screw rods 13a corresponding to the attaching holes are mounted upright on the backside of the lower cover 3c. The screw rods 13a are inserted into the attaching holes of the attaching piece 12b of the guide member 12, and nuts 13b are screwed on the screw rods 13a, so that the guide member 12 is fitted with the lower cover 3c.

[0016] Next, an attaching structure of the lower cover 3c to the housing 4 is described with reference to Figs. 3 and 4.

As shown in Fig. 4, latch members 14 are provided at upper and lower parts of the lower cover 3c. The latch member 14 has a plate member 14a and a latch rod 14b that is mounted upright to the plate member 14a. In addition, the housing 4 is provided with attaching members 15 that correspond to the latch members 14. The attaching member 15 has a plate member 15a and a latch spring 15b having an inverted V-shaped latch spring 15b. A leading end portion of the plate member 15a is formed with a notch portion 15c that is opened toward the latch rod 14b. The latch spring 15b is provided to the plate member 15a so that the latch spring is overlapped with the notch portion 15c as viewed from a horizontal direction. The latch spring 15b has a base portion that is fixed to the plate member 15a and a leading end portion that is fluctuated by elastic deformation. The latch rod 14b is inserted into the notch portion 15c, and the latch spring 15b presses the latch rod 14b toward the notch portion 15c, so that the latch member 14 is latched to the attaching member 15. Thereby, the lower cover 3c is attached to the housing 4.

[0017] Next, an operation of attaching the face cover 3, i.e., the upper cover 3b and the lower cover 3c, to the housing 4 is described with reference to Figs. 4, 5, 6, 7, and 8. Fig. 7 is a view showing a state before the upper cover 3b is attached. Fig. 8 is a view showing a state in which the upper cover 3b is attached. Fig. 9 is a view showing a state in which the lower cover 3c is being attached.

First, the attachment positions of the fitting member 10 and the guide member 12 are adjusted so that the size D is equal to or smaller than the size C. This adjustment is made within ranges of a size difference between a diameter of the attaching hole of the extending part 10a and an axis diameter of the screw rod 11a and a size difference between a diameter of the attaching hole of the attaching piece 12b and an axis diameter of the screw rod 13a. Next, as shown in Fig. 7, while the screw rods 6b are being fitted with the elongated holes 6a with the nuts 6c being loosened, the bracket 5 is pushed down. At this time, an interval between the upper guide 7a and the lower guide 7b is greater than an interval between the one side piece of the attaching member 8 and the attaching piece 10c of the fitting member 10. Then, the upper cover 3b is attached to the housing 4. At this time, the guide hole 8a is disposed at the position of the upper guide 7a and the guide hole 10e is disposed at the position of the lower guide 7b. Then, as shown in Fig. 8, the bracket 5 is pulled up to fit the lower guide 7b with the guide hole 10e and to fit the upper guide 7a with the guide hole 8a. At this time, due to the weight of the upper cover 3b, the upper face of the one side piece 5a of the bracket

5 and the lower face of the attaching piece 10c of the fitting member 10 contact with each other. Thereby, the mounting of the upper cover 3b is completed. In the meantime, the attachment position of the upper cover 3b is adjusted by adjusting the attachment position of the bracket 5.

[0018] Next, the lower cover 3c is attached to the housing 4, as described below. As shown in Fig. 9, the upper and lower latch rods 14b are disposed at the leading end positions of the latch sprints 15b and then are pushed into the notch portions 15c. Thereby, as shown in Fig. 4, the latch members 14 are latched to the attaching members 15, so that the lower cover 3c is attached to the housing 4. In addition, the fitting piece 10b of the fitting member 10 is fitted with the inclined part 12d of the guide member 12, so that the upper cover 3b is moved upwardly while it is guided by the guide 7 against the weight of the upper cover. When the lower cover 3c is mounted to the housing 4, the fitting face 10d of the attaching member 10 is fitted with the guide face 12c of the guide member 12, as shown in Fig. 4.

[0019] At this time, the lower face of the attaching piece 10c of the fitting member 10 rises to the upper face of the one side piece 5a of the bracket 5, so that the weight of the upper cover 3b depends on the guide member 12. Thereby, the lower end of the upper cover 3b is brought contact with the upper end of the lower cover 3c. In the meantime, when the size D is equal to the size C, the lower end of the upper cover 3b is overlapped with the upper end of the lower cover 3c, so that a gap is not formed at the divided part 3a. When the size D is smaller than the size C, a gap is formed which corresponds to a difference between the size D and the size C. However, as viewed from a front side, the extending part 10a of the latch member 10 blocks the gap. Like this, the lower cover 3c is attached to the housing 4 and the upper cover 3b is mounted, so that the face cover 3 is mounted to the housing 4.

[0020] The elevator control panel of the first illustrative embodiments realizes the following effects.

According to the elevator control panel of the first illustrative embodiment, the upper cover 3b is mounted to the housing 4 so that it can slide up and down by the guide 7. The fitting member 10 is provided inside the lower part of the upper cover 3b. The fitting member 10 has the fitting face 10d that is disposed below the lower end of the upper cover 3b and extends inwardly in the horizontal direction. In addition, the guide member 12 is provided inside the upper part of the lower cover 3c. The guide member 12 has the guide piece 12a that is disposed below the upper end of the lower cover 3c. The guide piece 12a is disposed below the fitting piece 10b of the fitting member 10, so that the guide face 12c is fitted with the fitting face 10d. Thereby, when mounting the lower cover 3c, the upper cover 3b is upwardly moved while the fitting face 10d is being fitted with the guide face 12c, so that the mounting of the lower cover 3c is completed and the upper cover 3b is mounted. Therefore, it is possible to simply attach the face cover 3.

[0021] In addition, by adjusting the size relation between the position (size C) of the fitting face 10d from the lower end of the upper cover 3b and the position (size D) of the guide face 10c from the upper end of the lower cover 3c, the guide face 12c is fitted with the fitting face 10d, and the lower end of the upper cover 3b and the upper end of the lower cover 3c contact with each other. Accordingly, the divided part 3a is formed as if it were an integrated surface, so that the face cover 3 can be made with good looks, In the meantime, it is preferable that the size D is equal to the size C. In this case, a gap is not formed at the divided part 3a, so that the face cover 3 has good looks.

[0022] In addition, according to the elevator control panel of the first illustrative embodiment, the fitting member 10 has the extending part 10a that extends more downwards than the lower end of the upper cover 3b. The extending part 10a is disposed on the backside of the divided part 3a and has the width extending over the substantially whole width of the upper cover 3b. When the planar precision of the lower end of the upper cover 3b or upper end of the lower cover 3c is not good or when the size D is smaller than the size C, a gap is formed at the divided part 3a. However, according to the first illustrative embodiment, the extending part 10a blocks the gap of the divided part 3a, so that the inside of the housing 4 is not seen. Thus, the face cover 3 can be made further good looks.

[0023] Furthermore, the leading end portion of the guide piece 12a is formed with the inclined part 12d that is inclined downwardly. Accordingly, in mounting the lower cover 3c, even when the lower cover 3c is attached with the fitting face 10d being positioned below the guide face 12c, the fitting member 10 is fitted with the inclined part 12d, so that the upper cover 3b is upwardly moved and then mounted to the housing 4. Therefore, it is possible to attach the face cover 3 more simply.

Second Illustrative Embodiment

[0024] Fig. 10 is a view showing a state in which a fitting member and a guide member of an elevator control panel are combined, according to a second illustrative embodiment of the invention. Fig. 11 is a perspective view showing the fitting member. Fig. 12 is a perspective view showing the guide member. The second illustrative embodiment changes the fitting member and the guide member of the first illustrative embodiment.

[0025] A fitting member 20 of the second illustrative embodiment is provided inside the lower part of the upper cover 3b. The fitting member 20 has a substantial U-shape section and has an extending part 20a to which fitting pieces 20b and an attaching piece 20c protruding horizontally are integrated at upper and lower sides of the extending part. The extending part 20a is attached on the backside of the upper cover 3b and extends more downwards than the lower end of the upper cover 3b.

The extending part 20a is disposed on the backside of the divided part 3a between the lower end of the upper cover 3b and an upper end of the lower cover 3c. In addition, the extending part 20a is formed over a substantially whole width of the upper cover 3b and is disposed inside the width direction of the housing 4. Further, the extending part 20a has a convex shape as viewed from a front side, and a convex part 21 thereof protrudes downwards. The fitting pieces 20b are disposed at both sides of the convex part 21. and above the convex part. In addition, the fitting pieces 20b are disposed below the lower end of the upper cover 3b and extend inwardly in the horizontal direction. In the meantime, lower faces of the fitting pieces 20b are fitting faces 20d. The attaching piece 20c extends inwardly in the horizontal direction and face to the upper side of the one side piece 5a of the bracket 5, like the first illustrative embodiment.

[0026] In the meantime, the attaching piece 20c is formed at a widthwise central portion with a guide hole 22. Like the first illustrative embodiment, the lower guide 7b is inserted into the guide hole 22, so that the fitting member 20 slides up and down with respect to the lower guide 7b. In addition, the extending part 20a has attaching holes 23 at both sides, like the first illustrative embodiment. The screw rods 11a that are mounted upright on the inner face of the upper cover 3b are inserted into the attaching holes 23 and then attached to the upper cover 3b by the nuts 11b.

[0027] A guide member 30 is provided inside the upper part of the lower cover 3c. The guide member 30 has a substantial L-shaped section and has guide pieces 30a and an attaching piece 30b. The guide pieces 30a are disposed below the upper end of the lower cover 3c and extend inwardly in the horizontal direction. The attaching piece 30b is disposed below the guide pieces 30a and is attached on the backside of the lower cover 3c. In addition, the guide pieces 30a are disposed below the fitting pieces 20b, so that upper faces of the guide pieces 30a are fitted with the fitting faces 20d, like the first illustrative embodiment. In the meantime, the upper faces of the guide pieces 30a are guide faces 30c. Furthermore, leading end portions of the guide pieces 30a form inclined parts 30d that are inclined downwardly.

[0028] In addition, as viewed from the front side, the attaching piece 30b forms a recessed part 31a that opens upwards and forms a recessed shape. The guide pieces 30a are disposed at both sides of the recessed part 31 and above the recessed part. Inner side faces 31b of the recessed part 31a and inner side faces 31c of the guide pieces 30a are flush with each other. The recessed part 31a and the inner side faces 31c of the guide pieces 30a form a concave part 31. Like this, the guide member 30 has the concave part 31 that is opened upwards as viewed from the front side. In the meantime, the attaching piece 30b is formed at its both sides with attaching holes 32, like the first illustrative embodiment. The screw rods 13a that are mounted upright on the backside of the lower cover 3c are inserted into the attaching holes 33 and then attached to the lower cover 3c by the nuts 13b.

[0029] The fitting member 20 and the guide member 30 are combined as the fitting faces 20d and the guide faces 30c are fitted with each other, as described above, and the convex part 21 and the concave part 31 are fitted as follows. In other words, the convex part 21 is inserted into the concave part 31, so that both side faces of the convex part 21 are fitted with the inner side faces 31c of the concave part 31. The convex part 21 and the concave part 31 configure a restraint member 35. Thereby, the guide member 30 is restrained in the widthwise direction with respect to the fitting member 20. When attaching the lower cover 3c, the fitting member 20 is fitted with the inclined parts 30d and guide faces 30c of the guide pieces 30a, and the both side faces of the convex part 21 are fitted with the inner side faces 31c of the concave part 31, so that the lower cover 3c is attached. With the lower cover 3c being attached to the housing 4, the both side faces of the convex part 21 are fitted with the inner side faces 31c c of the concave part 31. Like this, the lower cover 3c is mounted to the housing 4 while the convex part 21 and concave part 31 of the restraint member 35 are fitted with each other, and the attachment position of the lower cover is restrained in the widthwise direction with respect to the upper cover 3b.

[0030] In the meantime, a width size E of the convex part 21 is slightly smaller than a width size F of the concave part F, so that side faces of the convex part 1 can slide with being fitted with the inner side faces 31b, 31c of the concave part 31. The lower cover 3c is mounted to the housing 4 while the attachment position is being widthwise restrained with respect to the upper cover 3b within a range of a difference between the size E and the size F. The size E and the size F are preferably the same. In this case, the precision of the attachment position of the lower cover 3c is good. Preferably, the fitting member 20 and the guide member 30 are respectively attached to the upper cover 3b and the lower cover 3c so that the upper cover 3b and the lower cover 3c are attached with the good appearance. For example, when a width of the upper cover 3b and a width of the lower cover 3c are the substantially same, the fitting member 20 and the guide member 30 are attached with the upper cover 3b and the lower cover 3c being attached so that the side end faces of the upper cover 3b and the side end faces of the lower cover 3c coincide with each other or a widthwise center of the upper cover 3b and a widthwise center of the lower cover 3c coincide with each other. In this case, since the upper cover 3b and the lower cover 3c are integrally attached with substantially coinciding with each other in the width direction, the appearance is good.

The others are the same as the first illustrative embodiment, so that the descriptions thereof are omitted.

[0031] The elevator control panel of the second illustrative embodiment realizes not only the same effects as the first illustrative embodiment but also following effects. According to the second illustrative embodiment, the restraint member 35 restrains the guide member 30 in the

widthwise direction with respect to the fitting member 20. Thereby, the lower cover 3c is mounted to the housing 4 while the attachment position is restrained in the widthwise direction with respect to the upper cover 3b. Therefore, it is possible to adjust the widthwise attachment position of the lower cover 3c while attaching the lower cover 3c and to simply mount the face cover 3. In addition, even after the lower cover 3c is mounted, it is possible to suppress the lower cover 3c from out of alignment in widthwise.

[0032] The restraint member 35 is configured by the convex part 21 provided to the fitting member 20 and the concave part 31 provided to the guide member 30. However, the invention is not limited thereto. For example, the restraint member may be configured by a concave part that is provided to the fitting member 20 and has a recessed shape downwardly opened as viewed from a front side and a convex part that is provided to the attaching piece 30b of the guide member 30 and is protruded upwardly to fit with the concave part. In other words, any restraint member is possible inasmuch as it restrains the guide member 30 in the widthwise direction with respect to the fitting member 20.

Third Illustrative Embodiment

[0033] Fig. 13 is a view showing a state in which a fitting member and a guide member of an elevator control panel are combined, according to a third illustrative embodiment of the invention. Fig. 14 is a perspective view showing the guide member and Fig. 15 is a partial side sectional view of the elevator control panel. The third illustrative embodiment changes the guide member of the second illustrative embodiment

[0034] A guide member 40 of the third illustrative embodiment 3 is provided inside the upper part of the lower cover 3c, like the second illustrative embodiment. The guide member 40 has a substantial L-shaped section and has guide pieces 40a, an attaching piece 40b and a stopper 41. The guide pieces 40a are disposed below the upper end of the lower cover 3c and extend inwardly in the horizontal direction. The attaching piece 40b is disposed below the guide pieces 40a and is attached on the backside of the lower cover 3c. In addition, the guide pieces 40a are disposed below the fitting pieces 20b and the upper faces of the guide pieces 40a are fitted with the fitting faces 20d, like the second illustrative embodiment. In the meantime, the upper faces of the guide pieces 40a are guide faces 40c. Furthermore, leading end portions of the guide pieces 40a form inclined parts 40d that are downwardly inclined.

[0035] In addition, the attaching piece 40b forms a recessed part 42a that is opened upwards and has a recessed shape, as viewed from the front side. The stopper 41 extends inwardly in the horizontal direction from the upper sides and both sides of the recessed part 42a. The stopper 41 is configured by two struts 41a, which extend inwardly in the horizontal direction from both sides of the recessed part 42a, and a fixing part 41b to which leading end portions of the struts 41a are coupled. The fixing part 41b faces to the convex part 21 of the fitting member 20. The guide pieces 40a are disposed at both sides of the struts 41a. In addition, the upper faces of the guide pieces 40a are flush with the upper faces of the struts 41a.

[0036] Inner side faces 42b of the recessed part 42a and inner side faces 42c of the struts 41a are flush with each other. The recessed part 42a and the inner side faces 42c of the struts 42 configure a concave part 42. In the meantime, the attaching piece 40b is formed with attaching holes 43 at both sides thereof, like the second illustrative embodiment. The screw rods 13a that are mounted upright on the backside of the lower cover 3c are inserted into the attaching holes 43 and attached to the lower cover 3c by the nuts 13b.

[0037] Like the second illustrative embodiment, the fitting member 20 and the guide member 40 are combined as the fitting faces 20d and the guide faces 40c are fitted with each other and the convex part 21 and the concave part 41 are fitted. The convex part 2 I and the concave part 42 configure a restraint member 44. Thereby, the guide member 40 is restrained in the widthwise direction with regard to the fitting member 20. When attaching the lower cover 3c, the convex part 21 is inserted into the concave part 42 and then, like the second illustrative embodiment, the fitting member 20 is fitted with the inclined parts 40d and the guide faces 40c, so that the lower cover 3c is attached. At this time, like the second illustrative embodiment, the lower cover 3c is mounted to the housing 4 while the attachment position of the lower cover is restrained in the widthwise direction with respect to the upper cover 3b.

[0038] In addition, when separating the lower cover 3c, the lower cover 3c is detached from the housing 4. At this time, the fixing part 41b of the stopper 41 contacts with the convex part 21, so that the lower cover 3c is prevented from being separated. By moving the lower cover 3c so that the concave part 42 is pulled out from the convex part 21, the lower cover is completely separated from the housing 4.

The others are the same as the second illustrative embodiment, so that the descriptions thereof are omitted.

[0039] The elevator control panel of the third illustrative embodiment realizes not only the same effects as the second illustrative embodiment but also following effects. Since the guide member 40 is provided with the stopper 41, even when the lower cover 3c is separated incidentally, the fixing part 41b of the stopper 41 contacts with the convex part 21, so that it is possible to prevent the lower cover 3c from being completely separated. In addition, the lower cover 3c is not separated just by detaching it. Accordingly, it is possible to prevent the lower cover 3c from being separated due to mischief and the like.

[0040] The restraint member 44 is configured by the convex part 21 provided to the fitting member 20 and the concave part 42 provided to the guide member 40. However, the invention is not limited thereto. For example,

the restraint member may be configured by a concave part that is provided to the fitting member 20 and has a recessed shape downwardly opened as viewed from the front side and a convex part that is provided to the attaching piece 40b of the guide member 40 and is protruded upwardly to fit with the concave part. In other words, any restraint member is possible inasmuch as it restrains the guide member 40 in the widthwise direction with respect to the fitting member 20. Also, the stopper 41 is configured so that the fixing part 41b faces to the convex part 21. However, the invention is not limited thereto. For example, it may be possible that the fixing part 41b is upwardly bent with respect to the upper faces of the guide faces 40c and faces to the extending part 20a of the fitting member 20. Further, as described above, when the restraint member is configured by the concave part provided to the fitting member and the convex part provided to the guide member, a stopper may be provided in which a fixing part protruding from the convex part is formed on a backside of the convex part of the guide member and the fixing part of the stopper may faces to the inner face of the fitting member. Like this, the stopper, which is disposed to faces to the inner face of the fitting member and contacts with the inner face of the fitting member when the lower cover 3c is separated, may be provided to the guide member.
In the first to third illustrative embodiments, the control panel in the elevator car 1 has been described. However, the invention may be applied to a control panel at a riding point.

INDUSTRIAL APPLICABILITY

[0041] As described above, the elevator control panel of the invention is suitable for an apparatus that controls the elevating operation of the elevator car.

Claims

1. An elevator control panel having a face cover that is divided into upper and lower sections, the control panel comprising:

   an upper cover, which is provided at an upper side of a surface of the control panel and is slidable up and down;
   an fitting member, which is disposed below a lower end of the upper cover and is provided inside the upper cover, and which includes an fitting face extending inwardly in a horizontal direction;
   a lower cover, which is provided at a lower side of the surface of the control panel; and
   a guide member, which is provided inside the lower cover and below an upper end thereof, and which includes a guide face that is fitted with the fitting face so that the lower end of the upper cover and the upper end of the lower cover contact with each other.

2. The elevator control panel according to claim 1,
   wherein the fitting member has an extending part, which is disposed on a backside of a divided part between the lower end of the upper cover and the upper end of the lower cover
   wherein the extending part has a width substantially corresponding to a whole width of the upper cover and extends more downwards than the lower end of the upper cover.

3. The elevator control panel according to claim 1 or 2,
   wherein an inclined part inclined downwardly is provided a leading end of the guide member.

4. The elevator control panel according to claim 1 or 2, further comprising
   a restraint member that restrains the guide member in a widthwise direction of the fitting member.

5. The elevator control panel according to claim 1 or 2, further comprising
   a stopper, which is provided to the guide member and is disposed to face with an inner face of the fitting member,
   wherein the stopper contacts with the inner face of the fitting member when the lower cover is separated.

FIG.1

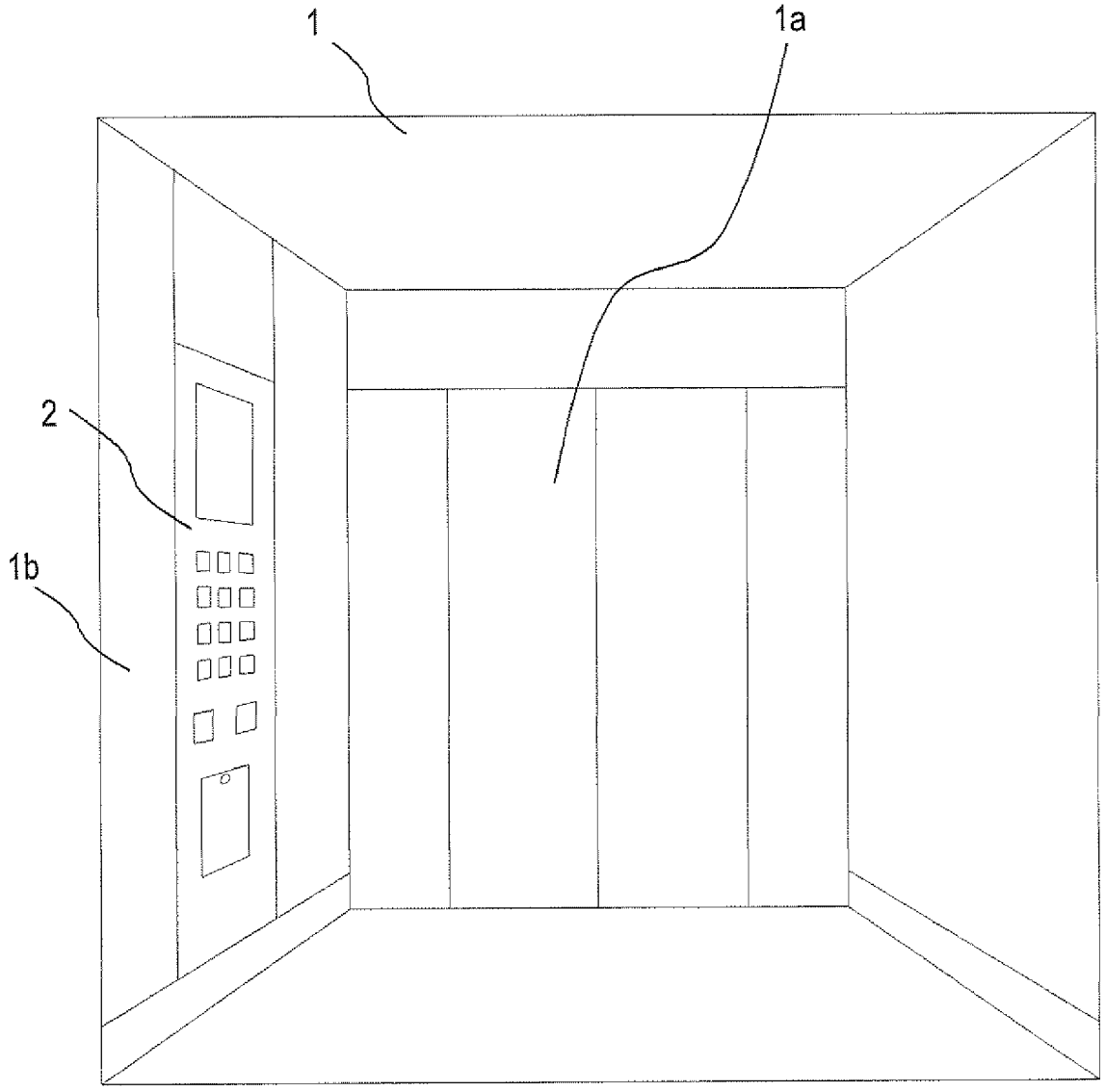


FIG.2

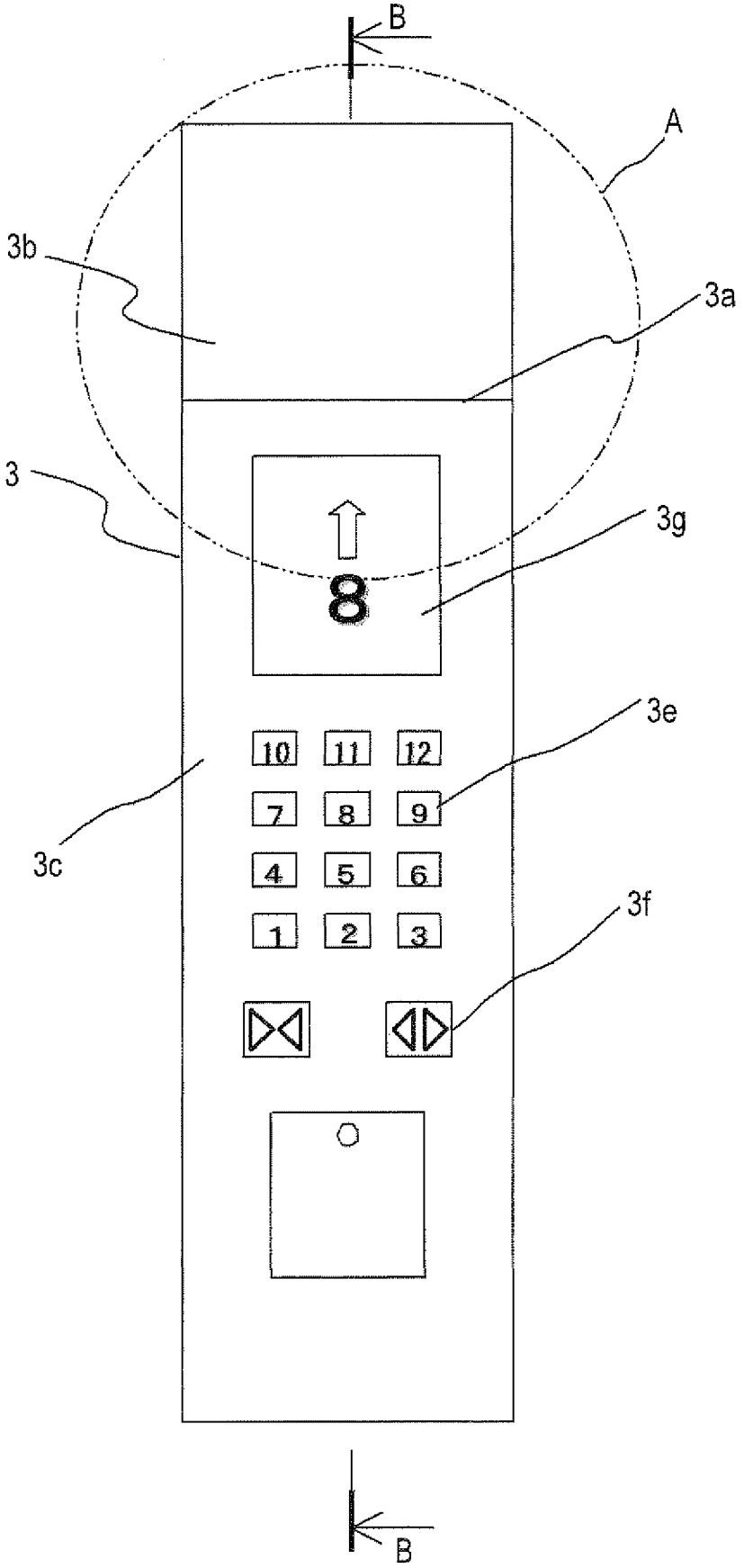


FIG.3

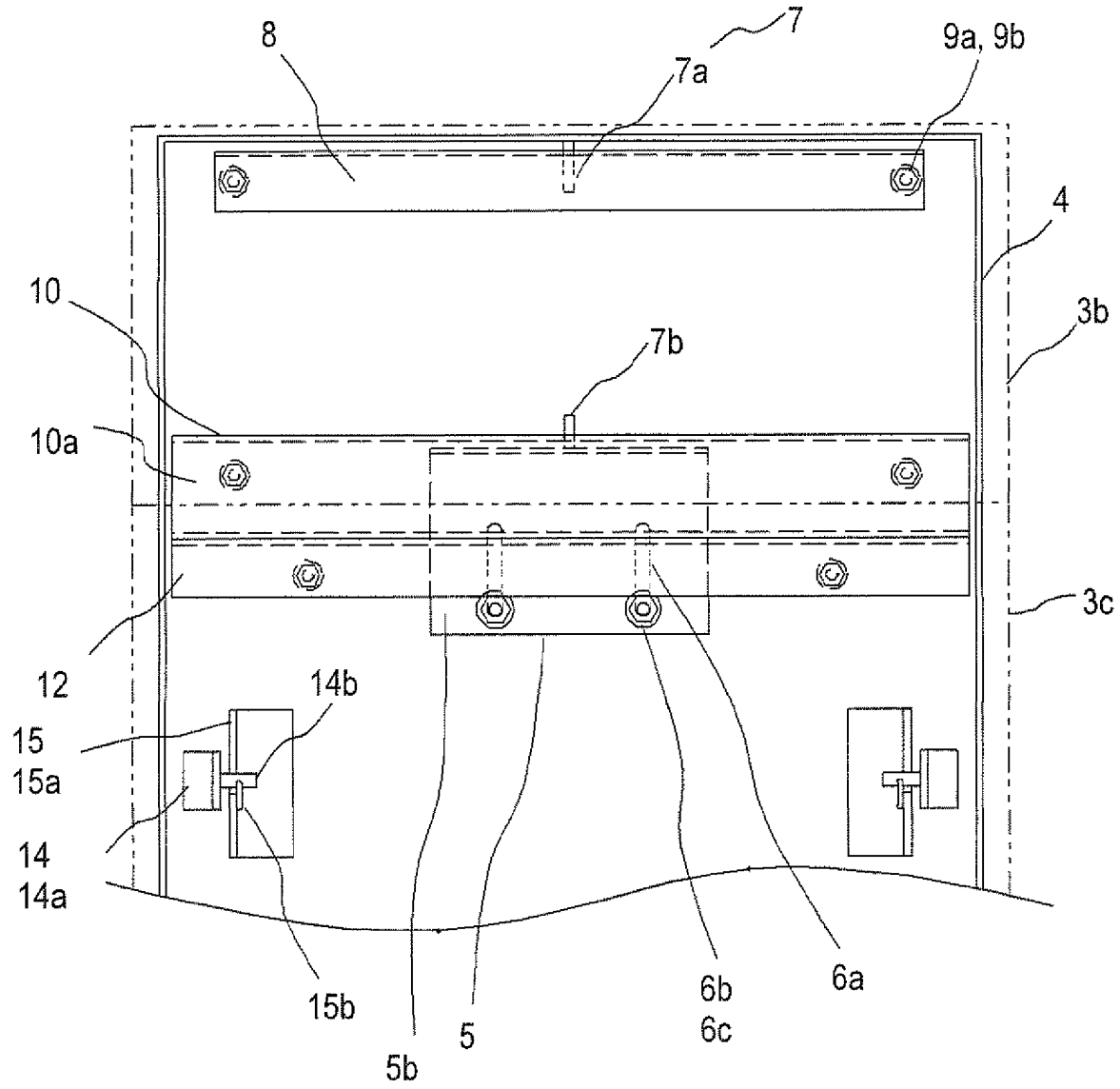


FIG.4

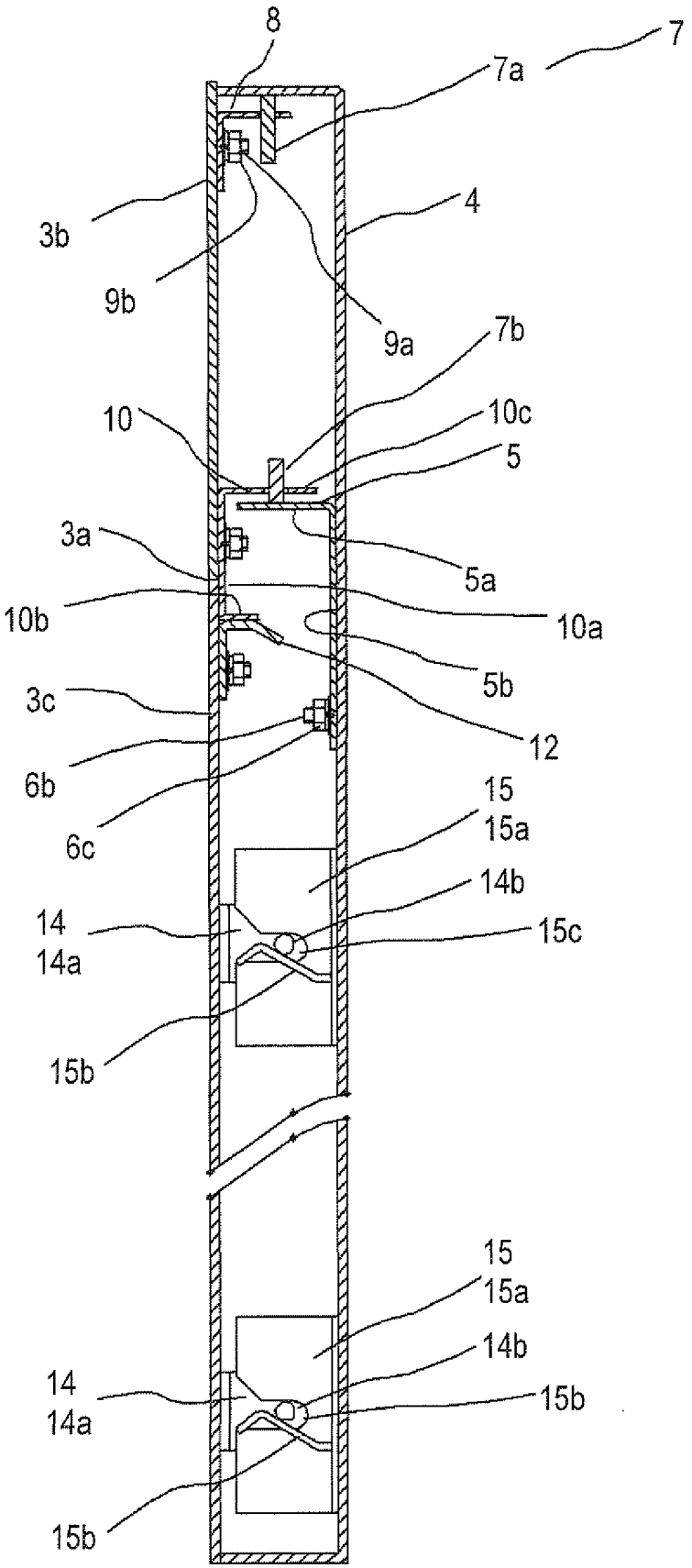

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7
7a
3b
4
9b
9a
7b
10
10c
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3a
5a
10b
10a
5b
3c
12
6b
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15b

FIG.5

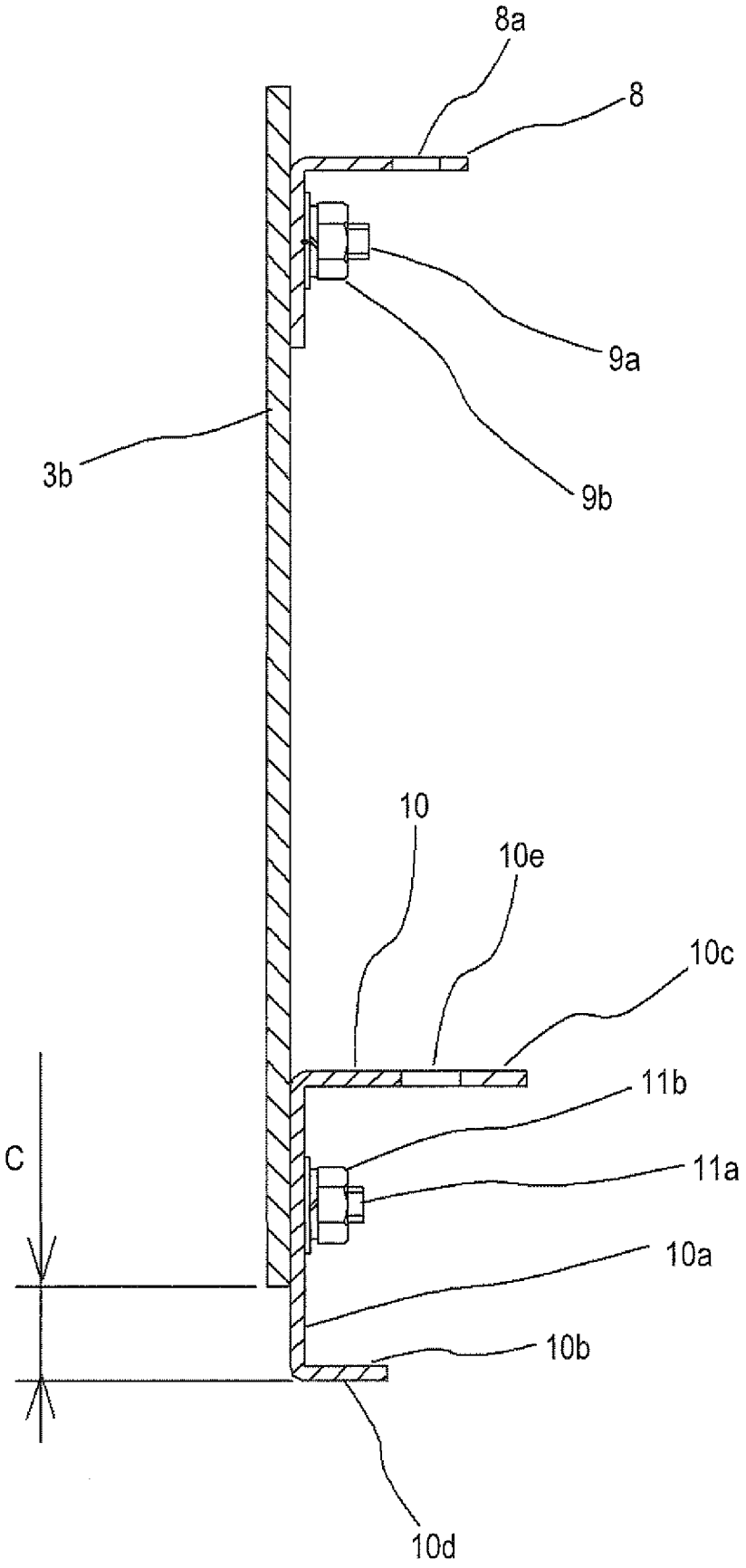


FIG.6

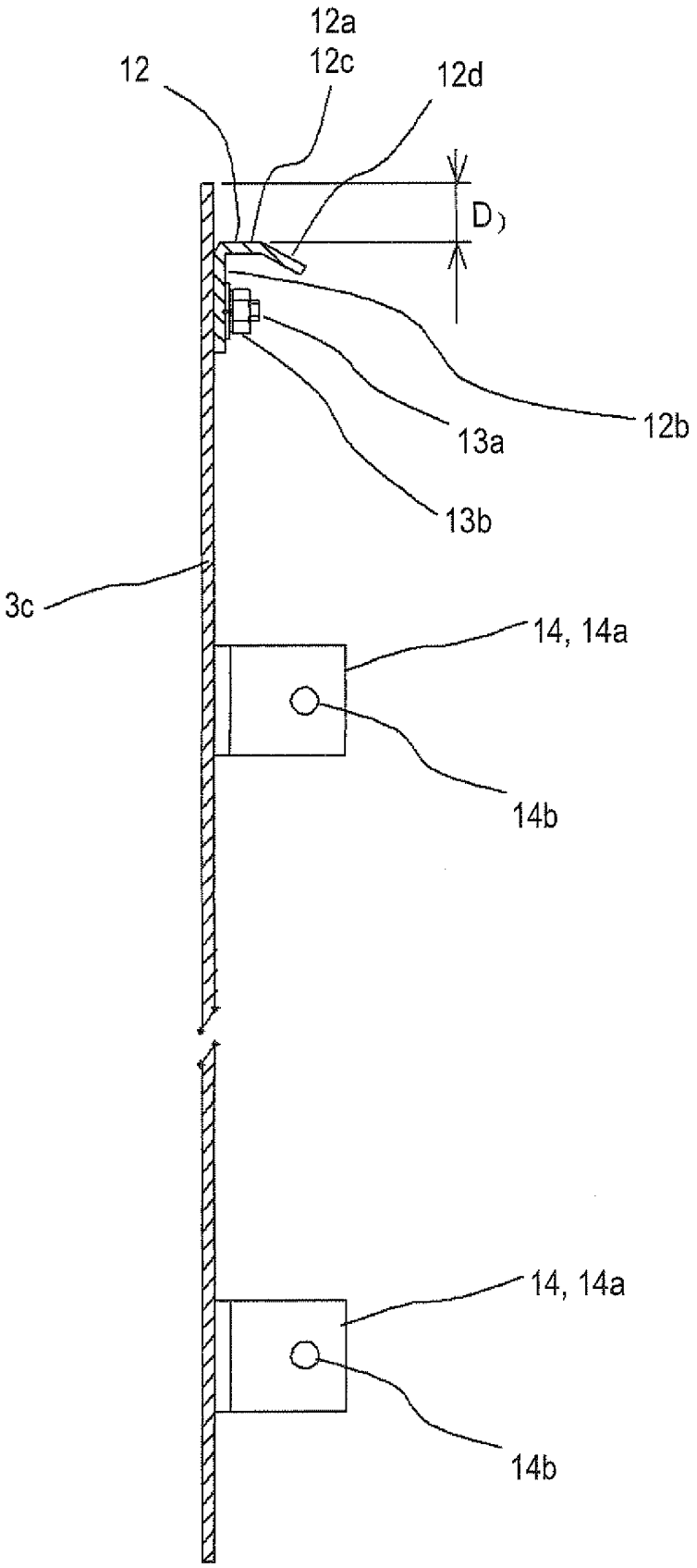


FIG.7

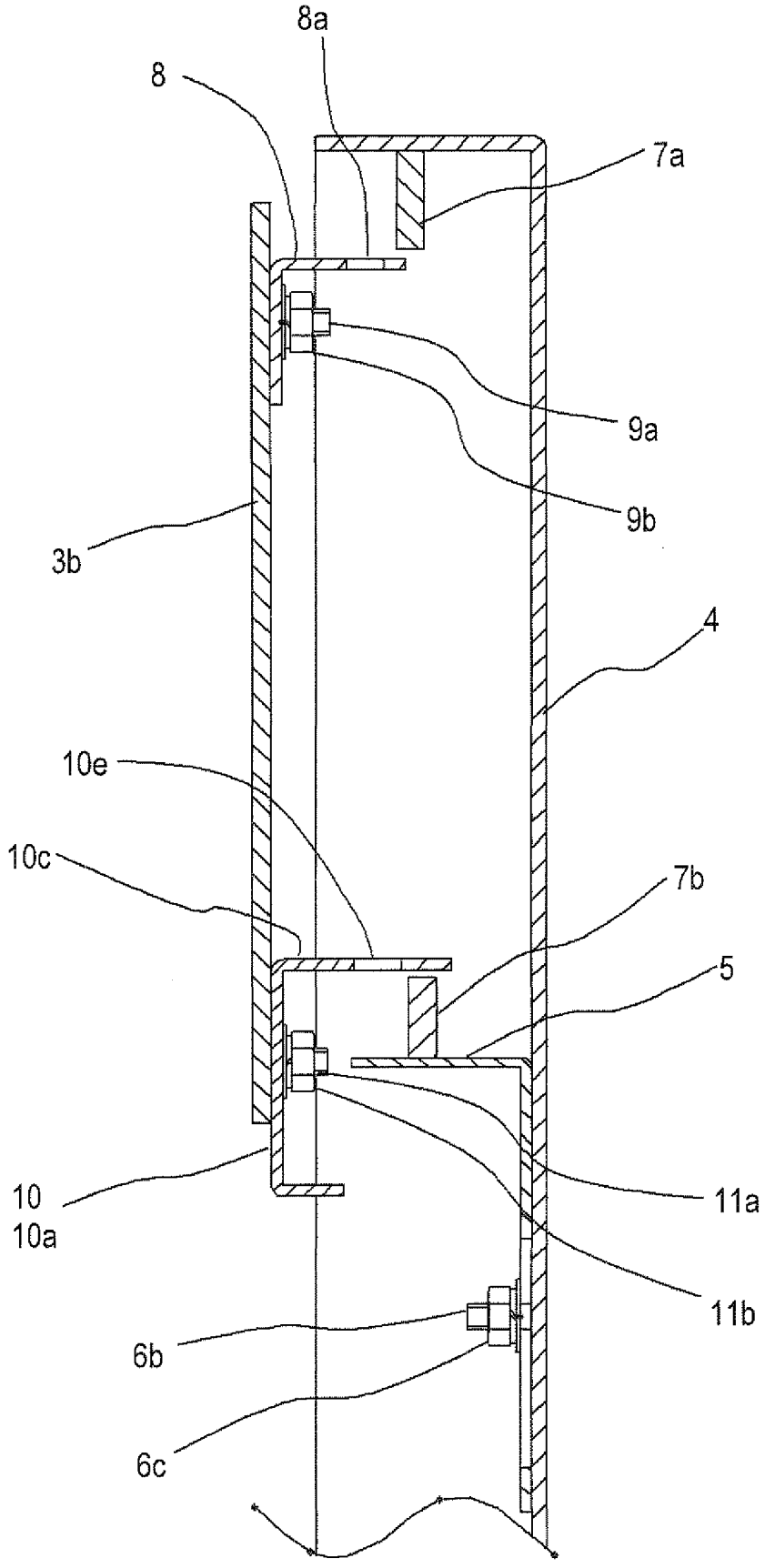


FIG.8

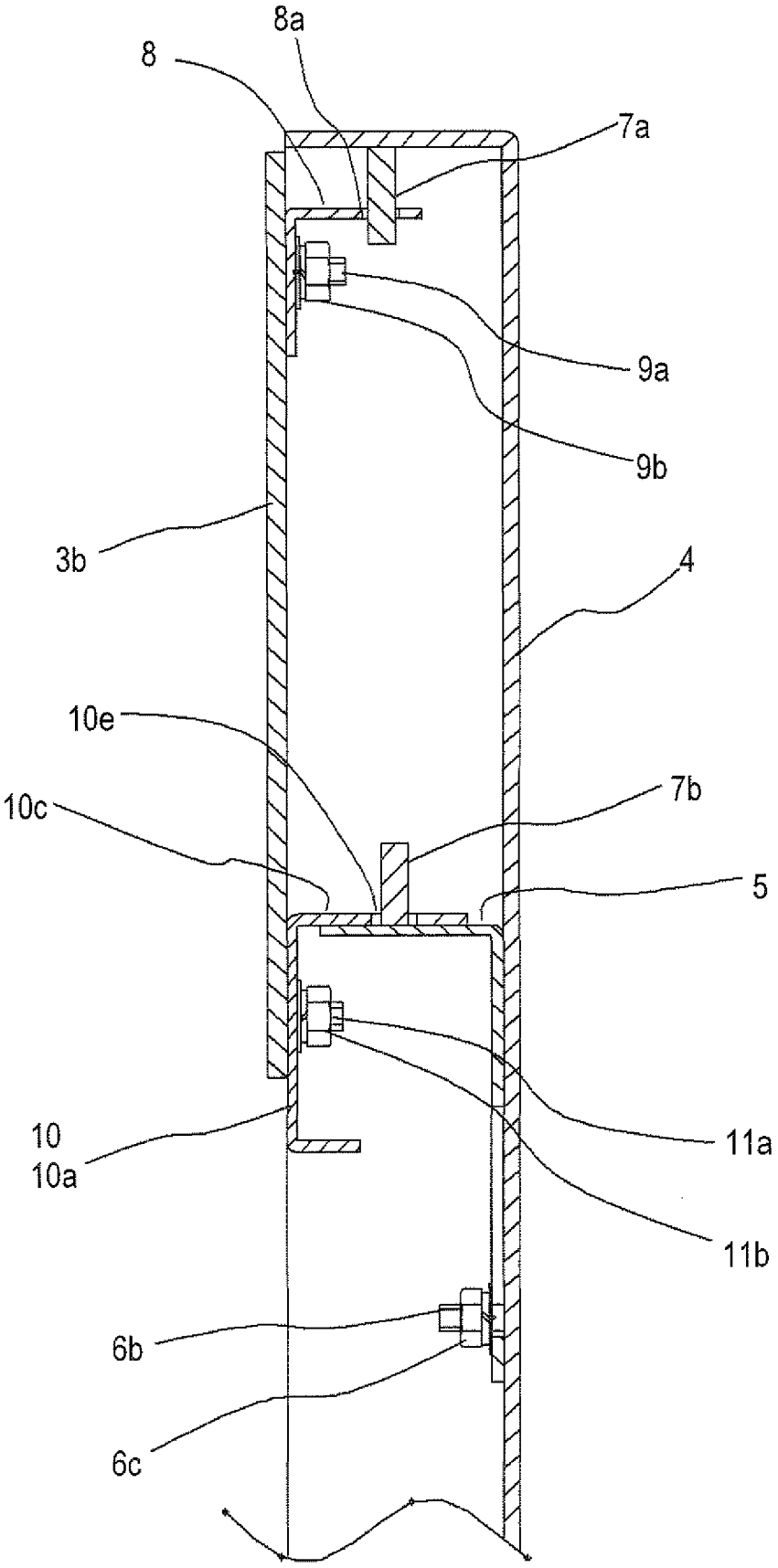


FIG.9

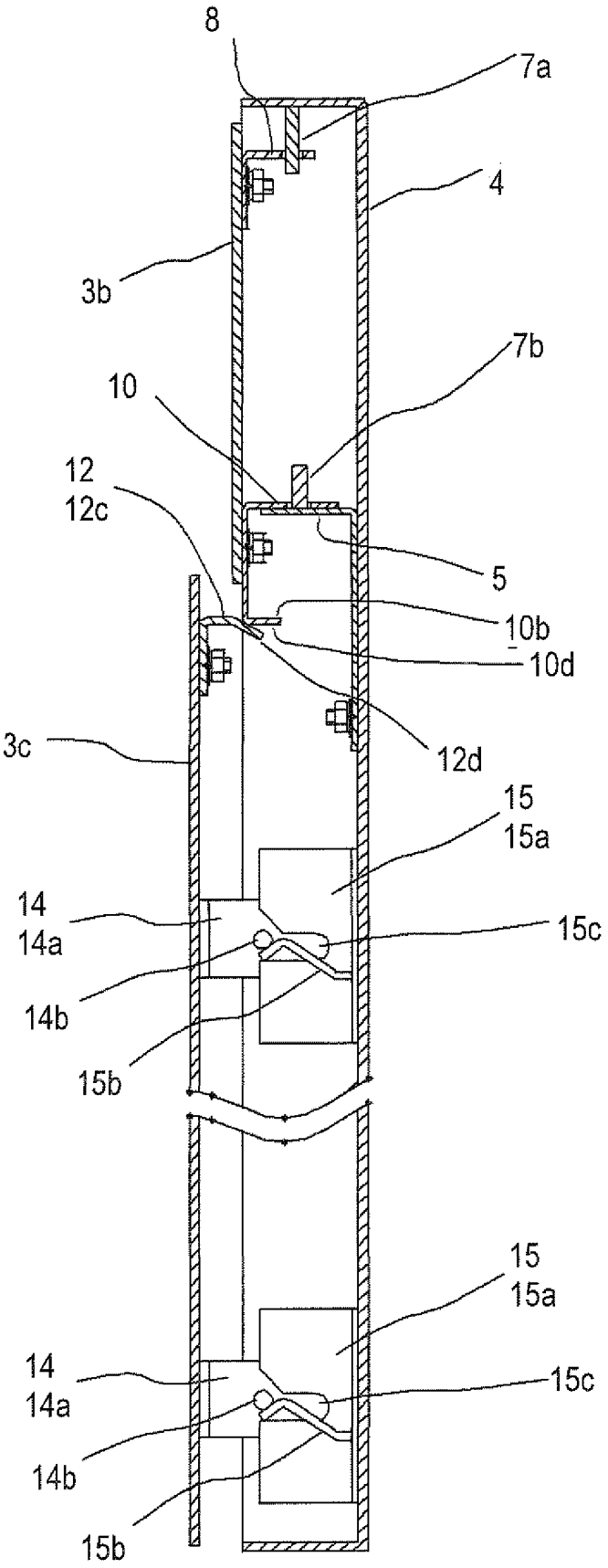

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7a
4
3b
7b
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12
12c
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10b
10d
12d
3c
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15b
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14a
15c
14b
15b

FIG.10

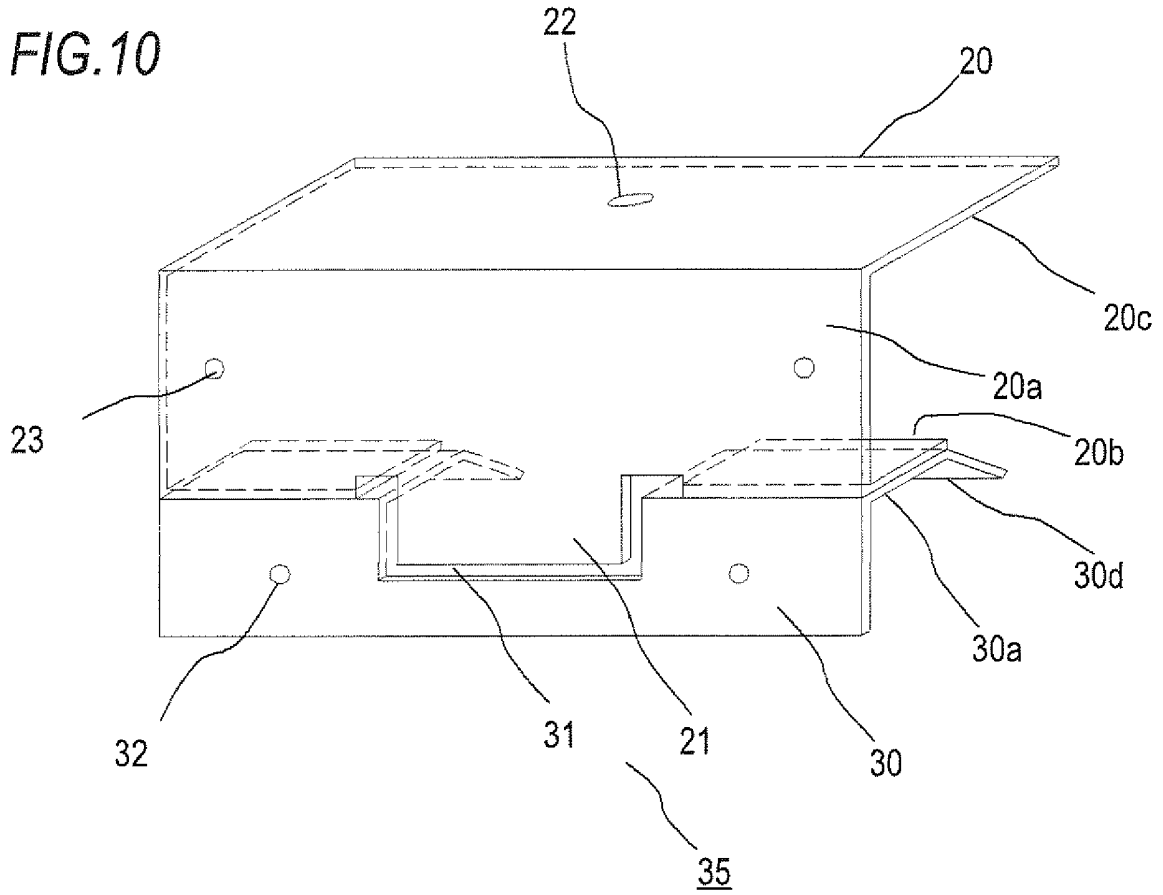

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FIG.11

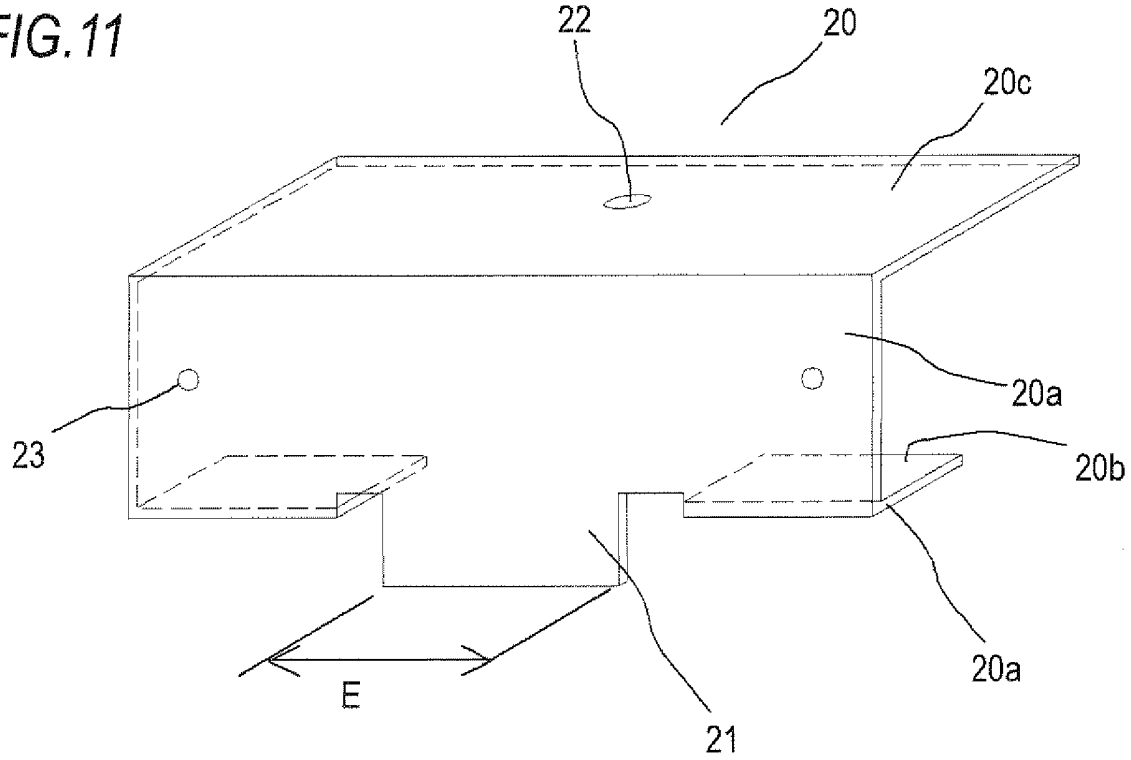

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E
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FIG.12

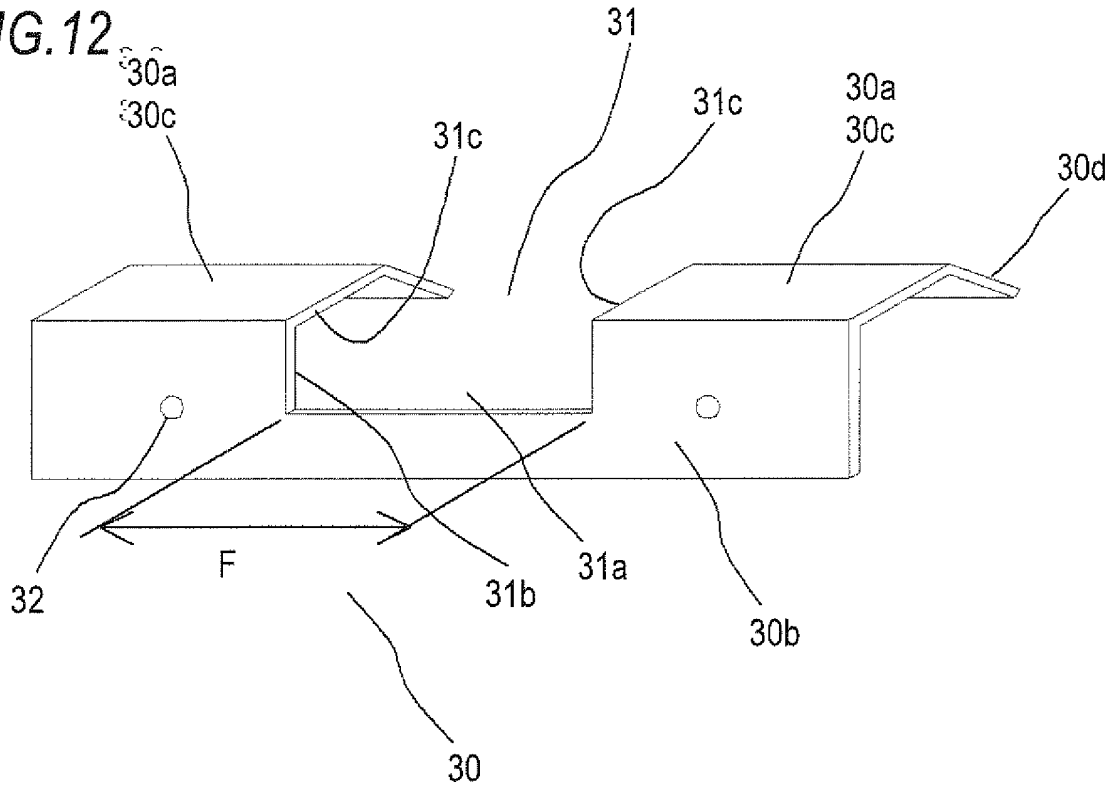

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FIG.13

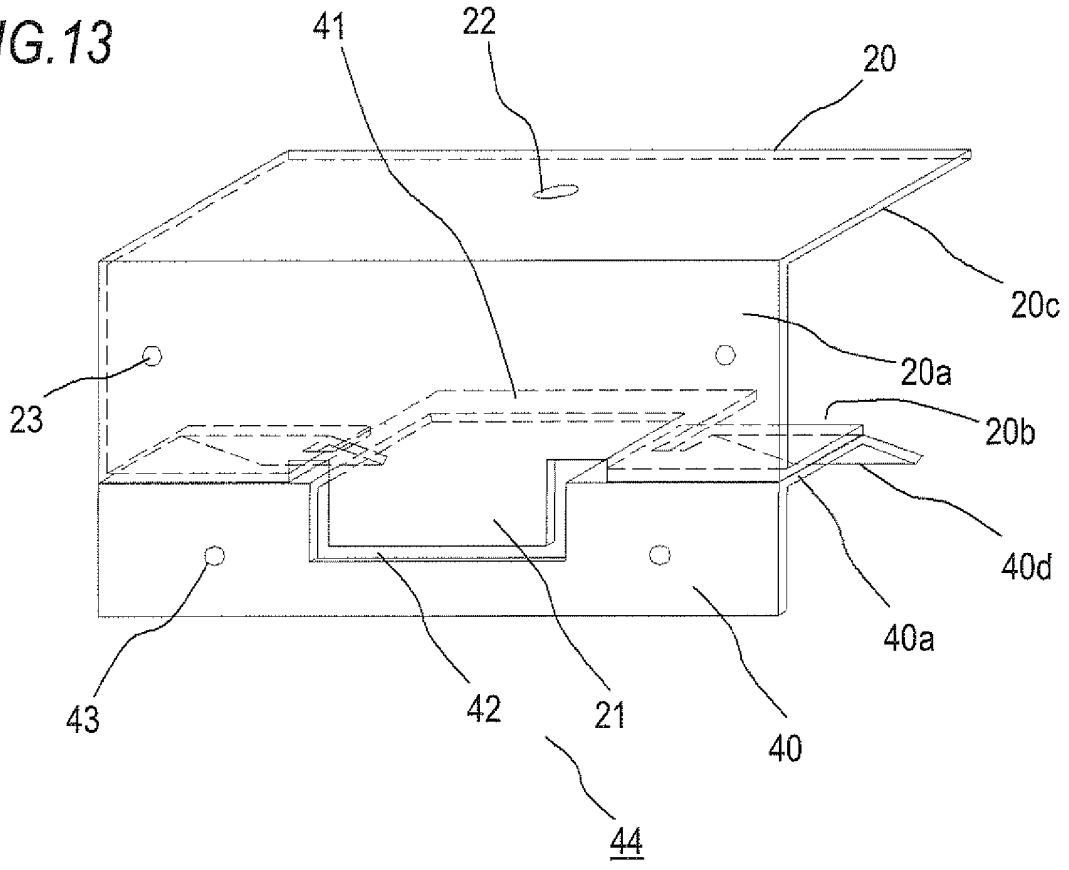

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FIG.14

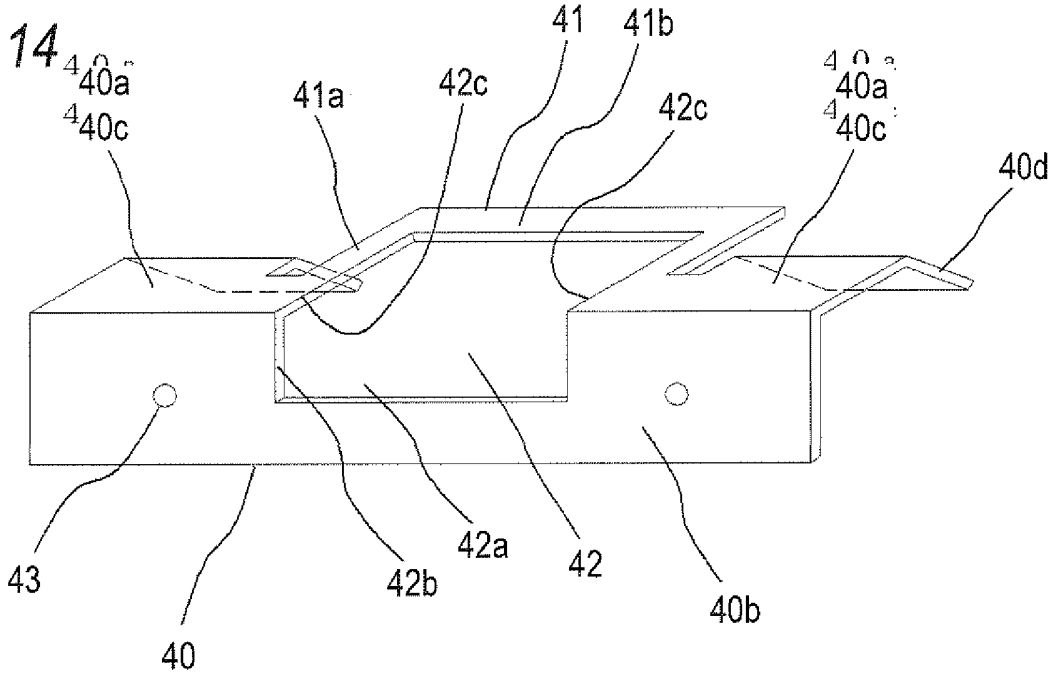
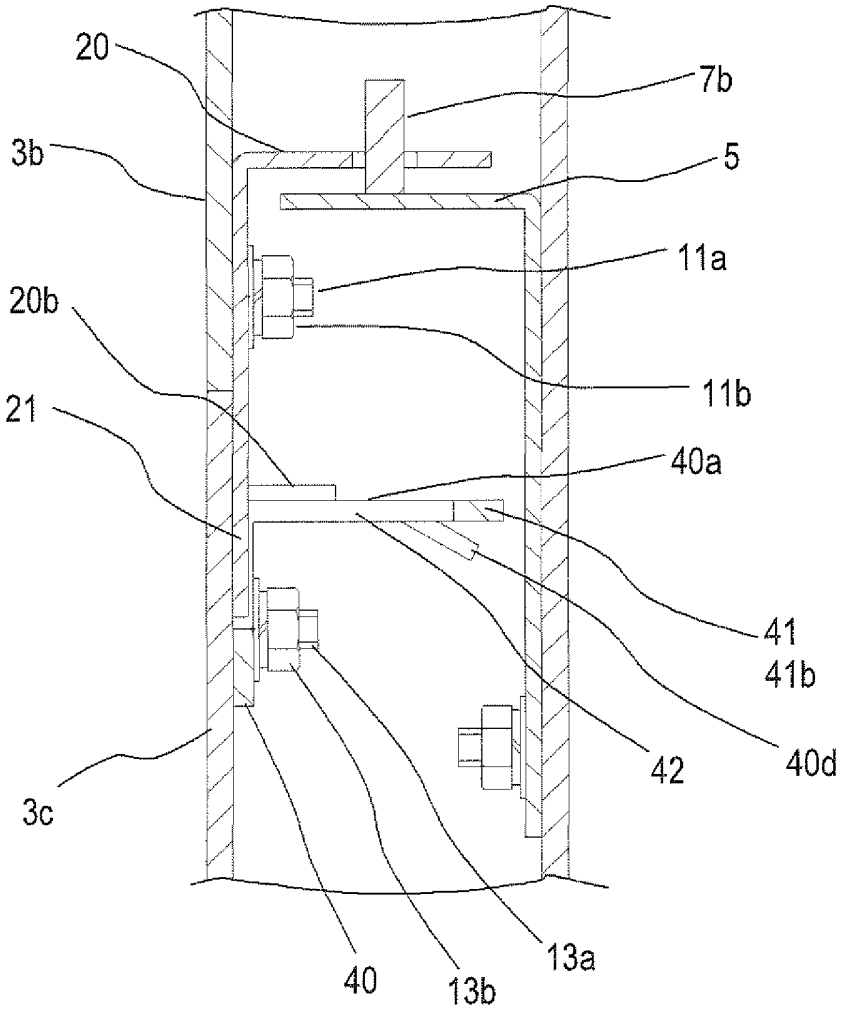

40a
40c
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42c
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41b
42c
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40c
40d
43
40
42b
42a
42
40b

FIG.15


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7b
3b
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11a
20b
11b
21
40a
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41b
42
40d
3c
13a
40
13b

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2009/001344

A. CLASSIFICATION OF SUBJECT MATTER
B66B11/02(2006.01)i

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)
B66B11/00-B66B11/08

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 1996-2009
Kokai Jitsuyo Shinan Koho 1971-2009 Toroku Jitsuyo Shinan Koho 1994-2009

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.
A	JP 2006-256736 A (Fujitec Co., Ltd.), 28 September, 2006 (28.09.06), Par. Nos. [0010] to [0013]; Fig. 1 (Family: none)	1-5
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 164340/1983(Laid-open No. 72454/1985) (Mitsubishi Electric Corp.), 22 May, 1985 (22.05.85), Description, page 3, line 17 to page 5, line 4; Figs. 3 to 6 (Family: none)	1-5

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

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Date of the actual completion of the international search	Date of mailing of the international search report
17 June, 2009 (17.06.09)	30 June, 2009 (30.06.09)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2009/001344

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 11-92044 A (Mitsubishi Electric Building Techno-Service Co., Ltd.), 06 April, 1999 (06.04.99), Par. Nos. [0013] to [0022]; Figs. 1 to 9 (Family: none)	1-5
A	JP 2666649 B2 (Mitsubishi Electric Corp.), 22 October, 1997 (22.10.97), Par. Nos. [0011] to [0022]; Figs. 1 to 3 (Family: none)	5

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2006256736 A **[0003]**