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

(11) **EP 1 818 302 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
14.08.2013 Bulletin 2013/33

(21) Application number: **04822429.9**

(22) Date of filing: **29.11.2004**

(51) Int Cl.:
B66B 1/46 *(2006.01)*

(86) International application number:
PCT/JP2004/017713

(87) International publication number:
WO 2006/057057 (01.06.2006 Gazette 2006/22)

(54) **LANDING BUTTON DEVICE OF ELEVATOR**

STOCKWERKSKNOPFVORRICHTUNG FÜR AUFZUG

DISPOSITIF DE BOUTONS DE PLATE-FORME D'ASCENSEUR

(84) Designated Contracting States:
NL

(43) Date of publication of application:
15.08.2007 Bulletin 2007/33

(73) Proprietor: **MITSUBISHI DENKI KABUSHIKI KAISHA**
Chiyoda-ku
Tokyo 100-8310 (JP)

(72) Inventor: **Yuasa, Eiji**
c/o Mitsubishi Denki Kabushiki Kaisha
Tokyo 1008310 (JP)

(74) Representative: **HOFFMANN EITLE**
Patent- und Rechtsanwälte
Arabellastrasse 4
81925 München (DE)

(56) References cited:
JP-A- 8 073 145
JP-A- 08 073 145
JP-A- 2000 226 162
JP-U- 53 068 069
JP-A- 08 024 439
JP-A- 2000 226 162
JP-A- 2003 203 535

EP 1 818 302 B1

Description

TECHNICAL FIELD

[0001] The present invention relates to an elevator hall button device for inputting a hall call instruction, which is provided in a hall.

BACKGROUND ART

[0002] In a conventional operating panel of an elevator, protrusions for telling a person having visual defects a function of an operation button are provided on a surface of the operation button. A general shape of the protrusions is, for example, a shape of a combination of a pair of triangles indicating a door-open state or a door-close state (see, for example, Patent Document 1).

[0003]

Patent Document 1: JP 2003-12248 A

As a further prior art document, JP 2000-226162 A refers to an elevator call operation device, and an elevator system equipped therewith. In the surface of a faceplate for an elevator call operation device, a recessed or projected shaped door direction guiding part is provided at its left part in an intermediate area between an upper area and a lower area. Another prior art document is JP 8-073145 A, which refers to an elevator cage control panel having a door opening button with a protruded surface and a door closing button with a recessed surface.

DISCLOSURE OF THE INVENTION

PROBLEM TO BE SOLVED BY THE INVENTION

[0004] However, in the conventional operation button, a person having visual defects needs to distinguish the operation buttons only by a difference in shape of the protrusions, so it is required to carefully trace the small protrusions with fingertips. Therefore, it takes time to identify the shape of the protrusions, so selection of the operation button takes for a long period of time.

[0005] The present invention has been made to solve the above-mentioned problem, and it is an object of the present invention to obtain an elevator hall button device with which an upper button and a lower button can be tactually distinguished more easily.

MEANS FOR SOLVING THE PROBLEM

[0006] The present invention provides an elevator hall button according to claims 1 and 2. Further embodiments are mentioned in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

[Fig. 1] Fig. 1 is a front view of an elevator hall button device according to Embodiment 1 of the present invention.

[Fig. 2] Fig. 2 is a sectional view taken along the line II-II of Fig. 1.

[Fig. 3] Fig. 3 is a front view of an elevator hall button device according to Embodiment 2 of the present invention.

[Fig. 4] Fig. 4 is a sectional view taken along the line IV-IV of Fig. 3.

[Fig. 5] Fig. 5 is a front view of an elevator hall button device according to Embodiment 3 of the present invention.

[Fig. 6] Fig. 6 is a sectional view taken along the line VI-VI of Fig. 5.

[Fig. 7] Fig. 7 is a front view of an elevator hall button device according to Embodiment 4 of the present invention.

[Fig. 8] Fig. 8 is a sectional view taken along the line VIII-VIII of Fig. 7.

BEST MODES FOR CARRYING OUT THE INVENTION

[0008] Preferred embodiments of the present invention are described below with reference to the drawings.

Embodiment 1

[0009] Fig. 1 is a front view of an elevator hall button device according to Embodiment 1 of the present invention, and Fig. 2 is a sectional view taken along the line II-II of Fig. 1. In the figures, a box 1 is embedded in a hall wall of an elevator hall. The box 1 is provided with an upper button 2 and a lower button 3 for inputting a hall call instruction so as to align vertically with each other. The box 1 accommodates therein a circuit board (not shown) for outputting a hall call instruction signal to a control panel (not shown), or the like in accordance with operations of the upper button 2 and the lower button 3.

[0010] Each of the upper button 2 and the lower button 3 has a button main body 4 and a button cap 5 serving as a button operating portion provided on a surface of the button main body 4. The button cap 5 is formed of transparent plastic, and is operated by being depressed by an elevator user. The button main body 4 is provided with a registration light which lights up when the button cap 5 is operated and the hall call is registered to the control panel.

[0011] The button cap 5 includes a first end at one vertical end thereof and a second end at the other vertical end thereof. A surface of the button cap 5 has a sectional shape so as to gradually swell from the second end toward the first end in a rounded manner (wave shape). That is, a swelling portion 5a is provided on the surface of the button cap 5. The button cap 5 of the upper button 2 and the button cap 5 of the lower button 3 are arranged to be oriented vertically opposite to each other. In other words, the button cap 5 of the upper button 2 and the

button cap 5 of the lower button 3 are arranged in vertical symmetry.

[0012] Here, in the button cap 5 of the upper button 2, an upper end thereof is the first end, and a lower end thereof is the second end. Further, in the button cap 5 of the lower button 3, a lower end thereof is the first end, and an upper end thereof is the second end. Therefore, in the button cap 5 of the upper button 2, the swelling portion 5a is positioned at the upper end. In the button cap 5 of the lower button 3, the swelling portion 5a is positioned at the lower end. Further, on the button cap 5, an arrow is drawn, for the elevator user to select a direction to which the user wants to move.

[0013] A faceplate 8 facing the hall is fixed to a front surface of the box 1. The faceplate 8 covers a surrounding area of the upper button 2 and the lower button 3. That is, the faceplate 8 is provided with an upper opening 8a and a lower opening 8b through which the button caps 5 of the upper button 2 and the lower button 3 extends, respectively.

[0014] In such the hall button device, a surface shape of each of the button caps 5 is vertically asymmetric, and the button cap 5 of the upper button 2 and the button cap 5 of the lower button 3 are arranged to be oriented vertically opposite to each other. Accordingly, even when a person having visual defects uses the elevator, it is possible to tactually distinguish the upper button 2 and the lower button 3 more easily only by recognizing the surface shape of each of the button caps 5 by touching the button caps 5.

[0015] Further, it is not required to provide a small protrusion on the surface of each of the button caps 5, so at the time of operation, fingertips are not bothered by a slight pain or a sense of discomfort.

Still further, the button cap 5 can be commonly used for the upper button 2 and the lower button 3, so a reduction in cost can be achieved.

[0016] Note that, in the above example, the swelling portion 5a is provided on each of the upper end of the upper button 2 and the lower end of the lower button 3. However, conversely, the swelling portion 5a may be provided on each of the lower end of the upper button 2 and the upper end of the lower button 3.

Embodiment 2

[0017] Next, Fig. 3 is a front view of an elevator hall button device according to Embodiment 2 of the present invention, and Fig. 4 is a sectional view taken along the line IV-IV of Fig. 3. In the figures, an upper button 11 has the button main body 4 and an upper button cap 13 serving as the button operating portion provided on the surface of the button main body 4. A lower button 12 has the button main body 4 and a lower button cap 14 serving as the button operating portion provided on the surface of the button main body4.

[0018] A surface of the upper button cap 13 is a convex curved surface. Further, a surface of the lower button cap 14 is a concave curved surface. That is, while an operating surface of the upper button cap 13 protrudes toward a hall side, an operating surface of the lower button cap 14 is depressed in a groove-like manner.

[0019] In such the hall button device, the surface of the upper button cap 13 is the convex curved surface and the surface of the lower button cap 14 is the concave curved surface. Therefore, even when a person having visual defects uses the elevator, it is possible to tactually distinguish the upper button 11 and the lower button 12 more easily only by recognizing the surface shape of each of the button caps 13, 14 by touching the button caps 13, 14. Further, it is not required to provide a small protrusion on the surface of each of the button caps 13, 14, so at the time of operation, fingertips are not bothered by a slight pain or a sense of discomfort.

[0020] Note that, in the above example, the surface of the upper button cap 13 is the convex curved surface and the surface of the lower button cap 14 is the concave curved surface. However, conversely, the surface of the upper button cap 13 may be the concave curved surface and the surface of the lower button cap 14 may be the convex curved surface.

Further, the curved surface of each of the button caps 13, 14 may be a spherical surface.

[0021] Here, a car operating panel is provided with a lot of buttons such as destination floor buttons and door-open and door-close buttons. On the other hand, the hall button device is often provided only with the upper button 2, 11 and the lower button 3, 12. Thus, as described in Embodiments 1, 2, the selection of the button can be facilitated, by making the upper button 2, 11 and the lower button 3, 12 have significantly different surface shapes. In other words, a construction according to the present invention is effective particularly for the hall button device.

Embodiment 3

[0022] Next, Fig. 5 is a front view of an elevator hall button device according to Embodiment 3 of the present invention, and Fig. 6 is a sectional view taken along the line VI-VI of Fig. 5. In the figures, each of the surfaces of the button caps 5 of the upper button 2 and the lower button 3 has a button convex portion (convex character) 5b provided on the each of the surfaces for tactually telling an elevator user whether a button which the elevator user touches is the upper button 2 or the lower button 3. Here, a front shape of the button convex portion 5b is a shape of an arrow pointing to a corresponding direction. This embodiment is the same as Embodiment 1 in other constructions.

[0023] In such the hall button device, the button convex portion 5b is provided on the surface of the button cap 5. Thus, whether a button which the user is touching is the upper button 2 or the lower button 3 can be recognized more reliably.

[0024] Note that, in the above example, the shape of

the button convex portion 5b is the arrow shape, but it is not limited thereto. The shape of the button convex portion 5b may be a triangle, characters such as "up" and "down", or the like.
Further, it is also possible to provide the button convex portion on the surfaces of the button caps 13, 14 as described in Embodiment 2.

Embodiment 4

[0025] Next, Fig. 7 is a front view of an elevator hall button device according to Embodiment 4 of the present invention, and Fig. 8 is a sectional view taken along the line VIII-VIII of Fig. 7. In the figures, on a portion on the faceplate 8 between the upper button 2 and the lower button 3, there are provided first and second floor number convex portions 15, 16 for tactually telling the elevator user an own floor number. Here, the first floor number convex portion 15 is a protrusion formed in a shape of a number indicating a floor number. The second floor number convex portion 16 is Braille. This embodiment is the same as Embodiment 1 in other constructions.
[0026] As described above, by providing the floor number convex portions 15, 16 on the portion on the faceplate 8 between the upper button 2 and the lower button 3, when a person having visual defects uses the elevator, it is possible to recognize the own floor number while recognizing the upper button 2 and the lower button 3.
[0027] Note that, the floor number convex portion is not limited to the number-shaped protrusion and the Braille.
Further, the floor number convex protrusion may be provided on the hall button devices according to Embodiment 2 and Embodiment 3.

Claims

1. An elevator hall button device comprising: an upper button (2); and a lower button (3), the upper button (2) and the lower button (3) being provided on a hall wall and aligned vertically with each other, and each having a button operating portion (5) to be operated by an elevator user,
characterized in that:

the button operating portion (5) has a first end which is one vertical end of the button operating portion (5) and a second end which is another vertical end of the button operating portion (5) ; a surface of the button operating portion (5) has a sectional shape so as to gradually swell from the second end toward the first end in a rounded manner; and
the button operating portion (5) of the upper button (2) and the button operating portion (5) of the lower button (3) are arranged to be oriented vertically opposite to each other.

2. An elevator hall button device comprising: an upper button (11); and a lower button (12), the upper button (11) and the lower button (12) being provided on a hall wall and aligned vertically with each other, and each having a button operating portion (13, 14) to be operated by an elevator user, wherein
a surface of at least one of the button operating portions (13, 14) of the upper button (11) and the lower button (12) is a convex curved surface; and
a surface of the other of button operating portions (13, 14) of the upper button (11) and the lower button (12) is a concave curved surface, further comprising a faceplate (8) for covering a surrounding area of the upper button (2, 11) and the lower button (3, 12),
characterized in that a portion on the faceplate (8) between the upper button (2, 11) and the lower button (3, 12) has floor number convex portions (15, 16) for tactually telling the elevator user a floor number.

3. An elevator hall button apparatus according to claim 1 or 2, **characterized in that** the surface of the button operating portion (5, 13, 14) of each of the upper button (2, 11) and the lower button (3, 12) has a button convex portion (5b) for tactually telling the elevator user whether a button which the elevator user touches is the upper button (2, 11) or the lower button (3, 12).

4. An elevator hall button device according to claim 1, further comprising a faceplate (8) for covering a surrounding area of the upper button (2, 11) and the lower button (3, 12),
characterized in that a portion on the faceplate (8) between the upper button (2, 11) and the lower button (3, 12) has floor number convex portions (15, 16) for tactually telling the elevator user a floor number.

Patentansprüche

1. Stockwerksknopfeinrichtung für einen Aufzug mit:

einem oberen Knopf (2); und einem unteren Knopf (3), wobei der obere Knopf (2) und der untere Knopf (3) an einer Stockwerkswand vorgesehen sind und vertikal zueinander ausgerichtet sind, und jeweils einen Knopfbetätigungsabschnitt (5), der durch einen Aufzugnutzer betätigt wird, aufweisen,
dadurch gekennzeichnet, dass:

der Knopfbetätigungsabschnitt (5) ein erstes Ende, das ein vertikales Ende des Knopfbetätigungsabschnittes (5) ist und ein zweites Ende, das ein anderes vertikales Ende des Knopfbetätigungsabschnittes (5) ist, aufweist;
eine Fläche des Knopfbetätigungsabschnit-

tes (5) eine solche Querschnittsfläche aufweist, dass sie von dem zweiten Ende zu dem ersten Ende hin allmählich in einer abgerundeten Form ansteigt; und
der Knopfbetätigungsabschnitt (5) des oberen Knopfs (2) und der Knopfbetätigungsabschnitt (5) des unteren Knopfs (3) angeordnet sind, dass sie zueinander vertikal entgegengesetzt ausgerichtet sind.

2. Stockwerksknopfeinrichtung für einen Aufzug mit: einem oberen Knopf (11) und einem unteren Knopf (12), wobei der obere Knopf (11) und der untere Knopf (12) an einer Stockwerkswand vorgesehen sind und vertikal zueinander ausgerichtet sind und jeweils einen Knopfbetätigungsabschnitt (13, 14), der durch einen Aufzugsnutzer betätigt wird, aufweisen, wobei
eine Fläche zumindest einer der Knopfbetätigungsabschnitte (13, 14) des oberen Knopfes (11) und des unteren Knopfes (12) eine konvex gekrümmte Fläche ist, und
eine Fläche des anderen Knopfbetätigungsabschnittes (13, 14) des oberen Knopfes (11) und des unteren Knopfes (12) eine konkav gekrümmte Fläche ist, ferner aufweisend eine Frontplatte (8) zum Abdecken eines umgebenden Bereichs des oberen Knopfs (2, 11) und des unteren Knopfs (3, 12),
dadurch gekennzeichnet, dass ein Abschnitt an der Frontplatte (8) zwischen dem oberen Knopf (2, 11) und dem unteren Knopf (3, 12) konvexe Stockwerksnummernabschnitte aufweist, um dem Aufzugsnutzer eine Stockwerksnummer (15, 16) durch Fühlen mitzuteilen.

3. Stockwerksknopfeinrichtung für einen Aufzug gemäß Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Fläche des Knopfbetätigungsabschnittes (5, 13, 14) jedes oberen Knopfes (2, 11) und jedes unteren Knopfes (3, 12) einen konvexen Abschnitt eines Knopfes (5b) aufweist, der den Aufzugsnutzer durch Fühlen mitteilt, ob ein berührter Knopf, der obere Knopf (2, 11) oder der untere Knopf (3, 12) ist.

4. Stockwerksknopfeinrichtung für einen Aufzug gemäß Anspruch 1,
ferner mit einer Frontplatte (8) zum Abdecken eines umgebenden Bereichs des oberen Knopfes (2, 11) und des unteren Knopfes (3, 12),
dadurch gekennzeichnet, dass ein Abschnitt auf der Frontplatte (8) zwischen dem oberen Knopf (2, 11) und dem unteren Knopf (3, 12) konvexe Stockwerksnummernabschnitte aufweist, um dem Aufzugsnutzer eine Stockwerksnummer (15, 16) durch Fühlen mitzuteilen.

Revendications

1. Dispositif de boutons de hall d'ascenseur comprenant : un bouton supérieur (2) ; et un bouton inférieur (3), le bouton supérieur (2) et le bouton inférieur (3) étant disposés sur une paroi de hall et alignés verticalement l'un par rapport l'autre, et chacun ayant une partie de mise en oeuvre de bouton (5) à mettre en oeuvre par un utilisateur d'ascenseur, **caractérisé en ce que** :

la partie de mise en oeuvre de bouton (5) a une première extrémité qui est une extrémité verticale de la partie de mise en oeuvre de bouton (5) et une seconde extrémité qui est une autre extrémité verticale de la partie de mise en oeuvre de bouton (5) ;
une surface de la partie de mise en oeuvre de bouton (5) a une forme en coupe de façon à progressivement gonfler à partir de la seconde extrémité vers la première extrémité d'une manière arrondie ; et
la partie de mise en oeuvre de bouton (5) du bouton supérieur (2) et la partie de mise en oeuvre de bouton (5) du bouton inférieur (3) sont agencées pour être verticalement orientées l'une en face de l'autre.

2. Dispositif de boutons de hall d'ascenseur comprenant : un bouton supérieur (11) ; et un bouton inférieur (12), le bouton supérieur (11) et le bouton inférieur (12) étant disposés sur une paroi de hall et verticalement alignés l'un par rapport à l'autre, et chacun ayant une partie de mise en oeuvre de bouton (13, 14) à mettre en oeuvre par un utilisateur d'ascenseur, dans lequel
une surface d'au moins une des parties de mise en oeuvre de bouton (13, 14) du bouton supérieur (11) et du bouton inférieur (12) est une surface courbe convexe ; et
une surface de l'autre des parties de mise en oeuvre de bouton (13, 14) du bouton supérieur (11) et du bouton inférieur (12) est une surface courbe concave, comprenant en outre une face avant (8) pour couvrir une zone environnante du bouton supérieur (2, 11) et du bouton inférieur (3, 12),
caractérisé en ce qu'une partie de la face avant (8) entre le bouton supérieur (2, 11) et le bouton inférieur (3, 12) a des parties convexes de numéro d'étage (15, 16) pour annoncer de façon tactile un numéro d'étage à l'utilisateur d'ascenseur.

3. Dispositif de boutons de hall d'ascenseur selon la revendication 1 ou 2, **caractérisé en ce que** la surface de la partie de mise en oeuvre de bouton (5, 13, 14) de chacun du bouton supérieur (2, 11) et du bouton inférieur (3, 12) a une partie convexe de bouton (5b) pour annoncer de façon tactile à l'utilisateur

d'ascenseur si un bouton que l'utilisateur d'ascenseur touche est le bouton supérieur (2, 11) ou le bouton inférieur (3, 12).

4. Dispositif de boutons de hall d'ascenseur selon la revendication 1,
comprenant en outre une face avant (8) pour couvrir une zone environnante du bouton supérieur (2, 11) et du bouton inférieur (3, 12),
caractérisé en ce qu'une partie sur la face avant (8) entre le bouton supérieur (2, 11) et le bouton inférieur (3, 12) a des parties convexes de numéro d'étage (15, 16) pour annoncer de façon tactile un numéro d'étage à l'utilisateur d'ascenseur.

FIG. 1

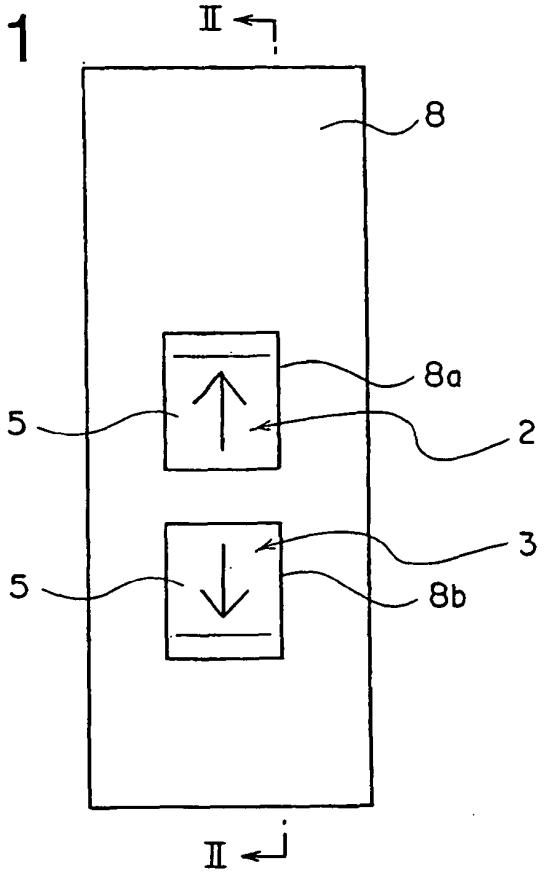


FIG. 2

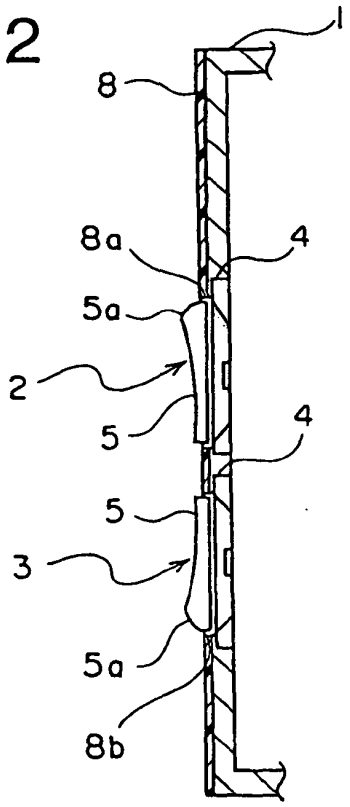


FIG. 3

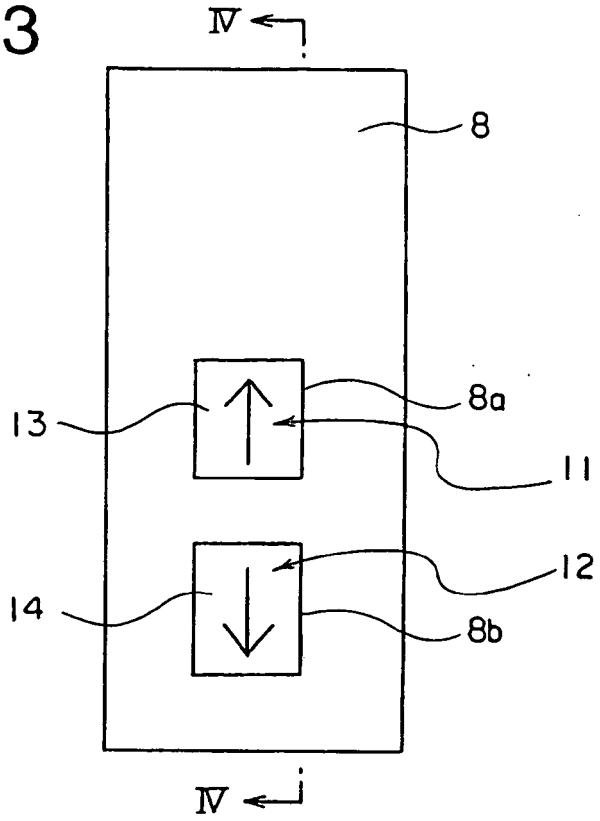


FIG. 4

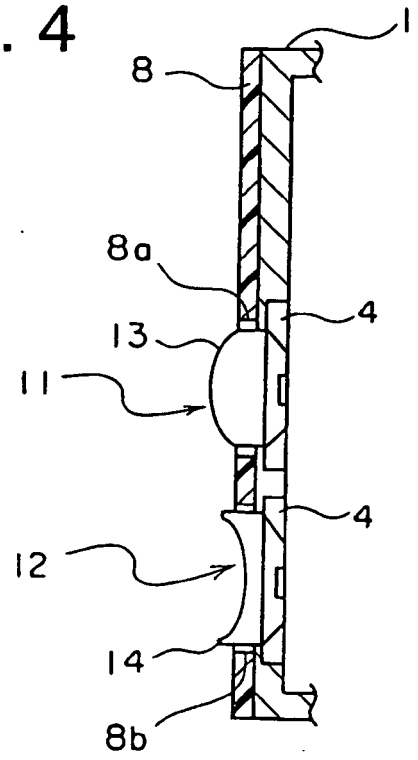


FIG. 5

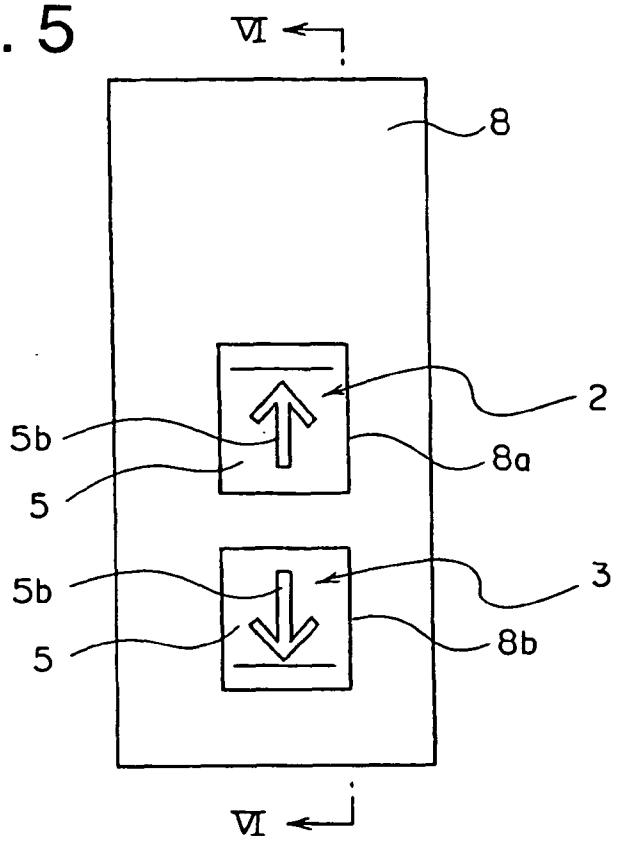


FIG. 6

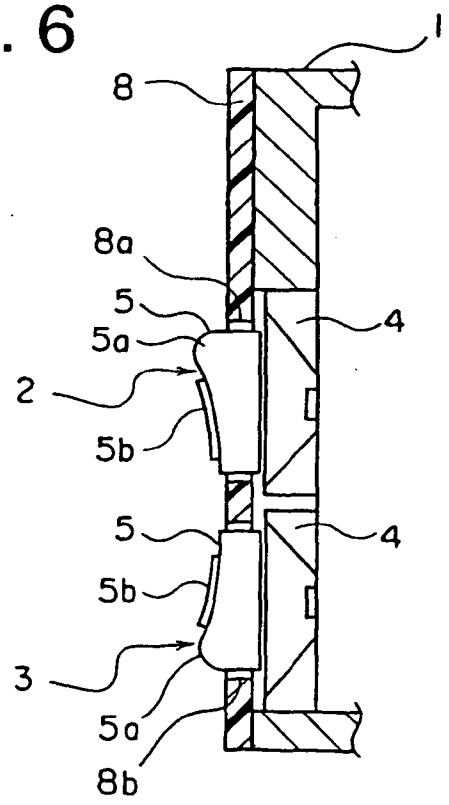


FIG. 7

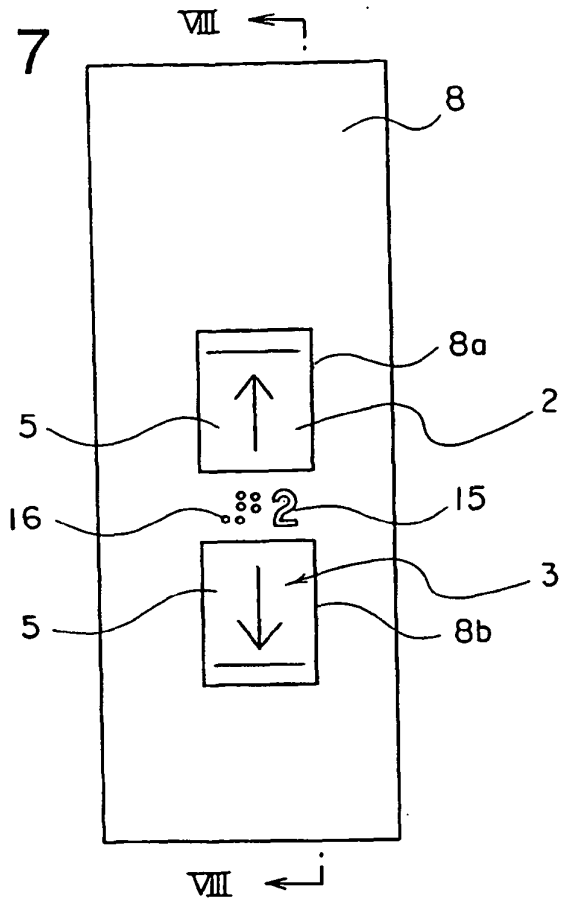
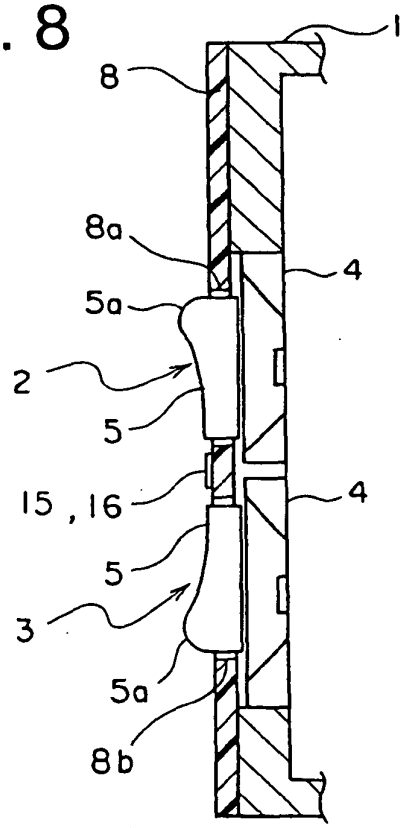


FIG. 8



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 2003012248 A **[0003]**
- JP 2000226162 A **[0003]**
- JP 8073145 A **[0003]**