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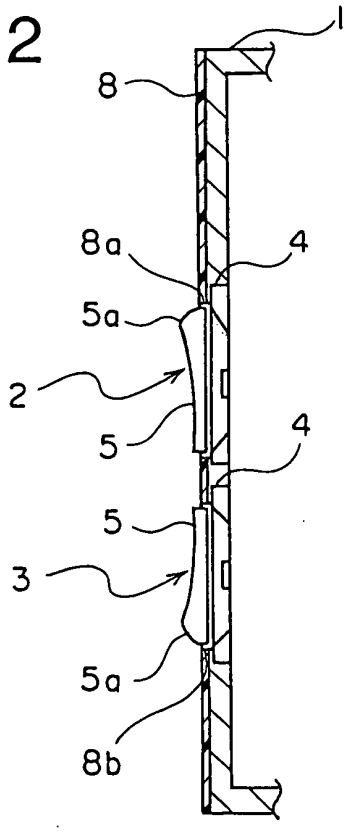
(54) **LANDING BUTTON DEVICE OF ELEVATOR**

(57) In an elevator hall button device, each of an upper button and the lower button has a button operating portion which is operated by an elevator user. The button operating portion has a first end which is vertical one end thereof and a second end which is the other vertical end thereof. A surface of the button operating portion has a sectional shape so as to gradually swell from the second end toward the first end in a rounded manner. The button operating portion of the upper button and the button operating portion of the lower button are arranged to be oriented vertically opposite to each other.

FIG. 2



EP 1 818 302 A1

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

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 obj ect 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] An elevator hall button device according to the present invention includes: an upper button; and a lower button, the upper button and the lower button being provided on a hall wall and aligned vertically with each other, and each having a button operating portion to be operated by an elevator user, in which: the button operating portion has a first end which is one vertical end of the button operating portion and a second end which is another vertical end of the button operating portion; a surface of the button operating portion 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 of the upper button and the button operating portion of the lower button are arranged to be oriented vertically opposite to each other.

Further, an elevator hall button device according to the present invention, includes: an upper button; and a lower button, the upper button and the lower button being provided on a hall wall and aligned vertically with each other, and each having a button operating portion to be operated by an elevator user, in which: a surface of at least one of the button operating portions of the upper button and the lower button is a convex curved surface; and a surface of the other of button operating portions of the upper button and the lower button is a concave curved surface.

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; and a lower button, the upper button and the lower button being provided on a hall wall and aligned vertically with each other, and each having a button operating portion to be operated by an elevator user, **characterized in that**:

   the button operating portion has a first end which is one vertical end of the button operating portion and a second end which is another vertical end of the button operating portion;
   a surface of the button operating portion 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 of the upper button and the button operating portion of the lower button are arranged to be oriented vertically opposite to each other.

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

   a surface of at least one of the button operating portions of the upper button and the lower button is a convex curved surface; and
   a surface of the other of button operating portions of the upper button and the lower button is a concave curved surface.

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

4. An elevator hall button device according to any one of claims 1 through 3, further comprising a faceplate for covering a surrounding area of the upper button and the lower button,
   characterized in that a portion on the faceplate between the upper button and the lower button has floor number convex portions for tactually telling the elevator user a floor number.

FIG. 1

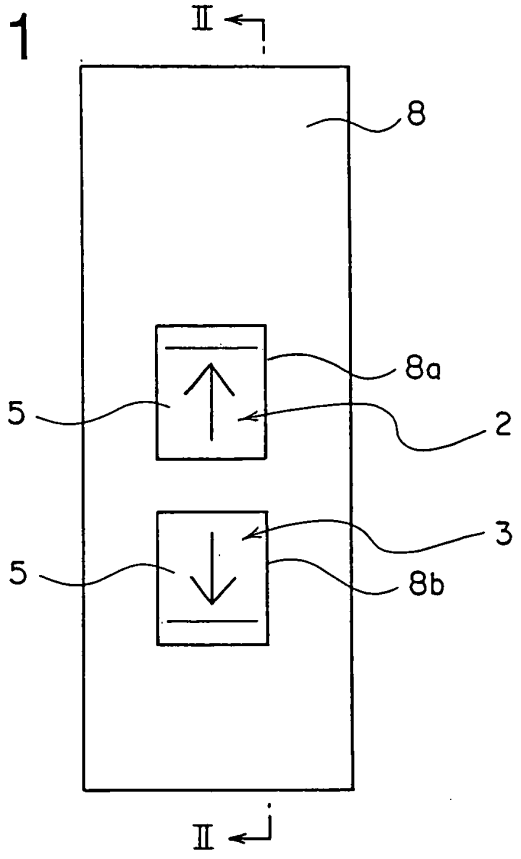


FIG. 2

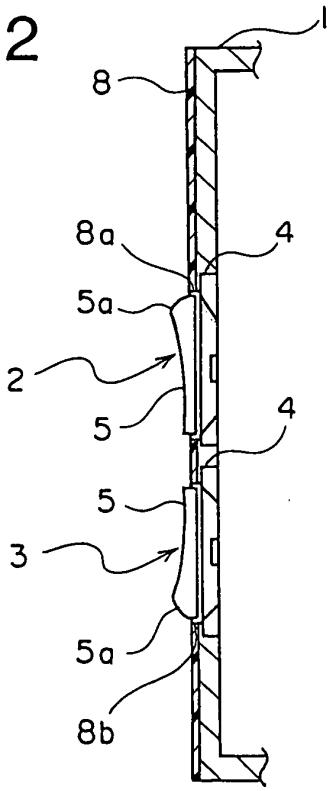


FIG. 3

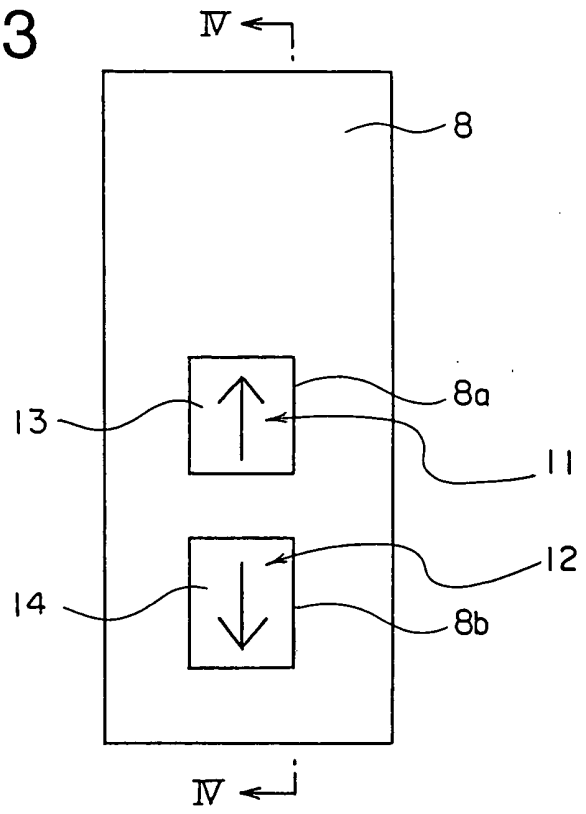


FIG. 4

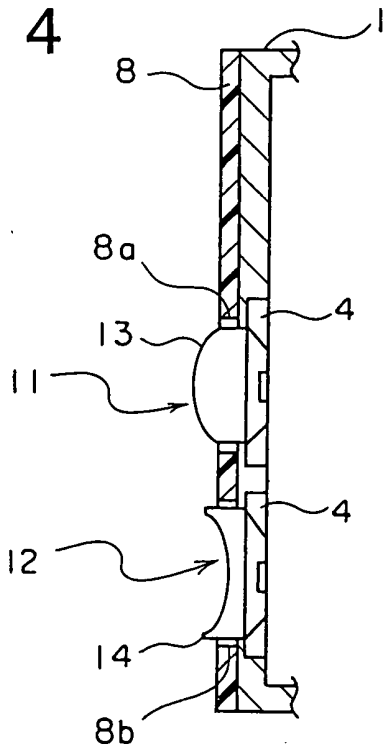


FIG. 5

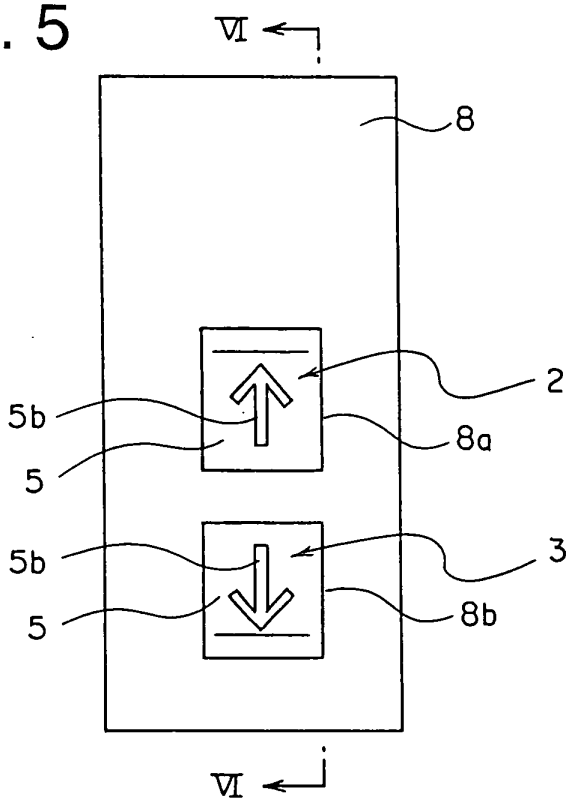


FIG. 6

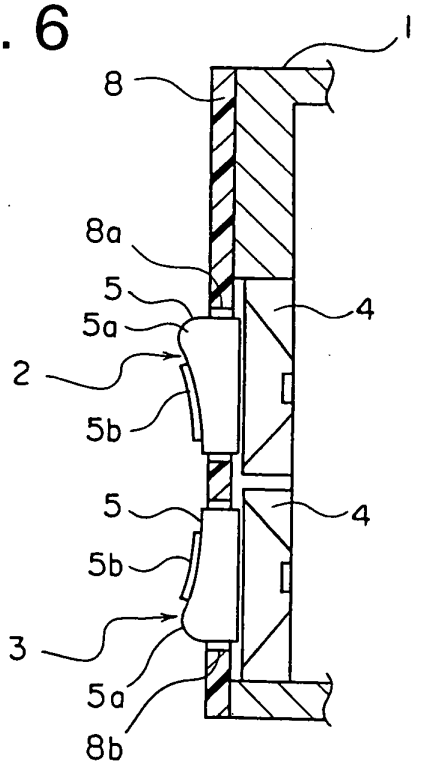


FIG. 7

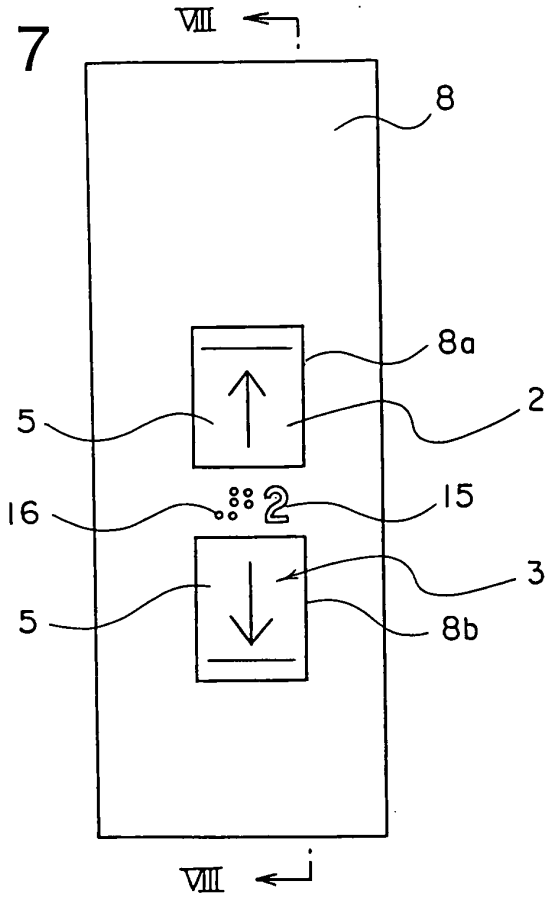
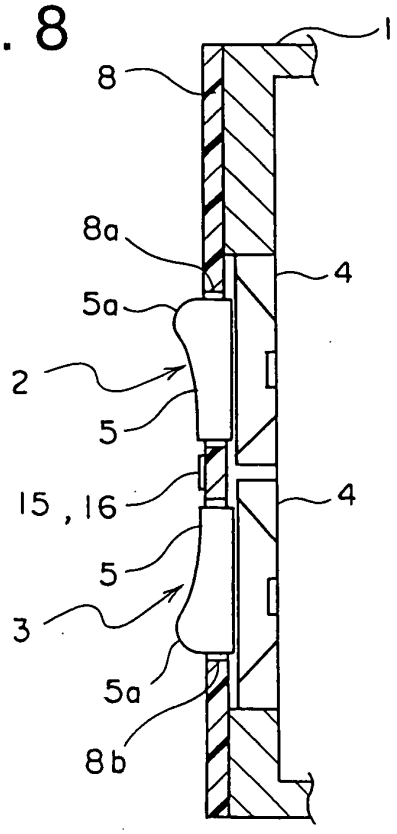


FIG. 8



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2004/017713

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[7] B66B1/46

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)
Int.Cl[7] B66B1/00-B66B1/52

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 1996-2005
Kokai Jitsuyo Shinan Koho 1971-2005 Toroku Jitsuyo Shinan Koho 1994-2005

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.
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 151100/1976(Laid-open No. 68069/1978) (Hitachi, Ltd.), 08 June, 1978 (08.06.78), Description; page 1, line 10 to page 2, line 6 (Family: none)	1-4
Y	JP 8-24439 A (Sony Corp.), 30 January, 1996 (30.01.96), Par. Nos. [0044], [0059] to [0060]; Figs. 6 to 7 & AU 1767295 A & CA 2148188 A1 & CN 1124855 A & EP 0682350 A2 & US 5551693 A	1-4

☒ 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
26 August, 2005 (26.08.05)	13 September, 2005 (13.09.05)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2004/017713

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 8-73145 A (Toshiba Corp.), 19 March, 1996 (19.03.96), Par. Nos. [0026] to [0035], [0048] to [0055]; Figs. 1, 3, 5 (Family: none)	2
Y	JP 2003-203535 A (Kabushiki Kaisha Fujitekku), 18 July, 2003 (18.07.03), Claims 1 to 2; Par. Nos. [0006], [0015]; Figs. 1 to 3, 8 to 9 (Family: none)	3
Y	JP 2000-226162 A (Hitachi, Ltd.), 15 August, 2000 (15.08.00), Abstract; Fig. 1 (Family: none)	4

Form PCT/ISA/210 (continuation of second sheet) (January 2004)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2003012248 A **[0003]**