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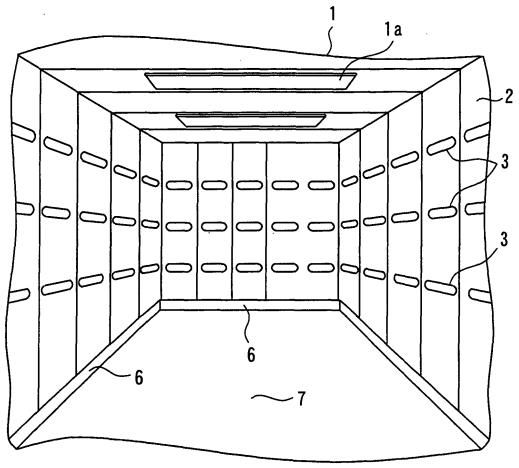
(54) CAGE OF ELEVATOR

(57) Provided is an elevator cab which is constructed so as to have pressed concavities or convexities in place of reinforcements in the middle of a wall panel, thereby imparting strength to the wall panel itself and moreover giving a decorative appearance to the wall panel, with the pressed portions serving as an accent. In an elevator cab which is constructed by combining multiple wall panels and interconnecting bent points formed in edge portions of each of the wall panels, a pressed concavity or convexity is provided in a middle part of each of the wall panels. For example, a decorative surface is provided on the surface of the pressed concavity or convexity of the wall panel.

Fig. 1



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Description

Technical Field

[0001] The present invention relates to an elevator cab, the construction of which is simplified, thereby lowering manufacturing costs and moreover improving a decorative appearance.

Background Art

[0002] Conventionally, in an elevator car in which walls are formed by interconnecting bent points which are formed in edge portions of multiple side panels, each of the bent points has a first surface which is formed by bending an edge portion on the inward side of the car and first surfaces of adjoining side panels are caused to mate with each other and connected by bolts and nuts (refer to Patent Document 1, for example).

[0003] Patent Document 1: Japanese patent Laid-Open No. 2000-229771

Disclosure of the Invention

Problems to be Solved by the Invention

[0004] In a conventional elevator car, side panels which become wall panels are given strength in bent points which are connecting portions and, therefore, widths of 350 to 400 mm or so are obtained by bending a steel sheet having a sheet thickness of 1.6 mm or so. However, if the width exceeds 400 mm, the strength of the wall panel decreases and hence it was necessary to attach a longitudinal reinforcement or a horizontal reinforcement in the middle of the rear surface of the wall panel by welding and the like. If this longitudinal reinforcement or horizontal reinforcement is welded, distortions and welding marks are formed on the wall panel, thereby posing the problem that it takes much time and labor to remove them.

[0005] The present invention has been made in order to solve problems as described above and provides an elevator cab which is constructed so as to have pressed concavities or convexities in place of reinforcements in the middle of a wall panel, thereby imparting strength to the wall panel itself and moreover giving a decorative appearance to the wall panel, with the pressed portions serving as accent.

Means for Solving the Problems

[0006] An elevator cab of the present invention is the one which is constructed by combining multiple wall panels and interconnecting bent points formed in edge portions of each of the wall panels, and a pressed concavity or convexity is provided in a middle part of each of the wall panels.

Advantages of the Invention

[0007] According to the present invention, a pressed concavity or convexity is provided in the middle part of each wall panel. Therefore, the present invention can provide an elevator cab in which strength is imparted to the wall panel itself and moreover a decorative appearance is given to the wall panel, with the pressed portions serving as accent.

Brief Description of the Drawings

[0008]

Figure 1 is a perspective view of the interior of an elevator cab as viewed from the front in Embodiment 1 of the present invention;
Figure 2 is a perspective view of a wall panel of a cab as viewed from the rear surface;
Figure 3 is a sectional view taken along the line A-A of Figure 2;
Figure 4 is a front view and longitudinal sectional view of a wall panel;
Figure 5 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 2 of the present invention;
Figure 6 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 3 of the present invention;
Figure 7 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 4 of the present invention;
Figure 8 is a front view and longitudinal sectional view of a screen plate;
Figure 9 is a diagram which shows an inserted portion of a screen plate in its state before bending;
Figures 10(a), 10(b) and 10(c) are detail views of an inserted portion of a screen plate;
Figure 11 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 5 of the present invention;
Figure 12 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 6 of the present invention;
Figure 13 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 7 of the present invention; and
Figure 14 is a front view and longitudinal sectional view of a pressed convexity in a wall panel of an elevator cab in Embodiment 8 of the present invention.

Description of Symbols

[0009]

1	Car ceiling
1a	Lighting fixture
2	Wall panel
2g	Press-extruded hole
3	Pressed concavity
3a	Painted surface
3b	Fibrous material
3c	Resin
3d	Screen plate
3e	Fitting guide
3f	Lancing
3g	Notch
3h	Tongue
4a	Wood material
4b	Bracket
4c	Wood screw
5a	Stone material
5b	Bracket
5c	Set screw
5d	Frame
5e	Seat plate
8a	Glass
8b	Tapped plate
8c	Bracket
8d	Set screw
8e	Rubber washer
11a	Tapped plate
11b	Four-direction frame
11c	Screw

Best Mode for Carrying Out the Invention

[0010] The present invention will be described in further detail with reference to the accompanying drawings.

Embodiment 1

[0011] Figure 1 is a perspective view of the interior of an elevator cab as viewed from the front in Embodiment 1 of the present invention. Figure 2 is a perspective view of a wall panel of a cab as viewed from the rear surface. Figure 3 is a sectional view taken along the line A-A of Figure 2. Figure 4 is a front view and longitudinal sectional view of a wall panel.

In the figures, the reference numeral 1 denotes a car ceiling of an elevator, the reference numeral 1a denotes a lighting fixture provided on the car ceiling 1, the reference numeral 2 denotes a wall panel which forms a side panel of the cab, the reference numeral 3 denotes horizontal pressed concavities provided at three upper, middle and lower levels in the middle of the wall panel 2, and the reference numeral 3a denotes a painted surface provided on the surface of the pressed concavity 3. Incidentally, the reference numeral 6 denotes a kick plate and the reference numeral 7 denotes a car floor.

In Embodiment 1, the wall panel 2 has bent points which are bent by a press on the four sides which are right and left, upper and lower sides, and the pressed concavities 3 are provided at the three upper, middle and lower levels in the flat-panel portion in the middle. As a result of this, in the wall panel 2, sufficient strength of the flat-panel portion can be ensured. The pressed concavity 3 provides a decorative accent in the interior of the cab.

[0012] In this construction of Embodiment 1, the wall panel 2 has sufficient strength in the flat-panel portion owing to the pressed concavity 3. Therefore, additional reinforcement is unnecessary, fabrication costs can be lowered and it is possible to reduce the weight of the car. In addition, because the accent of the pressed concavity can be provided as a novel decorative appearance, a different decorative appearance can be produced by providing the painted surface 3a in this part.

Incidentally, although the pressed concavity 3 is provided in this embodiment, a convexity may be provided by concaving the wall panel to the opposite side.

Furthermore, by providing a convexity formed from a stainless steel material and the like, it is also possible to cause the convexity to serve also as a cab wall protection.

Embodiment 2

[0013] Figure 5 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 2 of the present invention.

In the figures, the reference numeral 2 denotes a wall panel which forms a side panel of the cab, the reference numeral 3 denotes horizontal pressed concavities provided at three upper, middle and lower levels in the middle of the wall panel 2, and the reference numeral 3b denotes a fibrous material bonded to the surface of the pressed concavity 3, such as a carpet-type textile and Japanese paper, for example.

Although a wall panel of an elevator which is made from a single material of metal gives a cold-looking appearance to passengers, in Embodiment 2, by sticking the fibrous material 3b, which is formed from a carpet-type textile, for example, to the wall panel, it is possible to obtain a warm-looking decorative appearance. Furthermore, it is possible to obtain a decorative appearance which gives calmness to passengers by sticking a fibrous material, such as Japanese paper.

[0014] Because in Embodiment 2, the fibrous material 3b is stuck to the pressed concavity alone, a decorative appearance rich in variety can be obtained at low cost. Moreover, because dirt does not easily adhere to the concavity and the fibrous material does not split finely, either, the life can be extended and replacement is also easy.

Embodiment 3

[0015] Figure 6 is a front view and longitudinal section-

al view of a pressed concavity in a wall panel of an elevator cab in Embodiment 3 of the present invention.
In the figures, the reference numeral 2 denotes a wall panel which forms a side panel of the cab, the reference numeral 3 denotes horizontal pressed concavities provided at three upper, middle and lower levels in the middle of the wall panel 2, and the reference numeral 3c denotes a resin having good workability bonded to the surface of the pressed concavity 3.
The resin 3c is suitable for mass production because of its good workability. Therefore, in Embodiment 2, it is very favorable to stick the resin 3c suitable for mass production to the pressed concavity 3 of the same shape as part of the wall panels of the elevator, and this provides the advantage that a wide variety of decorative appearances according to patterns and colors added to the resin.

Embodiment 4

[0016] Figure 7 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 4 of the present invention. Figure 8 is a front view and longitudinal sectional view of a screen plate. Figure 9 is a diagram which shows an inserted portion of a screen plate in its state before bending. Figures 10(a), 10(b) and 10(c) are detail views of an inserted portion of a screen plate.
In the figures, the reference numeral 2 denotes a wall panel which forms a side panel of the cab, the reference numeral 2g denotes horizontal concave press-extruded holes provided at three upper, middle and lower levels in the middle of the wall panel 2, the reference numeral 3d denotes a screen plate in circular arc form which stops up the press-extruded hole 2g, the reference numeral 3e denotes a pair of upper and lower fitting guides, which are formed in the upper and lower parts of the screen plate 3d, the reference numeral 3f denotes a U-shaped inclusion of the insertion guide 3e, the reference numeral 3g denotes a U-shaped notch of the fitting guide 3e, and the reference numeral 3h denotes a blanked tongue of the fitting guide 3e.
In Embodiment 4, the pressed concavity of the wall panel 2 in Embodiment 1 is formed as the press-extruded hole 2g, the screen plate 3d to be fitted into this hole is prepared, and this screen plate 3d is covered with the fibrous material 3b such as a carpet-type textile in Embodiment 2, which is bonded to the screen plate, or the resin 3c in Embodiment 3 is stuck to the screen plate, which is then fitted into the hole. Figures 10(a) is a detail view of the fitting guide 3e, which is in a press-lanced condition, 10 (b) shows the fitting guide in a bent and raised condition, and 10(c) shows the fitting guide in a condition in which fitting has been completed by raising the tongue 3h in order to prevent a slip-off after the fitting.
[0017] In Embodiment 4, the same decorative appearance as by the bonding of the fibrous material 3b and the resin 3c is obtained. Besides, replacement is easy because of the fitting type. Therefore, by keeping several kinds of patterns and colors of the fibrous material or several kinds of patterns and colors of the resin at the ready, decorative appearances which make different impressions can be changed for each season of the year.
Incidentally, in the case of the resin, it is possible to adopt the following method. That is, the screen plate is formed from a resin material, fitting grooves are provided in this resin material, and the resin material is directly fitted into the press-extruded hole 2g.
Incidentally, in this embodiment, the resin material is fitted into the wall panel 2 made from a steel sheet. However, by fitting a mirror-finished stainless steel sheet into a wall of a steel sheet with a painting finish, for example, it is possible to expect a new design from images seen on the mirror surface. Embodiment 5
[0018] Figure 11 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 5 of the present invention.
In the figures, the reference numeral 2 denotes a wall panel which forms a side panel of the cab, the reference numeral 2g denotes horizontal concave press-extruded holes provided at three upper, middle and lower levels in the middle of the wall panel 2, the reference numeral 11a denotes a tapped plate provided in a peripheral edge portion of the press-extruded hole 2g, and the reference numeral 11b denotes an elliptic four-direction frame 11b provided in an edge portion of the press-extruded hole 2g. Japanese paper 3c is stuck to an inner side portion enclosed by this four-direction frame 11b. The press-extruded hole 2g is stopped up by this four-direction frame 11b and the Japanese paper 3c. The reference numeral 11c denotes a screw for attaching the four-direction frame 11b to the tapped plate 11a.
In Embodiment 5, it is possible to produce a calm atmosphere and taste specific to Japanese paper. Furthermore, if lighting from outside the wall is performed, it is possible to obtain a further different decorative appearance. Incidentally, if there is a fear that the Japanese paper might be torn by mischief when it is used alone, it is also possible to ensure safety by placing a transparent plate and the like behind the Japanese paper.

Embodiment 6

[0019] Figure 12 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 6 of the present invention.
In the figures, the reference numeral 2 denotes a wall panel which forms a side panel of the cab, the reference numeral 2g denotes horizontal concave press-extruded holes provided at three upper, middle and lower levels in the middle of the wall panel 2, the reference numeral 4a denotes a wood material for stopping up the press-extruded hole 2g, and the reference numeral 4b denotes a bracket for attaching the wood material 4a by a wood screw 4c.
In Embodiment 6, the wood material 4a is attached to

the press-extruded hole 2g with the wood screw 4c by using the bracket 4b.
A wood material is a natural material and can give peace of mind and a feeling of security to passengers. In order to obtain a natural feeling, it is advisable to finish the wood material with a thin coat of varnish by making the most of the patterns of knots. If the wood material is caused to overhang from the wall surface, the wood material can also serve as a cab wall protector which does not do damage to baggage.

Embodiment 7

[0020] Figure 13 is a front view and longitudinal sectional view of a pressed concavity in a wall panel of an elevator cab in Embodiment 7 of the present invention.
In the figures, the reference numeral 2 denotes a wall panel which forms a side panel of the cab, the reference numeral 2g denotes horizontal concave press-extruded holes provided at three upper, middle and lower levels in the middle of the wall panel 2, the reference numeral 5a denotes a stone material, such as marble, for stopping up the press-extruded hole 2g, the reference numeral 5b denotes a bracket for attaching the stone material 5a by a set screw 5c, the reference numeral 5d denotes a frame made from a sheet, and the reference numeral 5e denotes a seat plate.
In Embodiment 7, the stone material 5a such as marble is fitted in place of the wood material of Embodiment 6. The stone material 5a is fitted into the frame 5d made from a sheet, the frame is set by use of the set screw 5c via the bracket 5b and the seat plate 5e.
Stone materials such as marble can produce a luxury appearance. By selecting the kinds of stone materials, it is possible to select decorative appearances of different atmospheres.

Embodiment 8

[0021] Figure 14 is a front view and longitudinal sectional view of a pressed convexity in a wall panel of an elevator cab in Embodiment 8 of the present invention.
In the figures, the reference numeral 2 denotes a wall panel which forms a side panel of the cab, the reference numeral 2g denotes horizontal convex press-extruded holes provided at three upper, middle and lower levels in the middle of the wall panel 2, the reference numeral 8a denotes a glass for stopping up the press-extruded hole 2g, the reference numeral 8b denotes a tapped plate provided in a peripheral edge portion of the press-extruded hole 2g, the reference numeral 8c denotes a bracket for attaching the glass 8a by a set screw 8d, and the reference numeral 8e denotes a rubber seat provided between a peripheral edge portion of the glass 8a and the bracket 8c.
In Embodiment 8, the press-extruded hole 2g is caused to protrude in a convex manner to the front side of the cab, and the glass 8a, such as crystal glass, is fitted on the rear side of the press-extruded hole 2g.
Glass materials such as crystal glass can produce a luxury appearance. By selecting the types of glass and colors such as emerald, it is possible to obtain a luxurious atmosphere. Also, it is possible to obtain different decorative appearances by placing a lighting fixture behind the glass material.
[0022] In the present invention, stainless steel materials and the like as wall panel materials do not require a paint finish and this is favorable for reducing costs of car fabrication. However, on the other hand, stainless steel materials give the impression of cold appearance and, therefore, it is possible to obtain a warm-looking appearance and a luxurious decorative appearance by changing combinations of materials to be fitted into the pressed portions.
[0023] Materials for wall panels are not limited to stainless steel, and it is also possible to use copper, iron, titanium and aluminum alloys which permit press working. For surface working, the present invention is applicable to wall panels in which fine asperities, such as hair lines, spin lines and mat finish patterns are worked, in addition to mirror finish working. For each of the bent points on the four sides of the wall panel, single-angle bending is adopted. However, in the case of a tall wall, it is also possible to increase the strength of a wainscot by adopting double-angle bending only for the bending of the side surface. Although in each of the embodiments the present invention is applied to wall panels, it is a matter of course that the present invention is applicable to ceiling panels.

Industrial Applicability

[0024] As described above, in an elevator cab related to the present invention, a pressed concavity or convexity is provided in place of a reinforcement in the middle part of each wall panel. Therefore, it is possible to impart strength to the wall panel itself and moreover to give a decorative appearance to the wall panel, with the pressed portions serving as accent. The present invention is applicable not only to wall panels, but also to ceiling panels.

Claims

1. An elevator cab which is constructed by combining multiple wall panels and interconnecting bent points formed in edge portions of each of the wall panels, **characterized in that** a pressed concavity or convexity is provided in a middle part of each of the wall panels.

2. The elevator cab according to claim 1, **characterized in that** a decorative surface is provided on a surface of the pressed concavity or convexity of the wall panel.

3. The elevator cab according to claim 1, **characterized in that** a fibrous material is stuck to the pressed concavity or convexity of the wall panel.

4. The elevator cab according to claim 1, **characterized in that** a resin is stuck to the pressed concavity or convexity of the wall panel.

5. The elevator cab according to claim 1, **characterized in that** an extruded hole is formed in the pressed concavity or convexity of the wall panel and **in that** a screen plate to which a fibrous material is stuck is fitted into the extruded hole.

6. The elevator cab according to claim 1, **characterized in that** an extruded hole is formed in the pressed concavity or convexity of the wall panel and **in that** a screen plate to which a resin is stuck is fitted into the extruded hole.

7. The elevator cab according to claim 1, **characterized in that** the wall panel is of a bent steel sheet construction and **in that** a screen plate made of a mirror-finished stainless steel material or a material different from the material for the wall panel is fitted into an extruded hole formed in the pressed concavity or convexity of the wall panel.

8. The elevator cab according to claim 1, **characterized in that** an extruded hole is formed in the pressed concavity or convexity of the wall panel and **in that** a screen frame, to the middle of which a paper material is stuck, is fitted into the extruded hole.

9. The elevator cab according to claim 1, **characterized in that** an extruded hole is formed in the pressed concavity or convexity of the wall panel and **in that** a wood material is fitted into the extruded hole.

10. The elevator cab according to claim 1, **characterized in that** an extruded hole is formed in the pressed concavity or convexity of the wall panel and **in that** a stone material is fitted into the extruded hole.

11. The elevator cab according to claim 1, **characterized in that** an extruded hole is formed in the pressed concavity or convexity of the wall panel and **in that** a glass material is fitted into the extruded hole.

Fig. 1

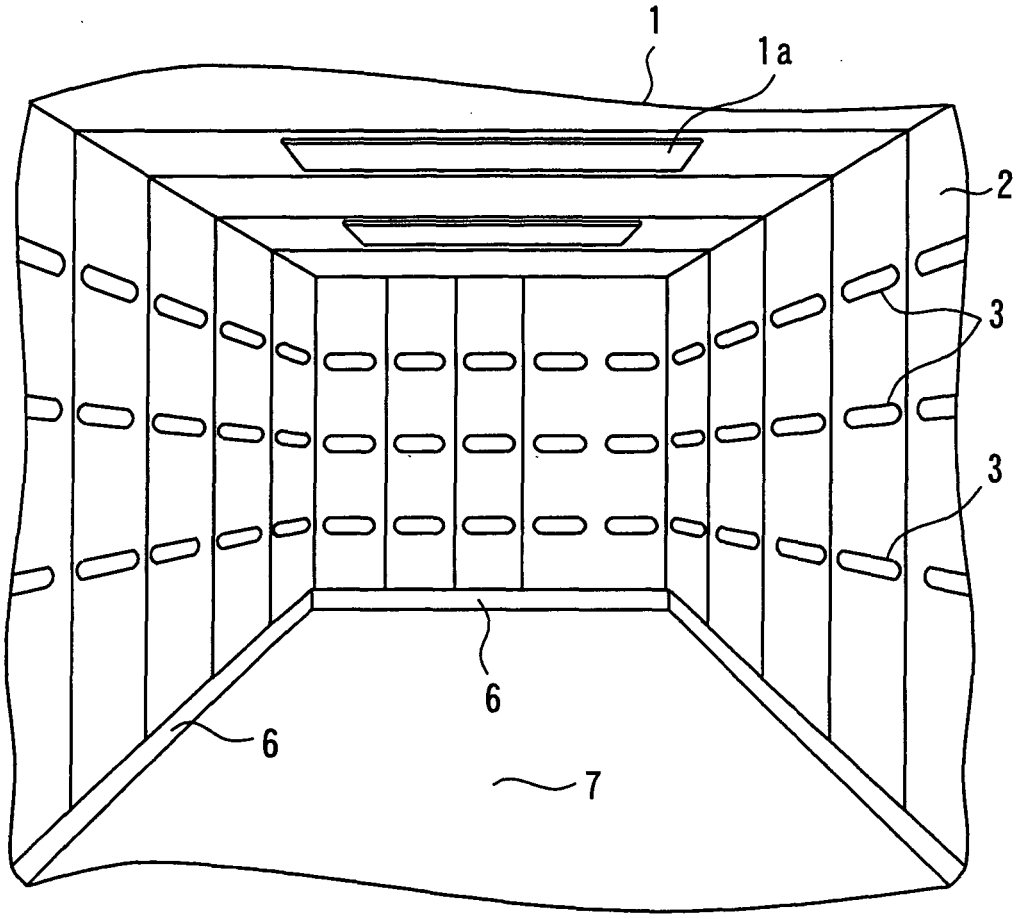


Fig. 2

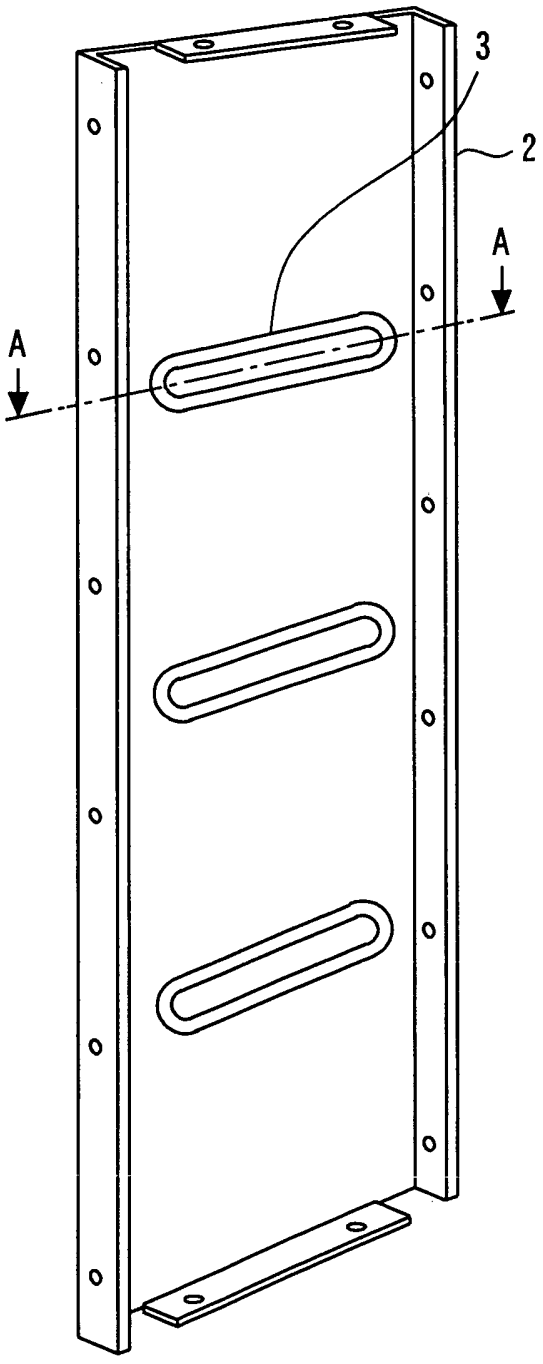


Fig. 3

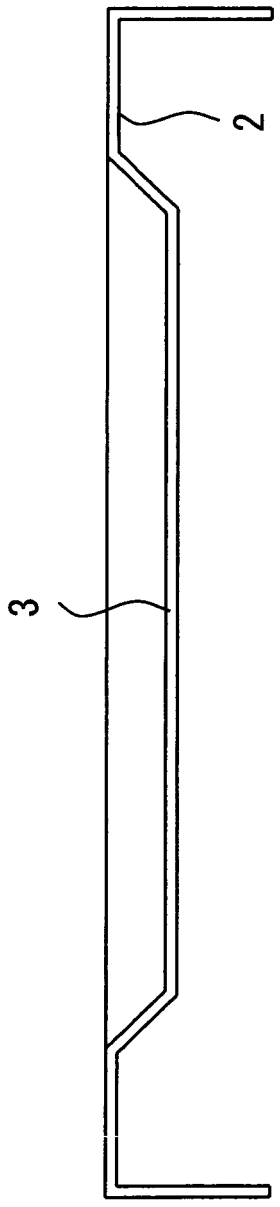


Fig. 4

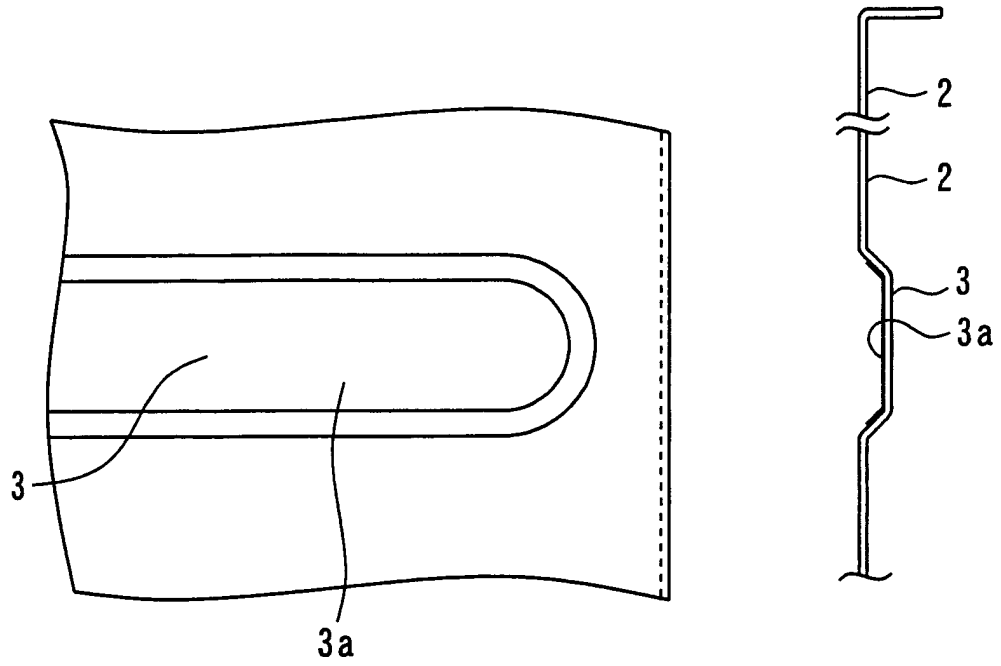


Fig. 5

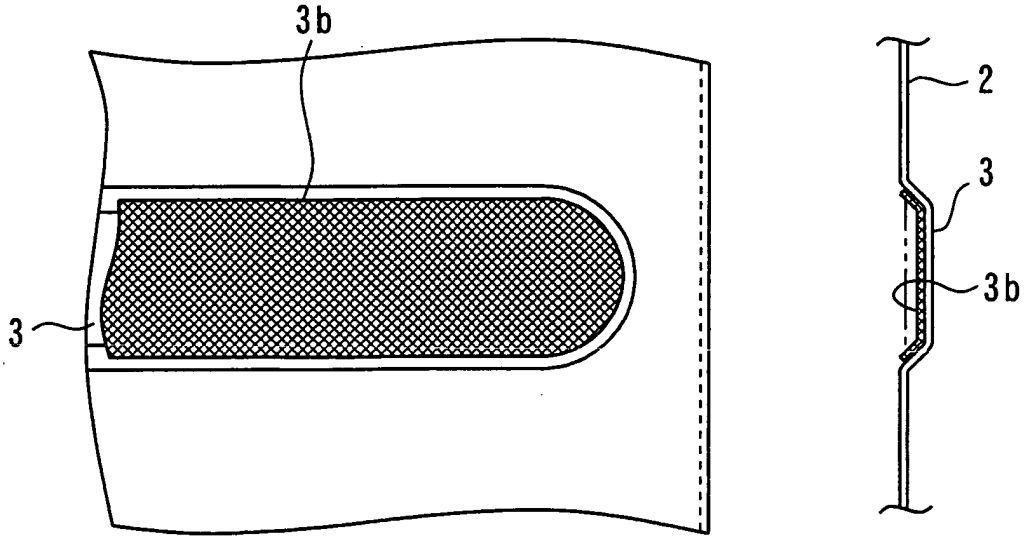


Fig. 6

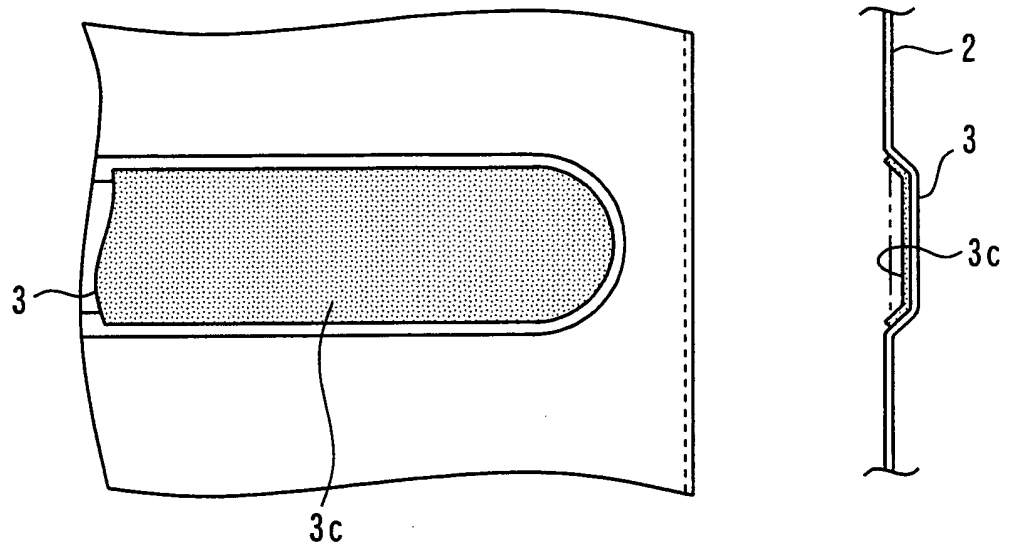


Fig. 7

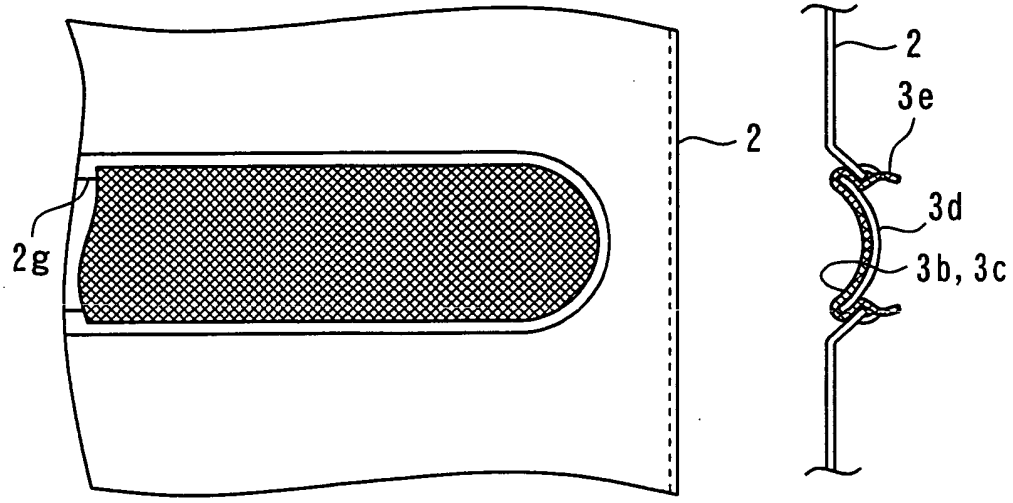


Fig. 8

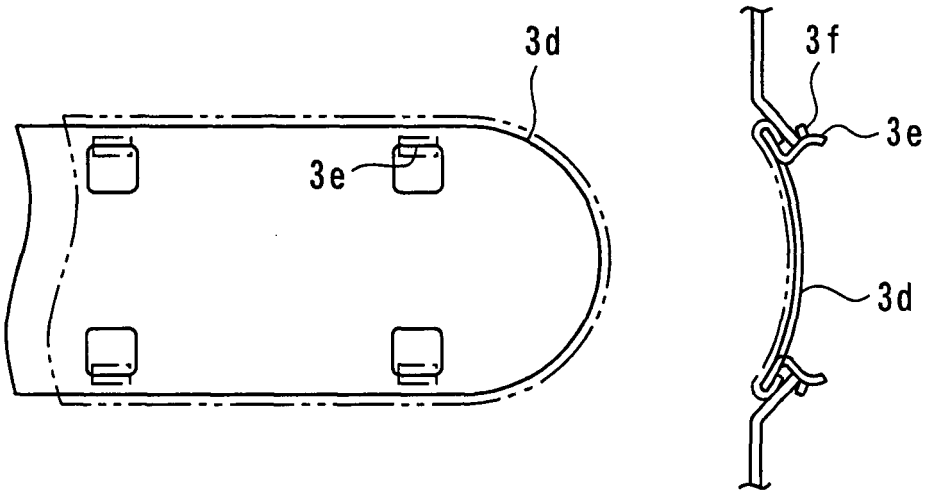


Fig. 9

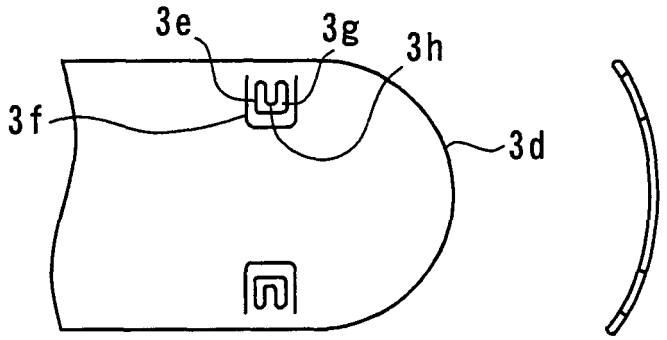


Fig. 10

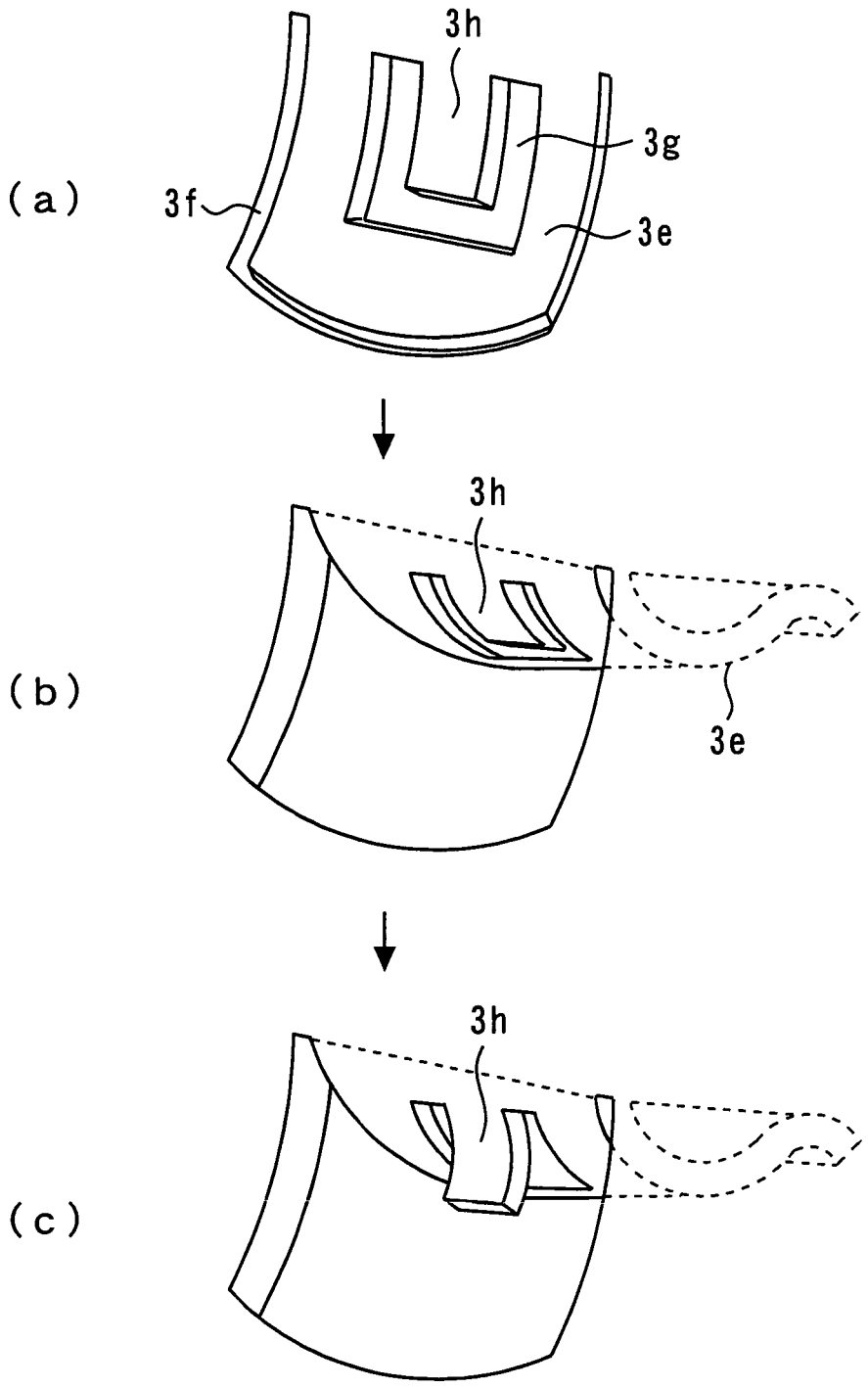


Fig. 11

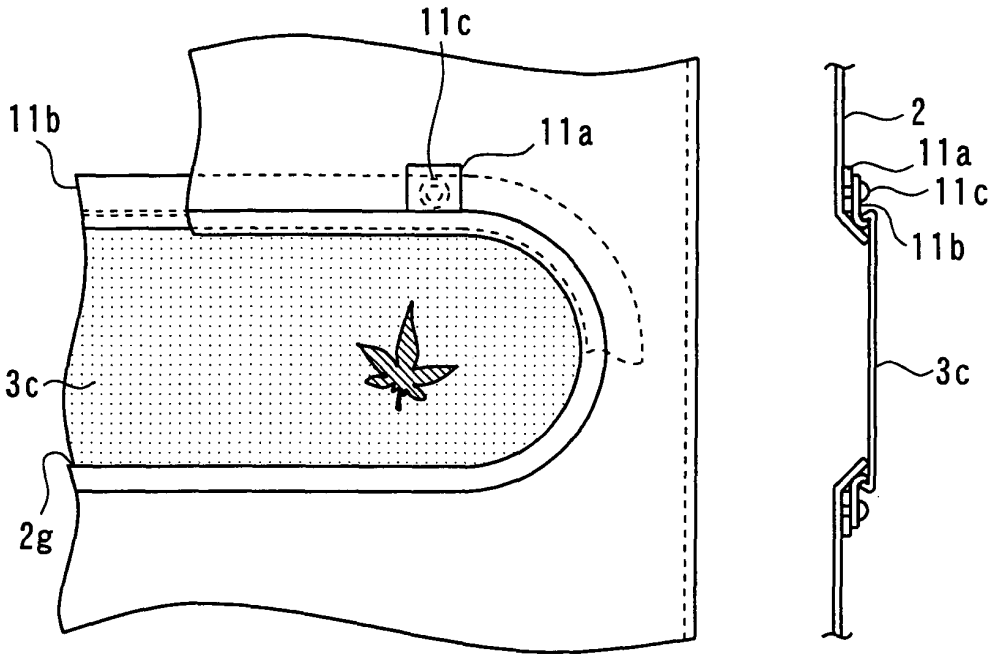


Fig. 12

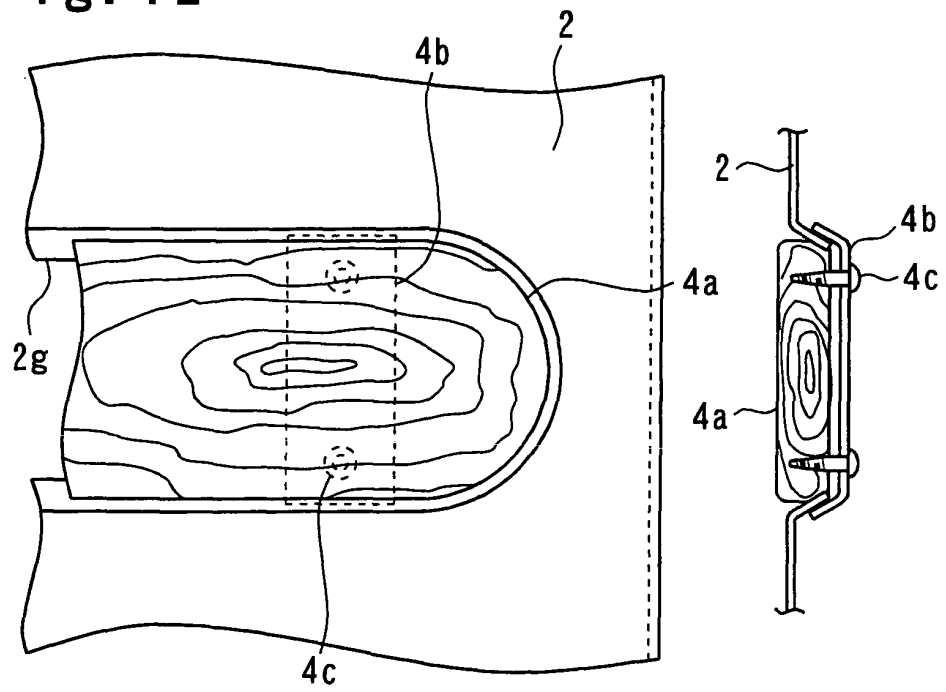


Fig. 13

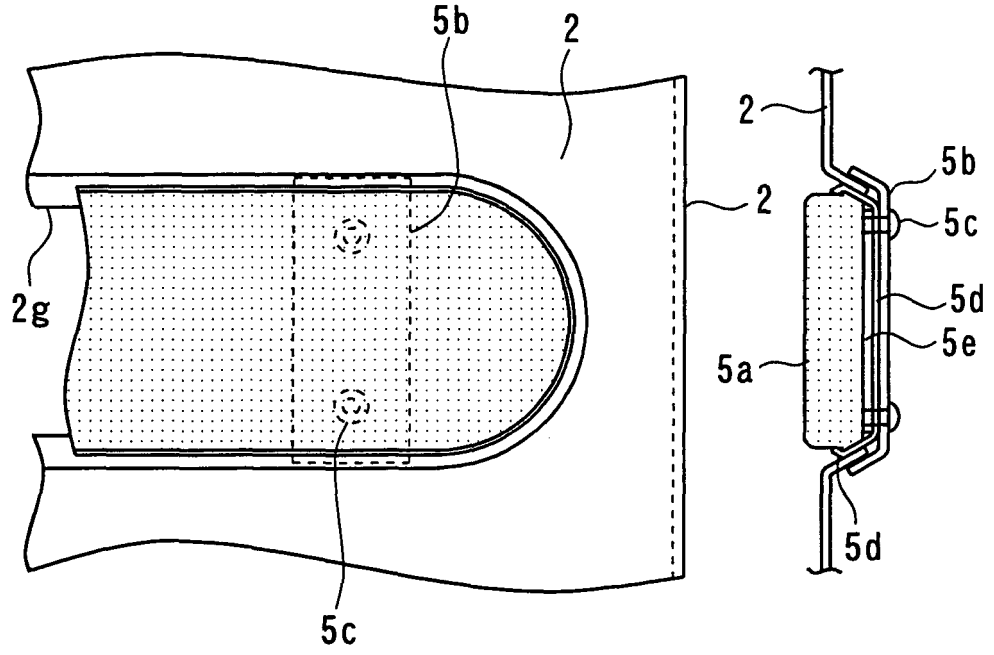
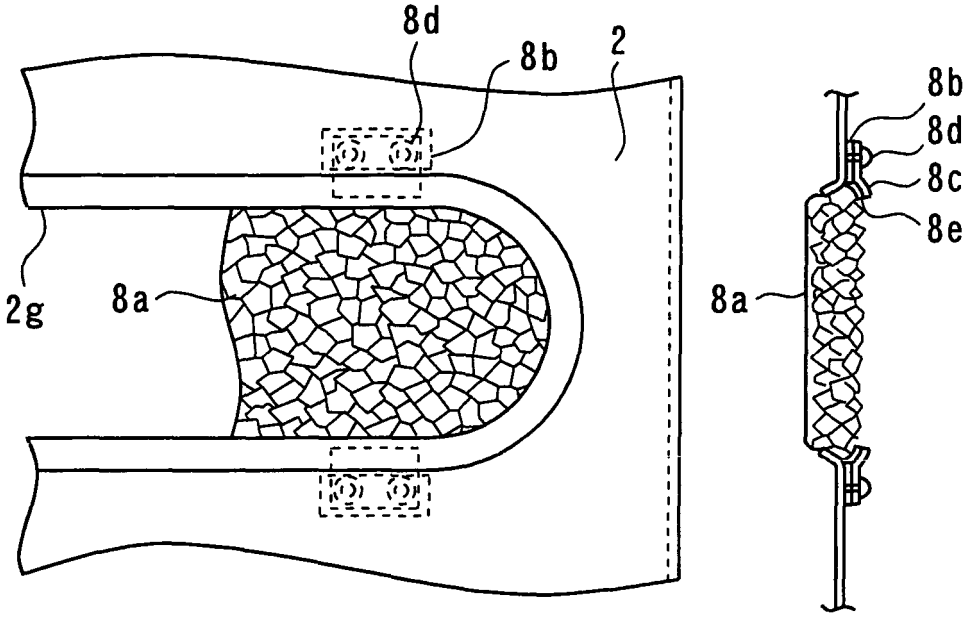


Fig. 14



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2006/307780

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)
B66B11/02

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 1996-2006
Kokai Jitsuyo Shinan Koho 1971-2006 Toroku Jitsuyo Shinan Koho 1994-2006

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	JP 2000-229771 A (Hitachi, Ltd.), 22 August, 2000 (22.08.00), Claim 1; Figs. 1 to 4 (Family: none)	1-11
Y	JP 26-001554 Y1 (Takeo SATO), 19 February, 1951 (19.02.51), (Family: none)	1-11
Y Y	JP 2000-044144 A (Hitachi Building Systems Co., Ltd.), 15 February, 2000 (15.02.00), Claim 1; Figs. 1 to 2 Par. No. [0011]; Figs. 3 to 4 (Family: none)	2-11 5-11

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

* Special categories of cited documents:
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24 July, 2006 (24.07.06)	01 August, 2006 (01.08.06)
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INTERNATIONAL SEARCH REPORT

International application No.
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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 11-310371 A (Hitachi, Ltd.), 09 November, 1999 (09.11.99), Claims 7, 9; Figs. 1 to 6 (Family: none)	1-2
A	JP 58-109377 A (Tokyo Shibaura Electric Co., Ltd.), 29 June, 1983 (29.06.83), (Family: none)	1

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2000229771 A **[0003]**