



SOEI PATENT & LAW FIRM

Marunouchi MY PLAZA 9th fl., 1-1, Marunouchi 2-chome
Chiyoda-ku, Tokyo 100-0005 JAPAN
TELEPHONE: +81-3-6738-8001 (3-6738-8022 for English)
FACSIMILE: +81-3-6738-8005 (Patent & Design)
E-mail: application@soei-patent.co.jp
URL: <http://www.soei.com>

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To whom it may concern:

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Signature of Junichi ISHIZUKA

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(54) [Title of the invention] BEAM HANGER

(57) [Abstract]

[Object] To provide a beam hanger which eliminates operations such as nailing at heights in a building site and with which installation of a beam can be completed in a single operation.

[Construction] The beam hanger includes a beam-side member 10 that has a hook 14 and is to be fitted to an end of a roof beam 120, and a wall-side member 20 that has a flat shape, has a slit 26 with which the hook 14 is engaged and that is to be fitted to a gable panel 100, the beam hanger being characterized in that the hook 14 has a claw part 14a formed on an end thereof for preventing dislodging, and that the roof beam 120 is fitted to the gable panel 100 by engagement between the beam-side member 10 and the wall-side member 20.

[CLAIMS]

[Claim 1] A beam hanger comprising:

a beam-side member to be fitted to an end of a beam; and

a wall-side member to be fitted to a wall, the beam hanger being characterized in that one of the beam-side member and the wall-side member comprises an engaging part and the other of the beam-side member and the wall-side member comprises an engaged part for engaging the engaging part, and the beam hanger is arranged to be capable of installing the beam to the wall by engagement between the beam-side member and the wall-side member.

[Claim 2] The beam hanger according to claim 1, characterized in that one of the beam-side member and the wall-side member comprises a latching part for preventing the beam-side member from dislodging upward, and the other comprises a latched part for engaging the latching part.

[Claim 3] The beam hanger according to claim 1 or 2, characterized in that the beam-side member has a plate-like hook that protrudes from an end surface of the beam as the engaging part, and

the wall-side member is of flat shape, the wall-side member having a slit formed parallel to a surface of the wall as the engaged part.

[Claim 4] The beam hanger according to claim 1 or 2, characterized in that the beam-side member has the engaging parts on an end surface and on both of side surfaces of the beam, and

the wall-side member has a wall fitting plate to be fitted to the wall, the wall fitting plate having an engaged part corresponding to the engaging part of the end surface, and a pair of wall protruding plates protruding from both ends of the wall fitting plate, respectively, and having engaged parts corresponding to the engaging parts of the side surfaces, respectively.

[Claim 5] The beam hanger according to claim 1 or 2, characterized in that the beam-side member is fitted to the beam at at least one surface excluding side surfaces of the beam, and

the wall-side member has a wall fitting plate to be fitted to the wall, a beam supporting plate protruding inward from the wall fitting plate for supporting a lower surface of the end of the beam, and a pair of reinforcing plates connecting a side of the wall fitting plate and a side of the beam supporting plate.

[Claim 6] The beam hanger according to claim 3, characterized in that the beam-side member comprises an L-shaped flat plate bent at a lower end, and is to be abutted and fitted to the end surface and a lower surface of the beam,

the wall-side member has a through-hole slightly larger than the wall-side member such that the beam-side member can be inserted in the through-hole when placing the beam on the beam supporting plate, and the beam hanger is arranged to be capable of installing the beam to the wall by inserting the beam-side member in the through-hole being the engaged part.

[Detailed Description of the Invention]

[0001]

[Industrial Field of Application] The present invention relates to a beam hanger, in particular, to a beam hanger with which installation of a beam can be completed in a single operation.

[0002]

[Prior Art] A panel construction method in which multiple panels are connected to construct a building has been traditionally known as a construction method of a building. FIG. 9 shows the installation of a roof beam to a gable panel in the panel construction method.

[0003] In FIG. 9, a gable panel 100 that is formed inclined to match the pitch of the roof is vertically arranged on a wall panel not shown, and a beam receiving-side reinforcing plate 102 is fitted to the gable panel 100 by an adhesive and a plurality

of nails 104. A beam hanger 110 is fitted to the beam receiving-side reinforcing plate 102.

[0004] The beam hanger 110 has an fitting plate 112 that is in contact with the beam receiving-side reinforcing plate 102 by having an upper end of the fitting plate 112 caught on the beam receiving-side reinforcing plate 102 and secured by nails 104, and a beam receiving part 114 protruding from the fitting plate 112 in a U-shape to support a roof beam 120.

[0005] The beam receiving part 114 of the beam hanger 110 having such a shape supports an end of the roof beam 120, and by securing them to each other by the nails 104, the roof beam 120 is to be installed to the gable panel 100.

[0006]

[Problem to be Solved by the Invention] However, using the conventional beam hanger 110 to install the roof beam 120 to the gable panel 100 requires the nails 104 to be driven after placing the end of the roof beam 120 on the beam receiving part 114. The driving of the nails is troublesome for the workers as the roof beam 120 is installed at an elevated position.

[0007] The present invention takes such conventional problems into consideration and it is an objective of the present invention to provide a beam hanger which eliminates operations such as nailing at heights in a building site and with which the installation of a beam is completed by a single operation.

[0008]

[Means for Solving the Problem] To achieve the above objective, the invention of claim 1 includes a beam-side member to be fitted to an end of a beam, and a wall-side member to be fitted to a wall, and the invention is characterized in that one of the beam-side member and the wall-side member comprises an engaging part and the other of the beam-side member and the wall-side member comprises an engaged part for engaging the engaging part, and the invention is arranged to be ca-

pable of installing the beam to the wall by engagement between the beam-side member and the wall-side member.

[0009] The invention of claim 2 is an invention according to claim 1, characterized in that one of the beam-side member and the wall-side member comprises a latching part for preventing the beam-side member from dislodging upward, and the other comprises a latched part for engaging the latching part.

[0010] The invention of claim 3 is an invention according to claim 1 or 2, characterized in that the beam-side member has a plate-like hook protruding from an end surface of the beam as the engaging part, and the wall-side member is of flat shape and has a slit formed parallel to a surface of the wall as the engaged part.

[0011] The invention of claim 4 is an invention according to claim 1 or 2, characterized in that the beam-side member has the engaging parts on an end surface and on both of side surfaces of the end of the beam, and the wall-side member has a wall fitting plate to be fitted to the wall and having an engaged part corresponding to the engaging part of the end surface, and a pair of wall protruding plates protruding from both ends of the wall fitting plate, respectively, and having engaged parts corresponding to the engaging parts of the side surfaces, respectively.

[0012] The invention of claim 5 is an invention according to claim 1 or 2, characterized in that the beam-side member is fitted to the beam at least one surface excluding side surfaces of the beam, and the wall-side member has a wall fitting plate to be fitted to the wall, a beam supporting plate protruding inward from the wall fitting plate for supporting a lower surface of the end of the beam, and a pair of reinforcing plates connecting a side of the wall fitting plate and a side of the beam supporting plate.

[0013] The invention of claim 6 is an invention according to claim 3, characterized in that beam-side member comprises an L-shaped flat plate bent at a lower end, and is to be abutted and fitted to the end surface and a lower surface of the beam, the wall-side member has a through-hole slightly larger than the wall-side member

such that the beam-side member can be inserted in the through-hole when placing the beam on the beam supporting plate, and the beam hanger is arranged to be capable of installing the beam to the wall by inserting the beam-side member in the through-hole being the engaged part.

[0014]

[Operation] In the invention of claim 1, the beam can be installed to the wall by simply fitting the beam-side member to the end of the beam, fitting the wall-side member to the wall and then engaging the two members.

[0015] In particular, when the present invention is applied to a panel construction method, fitting of the beam-side member to the beam and fitting of the wall-side member to a gable panel that forms the wall can be carried out in a factory, which leaves engagement between the beam-side member and the wall-side member to be the only operation required at the building site.

[0016] In the invention of claim 2, the latching part and the latched part prevent the engaging part of the beam-side member from dislodging upward from the engaged part of the wall-side member. In particular, when applied to the installation of a roof beam, the present invention can counter the force when the roof is blown upward by wind pressure.

[0017] According to the invention of claim 3, the wall-side member has a flat shape, so that when the present invention is applied to the panel construction method, other building materials do not tend to be damaged during transportation from the factory to the building site by having the wall-side member fitted to the gable panel in advance. At the building site, the beam can be fitted to the wall by simply inserting the hook of the beam-side member into the slit of the wall-side member.

[0018] Alternatively, according to the invention of claim 4, the wall-side member has the engaged parts on the wall fitting plate and the pair of the wall protruding plates. Thus, by having a total of three engaged parts, the beam-side member and

the wall-side member can be securely engaged and the beam can be firmly installed to the wall.

[0019] According to the invention of claim 5, the wall-side member has the beam supporting plate that supports a lower surface of the beam, and the beam supporting plate is reinforced by the reinforcing plates, so that even a large beam can be installed to the wall without the wall-side member being torn off or being caved into the wall by the weight of the beam. Moreover, having the reinforcing plates enables positioning on the plane that intersects the axial direction of the beam.

[0020] Furthermore, since the beam-side member is fitted to the end of the beam at a surface excluding the side surfaces of the beam, nailheads and the like do not project from the side surfaces of the beam to obstruct engagement between the wall-side member and the beam-side member, and the beam can be dropped into the wall-side member from above or slid thereinto from an inner side.

[0021] According to the invention of claim 6, the L-shaped beam-side member fits entirely into the engaged part of the wall-side member as the engaging part to engage the beam-side member with the wall-side member, which eliminates the need to provide an engaging part on the beam-side member, making the manufacture of the member relatively easy. Moreover, inserting the L-shaped beam-side member into the through-hole of the wall-side member can prevent the beam from dislodging upward and in the axial direction.

[0022]

[Embodiments] Embodiments of the present invention will now be described with reference to the drawings.

[0023] FIG. 1 is a perspective view of a first embodiment of a beam hanger according to the present invention. The first embodiment is the present invention applied to the installation of a roof beam 120 to the gable panel 100 in a panel construction method as with the conventional example of FIG. 9. A longitudinal sectional view of the roof beam 120 installed to the gable panel 100 is shown in FIG. 2

[0024] The beam hanger according to the first embodiment includes a beam-side member 10 and a wall-side member 20.

[0025] The beam-side member 10 is fitted to an end of the roof beam 120, and includes a fitting part 12 that is bent in a U-shape to contact an end surface and side surfaces of the roof beam 120, and a hook 14 that is formed by being bent at 180 degrees from an upper end of a front surface of the fitting part 12.

[0026] The fitting part 12 has a plurality of nail holes 12a, which enables nails to be driven into the end surface and side surfaces of the roof beam 120.

[0027] The hook 14 has a claw part 14a at an end thereof, that is bent substantially at a right angle in a direction toward the fitting part 12. As shown in FIG. 2, this claw part 14a catches on a lower end of a bulge 22 of the wall-side member 20 when fitted to the wall-side member 20 to prevent dislodging.

[0028] Next, as with the conventional example of FIG. 9, the wall-side member 20 is to be fitted to the gable panel 100 with the beam receiving-side reinforcing plate 102 interposed therebetween, and is formed in an L-shape to contact the beam receiving-side reinforcing plate 102 from an upper end surface to a front surface thereof.

[0029] The bulge 22 is formed in a front center portion such that a gap is formed between the bulge 22 and the beam receiving-side reinforcing plate 102. Portions other than the bulge 22 form an fitting part 24, and the wall-side member 20 can be fitted to the beam receiving-side reinforcing plate 102 by driving nails through nail holes 24a formed in the fitting part 24. Although having the bulge 22, the wall-side member 20 has an overall relatively flat shape.

[0030] The bulge 22 has a slit 26 formed on an upper end in the L-shaped bent portion with a lower end thereof also opened. The slit 26 has a size such that the hook 14 of the beam-side member 10 can be inserted therein, and the bulge 22 is formed such that the gap between the bulge 22 and the beam receiving-side reinforcing plate 102 decreases from a top portion to a bottom portion. Thus, when the

hook 14 is inserted into the slit 26, the claw part 14a catches on the opening at the lower end to prevent dislodging, as shown in FIG. 2.

[0031] The first embodiment according to the present invention is configured as above and the installing operation will be described below.

[0032] First of all, the beam-side member 10 is fitted to the roof beam 120 and the wall-side member 20 is fitted to the gable panel 100 via the beam receiving-side reinforcing plate 102 at the factory, and they are transported to the building site in this state. The wall-side member 20 has a relatively flat shape, which may reduce the chance of damaging other building materials during transportation and facilitates the transportation.

[0033] At the building site, the installation of the roof beam 120 is completed simply by vertically arranging the gable panel 100 at a predetermined position and inserting the hook 14 of the beam-side member 10 fitted to the roof beam 120 into the slit 26 of the wall-side member 20. Moreover, dislodging of the beam-side member 10 is prevented by the claw part 14a of the hook 14.

[0034] Next, FIG. 3 is a side view showing a second embodiment of the beam hanger according to the present invention. The second embodiment is also the present invention applied to the installation of the roof beam 120 to the gable panel 100 in the panel construction method. The beam hanger according to the second embodiment includes a beam-side member 30 and a wall-side member 40.

[0035] FIG. 4 is a diagram showing the beam-side member 30, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

[0036] The beam-side member 30 has a front plate 32 that contacts the end surface of the roof beam 120, side plates 34, 34 that respectively contact the side surfaces thereof, and a bottom plate 36 that contacts a lower surface thereof, and as shown in FIGS. 4(1) to (3), a plurality of nail holes 30a are formed in each plate, so that nails can be driven to secure the beam-side member 30 to the roof beam 120.

[0037] The front plate 32 has a hook 33 formed in a slightly high location thereof, and a dislodging prevention hole 35 formed below the hook 33 for preventing dislodging from the wall-side member 40. The bottom plate 36 is bent at a right angle at an end to form a rib 34a.

[0038] Next, FIG. 5 is a diagram showing the wall-side member 40, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

[0039] The wall-side member 40 is to be fitted to the gable panel 100 via the beam receiving-side reinforcing plate 102 (see, FIG. 3), and has a fitting part 42 that contacts a surface of the beam receiving-side reinforcing plate 102 and is secured thereto by driving nails through a plurality of nail holes 40a.

[0040] This fitting part 42 has a band plate 44 protruded from a lower portion thereof with a slit 46 between the band plate 44 and the fitting part 42, and a triangular protrusion 48 formed below the band plate 44 such that it catches on the dislodging prevention hole 35 of the beam-side member 30. It should be noted that this protrusion 48 is formed by making a cut in the fitting part 42 and bending the same.

[0041] Moreover, an upper end of the fitting part 42 is bent at a right angle so that it catches on an upper end of the beam receiving-side reinforcing plate 102 to be able to support the load of the roof beam 120. This bent portion has ribs 42a formed thereon for reinforcement.

[0042] A lower end of the fitting part 42 is also bent at a right angle to form a rib 42b to prevent deformation of the fitting part 42 due to the load of the roof beam 120.

[0043] The second embodiment according to the present invention is configured as above and the installing operation will be described below.

[0044] First of all, as with the first embodiment, the beam-side member 30 is fitted to the roof beam 120 and the wall-side member 40 is fitted to the gable panel 100 via the beam receiving-side reinforcing plate 102 at the factory, and they are trans-

ported to the building site in this state. The wall-side member 40 has fewer protrusions, which may reduce the chance of damaging other building materials during transportation and facilitates the transportation.

[0045] At the building site, the installation of the roof beam 120 is completed simply by vertically arranging the gable panel 100 at a predetermined position and, as shown in FIG. 3, inserting the hook 33 of the beam-side member 30 fitted to the roof beam 120 into the slit 46 of the wall-side member 40. Moreover, the protrusion 48 of the wall-side member 40 catches on a lower end of the dislodging prevention hole 35 of the beam-side member 30 and prevents the beam-side member 30 from dislodging from the wall-side member 40.

[0046] Next, FIG. 6 is a side view showing a third embodiment of the beam hanger according to the present invention. The third embodiment is also the present invention applied to the installation of the roof beam 120 to the gable panel 100 in the panel construction method. The beam hanger according to the third embodiment includes a beam-side member 50 and a wall-side member 60.

[0047] FIG. 7 is a diagram showing the beam-side member 50, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

[0048] The beam-side member 50 is different from the beam-side member 30 of the second embodiment above in that it has protrusions 56, 58 formed on each side plate 54, and is the same in other components, so that explanation will be omitted.

[0049] The protrusions 56, 58 are formed by making a cut in the side plate 54 and bending the same and are formed one above the other with a predetermined interval, with the upper protrusion 56 having a triangular shape and the lower protrusion 58 having an inverted triangular shape in side view. The protrusions 56, 58 are to be engaged with dislodging prevention holes 66, 68 of the wall-side member 60.

[0050] Next, FIG. 8 is a diagram showing the wall-side member 60, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

[0051] The wall-side member 60 is different from the wall-side member 40 of the second embodiment in that it has side plates 64 which protrude from either ends of an fitting part 62, and is otherwise the same, so that explanation will be omitted.

[0052] Each side plate 64 has engaging holes 66, 68 formed one above the other with a predetermined interval in a center portion thereof. The upper engaging hole 66 is for supporting the load of the roof beam 120 by having the protrusion 56 of the beam-side member 50 caught thereon, and the lower engaging hole 68 is for preventing dislodging by having the protrusion 58 of the beam-side member 50 caught thereon.

[0053] The third embodiment according to the present invention is configured as shown above, and the installing operation will be described below. The third embodiment includes all of the components of the second embodiment above, so that the third embodiment is capable of installing the roof beam 120 in a manner similar to that of the second embodiment. In the third embodiment, the beam-side member 50 has the protrusions 56, 58 and the wall-side member 60 has the engaging holes 66, 68, so that the roof beam 120 is supported by the protrusion 56 and the engaging hole 66 and dislodging is prevented by the protrusion 58 and the engaging hole 68. The third embodiment thus has more parts that support the load and more parts that prevent dislodging compared to the second embodiment, and is capable of more reliably supporting and securing the roof beam 120.

[0054] Embodiments shown in FIGS. 10 and 11 may be variations of the present invention. FIG. 10 is a variation of the beam-side member, and FIG. 11 is a diagram that shows a wall-side member which corresponds to the beam-side member of FIG. 10.

[0055] A beam-side member 70 has hooks 76 formed on side plates 74 and the hooks 76 are to be caught on upper ends of side plates 84 of a wall-side member 80. Dislodging is prevented in a manner similar to that of the second embodiment above by engagement between a dislodging prevention hole 75 of the beam-side

member 70 and a protrusion 88 of the wall-side member 80. It should be noted that ribs 84a are formed on upper ends of the side plates 84 of the wall-side member 80 to prevent the hooks 76 from slipping off when the wall-side member 80 becomes warped. Such configuration is capable of increasing structural resistance capability and of reducing cost.

[0056] FIG. 12 is a perspective view showing a fourth embodiment of the beam hanger according to the present invention. This embodiment is also the present invention applied to the installation of the roof beam 120 to the gable panel 100 in the panel construction method.

[0057] The beam hanger according to the fourth embodiment includes a beam-side member 130 and a wall-side member 140.

[0058] The beam-side member 130 is to be fitted to an end of the roof beam 120 and is bent in an L-shape having a front plate 132 that contacts an end surface of the roof beam 120 and a bottom plate 134 that contacts a lower surface thereof. The front plate 132 has a plurality of nail holes 132a formed therein and can be secured to the roof beam 120 by driving nails therethrough. As shown in FIG. 12, the beam-side member 130 has a width that is substantially equal to the width of the roof beam 120, and is formed to cover the widths of the end surface and the lower surface of the roof beam 120 at the end of the roof beam 120.

[0059] The wall-side member 140 is to be fitted to the gable panel 100 with the beam receiving-side reinforcing plate 102 interposed therebetween to receive the end of the roof beam 120, and includes a fitting plate 142 and a beam receiving part 148.

[0060] The fitting plate 142 is for fitting the wall-side member 140 to the gable panel 100 with the beam receiving-side reinforcing plate 102 interposed therebetween, and an upper end surface thereof is formed in a bent L-shape to contact the beam receiving-side reinforcing plate 102 from an upper end surface to a front surface thereof. This bent portion has a plurality of ribs 142a formed thereon for rein-

forcement with predetermined intervals. The fitting plate 142 has a plurality of nail holes 142b formed therein and can be secured to the beam receiving-side reinforcing plate 102 by driving nails therethrough.

[0061] The beam receiving part 148 is substantially U-shaped protruding perpendicularly relative to the fitting plate 142 and inwardly from a front center portion of the fitting plate 142 with lower ends thereof aligned to each other, and comprises a beam supporting plate 144 and reinforcing plates 146, 146.

[0062] The beam supporting plate 144 is located at a bottom surface of the beam receiving part 148 and has the lower surface of the roof beam 180 placed thereon to support the same.

[0063] An inner side end of the beam supporting plate 144 is bent perpendicularly downward to form a rib 144a to prevent deformation of the beam supporting plate 144 by the load of the roof beam 120. An end of the beam supporting plate 144 closer to the fitting plate 142 is also bent perpendicularly downward to form a rib in a manner similar to that of the inner side end. Moreover, an end of the rib is formed bent perpendicularly toward the fitting plate 142 such that the end is parallel to the beam supporting plate 144, and when the roof beam 120 which has the beam-side member 130 fitted thereto is placed on the beam supporting plate 144, the rib is engageable with the bottom plate 134 of the beam-side member 130 and can support the lower surface of the bottom plate 134. The depression of the beam supporting plate 144 formed in this manner is a portion of an engaging hole 149 that is described below.

[0064] The reinforcing plates 144 are a pair of flat plates each of which is located on a side surface of the beam receiving part 148 and extends a predetermined length perpendicularly upward from either side of the beam supporting plate 144 to connect the beam supporting plate 144 to the fitting plate 142. The reinforcing plates 144 reinforce the beam receiving part 148 and prevent lateral displacement of the roof beam 120 when placing the roof beam 120. The reinforcing plates 144

are protruded perpendicularly and inwardly from the fitting plate 142 and are formed by cutting out the fitting plate 142 and bending the same.

[0065] The beam receiving part 148 includes an engaging hole 149 into which the wall-side member 130 is fitted to connect the beam-side member 130 to the wall-side member 140.

[0066] The engaging hole 149 is comprised of an opening in the fitting plate 142 that is formed by providing the reinforcing plates 146 and the depression formed by the beam supporting plate 144 being bent at the end closer to the fitting plate 142. The size of the engaging hole 149 is slightly larger than the beam-side member 130 so that the beam-side member 130 is engageable therewith.

[0067] The fourth embodiment according to the present invention is configured as above and the installing operation will be described below.

[0068] As with the other embodiments, the beam-side member 130 is fitted to the roof beam 120 and the wall-side member 140 is fitted to the gable panel 100 via the beam receiving-side reinforcing plate 102 at the factory, and they are transported to the building site in this state.

[0069] At the building site, as shown in FIG. 12, the gable panel 100 is vertically arranged at a predetermined position, the end of the roof beam 120 to which the beam-side member 130 is fitted is placed on the beam receiving part 148 of the wall-side member 140, and the beam-side member 130 is pushed and fitted into the engaging hole 149 to complete the installation of the roof beam 120. When a small gap is formed at the engaging portion in doing so, a packing material or the like may be inserted therein.

[0070] FIG. 13 is a cross-sectional view showing the roof beam 120 installed.

[0071] The roof beam 120 is installed to the wall by the beam-side member 130 fitted to the end thereof being entirely fitted into the engaging hole 149 of the wall-side member 149, with the upper end of the engaging hole 149 being a latching part that prevents blow-up in an upward direction and the beam supporting plate

144 being capable of preventing inward dislodging. Moreover, since the beam receiving part 148 that has the reinforcing plate 166 firmly supports the end of the roof beam 120, even a large roof beam 120 can be securely supported.

[0072] Furthermore, the beam-side member 130 is nailed to the roof beam 120 at the end surface, so that engagement between the beam-side member 130 and the wall-side member 140 is not interfered by any protrusion of nailheads, and it is possible to insert the roof beam 120 into the beam receiving part 148 from the inner side and to drop the roof beam 120 into the beam receiving part 148 from above.

[0073] Next, FIG. 14 is a perspective view showing a fifth embodiment of the beam hanger according to the present invention. The fifth embodiment is also the present invention applied to the installation of the roof beam 120 to the gable panel 100 in the panel construction method. The beam hanger according to the fifth embodiment includes a beam-side member 150 and a wall-side member 160.

[0074] The beam-side member 150 is different from the beam-side member 130 of the fourth embodiment in that it is formed smaller than the width of the roof beam 120, but is the same in its overall shape and components other than its size, so that explanation will be omitted.

[0075] The wall-side member 160 is to be fitted to the gable panel 100 with the beam receiving-side reinforcing plate 102 interposed therebetween to receive the end of the roof beam 120, and includes a beam receiving part fitting plate 162 and a beam receiving part 168.

[0076] The fitting plate 162 is the same as the fitting plate 142 of the beam-side member 140 of the fourth embodiment, and explanation thereof will be omitted.

[0077] The beam receiving part 168 is substantially U-shaped protruding perpendicularly relative to the fitting plate 162 and inwardly from a front center portion of the fitting plate 162 with lower ends thereof aligned to each other, and includes a beam supporting plate 164 and reinforcing plates 166, 166.

[0078] The beam supporting plate 164 is located at a bottom surface of the beam receiving part 168 and has the lower surface of the roof beam 120 placed thereon to support the same.

[0079] An inner side end of the beam supporting plate 164 is bent perpendicularly downward to form a rib 164a to prevent deformation of the beam supporting plate 144 due to the load of the roof beam 120.

[0080] The reinforcing plates 164 are a pair of flat plates each of which is located on a side surface of the beam receiving part 168 and extends a predetermined length perpendicularly upward from either side of the beam supporting plate 164 to connect the beam supporting plate 164 to the fitting plate 162. The reinforcing plates 164 reinforce the beam receiving part 168 and prevent lateral displacement of the roof beam 120 when placing the roof beam 120. The reinforcing plates 164 are protruded perpendicularly and inwardly from the fitting plate 162 and are formed by cutting out the fitting plate 162 and bending the same.

[0081] An alignment plate 165 is fitted in an opening of the fitting plate 162 which is surrounded by the reinforcing plates 164, 164 and the beam supporting plate 144.

[0082] The alignment plate 165 is vertically arranged on the beam supporting plate 144 displaced inward by an amount that is substantially the same as the thickness of a rib 162a.

[0083] The beam receiving part 168 includes an engaging hole 169 in which the wall-side member 150 is fitted to connect the beam-side member 150 to the wall-side member 160.

[0084] The engaging hole 169 is formed by an L-shaped through-hole that continuously extends from the alignment plate 165 to the beam supporting plate 164 substantially near the center of the alignment plate 165 and is capable of having the beam-side member 150 fitted therein. The engaging hole 169 has a size that is slightly larger than the beam-side member 150 so that the beam-side member 150

can be fitted therein and has a latching part 167 on an upper end that prevents the beam-side member 150 from dislodging upward.

[0085] The latching part 167 is a plate protruding inward and obliquely downward and is fitted along the upper end of the engaging hole 169.

[0086] The fifth embodiment according to the present invention is configured as above and the installing operation thereof will be described below.

[0087] As with the other embodiments, the beam-side member 150 is fitted to the end of the roof beam 120 substantially near the center at the end surface and the lower surface thereof and the wall-side member 160 is fitted to the gable panel 100 via the beam receiving-side reinforcing plate 102 at the factory, and they are transported to the building site in this state.

[0088] At the building site, as with the fourth embodiment, the gable panel 100 is vertically arranged at a predetermined position, the end of the roof beam 120 to which the beam-side member 150 is fitted is placed on the beam receiving part 168 of the wall-side member 160, and the beam-side member 150 is entirely pushed and fitted into the engaging hole 169 to complete the installation of the roof beam 120.

[0089] In the fifth embodiment, the engaging hole 169 is protruded inward by an amount equivalent to the thickness of the rib 162a, so that the installation of the roof beam 120 is not affected by the rib 162a. Moreover, by having the latching part 167, upward dislodging due to blow-up can be reliably prevented. The other operations and effects are the same as those in the fourth embodiment and explanation thereof will be omitted.

[0090] It should be noted that the embodiments shown in FIG. 15 may be variations of the fourth and fifth embodiments.

[0091] A beam-side member 170 shown in FIG. 15(1) has a through-hole 174a that is to be an engaged part in a bottom plate 174, has a protrusion 184a that is formed by cutting out a portion of a beam supporting plate 184 of the wall-side

member 180 and raising the same, and has a latching part 187 on an upper end of a beam receiving part 188 toward an fitting plate 182 that prevents the roof beam 120 from dislodging upward. When the roof beam 120 to which the beam-side member 170 is fitted is placed on the beam receiving part 188 of the wall-side member 180, the protrusion 184a catches on the through-hole 174a to prevent inward dislodging, and the latching part 187 prevents upward dislodging. The latching part that prevents the roof beam 120 from dislodging upward may be provided on the beam-side member 170.

[0092] The beam-side member may also be as shown in FIG. 15(2).

[0093] A beam-side member 190 is bent in a U-shape and has a front plate 192 which comes into contact with the end surface of the roof beam 120 and side plates 196, 196 which come into contact with the side surfaces thereof, and has a claw 196a cut-out formed on each side plate 196. The wall-side member 190 is fitted to the roof beam 120 by nailing the front plate 192 to the end surface of the roof beam 120. Forming an engaged portion that is engageable with the claw 196a on the beam receiving part of the wall-side member (not shown) enables the installation of the roof beam 120 to be completed in a single operation.

[0094] Thus, even when the member comes into contact with the side surfaces of the roof beam 120, the engagement between the wall-side member and the beam-side member 190 will not be obstructed by protrusion of any nailheads if the member is fitted to a place other than the side surfaces. However, in this case, the roof beam 120 is preferably dropped into the beam receiving part from above.

[0095] The present invention is not limited to the above embodiments and many variations are possible within the scope of the invention.

[0096] For example, the present invention has been applied to a panel construction method in the above embodiments, but it is not limited thereto, and may be applied to conventional or other construction methods. Moreover, although the present invention has been applied to the installation of a roof beam in the above

embodiments, it is not limited thereto, and the present invention may also be applied to the installation of lintels or the like.

[0097]

[Effect of the Invention] As described above, the invention of claim 1 enables a beam to be installed in a single operation and can eliminate operations such as nailing at heights in a building site.

[0098] The invention of claim 2 eliminates operations for preventing dislodging because the beam installed in a single operation does not dislodge upward due to the latching part and the latched part.

[0099] According to the invention of claim 3, the wall-side member has a flat shape, so that when the present invention is applied to a panel construction method, the wall-side member may be fitted to the gable panel in advance, which reduces the chance of other building materials being damaged during transportation from the factory to the building site.

[0100] According to the invention of claim 4, engagement is made at a total of three locations, so that the beam-side member and the wall-side member are securely engaged and the beam can be firmly installed to the wall.

[0101] According to the invention of claim 5, the wall-side member has a beam supporting plate that supports the lower surface of the beam and the beam supporting plate is reinforced by a reinforcing plate, so that even a large beam can be installed to the wall without the wall-side member being torn off or being caved into the wall by the weight of the beam. Moreover, having the reinforcing plate enables positioning on the plane that intersects the axial direction of the beam.

[0102] Furthermore, since the beam-side member is fitted to the end of the beam at a surface excluding the side surfaces of the beam, nailheads and the like do not project from the side surfaces of the beam to obstruct engagement between the wall-side member and the beam-side member, and the beam can be dropped into the wall-side member from above or slid thereinto from the inner side.

[0103] According to the invention of claim 6, the whole of the L-shaped beam-side member fits into the engaged part of the wall-side member as the engaging part, so that the beam-side member engages with the wall-side member, which eliminates the need to provide an engaging part on the beam-side member, making the manufacture of the member relatively easy. Moreover, fitting the L-shaped beam-side member into the through-hole of the wall-side member prevents the beam from dislodging upward and in the axial direction.

[Brief Description of the Drawings]

FIG. 1 is a perspective view showing a first embodiment of a beam hanger according to the present invention.

FIG. 2 is a longitudinal sectional view showing a roof beam installed to a gable panel in FIG. 1.

FIG. 3 is a side view showing a second embodiment of the beam hanger according to the present invention.

FIG. 4 is a diagram showing the beam-side member of FIG. 3, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

FIG. 5 is a diagram showing the wall-side member of FIG. 3, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

FIG. 6 is a side view showing a third embodiment of the beam hanger according to the present invention.

FIG. 7 is a diagram showing the beam-side member of FIG. 6, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

FIG. 8 is a diagram showing the wall-side member of FIG. 6, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

FIG. 9 is a perspective view showing a conventional installation of the roof beam to the gable panel in a panel construction method.

FIG. 10 is a diagram showing a variation of the beam-side member according to the present invention, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

FIG. 11 is a diagram showing the wall-side member that corresponds to the beam-side member of FIG. 10, wherein (1) is a plan view, (2) is a front view, and (3) is a side view.

FIG. 12 is a perspective view showing a fourth embodiment of the beam hanger according to the present invention.

FIG. 13 is a cross-sectional view showing the roof beam installed using the beam-side member of FIG. 12.

FIG. 14 is a perspective view showing a fifth embodiment of the beam hanger according to the present invention.

FIG. 15(1) and (2) are perspective views showing variations of the beam hanger according to the present invention.

[Reference Signs List]

10, 30, 50, 130, 150 Beam-side member

20, 40, 60, 140, 160 Wall-side member

First Embodiment

14 Hook (Engaging part)

14a Claw part (Latching part)

26 Slit (Engaged part)

Second Embodiment

33 Hook (Engaging part)

35 Dislodging prevention hole (Latched part)

46 Slit (Engaged part)

48 Protrusion (Latching part)

Third Embodiment

56 Protrusion (Engaging part)

- 58 Protrusion (Latching part)
- 66 Engaging hole (Engaged part)
- 68 Engaging hole (Latched part)

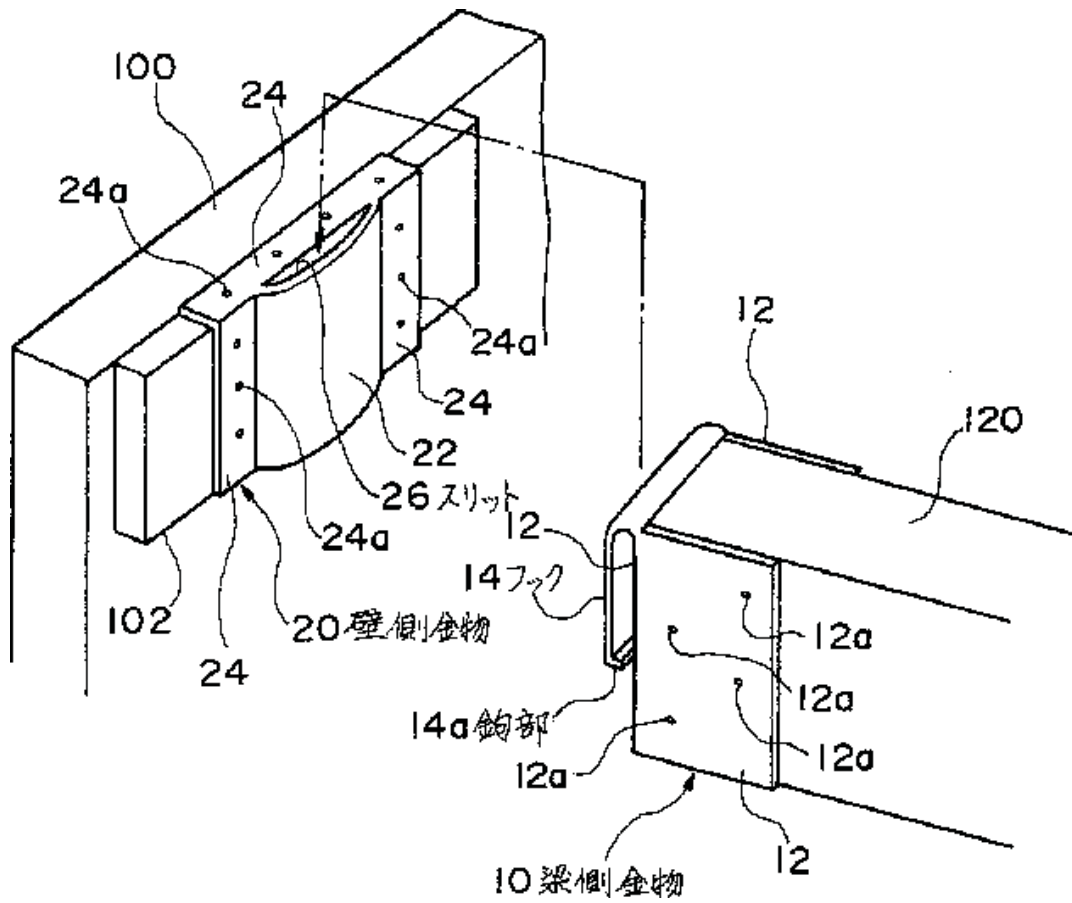
Fourth Embodiment

- 132 Front plate
- 134 Bottom plate
- 142 Fitting plate
- 144 Beam supporting plate
- 146 Reinforcing plate
- 148 Beam receiving part
- 149 Engaging hole

Fifth Embodiment

- 152 Front plate
- 154 Bottom plate
- 162 Fitting plate
- 164 Beam supporting plate
- 166 Reinforcing plate
- 168 Beam receiving part
- 169 Engaging hole

FIG. 1



10...Beam-side member, 14...Hook, 14a...Claw part, 20...Wall-side member,
26...Slit

FIG. 2

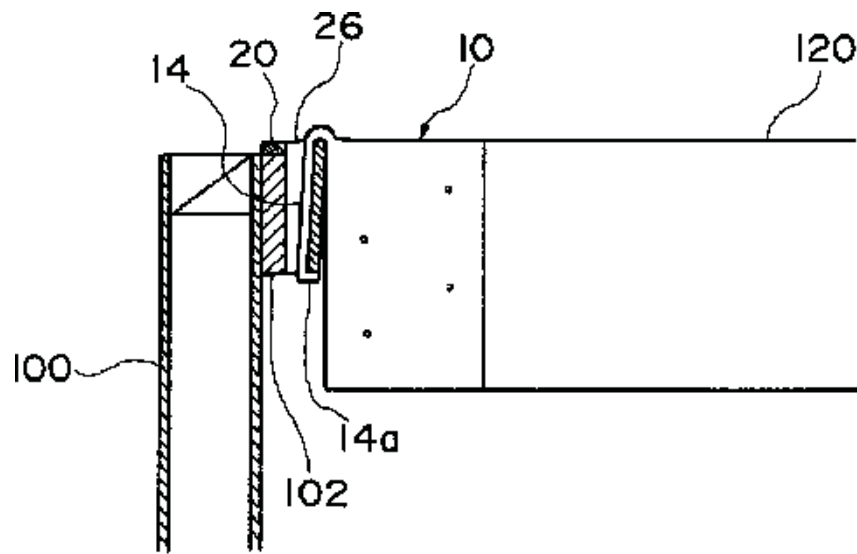


FIG. 3

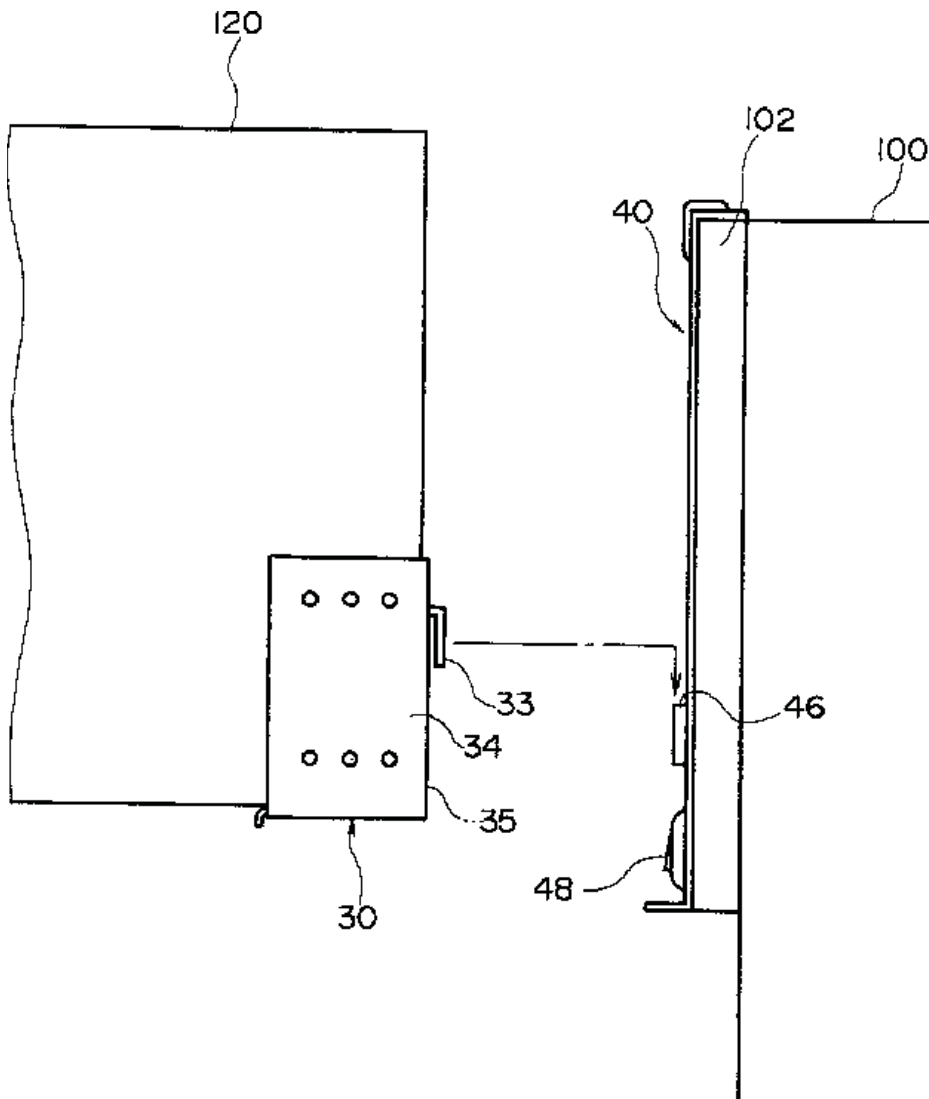


FIG. 4

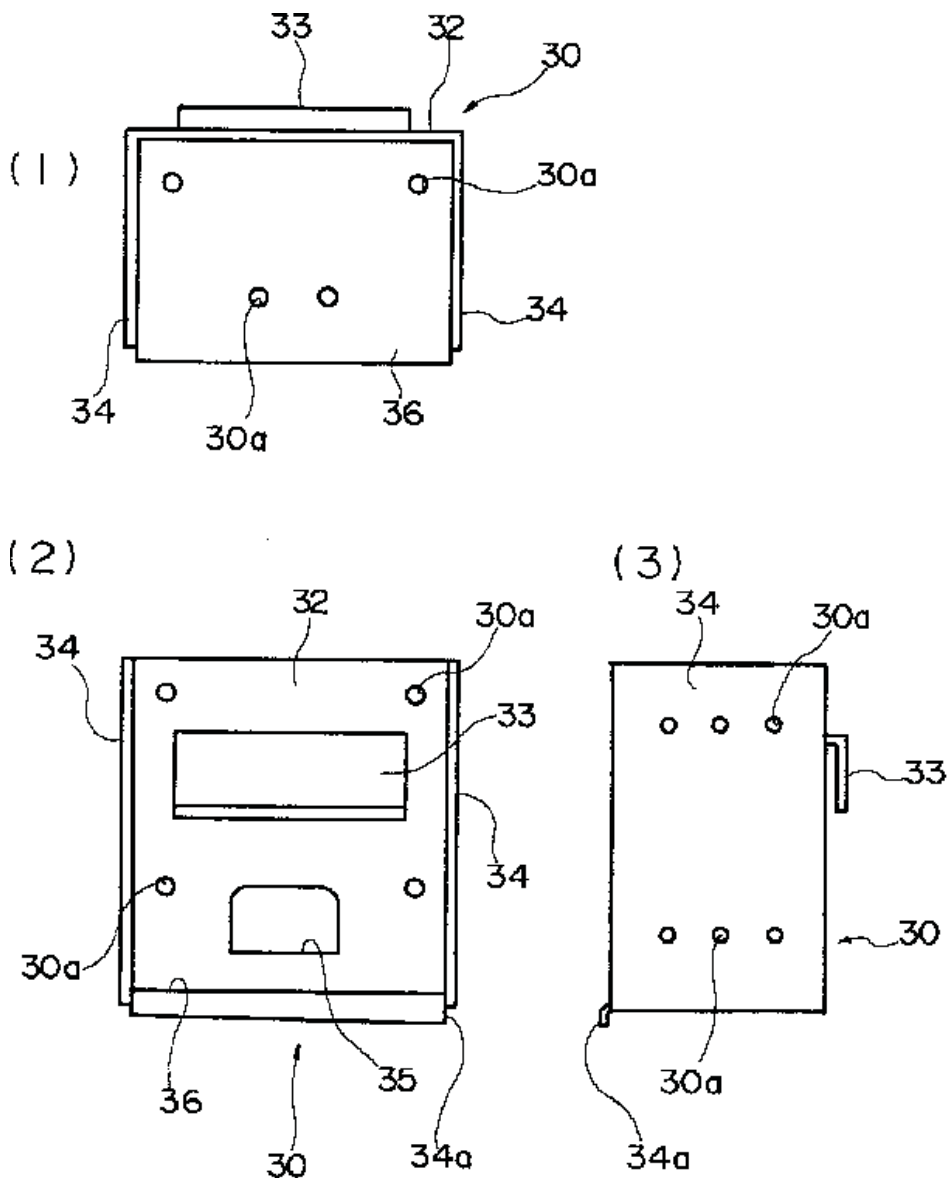


FIG. 5

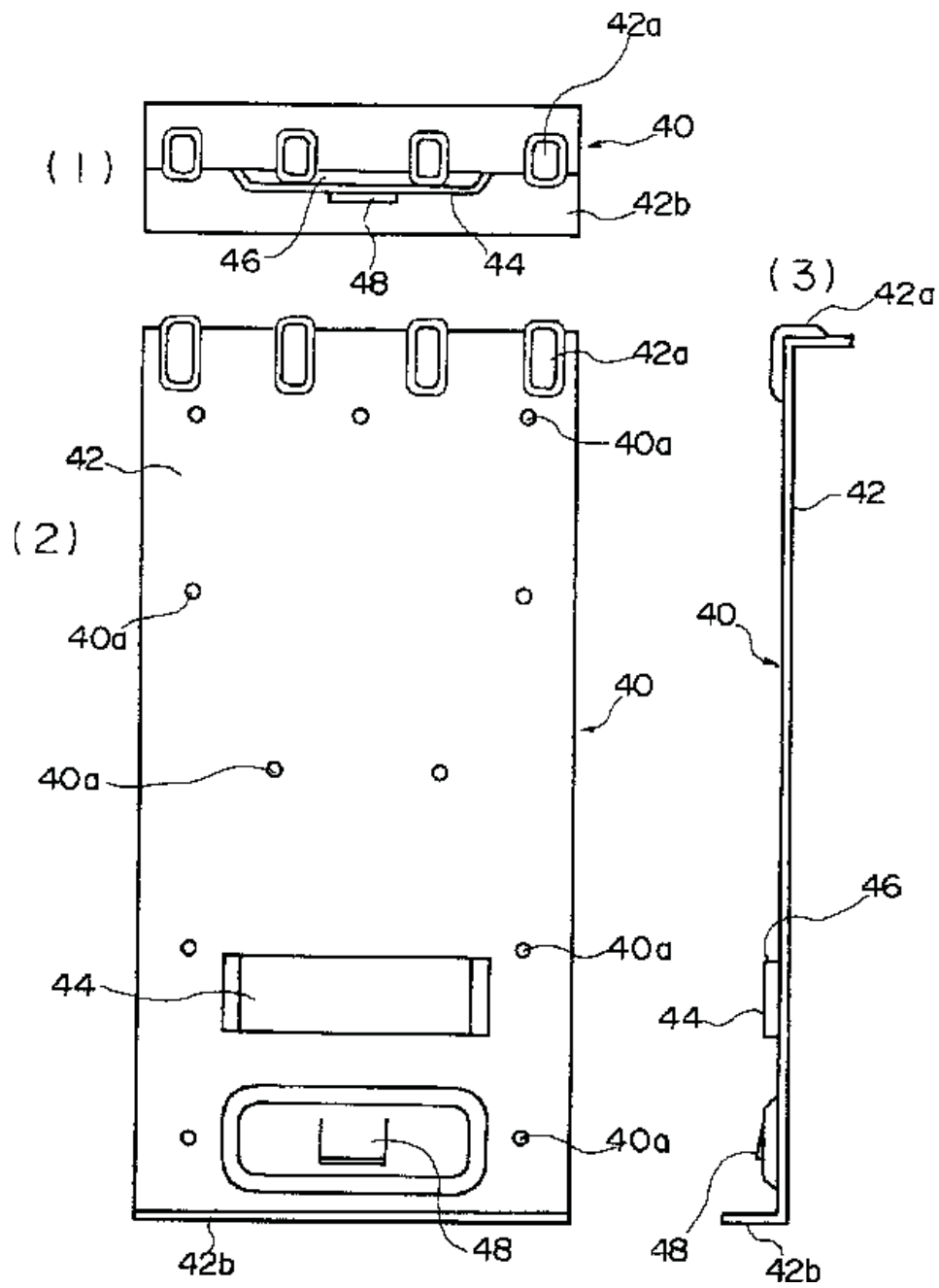


FIG. 6

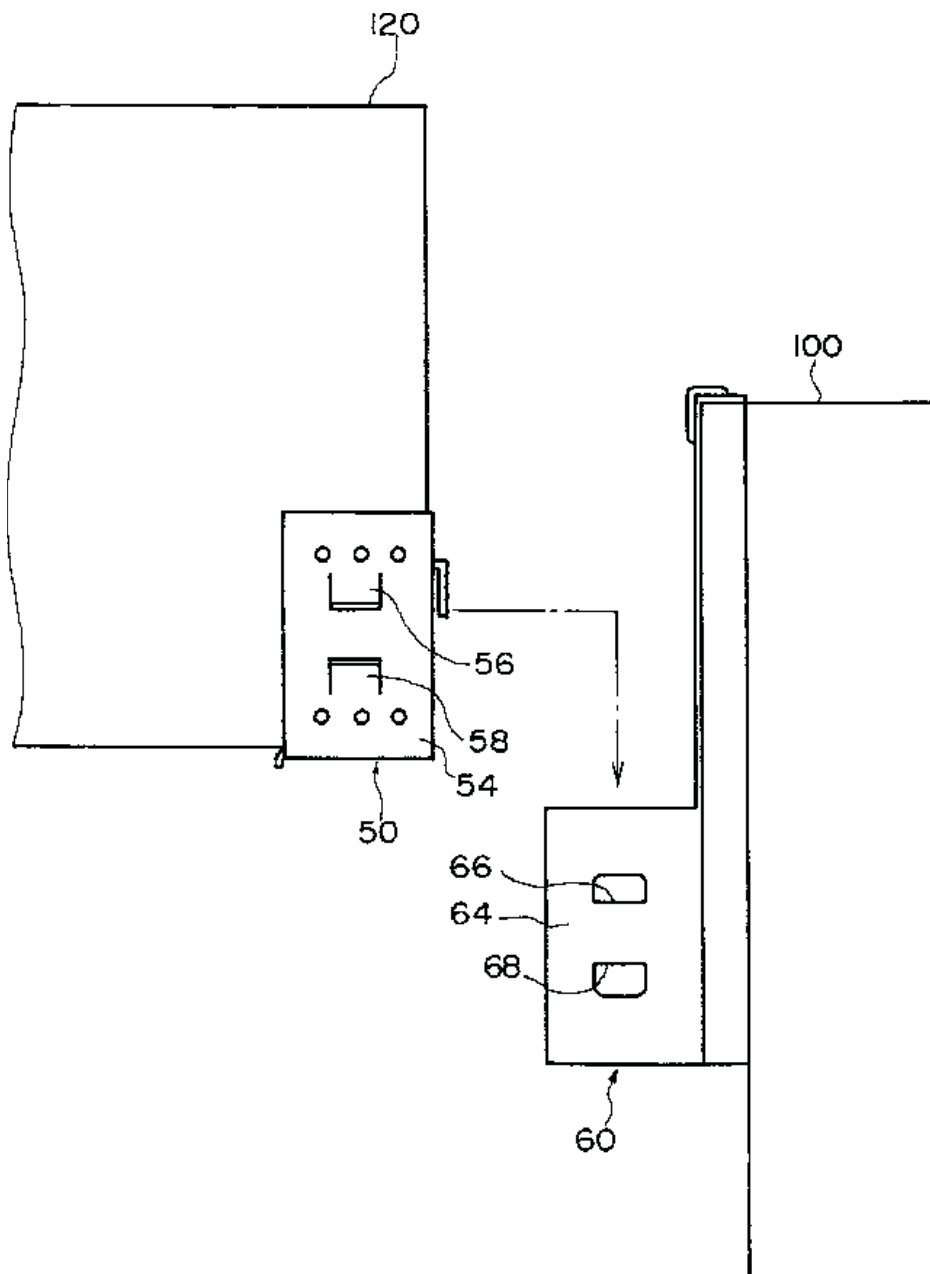


FIG. 7

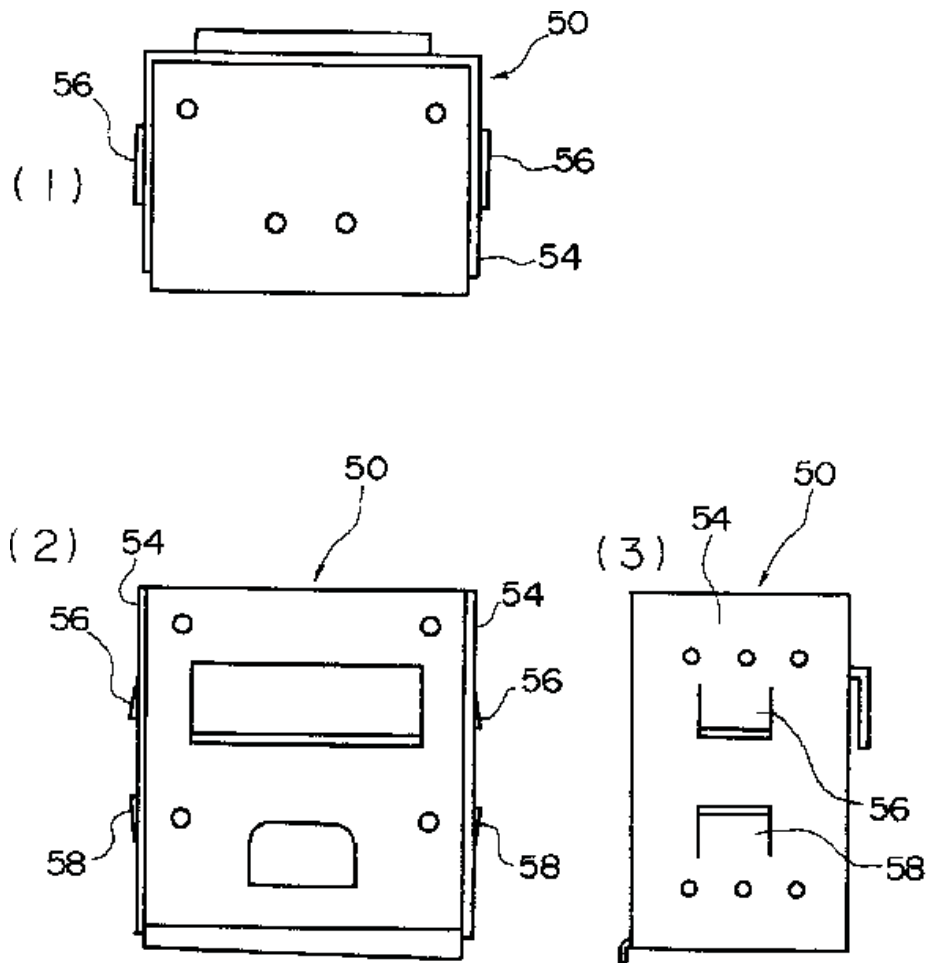


FIG. 8

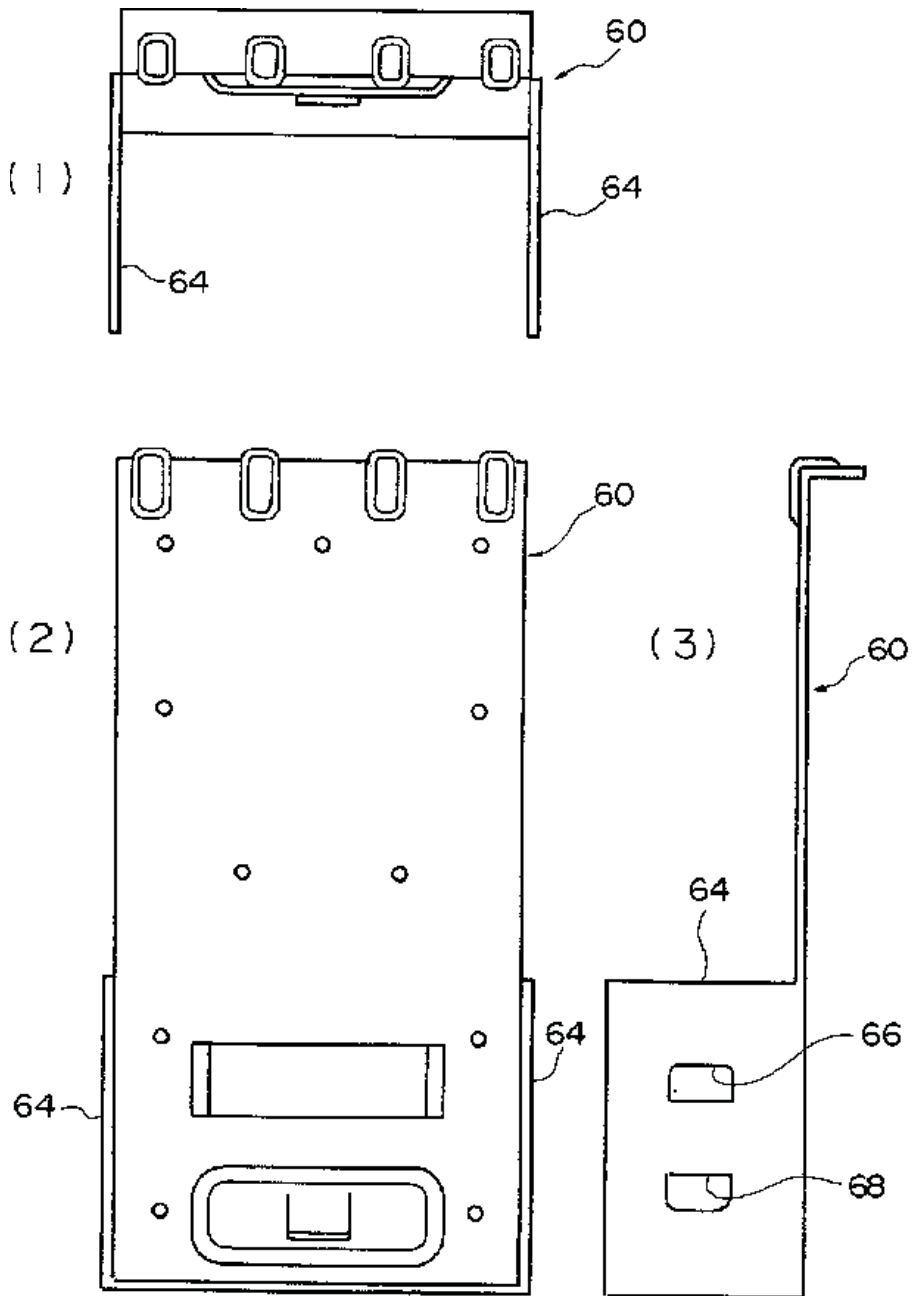


FIG. 9

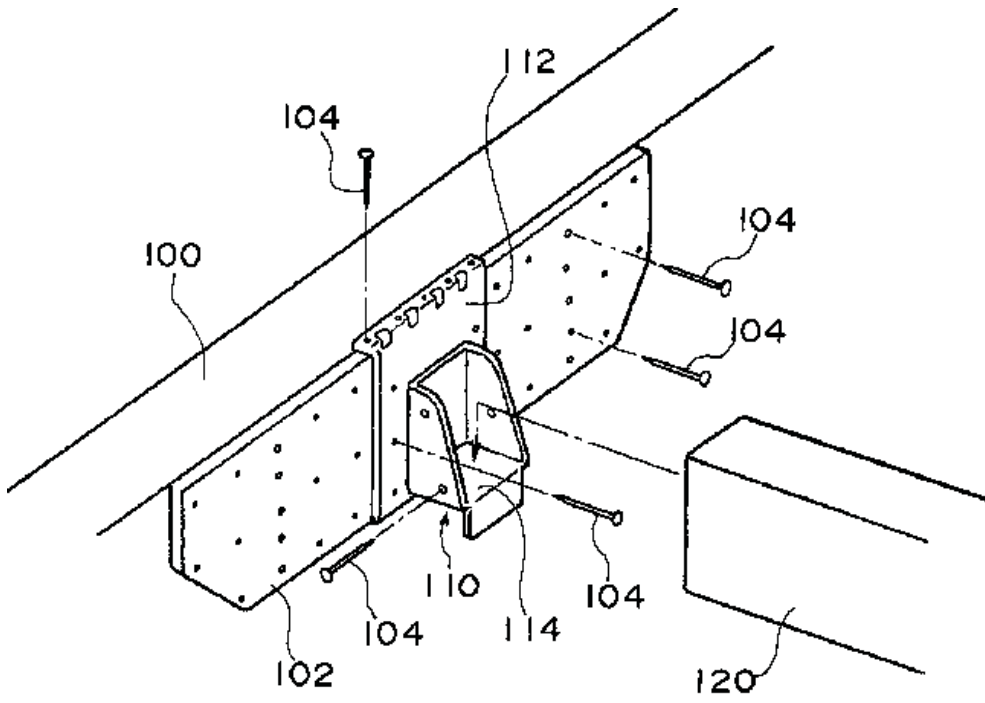


FIG. 10

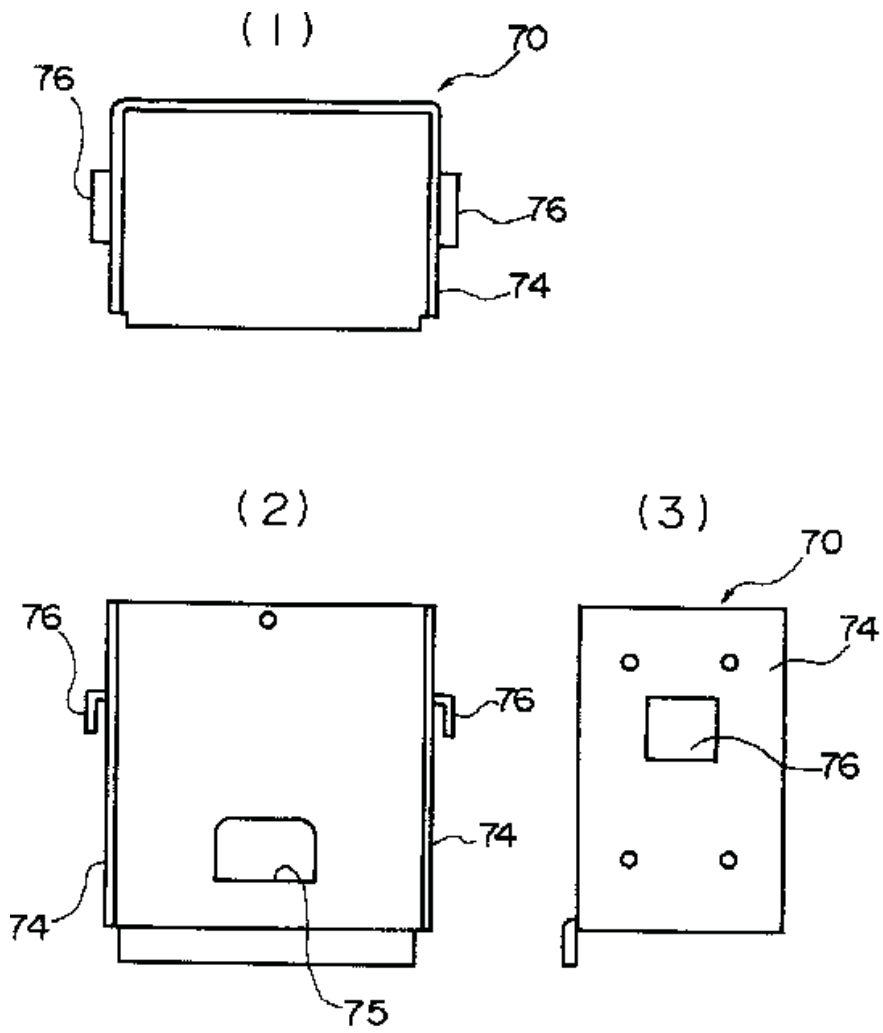


FIG. 11

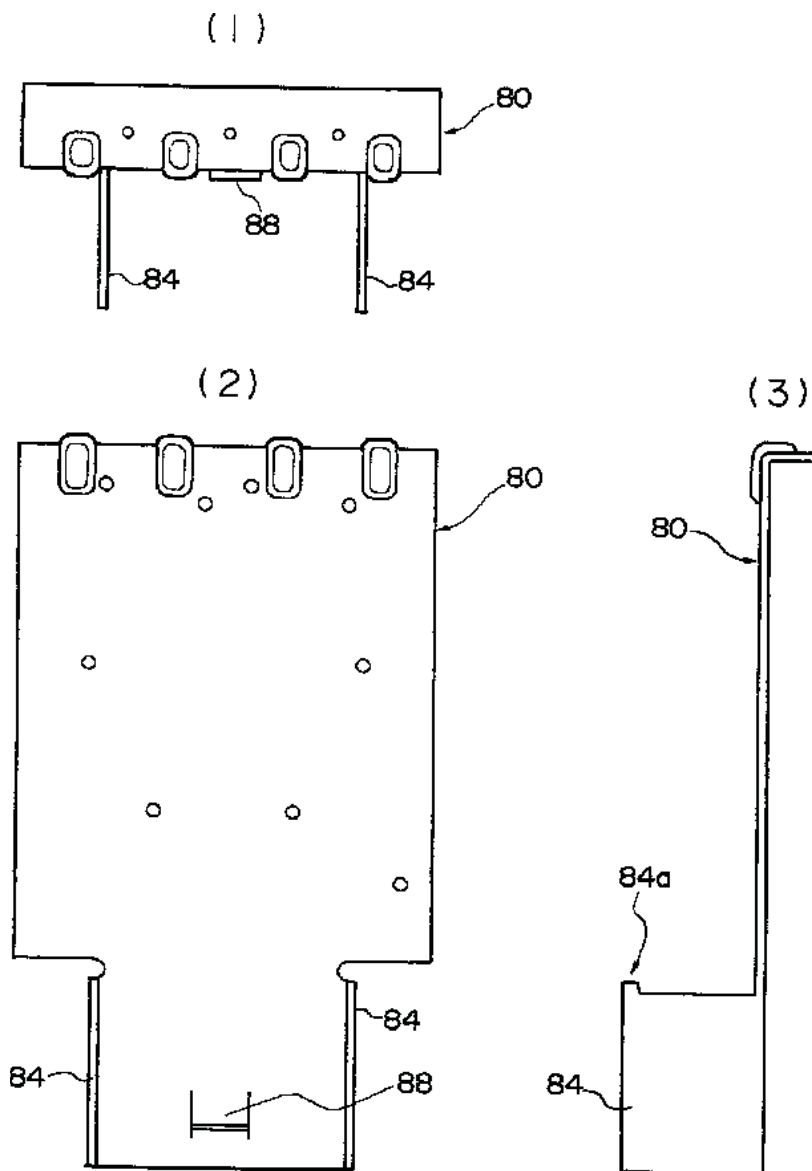


FIG. 12

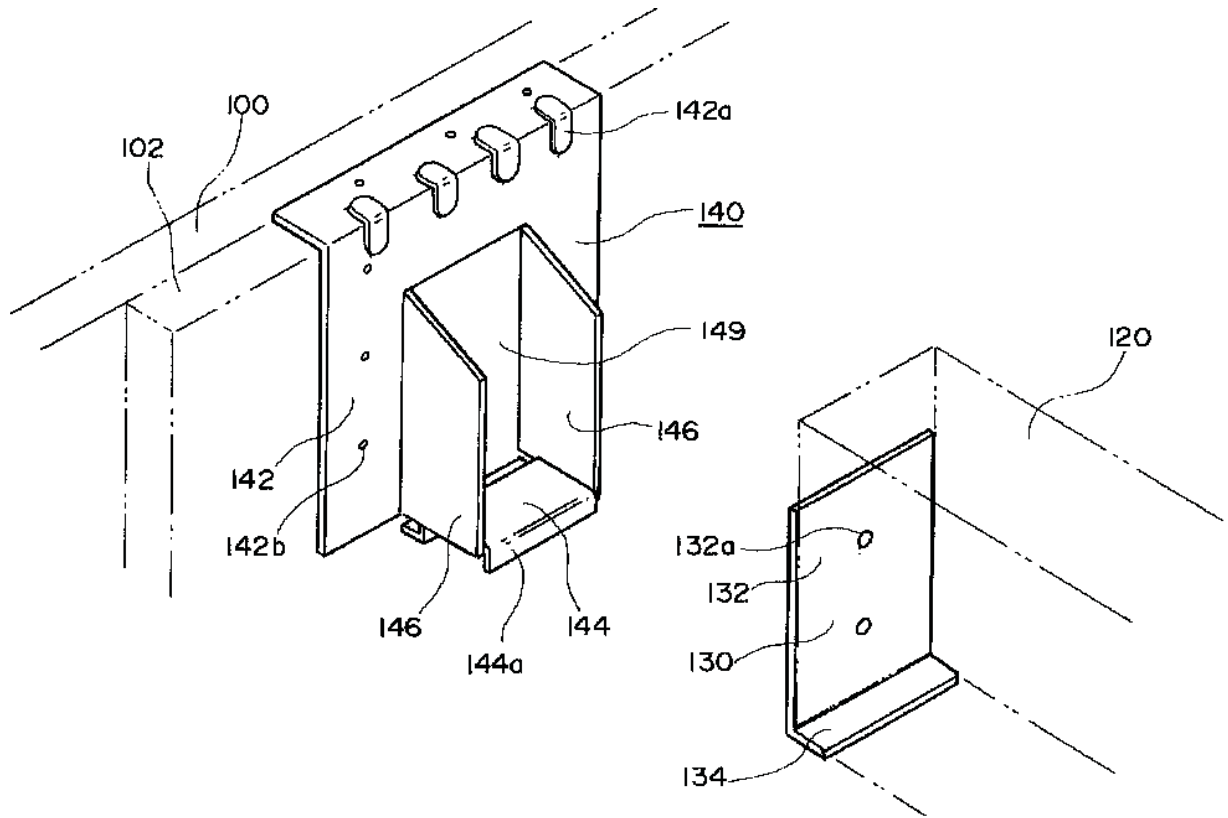


FIG. 13

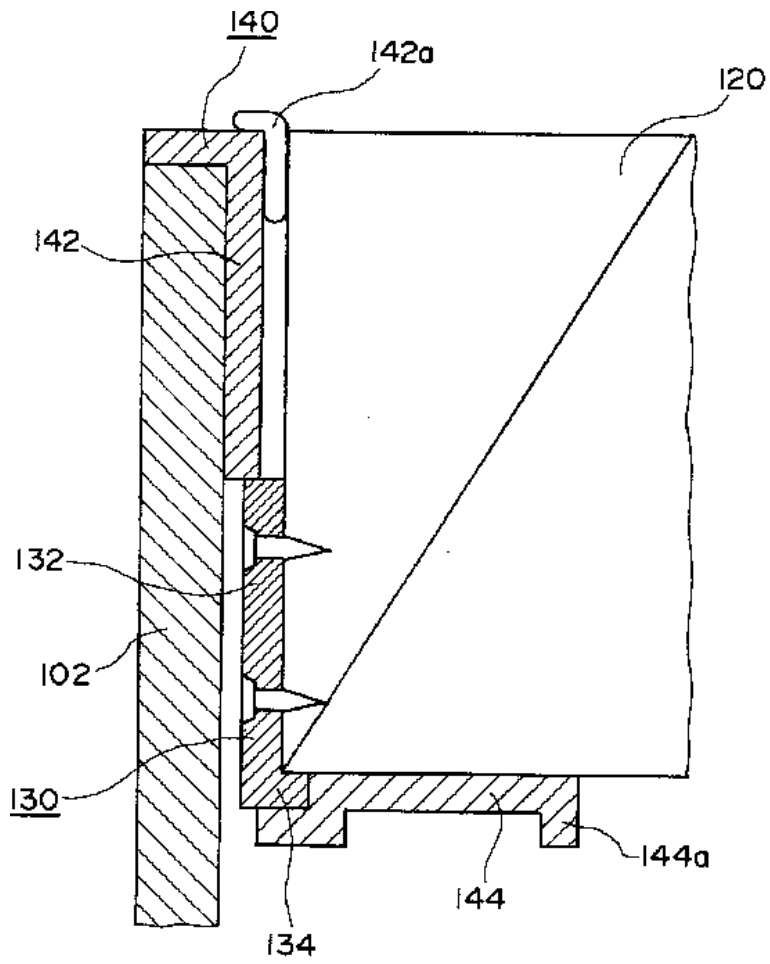


FIG. 14

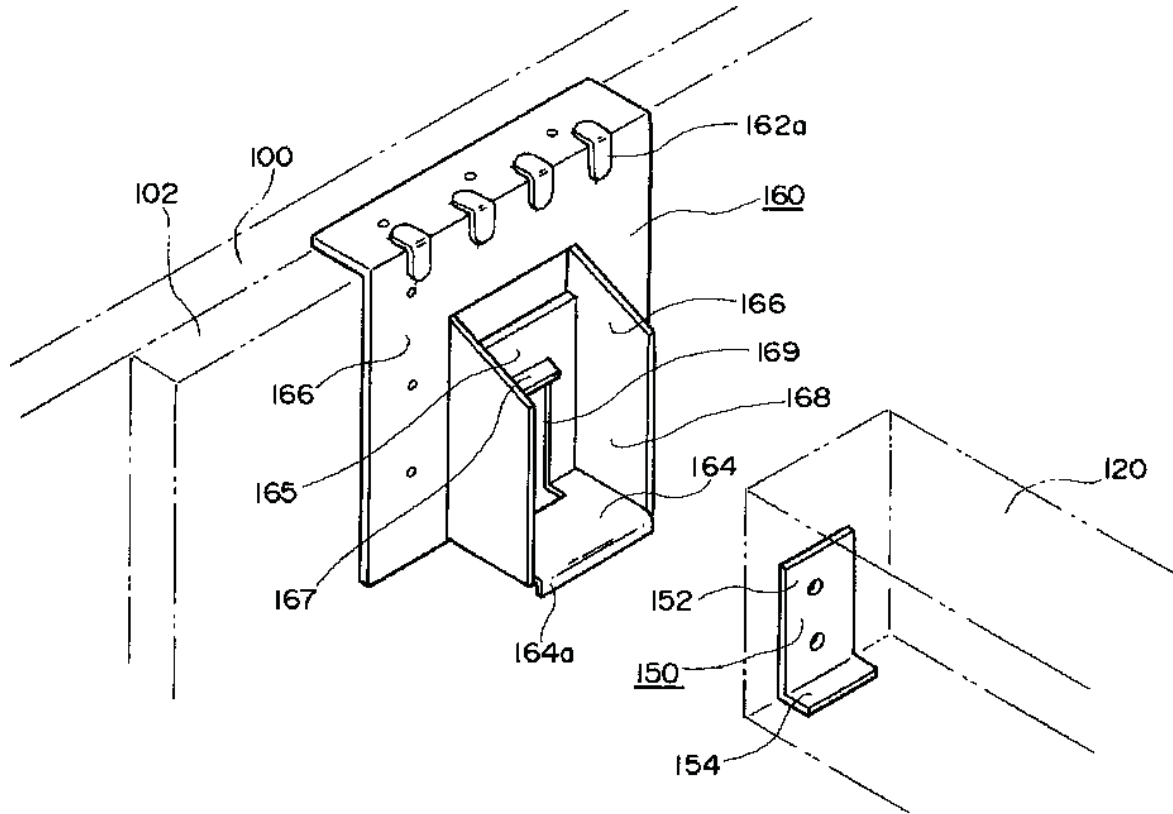
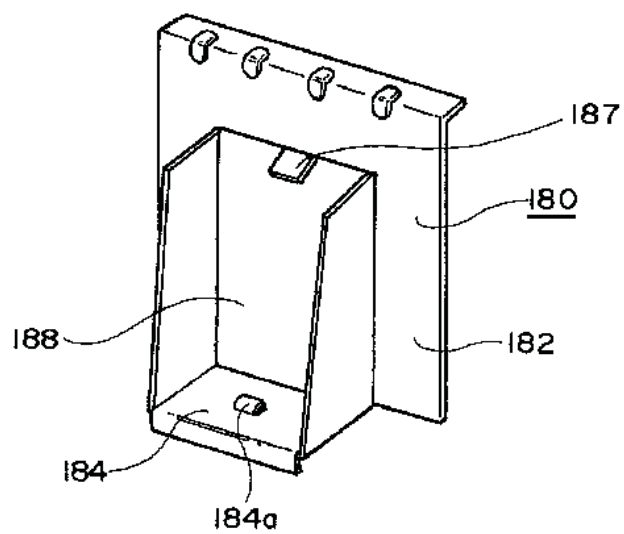
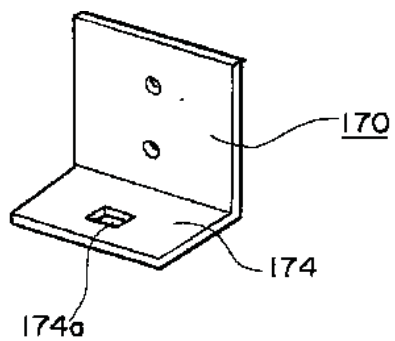
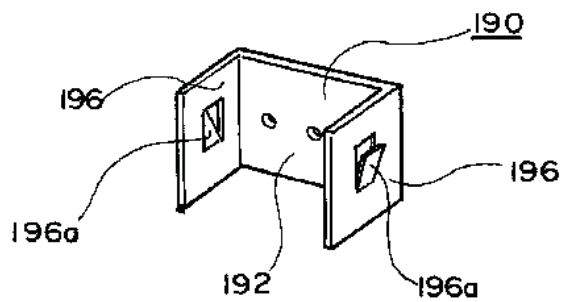


FIG. 15

(1)



(2)



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(71) 出願人 000114086

ミサワホーム株式会社

東京都杉並区高井戸東2丁目4番5号

(72) 発明者 平田 俊次

東京都杉並区高井戸東2丁目4番5号 ミ

サワホーム株式会社内

(72) 発明者 玉川 祐司

東京都杉並区高井戸東2丁目4番5号 ミ

サワホーム株式会社内

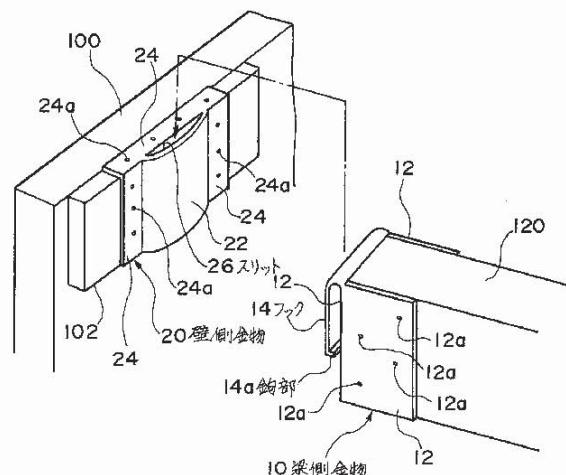
(74) 代理人 弁理士 布施 行夫 (外2名)

(54) 【発明の名称】 梁受金物

(57) 【要約】

【目的】 建築現場における高所での釘打ち等の作業を省略し、ワンタッチで梁の取付けが完了する梁受金物を提供することにある。

【構成】 フック14を有して屋根梁120の端部に取付けられる梁側金物10と、フック14と係合するスリット26を有して屋切パネル100に取付けられる偏平な形状の壁側金物20と、を含み、フック14の先端には抜け止め防止用の鉤部14aが形成され、梁側金物10と壁側金物20とを係合させることで屋根梁120が屋切パネル100に取付けられることを特徴とする。



【特許請求の範囲】

【請求項1】 梁の端部に取付けられる梁側金物と、壁に取付けられる壁側金物と、を含み、前記梁側金物または前記壁側金物のいずれか一方に係合部を、いずれか他方に前記係合部と係合する被係合部を有して、前記梁側金物と前記壁側金物とを係合させることで前記梁を前記壁に取付け可能の形成されることを特徴とする梁受金物。

【請求項2】 請求項1において、前記梁側金物または壁側金物のいずれか一方に、前記梁側金物の上方への抜けを防止するための係止部が設けられ、いずれか他方に、前記係止部と係合する被係止部が設けられることを特徴とする梁受金物。

【請求項3】 請求項1または請求項2において、前記梁側金物は、前記係合部として前記梁の端面から突出する板状のフックを有し、前記壁側金物は、偏平な形状をなし、前記被係合部として前記壁の面に平行に形成されたスリットを有することを特徴とする梁受金物。

【請求項4】 請求項1または請求項2において、前記梁側金物は、前記梁の端部の端面および両側面に前記係合部を有し、前記壁側金物は、壁に取付けられ前記端面の係合部に対応する被係合部を有する壁取付板と、この壁取付板の両端から突設され前記両側面の係合部に対応する被係合部を有する一対の壁突出板とを有することを特徴とする梁受金物。

【請求項5】 請求項1または請求項2において、前記梁側金物は、前記梁の側面を除いた少なくとも一面にて梁に取付けられ、前記壁側金物は、壁に取付けられる壁取付板と、前記壁取付板より内方に突設して前記梁の端部下面を支持する梁支持板と、前記壁取付板の側辺と前記梁支持板の側辺とを連結する一対の補強板とを有することを特徴とする梁受金物。

【請求項6】 請求項3において、前記梁側金物は、下端が屈曲したL型の平板より成り、前記梁の端面および下面に当接して取付けられ、前記壁側金物は、前記梁支持板への前記梁載置時に、前記梁側金物を嵌め込み可能な、前記壁側金物より若干大きな貫通穴を有し、被係合部である前記貫通穴に前記梁側金物を嵌合させることで前記梁を前記壁に取付け可能に形成されることを特徴とする梁受金物。

【発明の詳細な説明】**【0001】**

【産業上の利用分野】 本発明は、梁受金物に関し、特に、ワンタッチで梁の取付けが完了する梁受金物に関する。

【0002】

【従来の技術】 従来より、建物の建築工法として、複数

のパネルを連設して建物を構築するパネル工法がある。このパネル工法において、屋根梁の屋切パネルへの取付けを図9に示す。

【0003】 同図において、図示しない壁パネルの上に、屋根の傾斜に合わせて斜めに形成された屋切パネル100が立設されており、この屋切パネル100に接着剤および複数の釘104によって梁受補強板102が取付けられ、梁受補強板102には梁受金物110が取付けられている。

【0004】 この梁受金物110は、梁受補強板102に上端部を引っ掛けて接触し釘104にて固定される取付板112と、この取付板112から上向きコ字状に突出して延設されて屋根梁120を支持する梁受部114と、を有する。

【0005】 そして、このような形状の梁受金物110の梁受部114に、屋根梁120の端部を支持させて、両者を釘104にて固定することで、屋根梁120の屋切パネル100への取付けを行うこととしていた。

【0006】

【発明が解決しようとする課題】 しかし、上記従来の梁受金物110を使用すると、屋根梁120の屋切パネル100への取付けを行うには、屋根梁120の端部を梁受部114に載置してから、釘104を打ち付けることが必要であるが、この釘打ち作業は、屋根梁120の取付位置が高所にあることから、作業者にとって困難なものであるという問題があった。

【0007】 本発明は、上記従来の問題点に鑑みてなされたもので、その目的は、建築現場における高所での釘打ち等の作業を省略し、ワンタッチで梁の取付けが完了する梁受金物を提供することにある。

【0008】

【課題を解決するための手段】 上記目的を達成するために、請求項1記載の発明は、梁の端部に取付けられる梁側金物と、壁に取付けられる壁側金物と、を含み、前記梁側金物または前記壁側金物のいずれか一方に係合部を、いずれか他方に前記係合部と係合する被係合部を有して、前記梁側金物と前記壁側金物とを係合させることで前記梁を前記壁に取付け可能の形成されることを特徴とする。

【0009】 また、請求項2記載の発明は、請求項1において、前記梁側金物または壁側金物のいずれか一方に、前記梁の上方への抜けを防止するための係止部が設けられ、いずれか他方に、前記係止部と係合する係止部が設けられることを特徴とする。

【0010】 そして、請求項3記載の発明は、請求項1または請求項2において、前記梁側金物は、前記係合部として前記梁の端面から突出する板状のフックを有し、前記壁側金物は、偏平な形状をなし、前記被係合部として前記壁の面に平行に形成されたスリットを有することを特徴とする。

【0011】さらに、請求項4記載の発明は、請求項1または請求項2において、前記梁側金物は、前記梁の端部の端面および両側面に前記係合部を有し、前記壁側金物は、壁に取付けられ前記端面の係合部に対応する被係合部を有する壁取付板と、この壁取付板の両端から突設され前記両側面の係合部に対応する被係合部を有する一対の壁突出板とを有することを特徴とする。

【0012】請求項5記載の発明は、請求項1または請求項2において、前記梁側金物は、前記梁の側面を除いた少なくとも一面にて梁に取付けられ、前記壁側金物は、壁に取付けられる壁取付板と、前記壁取付板より内方に突設して前記梁の端部下面を支持する梁支持板と、前記壁取付板の側辺と前記梁支持板の側辺とを連結する一対の補強板とを有することを特徴とする。

【0013】請求項6記載の発明は、請求項3において、前記梁側金物は、下端が屈曲したL型の平板より成り、前記梁の端面および下面に当接して取付けられ、前記壁側金物は、前記梁支持板への前記梁載置時に、前記梁側金物を嵌め込み可能な、前記壁側金物より若干大きな貫通穴を有し、被係合部である前記貫通穴に前記梁側金物を嵌合させることで前記梁を前記壁に取付け可能に形成されることを特徴とする。

【0014】

【作用】請求項1記載の発明においては、梁の端部に梁側金物を取付け、壁に壁側金物を取付けて、両者を係合させるだけで梁を壁に取付けることができる。

【0015】特に、パネル工法において本発明を適用すると、梁に梁側金物を取付け、壁を形成する屋切パネルに壁側金物を取付ける作業を工場で行うことができ、建築現場で行う作業は、梁側金物を壁側金物に係合させることだけとなる。

【0016】そして、請求項2記載の発明においては、係止部と被係止部とによって梁側金物の係合部が壁側金物の被係合部から上方に抜けないようになり、特に屋根梁の取付けに適用すれば、風圧で屋根が吹き上げられるときの力に対抗できるようになる。

【0017】また、請求項3記載の発明によれば、壁側金物が偏平な形状をなしているため、パネル工法において本発明を適用した場合、この壁側金物を屋切パネルに取付けておいて工場から建築現場へ運搬するときに、他の建材を傷付けにくくなっている。そして、建築現場では、梁側金物のフックを壁側金物のスリットにはめ込むだけで、梁を壁に取付けることができる。

【0018】あるいは、請求項4記載の発明によれば、壁側金物が、壁取付板および一対の壁突出板に被係合部を有してなるので、合計3箇所の被係合部を含むこととなり、梁側金物と壁側金物とをしっかりと係合し、梁を強固に壁に取付けることができる。

【0019】請求項5記載の発明によれば、壁側金物が梁下面を支持する梁支持板を有し、梁支持板は補強板に

より補強されているので、かなり大型の梁でも梁の重さにより壁側金物がちぎれたり、壁側へめり込んだりせず、梁を壁に取付けることができる。また、補強板を有することにより、梁の軸方向と交差する平面上の位置決めが可能である。

【0020】さらに、梁側金物は、梁の側面を除いた面において梁端部に取付けられるので、釘頭等が梁側面側に出て、壁側金物と梁側金物との係合を妨げることがなく、壁側金物に梁を上方から落とし込むことも、内方側から差し入れることもできる。

【0021】請求項6記載の発明によれば、L型の梁側金物全体が係合部として壁側金物の被係合部に嵌合し、梁側金物と壁側金物とが係合するので、梁側金物に係合部を設ける必要がなく、金物の製造が比較的容易である。また、L型の梁側金物を壁側金物の貫通穴に嵌め込むことにより、梁の上方および軸方向への抜けを防止することができる。

【0022】

【実施例】以下、本発明の実施例について図面を参照して説明する。

【0023】図1は、本発明に係る梁受金物の第一実施例を示す斜視図である。この第一実施例は、図9の従来例と同様に、パネル工法において、屋切パネル100に屋根梁120を取付けるときに本発明を適用したものである。また、屋切パネル100に屋根梁120が取付けられた状態の縦断面を図2に示す。

【0024】この第一実施例に係る梁受金物は、梁側金物10と壁側金物20とを含む。

【0025】梁側金物10は、屋根梁120の先端部に取付けられるもので、屋根梁120の端面および側面に接触するようコ字状に屈曲する取付部12と、この取付部12の前面上端から180度屈曲して形成されるフック14と、を有する。

【0026】取付部12には、屋根梁120の端面および側面に釘を打ち込めるように、複数の釘穴12aが形成されている。

【0027】また、フック14の先端部は、取付部12方向にほぼ直角に屈曲して鉤部14aが形成されている。この鉤部14aは、図2に示すように、壁側金物20に取付けられたときに、壁側金物20の膨らみ22の下端に引っ掛かって抜けを防止するものである。

【0028】次に、壁側金物20は、図9の従来例と同様に、梁受補強板102を介らせて屋切パネル100に取付けられるもので、梁受補強板102の上端面から正面に接触するようL字状に形成されている。

【0029】そして、正面中央部において梁受補強板102との間に隙間があくよう膨らみ22が形成され、この膨らみ22以外の部分が取付部24となっており、この取付部24に形成された釘穴24aから釘を打ち込むことで、壁側金物20は梁受補強板102に取付けられるよ

うになっている。また、この壁側金物20は、膨らみ22を有するものの、全体的に比較的偏平な形状をなしている。

【0030】膨らみ22の上端は、L字状の屈曲部にスリット26が形成されており、下端も開口するようになっている。そして、スリット26は、梁側金物10のフック14を挿入できる大きさをなし、膨らみ22は、上部から下部に行くに従って、梁受補強板102との隙間が小さくなるように形成されている。したがって、スリット26からフック14を挿入すると、図2に示すように、下端の開口部で鉤部14aが引っ掛かって抜けなくなるようになっている。

【0031】本発明に係る第一実施例は上記のように構成されており、以下その取付作業について説明する。

【0032】まず、工場で、屋根梁120に梁側金物10を取付け、屋切パネル100に梁受補強板102を介して壁側金物20を取付けておき、この状態でそれぞれを建築現場に運搬する。このとき、壁側金物20が比較的偏平な形状をなしていることから、運搬中に他の建材を傷付けることが少なくなるとともに、運搬の作業も行いやすくなっている。

【0033】そして、建築現場では、屋切パネル100を所定位置に立設し、屋根梁120に取付けられた梁側金物10のフック14を、壁側金物20のスリット26に嵌入するだけで、屋根梁120の取付けが完了する。また、フック14の鉤部14aによって梁側金物10の抜け止めも図られることとなる。

【0034】次に、図3は、本発明に係る梁受金物の第二実施例を示す側面図である。この第二実施例も、パネル工法において、屋切パネル100に屋根梁120を取付けるときに本発明を適用したものである。この第二実施例に係る梁受金物は、梁側金物30と壁側金物40とを含む。

【0035】そして、図4は、梁側金物30を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【0036】梁側金物30は、屋根梁120の端面に接触する前板32、両側面に接触する側板34、34および下面に接触する底板36を有し、図4(1)～(3)に示すように、各板に複数の釘穴30aが形成されて、釘を打ち込んで屋根梁120に固定できるようになっている。

【0037】また、前板32には、やや上部にフック33が設けられ、その下に壁側金物40との抜けを防止するための抜止穴35が形成されている。そして、底板36の先端は直角に屈曲してリブ34aを形成している。

【0038】次に、図5は、壁側金物40を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【0039】壁側金物40は、梁受補強板102を介し

て屋切パネル100に取付けられるもので(図3参照)、梁受補強板102の面に接触し複数の釘穴40aから釘を打ち付けて固定される取付部42を有する。

【0040】この取付部42には、下部に帯板44が突出して設けられて取付部42との間にスリット46が形成され、この帯板44の下には梁側金物30の抜止穴35に引っ掛かるように三角形の突起48が形成されている。なお、この突起48は、取付部42に切り込みを入れて屈曲させて形成される。

【0041】さらに、取付部42の上端は、直角に屈曲して梁受補強板102の上端に引っ掛けて屋根梁120の荷重を支持できるようになり、この屈曲部には補強のためのリブ42aが設けられている。

【0042】また、取付部42の下端も、直角に屈曲してリブ42bが形成されて屋根梁120の荷重による取付部42の変形を防止している。

【0043】本発明に係る第二実施例は上記のように構成されており、以下その取付作業について説明する。

【0044】まず、第一実施例と同様に、工場で屋根梁120に梁側金物30を取付け、屋切パネル100に梁受補強板102を介して壁側金物40を取付けておき、この状態でそれぞれを建築現場に運搬する。このとき、壁側金物40の突出物が少ないので、運搬中に他の建材を傷付けることが少なくなるとともに、運搬の作業も行いやすくなっている。

【0045】そして、建築現場では、屋切パネル100を所定位置に立設し、図3に示すように、屋根梁120に取付けられた梁側金物30のフック33を、壁側金物40のスリット46に嵌入するだけで屋根梁120の取付けが完了する。また、壁側金物40の突起48が梁側金物30の抜止穴35の下端に引っ掛かり、梁側金物30が壁側金物40から抜けることが防止される。

【0046】次に、図6は、本発明に係る梁受金物の第三実施例を示す側面図である。この第三実施例も、パネル工法において、屋切パネル100に屋根梁120を取付けるときに本発明を適用したものである。この第三実施例に係る梁受金物は、梁側金物50と壁側金物60とを含む。

【0047】そして、図7は、梁側金物50を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【0048】梁側金物50は、上記第二実施例の梁側金物30と比べて、側板54に突起56、58が形成されている点で相違し、これ以外の構成は同じであるので説明は省略する。

【0049】突起56、58は、側板54に切り込みを入れて屈曲させて形成されるもので、所定間隔をあけて上下に一对が形成され、側面視において上の突起56は三角形で、下の突起58は逆三角形となっている。そして、突起56、58は、壁側金物60の抜止穴6

6、68に係合するようになっている。

【0050】次に、図8は、壁側金物60を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【0051】壁側金物60は、取付部62の両端から突出する側板64を有する点で、第二実施例の壁側金物40と相違し、これ以外は同様であるので説明は省略する。

【0052】また、側板64には、中央部に係合穴66、68が所定間隔をあけて上下に形成されている。そして、上の係合穴66は、梁側金物50の突起56が引っ掛かって屋根梁120の荷重を支持し、下の係合穴68は、梁側金物50の突起58が引っ掛かって抜けないようにするものである。

【0053】本発明に係る第三実施例は上記のように構成されており、以下その取付作業について説明すると、この第三実施例は、上記第二実施例の構成を全て含むものなので、第二実施例と同様の作業により屋根梁120を取付けることができる。また、第三実施例では、梁側金物50が突起56、58を有し、壁側金物60が係合穴66、68を有しており、突起56と係合穴66とによって屋根梁120を支持し、突起58と係合穴68とによって抜けを防止できるようになっている。したがって、第三実施例では、第二実施例と比較して、荷重を支持する部位および抜けを防止する部位が多いので、しっかりと支持し固定することができることとなる。

【0054】本発明の変形例として、図10および図11に示すようなものとしても良い。図10は、梁側金物の変形例であり、図11は、図10の梁側金物に対応する壁側金物を示す図である。

【0055】梁側金物70は側板74にフック76が設けられていて、壁側金物80の側板84の上端部に引っ掛けるようになっている。また、梁側金物70の抜止穴75と壁側金物80の突起88とが係合して、抜け止めが図られることは、上記第二実施例と同様である。なお、壁側金物80の側板84の上端には、リブ84aが設けられて、この壁側金物80が撓んだ時にフック76がすべり落ちるのを防止している。このようにして構成することで、構造耐力性能アップ、コストダウンを図ることができる。

【0056】図12は、本発明に係る梁受金物の第四実施例を示す斜視図である。この実施例もパネル工法において、屋切パネル100に屋根梁120を取付けるときに本発明を適用したものである。

【0057】この第四実施例に係る梁受金物は、梁側金物130と壁側金物140とを含む。

【0058】梁側金物130は、屋根梁120の先端部に取付けられるもので、屋根梁120の端面に接触する前板132および下面に接触する底板134を有するL字状に屈曲した金物である。前板132には複数の釘穴

132aが形成されていて、釘を打ち込んで屋根梁120に固定できるようになっている。梁側金物130の幅は、図12に示すように、屋根梁120の幅とほぼ等しく、屋根梁120の先端部において屋根梁120の端面および下面の横幅を覆うように形成されている。

【0059】壁側金物140は、梁受補強板102を介在させて屋切パネル100に取付けられ屋根梁120の先端を受けるもので、取付け板142および梁受部148を有している。

【0060】取付け板142は、壁側金物140を梁受補強板102を介在させて屋切パネル100に取付けるためのもので、梁受補強板102の上端面から正面に接触するように上端面が屈曲したL字状に形成されている。この屈曲部には補強のためのリブ142aが所定間隔をあけて複数設けられている。取付け板142には複数の釘穴142bが形成されていて、釘を打ち込んで梁受補強板102に固定できるようになっている。

【0061】梁受部148は、取付け板142の正面中央部において、互いの下端を揃えて取付け板142に対して垂直に、内方側に突出した上向き略コ字状のもので、梁支持板144および補強板146、146とから構成されている。

【0062】梁支持板144は、梁受部148の底面に位置し、屋根梁180の下面が載置され、これを支持するものである。

【0063】梁支持板144の内方側端部は下向き垂直に屈曲してリブ144aが形成されて屋根梁120の荷重による梁支持板144の変形を防止している。また梁支持板144の取付け板142側端部は、下向き垂直に屈曲し、内方側端部と同様にリブを形成し、さらに先端が梁支持板144と平行になるように取付け板142方向に向かって垂直に屈曲形成され、梁側金物130を取付けた屋根梁120を梁支持板144上に載置時に、梁側金物130の底板134が嵌合可能で、かつ底板134の下面を支持できるようになっている。このように形成された梁支持板144の窪みは後述する係合穴149の一部となる。

【0064】補強板144は、梁受部148の側面に位置し、梁支持板144の両側辺より上方へ垂直に所定長さ延出され梁支持板144と取付け板142を連結する一对の平板で、梁受け部148の補強を行い、かつ屋根梁120載置時に屋根梁120の横方向へのずれを防止する。補強板144は、取付け板142に対して垂直に内方側へ突出形成されるもので、取付け板142を切り開いて屈曲させて形成したものである。

【0065】梁受部148は、壁側金物130を嵌合させて、梁側金物130と壁側金物140との連結を行う係合穴149を備える。

【0066】係合穴149は、補強板146を形成したことにより貫通された取付け板142の開口部と、梁支

持板144が取付け板142側端部において屈曲していることにより形成されている窪みとにより形成されている。その大きさは、梁側金物130が嵌合可能であるように梁側金物130より若干大きい。

【0067】本発明に係る第四実施例は上記のように構成されており、以下その取付け作業について説明する。

【0068】他実施例と同様に、工場で屋根梁120に梁側金物130を取付け、屋切パネル100に梁受補強板102を介して壁側金物140を取付けておき、この状態でそれぞれ建築現場に運搬する。

【0069】そして建築現場では、図12に示すように、屋切パネル100を所定位置に立設し、梁側金物130を取付けた屋根梁120の端部を、壁側金物140の梁受部148に載置させて梁側金物130に係合穴149に押圧して嵌合させることにより屋根梁120の取付けが完了する。この際、係合部分に若干の隙間があった場合は、パッキング材等を噛ませてよい。

【0070】図13は、屋根梁120の取付け状態を示す断面図である。

【0071】屋根梁120は、先端に取付けられた梁側金物130全体が、壁側金物149の係合穴149に嵌合することにより壁に取付けられ、係合穴149の上端が上方向への吹上げを防止する係止部となり、さらに梁支持板144により内方側への抜けも防止することができる。また補強板166を備える梁受部148が屋根梁120の端部を強固に支持するので大型の屋根梁120でもしっかりと支持することができる。

【0072】さらに、梁側金物130は、屋根梁120の端面において釘打ちされているので、釘頭が突出して梁側金物130と壁側金物140との係合を妨げることなく、梁受部148に対して、屋根梁120を内方側より差し込むことも、上方より落とし込むことも可能である。

【0073】次に、図14は、本発明に係る梁受金物の第五実施例を示す斜視図である。この第五実施例も、パネル工法において、屋切パネル100に屋根梁120を取付けるときに本発明を適用したものである。この第五実施例に係る梁受金物は、梁側金物150と壁側金物160とを含む。

【0074】梁側金物150は、上記第四実施例の梁側金物130と比べて、屋根梁120の横幅よりも小さく形成されている点で相違し、大きさ以外の全体形状および構成は同じであるので説明は省略する。

【0075】壁側金物160は、梁受補強板102を介させて屋切パネル100に取付けられ屋根梁120の先端を受けるもので、梁受部取付け板162および梁受部168を有する。

【0076】取付け板162は上記第四実施例の梁側金物140の取付け板142と同様であるので説明は省略する。

【0077】梁受部168は、取付け板162の正面中央部において、互いの下端を揃えて取付け板162に対して垂直に、内方側に突出した上向き略コ字状のもので、梁支持板164および補強板166、166とから構成されている。

【0078】梁支持板164は、梁受部168の底面に位置し、屋根梁120の下面が載置され、これを支持するものである。

【0079】梁支持板164の内方側端部は下向き垂直に屈曲してリブ164aが形成されて屋根梁120の荷重による梁支持板144の変形を防止している。

【0080】補強板164は、梁受部168の側面に位置し、梁支持板164の両側辺より上方へ垂直に所定長さ延出され梁支持板164と取付け板162を連結する一対の平板で、梁受け部168の補強を行い、かつ屋根梁120載置時に屋根梁120の横方向へのずれを防止する。補強板164は、取付け板162に対して垂直に内方側へ突出形成されるもので、取付け板162を切り開いて屈曲させて形成したものである。

【0081】補強板164、164と梁支持板144とで囲まれる取付け板162の開口部には、位置合わせ板165が取付けられている。

【0082】位置合わせ板165は、リブ162aの厚さとほぼ同じ分だけ内方側へずれて梁支持板144上に立設される。

【0083】梁受部168は、壁側金物150を嵌合させて、梁側金物150と壁側金物160との連結を行う係合穴169を備える。

【0084】係合穴169は、位置合わせ板165のほぼ中央付近において、位置合わせ板165から梁支持板164へ連続する、梁側金物150を嵌合可能なL型の貫通穴により形成されている。その大きさは、梁側金物150が嵌合可能であるように梁側金物150より若干大きく、その上端部において、梁側金物150の上方向への抜けを防止する係止部167を備える。

【0085】係止部167は、係合穴169の上端に沿って取付けられた内方側斜め下方向へ突出する板である。

【0086】本発明に係る第五実施例は上記のように構成されており、以下その取付け作業について説明する。

【0087】他実施例と同様に、工場で屋根梁120の端部において端面および下面のほぼ中央部付近に梁側金物150を取付け、屋切パネル100に梁受補強板102を介して壁側金物160を取付けておき、この状態でそれぞれ建築現場に運搬する。

【0088】そして建築現場では、第四実施例と同様に、屋切パネル100を所定位置に立設し、梁側金物150を取付けた屋根梁120の端部を、壁側金物160の梁受部168に載置させて梁側金物150全体に係合穴169に押圧して嵌合させることにより屋根梁120

の取付けが完了する。

【0089】第五実施例においては、係合穴169がりブ162aの厚さ分だけ内方側へ突出して形成されているので、屋根梁120の取付け時にリブ162aに影響されない。また係止部167を備えることにより確実に吹上による上方への抜けを防止することができる。その他の作用効果については第四実施例と同様であるので説明は省略する。

【0090】なお、第四および第五実施例の変形例として、図15に示すようなものとしても良い。

【0091】図15(1)に示す梁側金物170は、底板174に被係合部となる貫通穴174aを有し、壁側金物180の梁支持板184には、切り起こして形成した突起184aを有し、梁受部188の取付け板182側上端には屋根梁120の上方への抜けを防止する係止部187を有している。梁側金物170を取付けた屋根梁120を壁側金物180の梁受部188に載置すると、突起184aが貫通穴174aに引っ掛かって内方側への抜けを防止することができ、係止部187により上方への抜けを防止することができる。屋根梁120の上方への抜けを防止する係止部は梁側金物170に設けられていてもよい。

【0092】また、梁側金物は図15(2)に示すようなものでもよい。

【0093】梁側金物190は、屋根梁120の端面に接触する前板192および両側面に接触する側板196、196を有したコ字状に屈曲した金物で、側板196には爪196aが切り欠き形成されている。壁側金物190は屋根梁120の端面において前板192を釘打ちすることにより屋根梁120に取付けられる。壁側金物(図示せず)の梁受部に爪196aと係合可能な被係合部を設けておけば、屋根梁120の取付けはワンタッチで完了する。

【0094】このように、屋根梁120の側面に金物が接触していても、取付けが側面以外の場所であれば釘頭が突出し、壁側金物と梁側金物190との係合を邪魔することはない。ただし、この場合は、梁受部に屋根梁120を上方から落とし込んだ方がよい。

【0095】本発明は、上記実施例に限定されるものではなく、発明の要旨の範囲内で種々の変形が可能である。

【0096】例えば、上記実施例では、パネル工法において本発明を適用したが、これに限定されるものではなく、在来工法やその他の工法においても適用することができ、また、上記実施例では、屋根梁の取付けに本発明を適用したが、これに限定されるものではなく、まぐさ等の取付けに本発明を適用することもできる。

【0097】

【発明の効果】以上説明したように、請求項1記載の発明によれば、ワンタッチで梁を取付けることができ、建

築現場における高所での釘打ち等の作業を省略することができる。

【0098】また、請求項2記載の発明によれば、ワンタッチで取付けられた梁が、係止部および被係止部によって上方に抜けないようになるので、抜け止めのための作業を省略することができる。

【0099】さらに、請求項3記載の発明によれば、壁側金物が扁平な形状をなしているため、パネル工法において本発明を適用した場合、この壁側金物を屋切パネルに取付けておいて工場から建築現場へ運搬するとき、他の建材を傷付けにくくなるという効果がある。

【0100】そして、請求項4記載の発明によれば、合計3箇所において係合されるので、梁側金物と壁側金物とをしっかりと係合し、梁を強固に壁に取付けることができる。

【0101】請求項5記載の発明によれば、壁側金物が梁下面を支持する梁支持板を有し、梁支持板は補強板により補強されているので、かなり大型の梁でも梁の重さにより壁側金物がちぎれたり、壁側へめり込んだりせず、梁を壁に取付けることができる。また、補強板を有することにより、梁の軸方向と交差する平面上の位置決めが可能である。

【0102】さらに、梁側金物は、梁の側面を除いた面において梁端部に取付けられるので、釘頭等が梁側面側に出て、壁側金物と梁側金物との係合を妨げることがなく、壁側金物に梁を上方から落とし込むことも、内方側から差し入れることもできる。

【0103】請求項6記載の発明によれば、L型の梁側金物全体が係合部として壁側金物の被係合部に嵌合し、梁側金物と壁側金物とが係合するので、梁側金物に係合部を設ける必要がなく、金物の製造が比較的容易である。また、L型の梁側金物を壁側金物の貫通穴に嵌め込むことにより、梁の上方および軸方向への抜けを防止することができる。

【図面の簡単な説明】

【図1】本発明に係る梁受金物の第一実施例を示す斜視図である。

【図2】図1において、屋切パネルに屋根梁が取付けられた状態を示す縦断面図である。

【図3】本発明に係る梁受金物の第二実施例を示す側面図である。

【図4】図3における梁側金物を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【図5】図3における壁側金物を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【図6】本発明に係る梁側金物の第三実施例を示す側面図である。

【図7】図6における梁側金物を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【図8】図6における壁側金物を示す図であり、(1)

は平面図、(2)は正面図、(3)は側面図である。

【図9】パネル工法において、屋根梁の屋切パネルへの従来の取付けを示す斜視図である。

【図10】本発明に係る梁側金物の変形例を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【図11】図10の梁側金物に対応する壁側金物を示す図であり、(1)は平面図、(2)は正面図、(3)は側面図である。

【図12】本発明に係る梁受金物の第四実施例を示す斜視図である。

【図13】図12に示す梁受金物を用いた屋根梁の取付け状態を示す断面図である。

【図14】本発明に係る梁受金物に第五実施例を示す斜視図である。

【図15】(1)(2)共に本発明の梁受金物の変形例を示す斜視図である。

【符号の説明】

10、30、50、130、150 梁側金物

20、40、60、140、160 壁側金物

第一実施例

14、フック(係合部)

14a 鉤部(係止部)

26 スリット(被係合部)

第二実施例

33 フック(係合部)

35 抜止穴(被係止部)

46 スリット(被係合部)

48 突起(係止部)

第三実施例

56 突起(係合部)

58 突起(係止部)

66 係合穴(被係合部)

68 係合穴(被係止部)

第四実施例

132 前板

134 底板

142 取付け板

144 梁支持板

146 補強板

148 梁受部

149 係合穴

第五実施例

152 前板

154 底板

162 取付け板

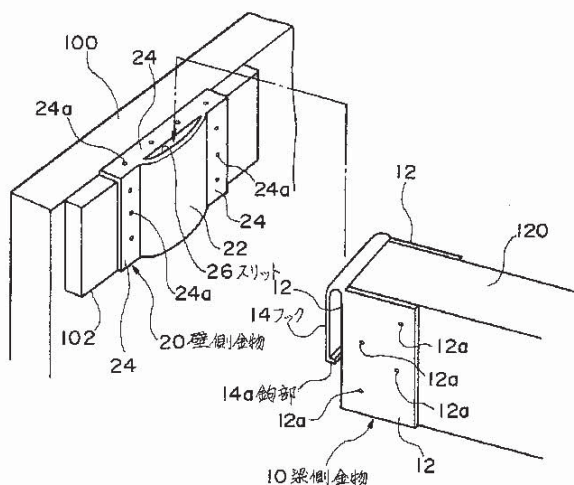
164 梁支持板

166 補強板

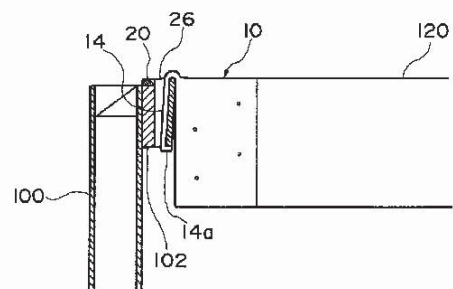
168 梁受部

169 係合穴

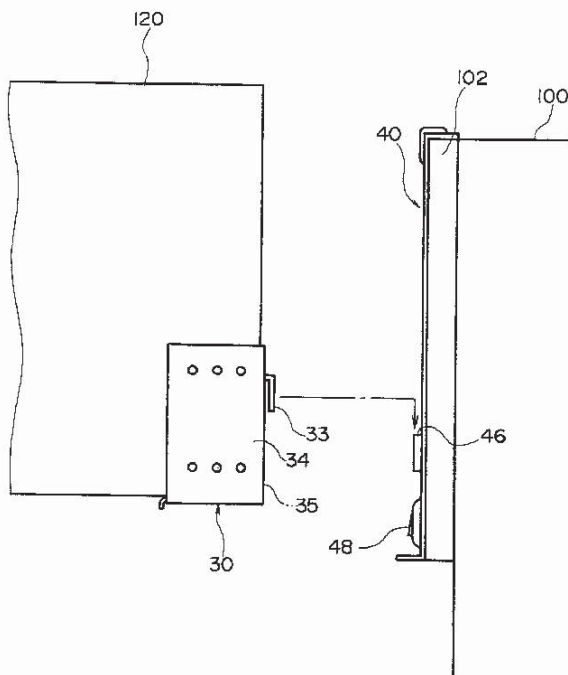
【図1】



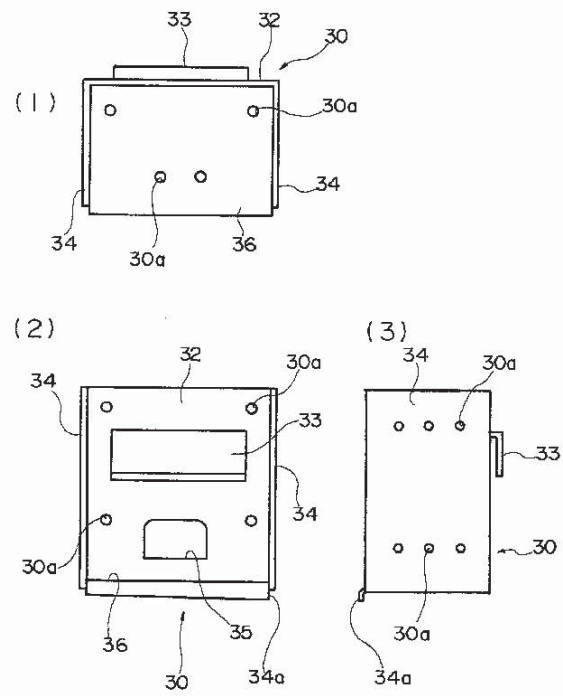
【図2】



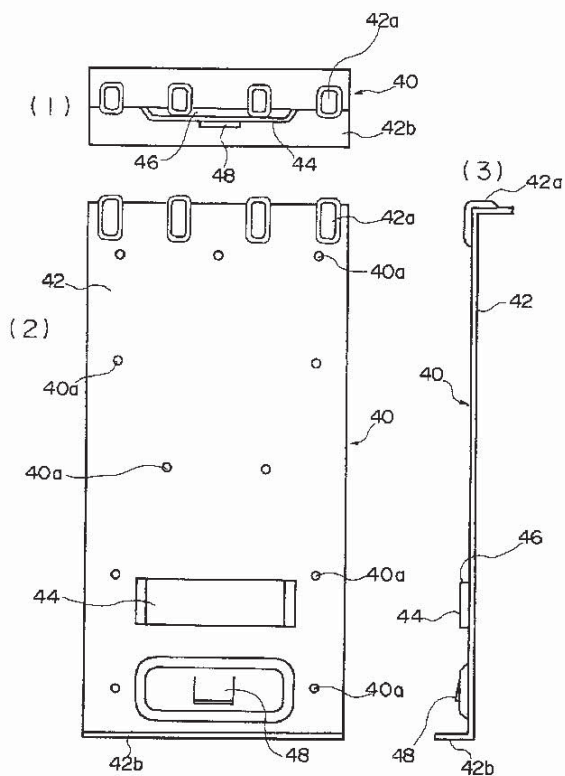
【図3】



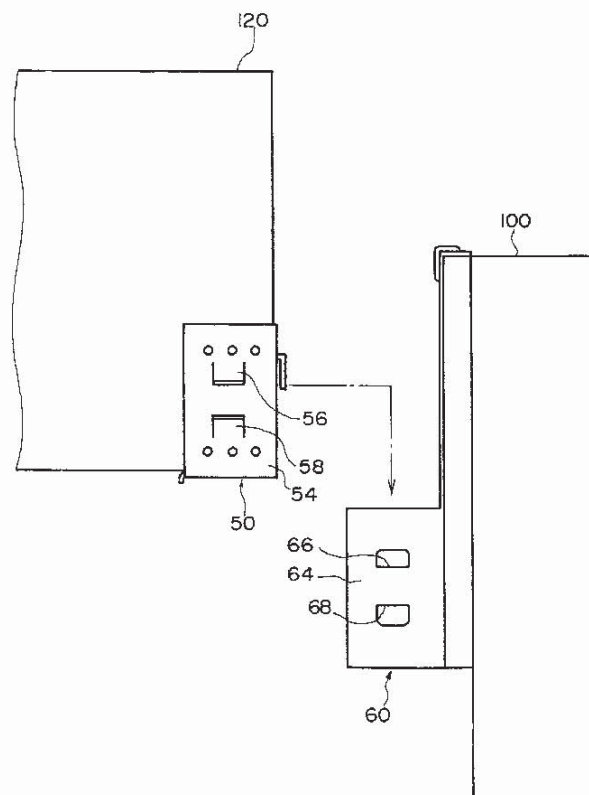
【図4】



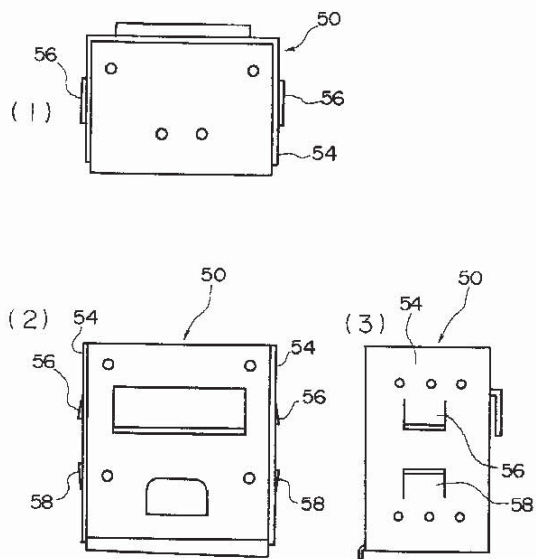
【図5】



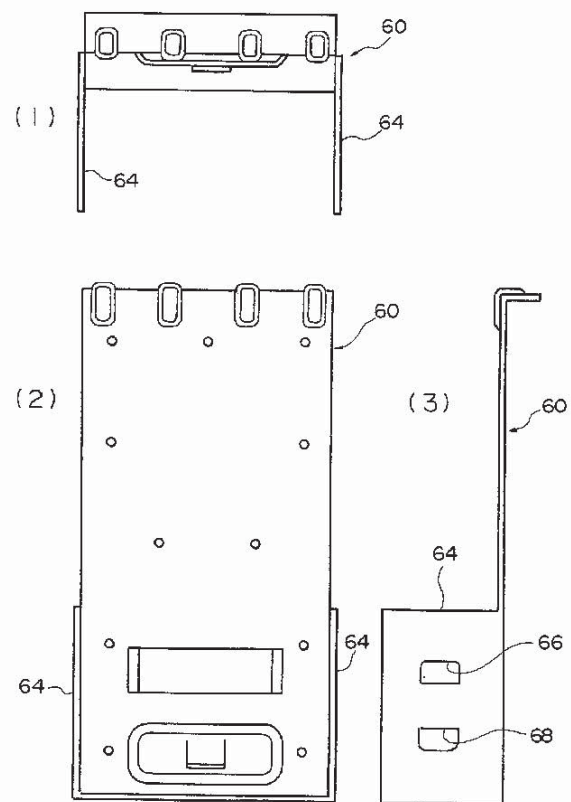
【図6】



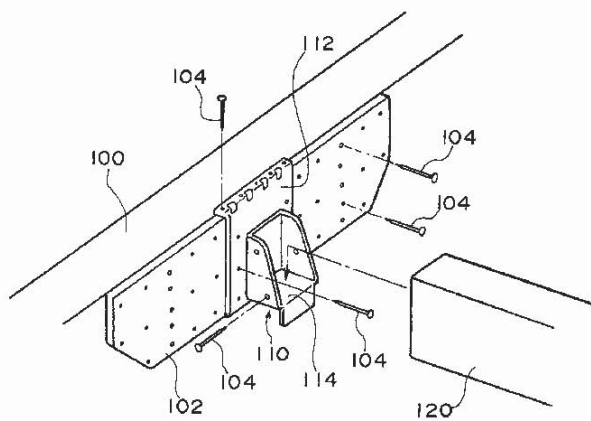
【図7】



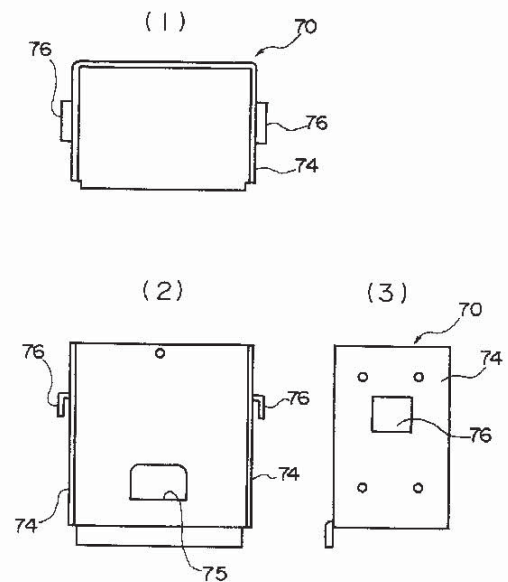
【図8】



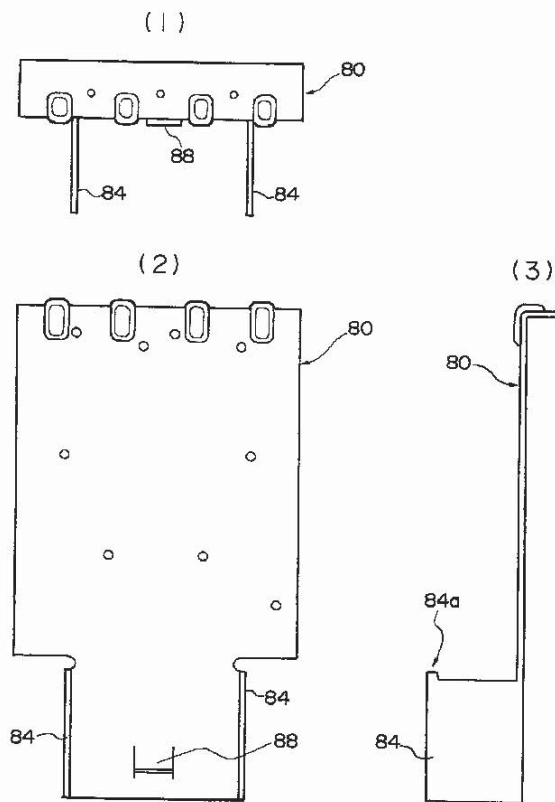
【図9】



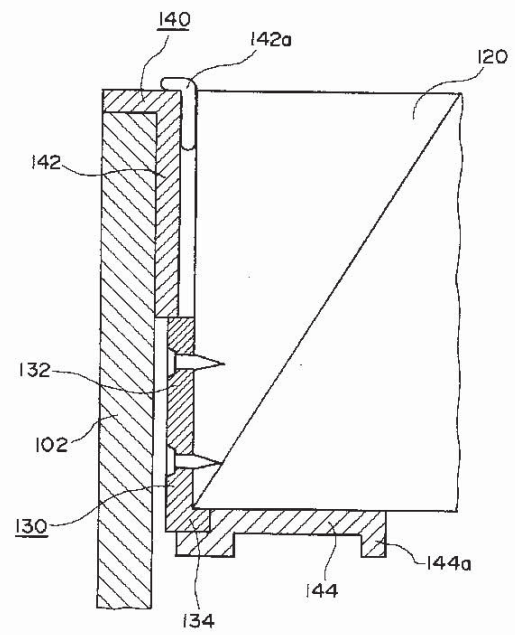
【図10】



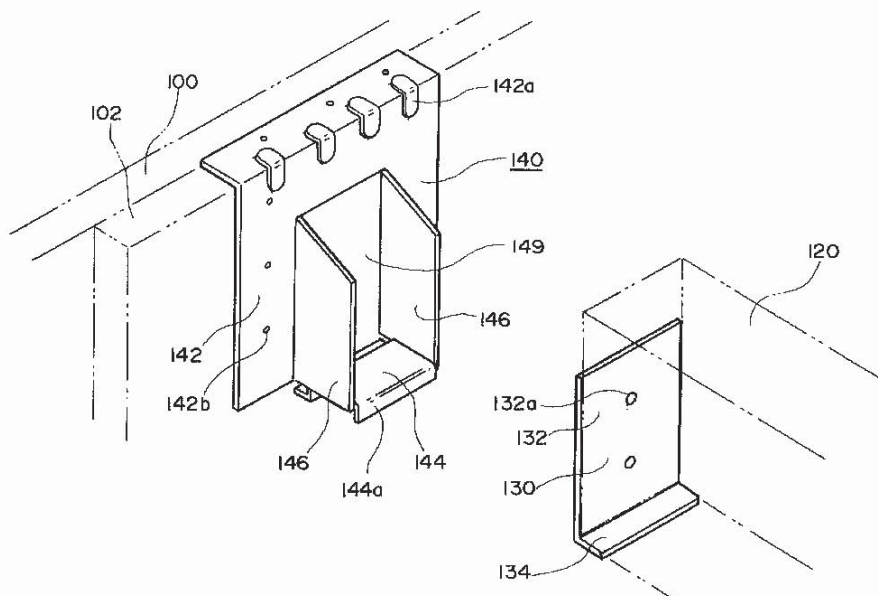
【図11】



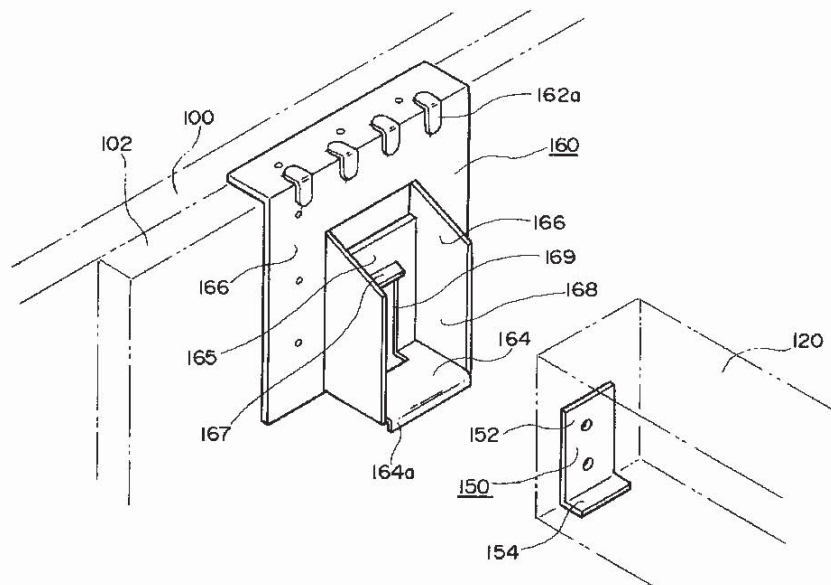
【図13】



【図12】

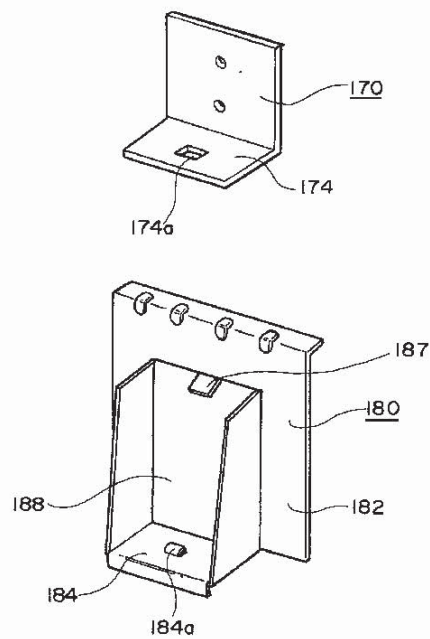


【図14】



【図15】

(1)



(2)

