



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
27.11.2013 Bulletin 2013/48

(51) Int Cl.:
E04B 1/00 (2006.01)

(21) Application number: **13168166.0**

(22) Date of filing: **17.05.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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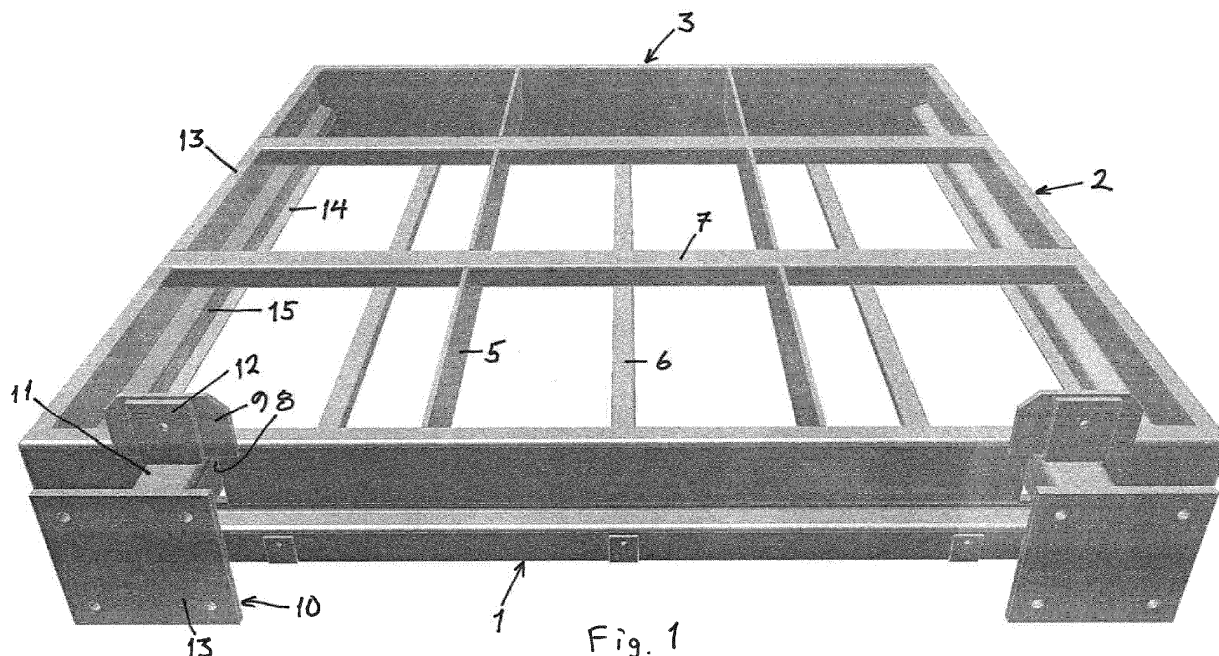
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(30) Priority: **21.05.2012 FI 20125534**

(54) **Balcony**

(57) The invention relates to a balcony, which has a rectangular frame comprising a rear plate (1) to be set against a wall, two side plates (2), and a front plate (3).

At least two of the plates have between top and bottom edges a chute-like inward protrusion (15) and these plates are opposite to each other.



Description

Technical background

[0001] The invention relates to a steel frame balcony. The invention is particularly useful in renovation, but also in new construction.

[0002] It is prior known to manufacture and attach steel frame balconies by constructing a balcony with an attachment flange at its rear edge in register with the frame and with brackets at the corners of its front edge for fastening a tension rod. The balcony frame includes a G-shaped edge profile with a flat external side. The balcony is secured to a wall with the attachment flanges and the tension rods, followed by placing a wooden grid on top of the frame. One example of such balcony is the Producta balcony from LO Rakenne Oy.

General description of the invention

[0003] There is now provided an invention as presented in the claims.

[0004] The balcony according to the invention has a rectangular frame, its edge plates consisting of a rear plate to be set against a wall, two side plates, and a front plate. In addition, the frame may include lengthwise beams perpendicular to the wall and crosswise beams parallel to the wall. To be supported by the frame is installed a floor. The frame can be further fitted with railings and other desirable fixtures.

[0005] According to a first feature of the invention, at least two of the plates have a chute-like inward protrusion between top and bottom edges. These two plates are those on opposite sides. Other plates may also have a similar protrusion. The chute bottom is most preferably vertical.

[0006] In one embodiment, a top surface of the protrusion in the plates is preferably inward sloping or a bottom surface of the protrusion is straight or inward sloping. The sloping top surface can be used for directing water. To the protrusion below the top surface, preferably to the bottom surface, can be fixed a waterproofing board. Water runs from the top surface onto this board, along which it can be directed for example into and out of a rain gutter present at the edge. The waterproofing board material can be for example corrugated sheet metal. In a second embodiment, the protrusion's top surface is straight or outward sloping and the bottom surface is outward sloping. In this case, water can be directed away from an outer edge of the top protrusion surface. For this purpose, inside the protrusion can be constructed a rain gutter, into which water is directed from an edge of the plate above the protrusion. The second embodiment can also be implemented by turning upside down the frame assembly composed of the edge plates.

[0007] A second independent object of the invention is a balcony frame edge plate with a chute-like inward protrusion between top and bottom edges.

[0008] A third independent object of the invention is a frame assembly composed of edge plates, which can be used in a balcony with either side up.

[0009] At a top edge of the plate can be an upper face, preferably inward from the edge. To be supported by such a top edge can be preferably installed a floor, for example a board floor. Alternatively, the plate can have a straight top edge. In this case, to be supported by the protrusion can be installed a floor, for example a tile floor. The various options can also be implemented with one and the same frame composed of edge plates, which has been constructed for a capability of being used with either side up.

[0010] The rear plate may define apertures by which the balcony is suspended on brackets mountable on the wall. If necessary, a further bracing of the balcony to the wall can be provided with tension rods. The rear plate can have a fastener, for example an attachment flange, by which the balcony can be secured to the bracket or the wall. The fastener lies most preferably above the floor level, whereby the balcony can be made completely ready for service prior to being lifted to its position.

[0011] A fourth independent object of the invention is a balcony fastener, which is in attachment with the balcony above the floor level.

[0012] The balcony can also be provided with elements for adjusting the balcony's height with respect to load-bearing girders. In such an arrangement, the balcony may feature a lengthwise beam, which is provided alongside the load-bearing girder with side legs connected above the load-bearing girder with an iron flat bar, most preferably with two of those. The iron flat bar defines a threaded hole. A screw fitted therein enables a height adjustment. As a result, variations in the height differences of load-bearing girders can be cancelled out.

Drawings

[0013] The attached drawings make up a part of a written specification for the invention and relate to the subsequently presented detailed description for a few embodiments of the invention. In the drawings, fig. 1 shows one balcony frame in a horizontal view, fig. 2 shows a balcony with the frame of fig. 1 in a cross-section parallel to the wall, fig. 3 shows a balcony with the frame of fig. 1 in a cross-section perpendicular to the wall, fig. 4 is a plan view of a balcony with another type of frame, fig. 5 shows a cross-section of fig. 4 parallel to the wall, and fig. 6 shows a cross-section of an edge plate profile for the balcony of fig. 4.

Detailed description for a few embodiments of the invention

[0014] The balcony frame of figs. 1-3 comprises a rear plate 1 parallel to the wall, side plates 2 perpendicular to the wall at the ends of the rear plate, and a front plate 3 parallel to the wall and connecting the outer ends of the

side plates. The rear plate and the front plate are connected at a top edge with a sufficient number of upper beams 5 and at a bottom edge with a sufficient number of lower beams 6. The side plates and the upper beams are connected at a top edge with a sufficient number of cross beams 7.

[0015] The rear plate 1 defines apertures 8 near its ends and, above the apertures, rear plate flanges 9 slightly wider than the apertures and extending higher than the rear plate. Into the apertures are installed load-bearing girders 10. These have a tubular body 11, an attachment flange 12 fixed to its top surface and mountable to the rear plate flange with bolts, and at its rear end a wall flange 13 mountable to the wall with bolts. When using short load-bearing girders such as those in fig. 1, the frame has its outer corners further fitted with attachment brackets for tension rods by which the balcony is also suspended on the wall. If the wall is provided with long load-bearing girders capable of supporting the balcony without tension rods, the attachment beams will be omitted and the balcony will be installed by the rear plate apertures to rest on the load-bearing girders.

[0016] The rear plate 1 and the side plates 2 consist of press-brake bent profile sheet with a thickness of 5-6 mm. It includes both an inward upper face 13 at the top edge and a similar type of lower face 14 at the bottom edge. Slightly below the midpoint is a wide U-shaped inward protrusion 15 lengthwise of the profile. The protrusion has its top surface slightly inclined inward for promoting the flow of water. The protrusion's bottom is vertical and its bottom edge is most preferably sharp for easy water droplet release. The protrusion's bottom surface is slightly inward sloping. The front plate 3 has at its top edge an inward upper face 16 and at its bottom edge an internal rain gutter 17 with a hole at least at one of its ends for the outflow of water.

[0017] The frame is most preferably constructed from zinc-plated steel.

[0018] In the embodiment of figs. 2 and 3, the protrusion 15 included in a profile of the side plates 2 has a drain panel 18 mounted on its lower surface. The drain panel is fastened preferably with screws, such that the screw points will be concealed inside the protrusion. Between the drain panel and the protrusion's lower surface can further be a water seal, for example a sealing tape. The drain panel material is hot-dip galvanized sheet metal with its grooves lengthwise of the balcony. The drain panel is inclined sufficiently (1:100 - 1:80) towards the front plate for enabling water to flow along the panel into the front plate's rain gutter 17.

[0019] On the frame edges are mounted railings and other possibly necessary fixtures.

[0020] In the embodiment of figs. 2 and 3, to be supported by the plates' upper faces 13 and 16 and by the top beams 5 and the crosswise beams 7 is installed a terrace board flooring 19. Underneath the drain panel is a fireproof insulation sheet 20 (fireproof rockwool 30 mm), resting on the profile's lower face 14 and the bottom

surface flooring. To a bottom surface of the lower face is secured a baseboard 21, which is made for example of calcium silicate.

[0021] In principle, the edge plate frame of figs. 1-3 can be used in a balcony also in an upside-down position for enabling the installation of a different type of flooring.

[0022] In the frame of figs. 4 and 5, both a rear plate 1.1, side plates 2.1 and a front plate 3.1 are made of metal profile sheet. Slightly above the middle part, it has an inward protrusion 15.1, which is lengthwise of the profile sheet and has a U-shaped cross-section. The protrusion's top surface and bottom surface are outward inclined and its bottom is vertical. The bottom edge has an inward lower face 14.1.

[0023] The rear plate 1.1 and the front plate 3.1 are interconnected with two beams 5.1. These have a top edge flush with a top surface of the profile sheet's protrusion 15.1. The rear plate 1.1 defines apertures 22 in register with the beams. The beam 5.1 has two vertical legs 23 and two iron flat bars 24 connecting the same and provided with a threaded hole 25. The embodiment is intended for use in projects involving wall-mounted load bearing girders upon which the balcony is rested. The load-bearing girders place themselves between the legs of the balcony beams underneath the iron flat bars. Into the holes of the iron flat bars are inserted screws, by means of which the balcony's height with respect to the load-bearing girders can be adjusted exactly as desired regardless of height differences. The balcony frame is installed in a precisely horizontal position. The inward bent U-shaped protrusions present in the profile sheets are horizontal or inclined in a longitudinal direction.

[0024] To be supported by the top surface of the profile sheet protrusion 15.1 is placed a concrete slab 19.2. The slab is dimensioned so as to leave a small gap between its front edge and the edge of the profile sheet. The front plate protrusion 15.1 has its upper face provided with holes for allowing the outflow of water. If desired, inside the protrusion can be further fitted a rain gutter for removing water in a controlled manner for example from the gutter's end.

[0025] Above its floor level, the frame can have a fastener for securing a balcony to the frame.

[0026] The edge plate frame of figs. 4 and 5 is also applicable in the embodiment of figs. 1-3.

[0027] The bottom surface of each version includes a steel frame supporting both the fireproofing sheet and the board system therebelow.

Claims

1. A balcony, which has a rectangular frame comprising a rear plate (1; 1.1) to be set against a wall, two side plates (2; 2.1), and a front plate (3; 3.1), **characterized in that** at least two of the plates have between top and bottom edges a chute-like inward protrusion (15; 15.1), and that these plates are opposite to each

other, that the balcony is installed to rest on wall-mounted load bearing girders, and that the balcony has elements (5.1, 24, 25) for adjusting the balcony's height with respect to the load-bearing girders.

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2. A balcony as set forth in claim 1, wherein a top surface of the protrusion (15) is inward sloping or a bottom surface of the protrusion (15) is inward sloping or horizontal.

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3. A balcony as set forth in claim 1 or 2, wherein to the protrusion (15), below the top surface, is attached a waterproofing insulation board (18) inside the balcony.

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4. A balcony as set forth in any of the preceding claims, wherein the plate (1; 2; 3) has at its top edge an upper face (13) or the top edge of the plate (1.1; 2.1; 3.1) is straight.

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5. A balcony as set forth in claim 4, wherein the plate (1; 2; 3) has at its top edge an upper face (13) and to be supported thereby is installed a floor (19) or the top edge of the plate (1.1; 2.1; 3.1) is straight and to be supported by the protrusion (15.1) is installed a floor (19.1).

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6. A balcony as set forth in claim 5, wherein the plate (1; 2; 3) has at its top edge an upper face (13) and to be supported thereby is installed a board floor (19) or the top edge of the plate (1.1; 2.1; 3.1) is straight and to be supported by the protrusion (15.1) is installed a tile floor (19.1).

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7. A balcony as set forth in any of the preceding claims, wherein the rear plate (1) has apertures (8) and rear plate flanges (9) extending above the rear plate, the apertures (8) having fitted therein load-bearing girders (10) which have a tubular body (11), to the top surface of which is fixed an attachment flange (12) capable of being fastened to the rear plate flange.

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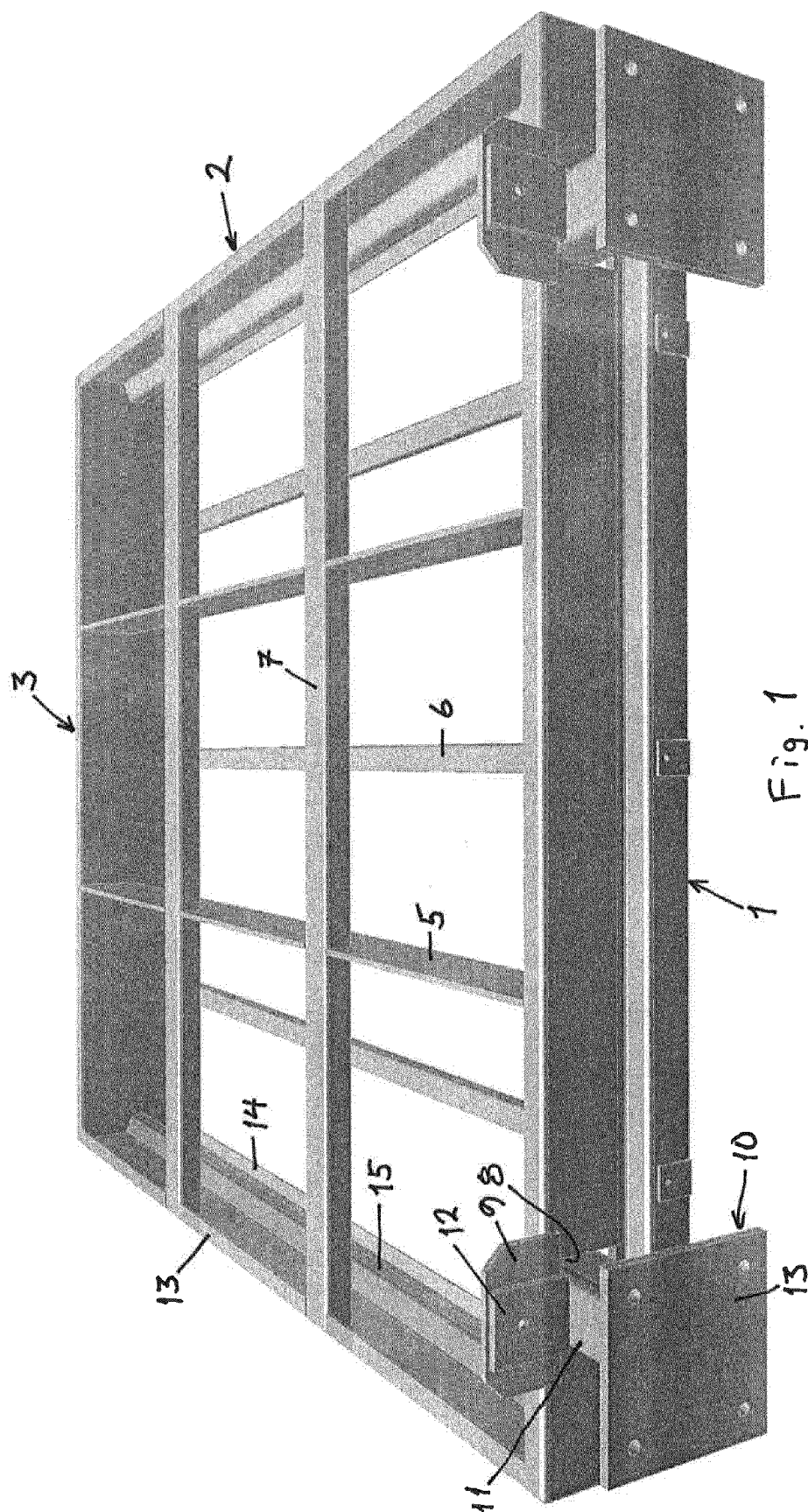
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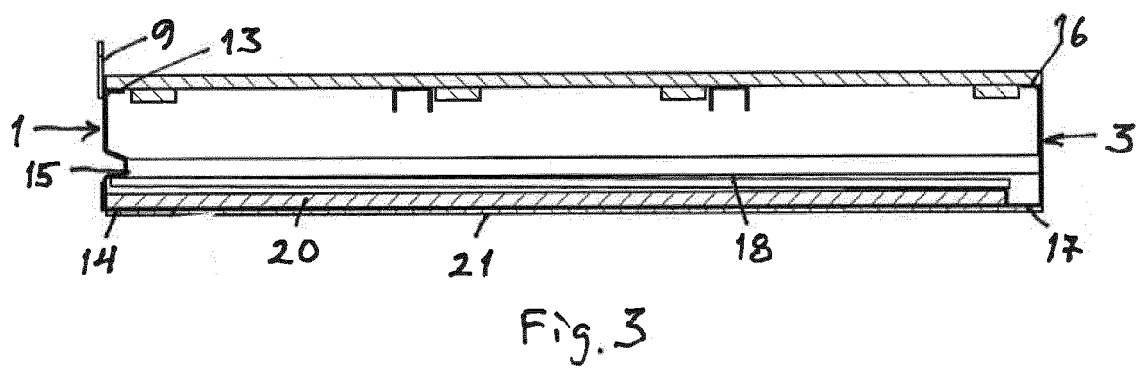
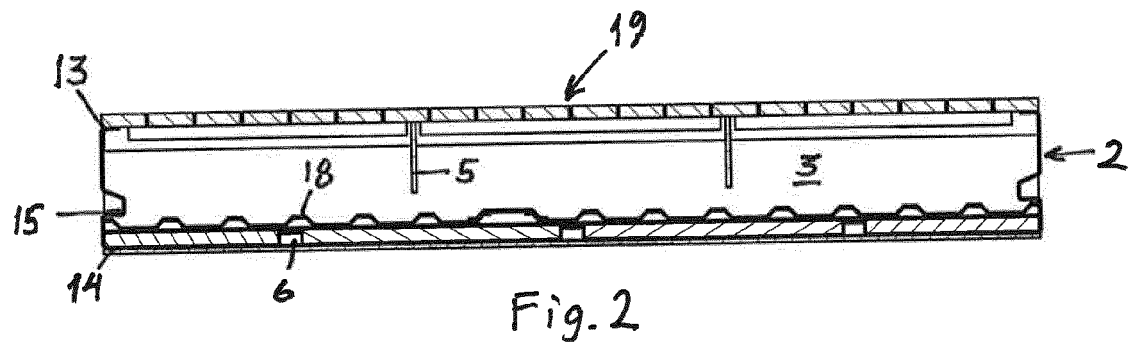
8. A balcony as set forth in any of the preceding claims, wherein the frame is capable of being used also in an upside-down position in the balcony.

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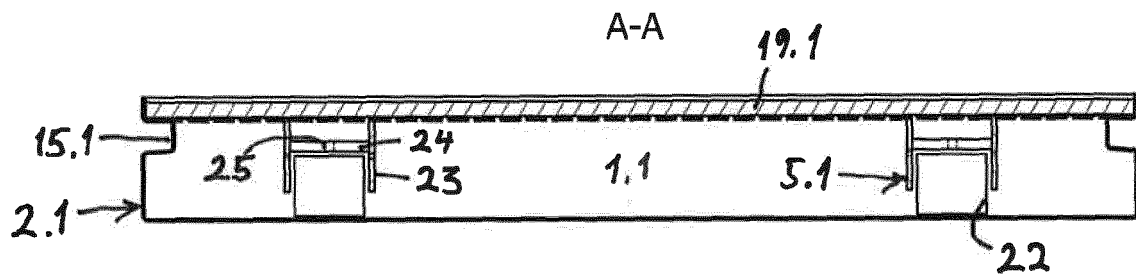


Fig. 5

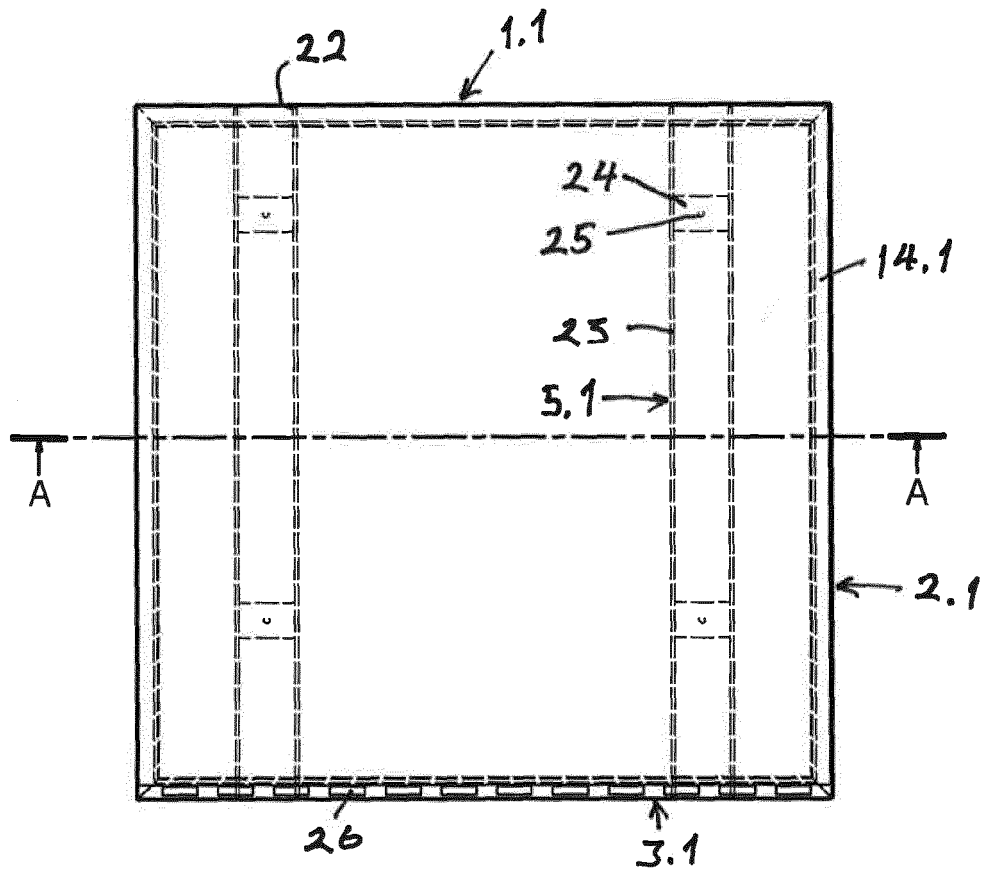


Fig. 4

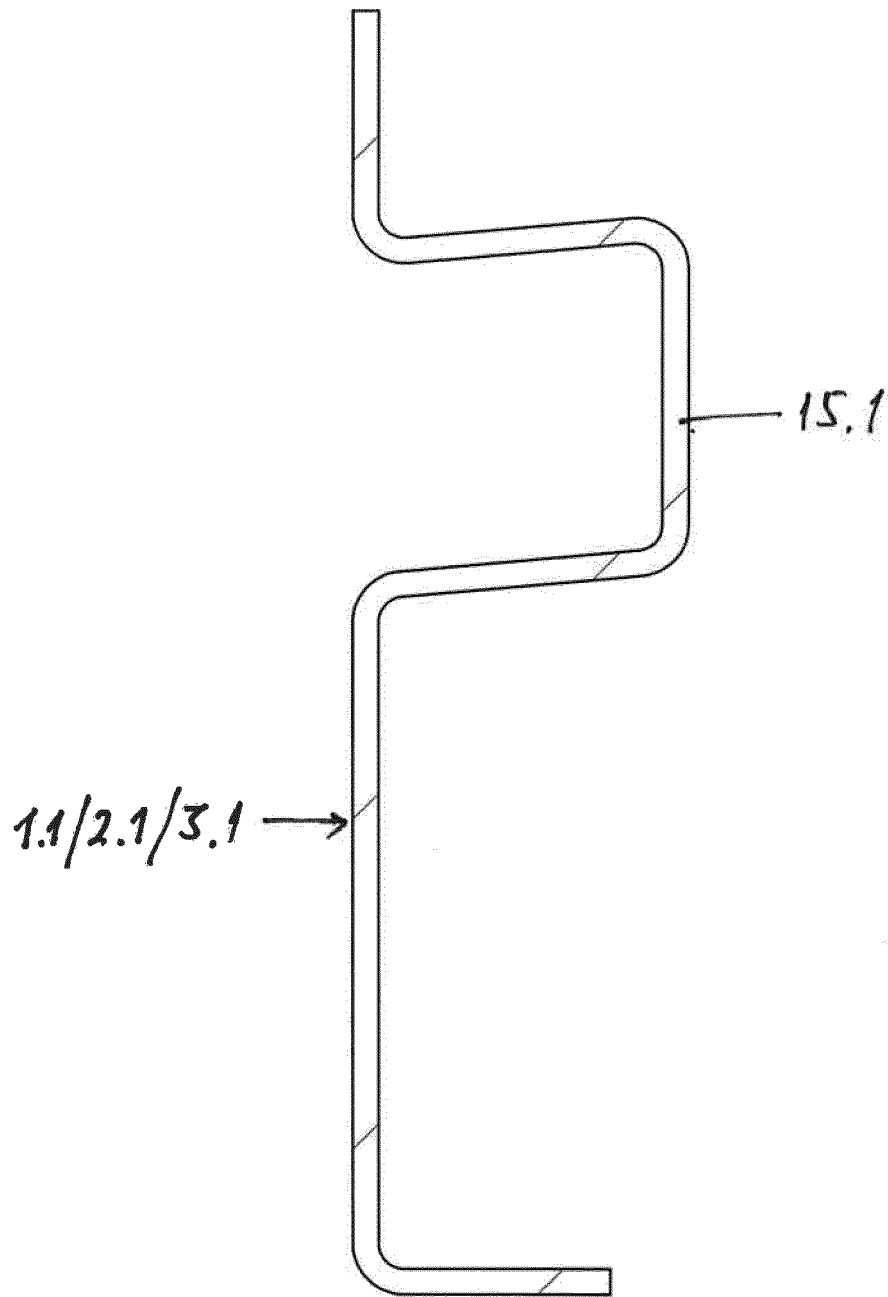


Fig. 6