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(54) **Wall bracket and working platform**

(57) A wall bracket is provided for facilitating construction work, as a surface for a person or another load. The wall bracket comprises a plurality of support structures (110) to be fastened to a wall in parallel and at a distance from one another and, resting thereon, parallel working platform frames (150) settling at a distance from one another for supporting working platforms (252, 253) comprised by the wall bracket. In the invention, the working platforms are such that the working platform comprises a self-supporting wall (261 to 267, 271 to 277) and that at least an end area of the self-supporting wall is provided with an overlap area (L) for resting on an adjacent working platform.

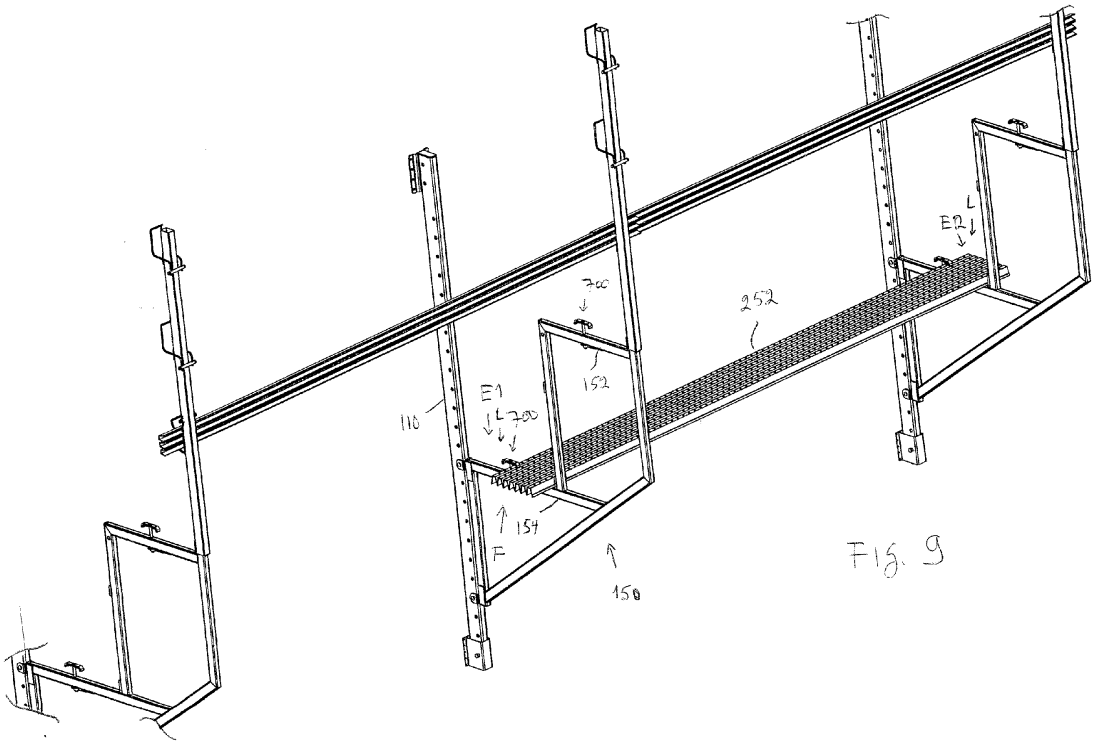

Fig. 9

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Description

Background of the invention

[0001] The invention relates to a wall bracket for facilitating construction work, as a surface for a person or another load, the wall bracket comprising a plurality of support structures to be fastened to a wall in parallel and at a distance from one another and, resting thereon, parallel working platform frames settling at a distance from one another for supporting working platforms comprised by the wall bracket.

[0002] The invention also relates to a working platform.

[0003] In house building, for instance, scaffolds are used alongside a wall to enable a worker to move high enough so as to perform the necessary work, such as mounting of roof trusses onto wall elements or mounting or painting of eaves boarding or sheathing for eaves. Conventional scaffolds rest on the ground, which means that the ground has to be evened out, and such scaffolds resting on the ground are slow to assemble and disassemble and, in order to achieve stability, require that the legs of the scaffolds settle on a sufficiently large area against the ground.

[0004] From WO9820215 is known a bracket to be fastened to a wall and comprising a wall rail whereto a horizontal beam which extends away from the wall is fastened and on which the actual working platform lies, and on the horizontal beam rests a rail post on which horizontal fall arrest boards may be provided to rest. However, this solution is not sufficiently versatile to be able to provide sufficient applicability to different tasks and different installation environments, a particular problem being the structure of the working platforms, which is based on fixed-size working platforms whose position is not adjustable while resting on one another. The known structures fail to address the width adjustment of working platforms in a satisfying manner.

Brief description of the invention

[0005] An object of the invention is thus to provide a novel wall bracket and working platform e.g. for construction work so as to enable the aforementioned problems to be solved or mitigated.

[0006] The object of the invention is achieved by a wall bracket which, according to the characterizing part of independent claim 1, is such that the working platforms are such that the working platform comprises a self-supporting wall and that at least an end area of the self-supporting wall is provided with an overlap area for resting on an adjacent working platform.

[0007] The object of the invention is achieved by a working platform which, according to the characterizing part of the independent claim disclosing a working platform, is such that the working platform comprises a self-supporting wall and that at least an end area of the self-supporting wall is provided with an overlap area for resting on an adjacent working platform.

[0008] Preferred embodiments of the invention are disclosed in the dependent claims.

[0009] The wall bracket and working platform according to the invention provide several advantages. A significant advantage is that the structure is highly applicable to mutually different objects, such as work sites wherein the locations of windows and doors are differently positioned and/or have different widths or wherein the width of the object, such as a wall, varies. By means of successive, partially superimposed overlapping working platforms, easy adjustability is achieved for the width. The bracket, together with its working platforms, and the working platform according to the invention are lightweight, easy to assemble, remove and move to another object.

[0010] Next, the invention will be explained with reference to the accompanying drawings, in which:

Figure 1 shows fastening of a supporting beam to a wall,
Figure 2 shows an early stage in installation of a working platform frame of a bracket structure prior to the working platform frame being lifted up and locked to rest on a support structure,
Figure 3 shows the up-lifted and locked-up working platform frame together with working platforms prior to installation of a rail post,
Figure 4 shows the arrangement with a rail post,
Figure 5 shows the structure according to Figure 1 with markings designating enlargements according to Figures 6 to 8 added thereto,
Figure 6 shows enlargement A of Figure 5 related to fastening of a support structure to a frame of a wall element,
Figure 7 shows enlargement B of Figure 5 related to fastening of a support structure to a wall panel,
Figure 8 shows enlargement C of Figure 5 related to a lower support at a lower end of a support structure,
Figure 9 shows a wall bracket over a distance according to three support posts and three working platform frames,
Figure 10 shows fastening of an end of a working platform to a horizontal support of a working platform frame at arrow F of Figure 9,
Figure 11 is an end view showing a working platform,
Figure 12 is an end view showing two successive working platforms with overlapping end areas.

Detailed description of the invention

[0011] First, referring to Figures 1 to 10 in particular, a bracket 100 is provided for use in a construction or another stage of a house or another building 10. Resting on an erected wall element 12 of the building, a roof truss 14 and, resting thereon, the actual roof covering 16 together with its sheeting are provided. An application may

be a one- or two-storey detached house. The wall element 12 or another wall structure is provided with a lining 18, such as a wooden wall panel.

[0012] In order to mount, fasten, finish or otherwise treat the necessary structural parts of the house 10 or to perform other work phases, a wall bracket 100 is now provided which is stepwise according to Figures 1 to 4 assembled to rest on the wall 12 of the building 10. Figures 4 and 9 show the wall bracket completed. The invention is suitable for both newbuilding and renovation building.

[0013] A wall bracket 100 is thus provided for facilitating construction work, the wall bracket comprising a support structure 110 to be fastened to a wall, and a bracket structure 120 to be placed to rest on the support structure and to serve as a work surface and fall arrest for a person 30 or another load. When viewed as a working platform, applications may also include structures other than a building scaffold, e.g. a walkway resting on another support structure, such as a catwalk in a factory.

[0014] The bracket structure 120 to be placed to rest on the support structure 110 to be fastened to the wall 12 comprises a working platform frame 150 which forms at least two different height positions and which is provided with an upper support 152 and a lower support 154 for at least partly non-superimposed working platforms 152a and 154a, the working platforms 152a and 154a being shown in Figures 3 and 4.

[0015] In Figures 9 to 12, working platforms are designated by reference numbers 252 and 253, of which 252 particularly in Figure 12 is the working platform on which another working platform contributing to the formation of the same walking platform, i.e. a second working platform 253, settles mainly over an end area of the working platform. A distance over which superimposition, i.e. overlapping, occurs is e.g. 30 cm. Figure 12 is thus to be understood such that the upper, i.e. the second working platform 253, resides father away from a viewer than the lower working platform 252, and that the end of the upper working platform 253 that is closer to the viewer is superimposed over a distance of e.g. 30 cm (in the depth direction of Figure 12) with the end of the lower working platform 252 that resides farther away from the viewer.

[0016] As to the wall bracket, a wall bracket is provided for facilitating construction work, as a surface for a person or another load. The wall bracket comprises a plurality of support structures 110 to be fastened to a wall in parallel and at a distance from one another and, resting thereon, parallel working platform frames 150 settling at a distance from one another for supporting working platforms 252, 253 (or 152a, 154a in Figures 3 to 4) comprised by the wall bracket from below.

[0017] The working platforms 252, 253 are such that the working platform comprises a self-supporting wall 261 to 267, 271 to 277 and that at least an end area of the self-supporting wall is provided with an overlap area L for resting on an adjacent working platform.

[0018] In order to implement the self-supporting wall of the working platform, the working platforms 252, 253 are such that the working platform comprises adjacent ridges 261 to 268 extending in a longitudinal direction of the working platform, and between the ridges are provided recesses 271 to 277 extending in the longitudinal direction of the working platform and defined by walls of the ridges such that the wall of the working platform forms at the ridge 261 to 268 of an upper surface of the working platform a recess 261a to 268a in a lower surface of the working platform, and that the wall of the working platform 252 forms at the recess 271 to 277 of the upper surface a ridge 271a to 277a in the lower surface of the working platform. It is noted that in an embodiment the ridges 261 to 268 and the recesses 271 to 277 extend in the longitudinal direction of the working platform from a first transverse end E1 of the working platform to a second transverse end E2 thereof. It is advantageous that the ridges and the recesses are located at least in the end areas of the working platforms in order to achieve an adjustment possibility for the extent, i.e. length, of the superimposition, i.e. overlap, but most appropriate in terms of both the adjustability and easy manufacturability of the working platforms is that the ridges and protrusions extend over the entire distance, i.e. from the end E1 to the second end E2.

[0019] In an embodiment, the working platform 252, 253 is made of aluminium or another light metal; in an embodiment, it is an extrusion piece. This enables both lightness and strength to be achieved. Most preferably, the working platform is a profile.

[0020] Alternatively, the working platform may be a working platform folded from steel.

[0021] As can be seen in Figures 9 to 12, the peak of the ridge, such as 261 to 268, of the upper surface of the working platform and, in a preferred embodiment, also the peak of the corresponding recess, such as 261a to 268a, of the lower surface of the working platform are substantially planar. The peaks of the upper surface, i.e. the peaks of the ridges 261 to 268, mutually reside substantially in the same plane, i.e. in the same height position, in order for the ridges 261 to 268 together to form a safe, uniform surface. It is noted in Figures 11 to 12 in particular that the bottom of the recess 271 to 277 of the upper surface of the working platform and the peak of the corresponding ridge of the lower surface of the working platform are substantially shaped like a vertex of a triangle.

[0022] Referring to Figure 12 in particular, the successive and/or parallel working platforms are superimposed at least over their ends and/or sides such that the ridges and recesses of the lower surface of an upper working platform settle against the recesses 271 to 277 and the ridges 261 to 268 of the upper surface of a lower working platform. Figure 12 shows superimposition of the ends, i.e. end areas, of the working platforms, i.e. succession of the working platforms 252, 253, i.e. the working platforms 252, 253 are extensions of one another in the longitudinal direction.

[0023] It can be seen in Figures 9 to 10 that the bracket comprises a fastening arrangement 700 for fastening a working platform to a working platform frame 150. In an embodiment, the fastening arrangement 700 comprises a fastener 701 with a shaft, an opening 1500 in the working platform frame 150 for the shaft 701a of the fastener 701 and, further, a fastening counterpart 710 which, in cooperation with the fastener 701, is arranged to fasten the working platform to the working platform frame 150, to a horizontal support 154 thereof. The shaft of the fastener, a special lower part thereof is provided with an external thread and, correspondingly, the fastening counterpart 710 is provided with an internal thread housing 710a which is rotated by a crank or a corresponding driver 710b when a worker turns the driver 710b.

[0024] Referring to Figure 10 in particular, the fastener 701 comprised by the wall bracket comprises at an upper part of its shaft 701a a support member 701b, 701c which is transverse to the shaft and which, in a fastening position, settles at an edge of a recess of the working platform 252, against a flank of a ridge of the working platform.

[0025] The position of the shaft 701a of the fastener 701 may, according to Figure 9, be at the edge of the working platform 252 or between parallel working platforms, i.e. at the edge of both working platforms when in Figure 9 another working platform were provided on the long side parallel with the working platform 252.

[0026] No thread transmission is provided between the shaft 701a of the fastener 701 and the vertical opening 1500 of the horizontal support 154 of the working platform frame 150 in order for the fastener 701 to be easily and quickly lowerable into its lower position wherein the transverse parts 701b, 701c of the shaft 701a of the fastener 701 come against the recess of the top surface of the working platform 252. The fastening arrangement 700 enables either a single working platform 252 and/or working platforms 252, 253 superimposed at least over their ends to be fastened to the working platform frame or another target. The working platform 252 may have an opening for the shaft 701a of the fastener 701, or the shaft 701a of the fastener 701 may reside alongside the working platform.

[0027] The surface of the working platform 252, 253 may be roughened through perforation so as to prevent slipping.

[0028] In Figure 12, the ridges of the lower surface of the upper working platform 253 settle in the recesses 271 to 277 of the upper surface of the lower working platform 252 while the ridges 261 to 267 of the upper surface of the lower working platform 252 settle in the recesses of the lower surface of the upper working platform 253.

[0029] In the example of Figures 9 to 12, the working platform has seven ridges and a width e.g. of 302.50 mm and a length of 3300 mm when the span of the support 154 below is 3000 mm, in which case the working platform extends on both sides 150 mm broader than the support below, i.e. the horizontal support 154, in which case the superimposed overlap of the ends of the working platforms 252, 253 is 300 mm in both ends. The working platform may be shorter or longer. The weight of a working platform made of aluminium is about 20 kg. In another embodiment, the working platform is made from folded steel.

[0030] In an embodiment, the support structure 110 is a beam, a bar or another appropriate uniform structure. The support structure 110 is vertical, allowing the bracket structure, i.e. particularly the bracket frame of the bracket structure 120, to be installed at different heights to rest on the support structure 110, enabled by holes 110a, chambers or other height adjustment members of the support structure 110. Holes 156 and 166 are also holes similar to the holes 110a.

[0031] Referring to Figure 6 in particular and also to Figures 1 and 5, the support structure 110 is by means of fastening members 111, such as screws or bolts, fastened to a wall 12, particularly to the frame of a wall element, such as an upper horizontal beam 13 of the wall element 12.

[0032] According to the figures, in an embodiment the wall bracket 100 is fastened to a vertical surface 14 of an exterior of the wall element 12, i.e. without the supporting beam 110 of the bracket extending, overhead, to hang down from the upper end of the wall element, since this could interfere with tasks to be carried out in that direction.

[0033] It is noted that in an embodiment the upper support 152 of the working platform frame 150 extends farther away from the support structure 110 than the lower support 154; in such a case, the upper working platform 152a may at least partly or even completely be made to extend away from underneath the eaves, i.e. the upper working platform 152a can made to be located outside the eaves line, i.e. sufficiently far away from the wall 12.

[0034] Referring to Figure 7 in particular, the wall bracket 10 comprises a plurality of support structures 110 to be fastened to a wall in parallel and at a distance from one another and, resting thereon and settling at a distance from one another, parallel working platform frames 150 for the working platforms. These second and third, and so forth, support structures and working platform frames remain behind the corresponding structures 110, 150 shown in the foreground in the figures, unlike in Figure 9.

[0035] In order to make the amount of free overhead working space as large as possible, the upper support 152 and the lower support 154 comprised by the working platform frame 150 comprised by the bracket structure 120 of the wall bracket 10 are at least mainly non-superimposed for the at least mainly non-superimposed working platforms 152a, 154a. It is seen in Figures 2 to 4 and 9 that the upper support 152 and the lower support 154 comprised by the working platform frame 150 are not at all mutually superimposed, and the mutual position of the upper working platform 152a and the lower working platform 154a is also in like manner. In addition to increasing the working space, the manner of implementation in

question enables the worker 30 to move unobstructedly in the longitudinal direction of the wall along the working platforms since the end of the upper support 154 facing the wall does not extend so as to form an obstacle to moving along the lower working platform 154a.

[0036] Next, reference is made to Figures 2 and 3 in particular as well as to rotational motion of the working platform frame 150 from position 2 according to Figure 2 to the position according to Figure 3. The wall bracket 10 comprises a rotating fastening 155 to 157 between the support structure 110 and the working platform frame 150 by means of which the working platform frame 150 rests on the support structure 110. The rotating fastening comprises e.g. a pin 155, a hole 156 in the support structure 110 and a hole 157 in the working platform frame 150. The rotating fastening 155 to 157 makes the working platform frame 150 easier to install in the support structure 110.

[0037] The wall bracket further comprises a locking 165 to 167 by means of which the working platform frame 150, which is by means of the rotating fastening 155 to 157 lifted up and placed to rest on the support structure, is locked into its operating position according to Figure 3.

[0038] The locking 165 to 167 comprises e.g. a pin 165, a hole 166 in the support structure 110 and a hole 167 in the working platform frame 150. The rotating fastening 155 to 157, too, may be seen as contributing to the locking since the pin 155 engages the working platform frame 150 to the support structure 110.

[0039] Figure 7 shows enlargement B of Figure 5 related to fastening of a support structure 110 to a wall panel in order to prevent bending. The support structure 110 comprises a support part 110b by means of which a middle section of the support structure 110 or another section between the ends of the support structure 110 is supported on the surface of the wall 12 and through which the support structure 110 may further also be fastened to a panel 118. The support part 110b is fastened to the support structure 110, i.e. the vertical beam 110, by means of a fastening structure, such as bolts 119b.

[0040] Figure 8 shows enlargement C of Figure 5 related to a lower support 110c at a lower end of the support structure 110. The lower support 110c enables the lower part of the support structure 110 to be supported on the wall 12. Through the lower support 110c the support structure 110 may further also be fastened to the panel 118. The lower support 110c is fastened to the support structure 110, i.e. the vertical beam 110, by means of a fastening structure, such as bolts 119c.

[0041] Next, assembly/installation of the wall bracket will be discussed with reference to Figures 1 to 4. First, according to Figures 1, 5, and 6, the supporting beam 110 is fastened to the surface of the wall 12 at an upper part by means of fastening members 111 and, when necessary, also at a lower part, such as through the support part 110b and the lower support 110c by means of fastening members. Next, according to Figure 2, the working platform frame 150 is installed by means of the rotating fastening 155 to 157, such as a pin-hole structure, to rest on the support structure 110 and, according to arrow E, the working platform frame 150 is lifted up into the vertical position according to Figure 3 and, by means of the locking 165 to 167, i.e. the pin-hole structure, locked. Next, the working platforms 152a and 154a are set in place to rest on the upper support 154 and the lower support 152. If no rail post 170 was already included in the working platform frame, then, according to Figure 4, a rail post 170 is set in place by means of a sleeve or another fastener 171 provided at an upper corner of the outer edge, i.e. far edge, of the working platform frame 150; further, horizontal rails 174 are set in place in clamps 172 for the rail post 170, i.e. rail locks, and horizontal rails 184 are placed in clamps 182, i.e. rail locks, in vertical supports 180 in the area between the working platforms, i.e. behind the lower working platform 152a. The rail posts 170, 180 provide support for horizontal stops 174, 184, forming an integrated fall arrest in the bracket for both working platforms 152a, 154a (the lower working platform 152a corresponds to the working platform 252).

[0042] The working platform frame 150 comprises for working platforms, such as 252, 253, 152a, 154a, an upper support 152 and a lower support 154. The structure is stabilized by an intermediate support 153. For the rails 174, 184 the working platform frame 150 comprises in the vertical support 180 a rail lock 182 and, on the other hand, a fastener 171 for the rail post 170 provided with a rail lock 172 which in Figure 9 is different from that shown in Figure 4. The working platform frame 150 is formed from profile tubes, for instance.

[0043] The working platform frame may also be different from what has been shown above.

[0044] It will be apparent to a person skilled in the art that as technology advances, the basic idea of the invention may be implemented in many different ways. The invention and its embodiments are thus not restricted to the examples described above but may vary within the scope of the claims.

Claims

1. A wall bracket for facilitating construction work, as a surface for a person or another load, the wall bracket comprising a plurality of support structures (110) to be fastened to a wall in parallel and at a distance from one another and, resting thereon, parallel working platform frames (150) settling at a distance from one another for supporting working platforms (252, 253) comprised by the wall bracket, **characterized in that** the working platforms are such that the working platform comprises a self-supporting wall (261 to 267, 271 to 277) and that at least an end area of the self-supporting wall is provided with an overlap area (L) for resting on an adjacent working platform.

2. A wall bracket as claimed in claim 1, **characterized**

in that the working platforms are such that the working platform (252) comprises adjacent ridges (261 to 267) extending in a longitudinal direction of the working platform, and between the ridges are provided recesses (271 to 277) extending in the longitudinal direction of the working platform and defined by walls of the ridges such that the wall of the working platform forms at the ridge of an upper surface of the working platform a recess (261a to 267a) in a lower surface of the working platform, and that the wall of the working platform forms at the recess (271 to 277) of the upper surface a ridge (271a to 277a) in the lower surface of the working platform.

3. A wall bracket as claimed in claim 2, **characterized in that** the ridges and the recesses extend in the longitudinal direction of the working platform from a first transverse end of the working platform to a second transverse end thereof.

4. A wall bracket as claimed in claim 1, 2 or 3, **characterized in that** the working platform is made of aluminium or another light metal.

5. A wall bracket as claimed in claim 2, **characterized in that** the successive and/or parallel working platforms are superimposed at least over their ends and/or sides such that the ridges and recesses of the lower surface of an upper working platform settle against the recesses and the ridges of the upper surface of a lower working platform.

6. A wall bracket as claimed in claim 1, **characterized in that** it comprises a fastening arrangement (701) for fastening the working platform to the working platform frame.

7. A wall bracket as claimed in claim 6, **characterized in that** the fastening arrangement comprises a fastener (701) with a shaft, an opening in the working platform for the shaft of the fastener, an opening in the working platform frame for the shaft of the fastener and, further, a fastening counterpart which in cooperation with the fastener is arranged to fasten the working platform to the working platform frame.

8. A wall bracket as claimed in claim 7, **characterized in that** the fastener comprised by the wall bracket comprises at an upper part of its shaft a support member which is transverse to the shaft and which, in a fastening position, settles at an edge of the recess of the working platform, against a flank of the ridge of the working platform.

9. A working platform, **characterized in that** the working platform comprises a self-supporting wall (261 to 267, 271 to 277) and that at least an end area of the self-supporting wall is provided with an overlap area (L) for resting on an adjacent working platform.

10. A working platform as claimed in claim 9, **characterized in that** the working platform comprises adjacent ridges (261 to 267) extending in a longitudinal direction of the working platform, and between the ridges are provided recesses (271 to 277) extending in the longitudinal direction of the working platform and defined by walls of the ridges such that the wall of the working platform forms at the ridge of an upper surface of the working platform a recess (261a to 267a) in a lower surface of the working platform, and that the wall of the working platform forms at the recess of the upper surface of the working platform a ridge (271a to 277a) in the lower surface of the working platform.

11. A working platform as claimed in claim 10, **characterized in that** the ridges and the recesses extend in the longitudinal direction of the working platform from a first transverse end of the working platform to a second transverse end thereof.

12. A working platform as claimed in claim 10, **characterized in that** the working platform is made of aluminium or another light metal.

13. A working platform as claimed in claim 10, **characterized in that** the peak of the ridge of the upper surface of the working platform and the peak of the corresponding recess of the lower surface of the working platform are substantially planar.

14. A working platform as claimed in claim 10 or 13, **characterized in that** the bottom of the recess of the upper surface of the working platform and the peak of the corresponding ridge of the lower surface of the working platform are substantially shaped like a vertex of a triangle.

15. A working platform as claimed in claim 10, **characterized in that** the working platform is made from folded steel.

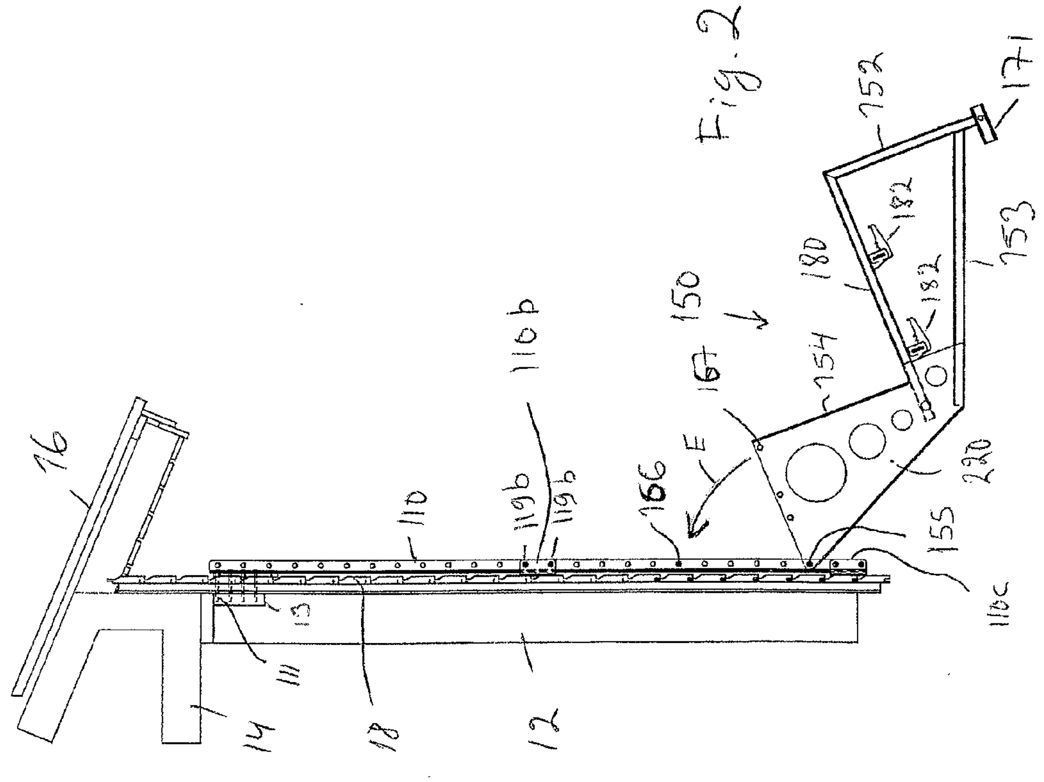
Fig. 2
16
110
110b
119b
119b
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E
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180
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110c
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18
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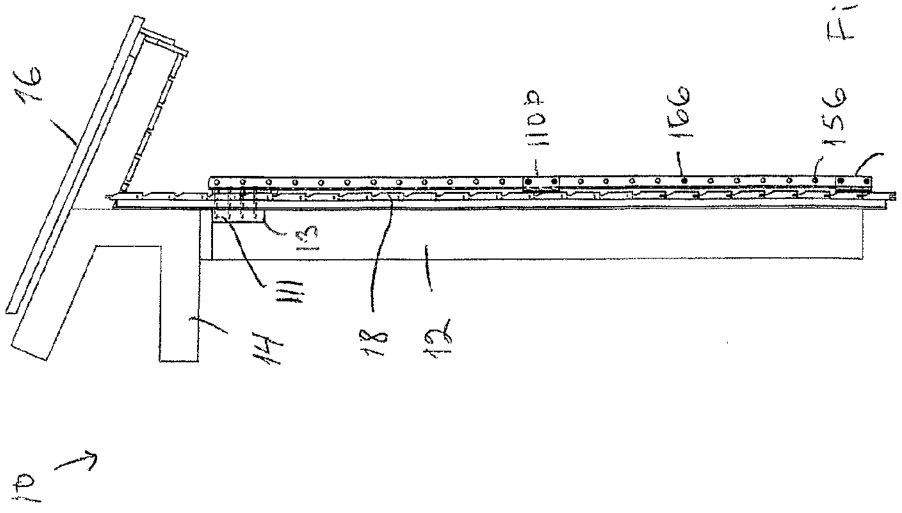
Fig. 1
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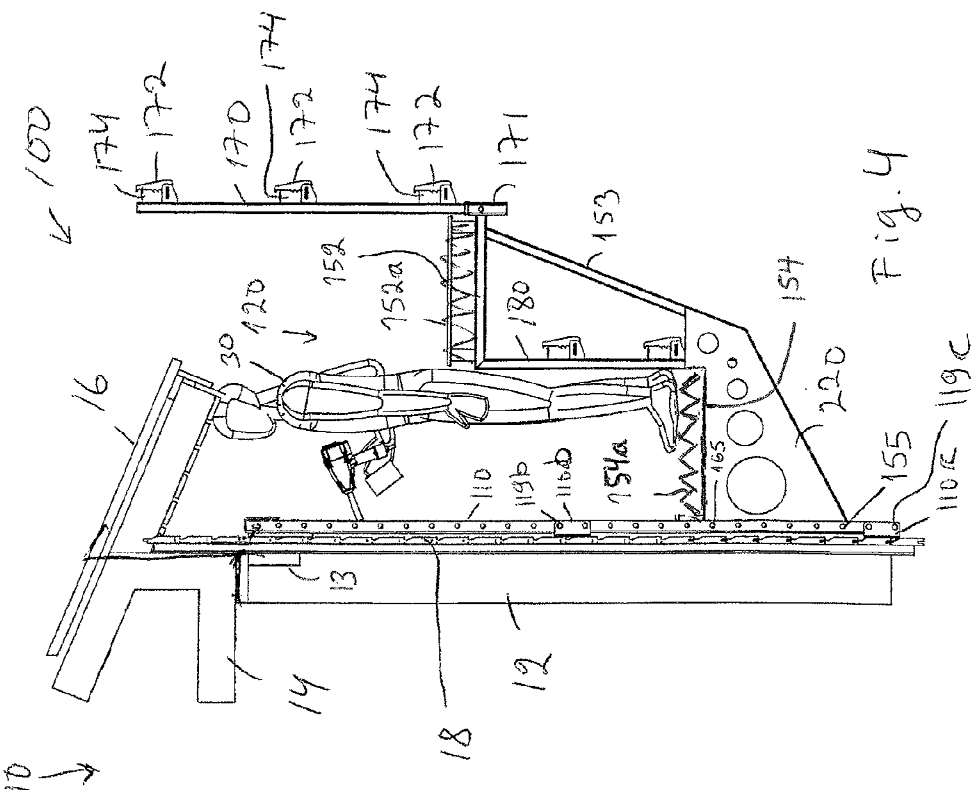
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Fig. 4

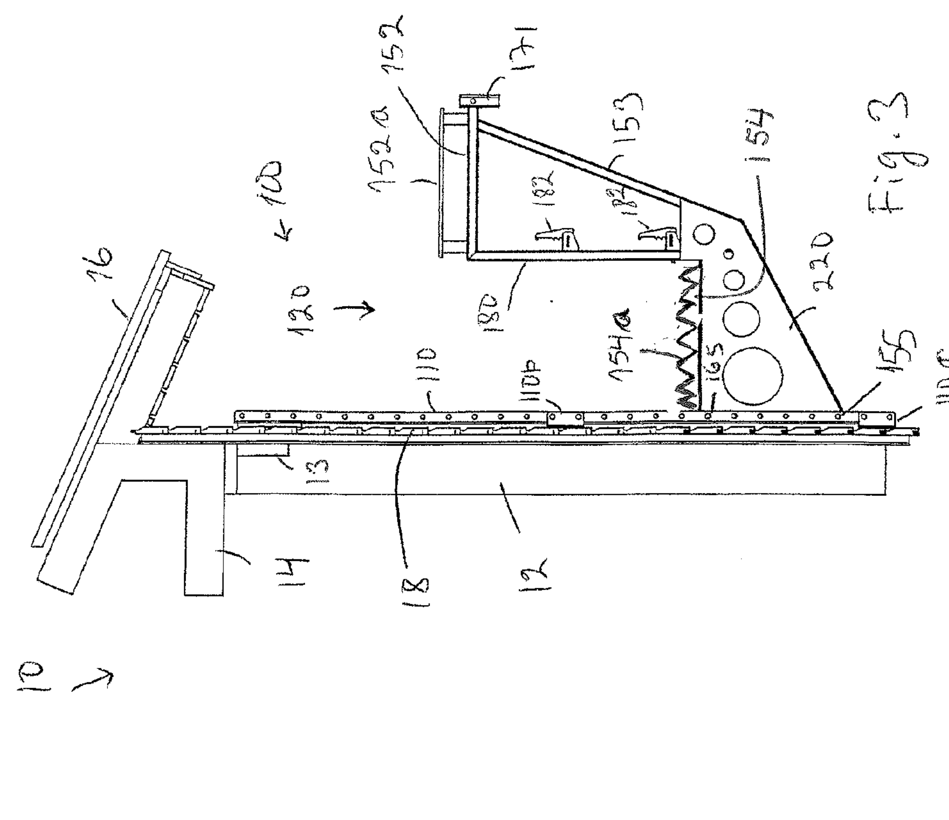
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Fig. 3

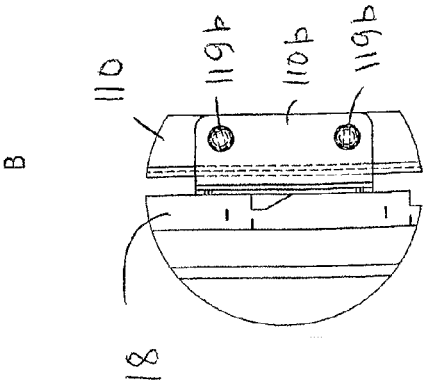

Fig. 7

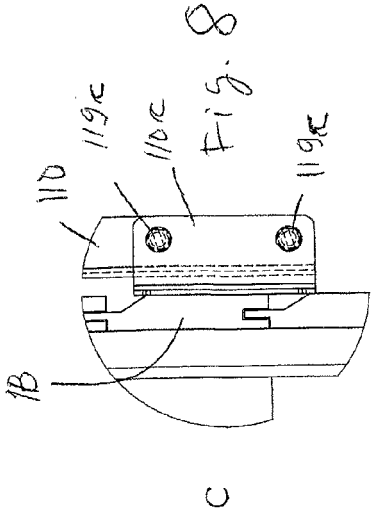

Fig. 8

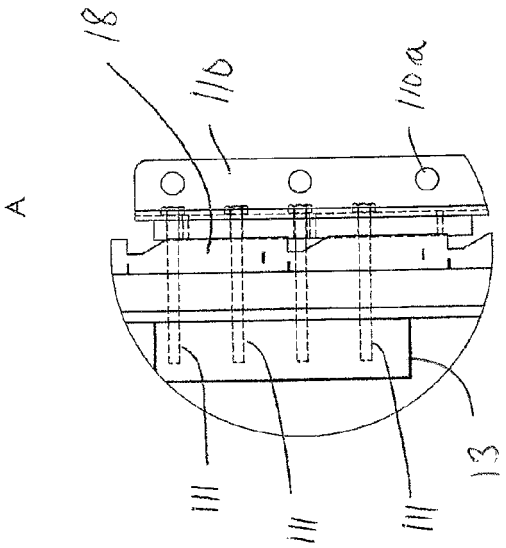

Fig. 6

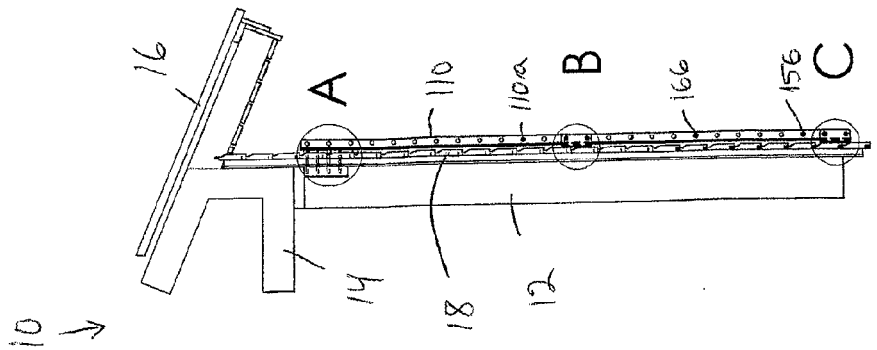

Fig. 5

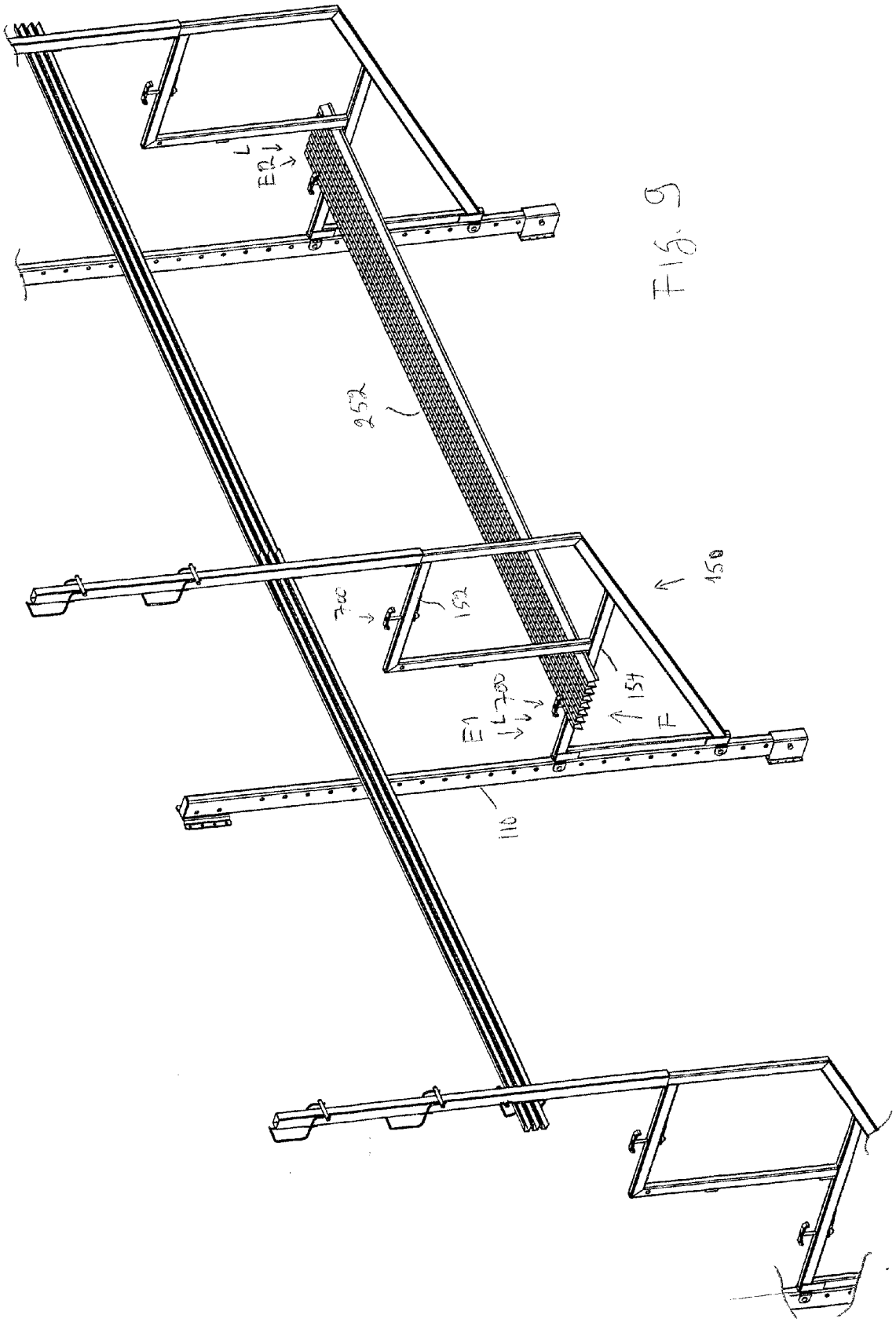

Fig. 9

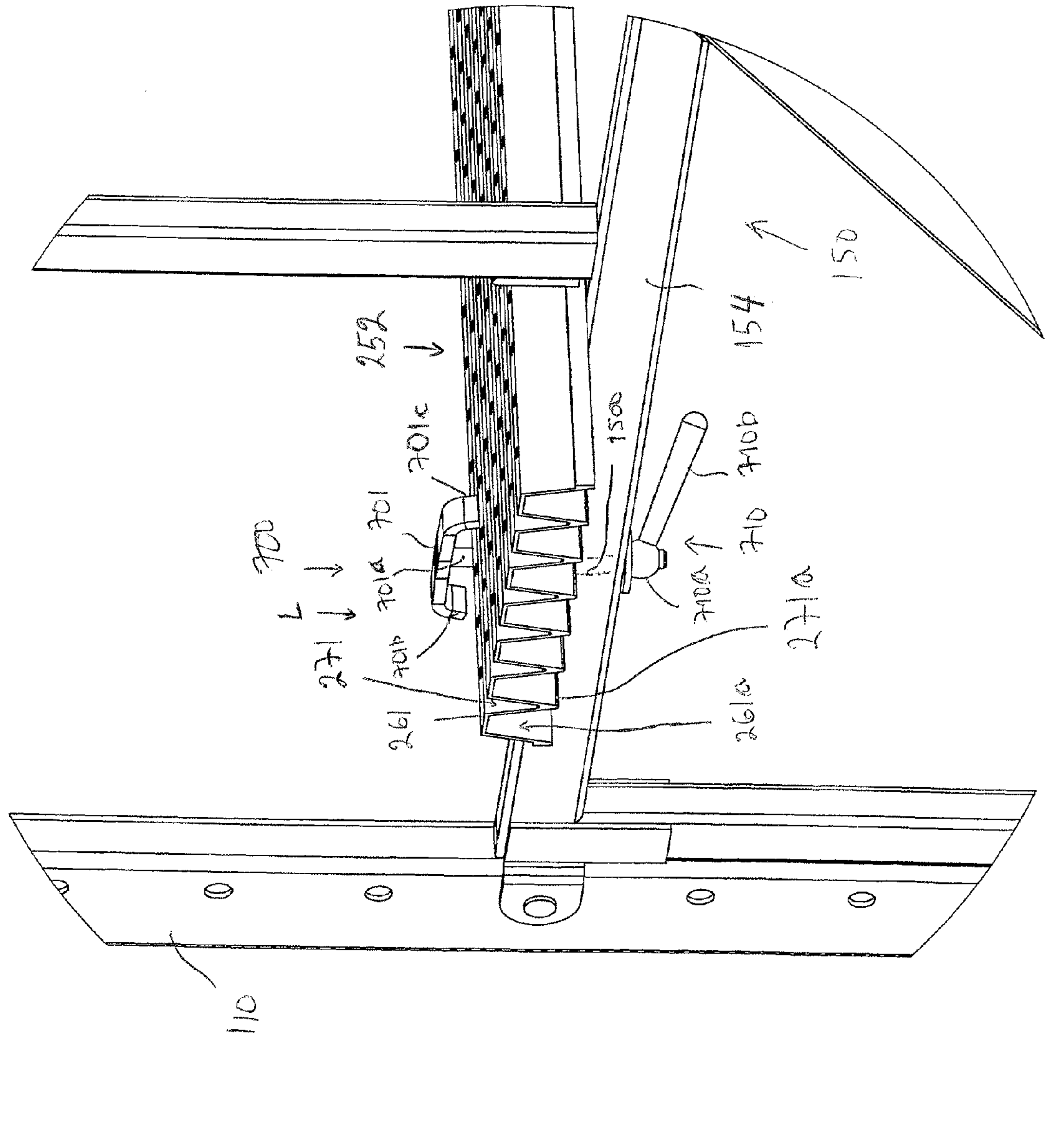
110
150
154
252
700
701
701a
701b
701c
710
710a
710b
150a
261
261a
271
271a
L

Fig. 10

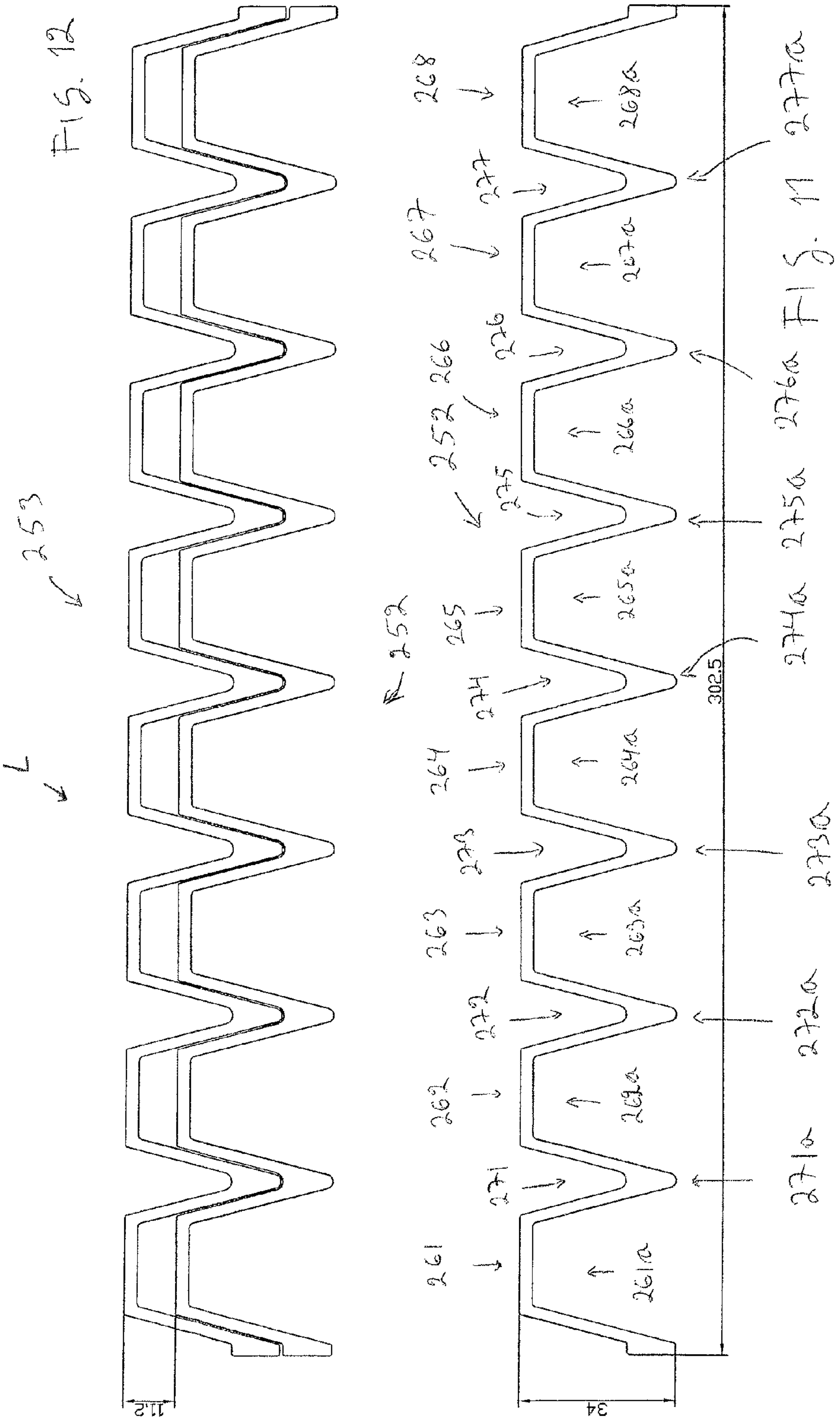
Fig. 12
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Fig. 11
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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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