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Remarks:

Amended claims in accordance with Rule 137(2) EPC.

(54) **Movable platform for supporting shuttering for vertical walls and the like**

(57) The platform comprises a displaceable base (9) for supporting the frame (6) bearing the wall shuttering (3) and other accessories, articulated in positions close to its front and rear ends to respective main arms (14, 14') which are guided by their other ends in rectilinear vertical guides (18) of the fixed structure of the stand (1) which supports the movable platform, said main arms being

further articulated, in intermediate positions, to the lower ends of respective auxiliary arms (21, 22), which are themselves articulated by their upper ends to the actual fixed support structure of the stand, such that the displacement of the base bearing the shuttering, resulting from the displacement of the arms, takes place in its own horizontal plane without appreciable vertical displacement.

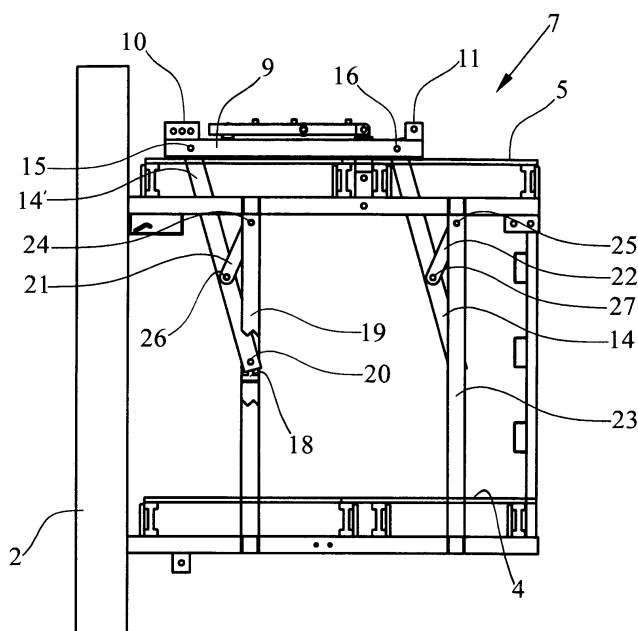


FIG.5

Description

[0001] The present invention is intended to disclose a movable platform intended for supporting shuttering panels for vertical walls and similar structures.

[0002] The field of application of the present invention is that of shuttering for walls and similar structures in which concreting is started from the lower part, producing a part of the wall, allowing it to set until a specific strength has been reached, and then proceeding with the upward displacement of the platform bearing the shuttering panel or panels in order then to proceed with the shuttering and concreting of a following section and so on, in succession, until the top of the wall or similar structure is reached.

[0003] Therefore, the platforms bearing the shuttering panels must move vertically in order to carry out the shuttering of subsequent sections, as has been indicated, and must also be capable of horizontal displacement so as to allow the platform to adopt two positions: a working position in which the shuttering panel forms the outer face of the wall, and another, rest position, in which the platform is moved in a horizontal direction, the shuttering panel being separated from the wall and permitting the passage of personnel in the gap between the wall and said shuttering panel, in order to permit the work of maintaining the panel, i.e. cleaning of its surface, application of demoulding substances, etc.

[0004] At present, movable platforms for shuttering panels of this type are mounted on guides of various types in order to permit their displacement in a horizontal plane perpendicularly to the plane of the wall. Said guides may be formed by rails and wheels, or by female guides with rollers incorporated within them, or other types which are fundamentally based on fixed guides associated with the base bearing the movable platform and guided members associated with the actual movable platform. However, the devices known at present have significant drawbacks, both with regard to their mechanical complexity and the difficulty of maintaining them, all of which represents a higher price and an unsatisfactory service. In fact, in view of the large amount of work waste generated during the shuttering and concreting of walls, the platforms are subjected to a considerable degree of soiling which is transmitted to the guides intended for the displacement of the movable platforms, necessitating continual and significant maintenance work in order to permit more or less satisfactory functioning of said guides. It also results in the need to apply considerable efforts for the movement of the movable platforms, since the efforts which the movable platforms have to overcome on the guides are considerable.

[0005] Another important drawback of the systems known at present lies in the considerable number of mechanical parts necessary, which, besides significantly increasing costs, involve the substantial drawbacks of assembly, disassembly, loss of parts during work, etc.

[0006] In order to remedy the drawbacks mentioned, the inventor has developed a new movable platform for

supporting shuttering panels for vertical walls and the like which permits very easy actuation with the application of minimum effort, requiring in addition a much reduced number of parts and not necessitating any disassembly of parts when the relocation of the platform takes place, thereby avoiding the drawbacks of losses, damage, etc.

[0007] The basic concept of the invention, which is defined by the characterizing part of claim 1, consists in providing a platform intended for supporting the vertical shuttering panels which, by means of a special assembly of levers for connection to the support base of the movable platform, permits the horizontal displacement of the latter without appreciable variation of the height level, i.e. with displacement of the platform in an almost perfectly horizontal plane. In addition, in view of the disappearance of the guides for rectilinear sliding with the problems of friction mentioned above, the work necessary for the displacement of the movable platform is reduced to a small fraction of that currently necessary, for which reason it is possible for said displacement to be carried out by a single operator and proceeding from only one of the ends of the platform, whereas at present two operators are required, each acting in a system of manual actuation, and located respectively at each end of the movable platform.

[0008] The assembly of levers and arms for each of the devices for actuating the movable platform and coupled to each platform consists fundamentally of two main arms of longer length articulated by their upper ends to the movable platform and which are guided at the bottom by means of protrusions within vertical guides of the structure of the fixed platform, i.e., that which supports the movable platform and which is translated vertically when a new section of the wall is to be concreted. Each of said main arms is itself articulated at an intermediate part thereof to a fixed point of the actual support structure of the movable platform, by means of auxiliary arms, optionally in the same vertical guide members of the lower ends of the main arms. The sizing is adapted so that when the rotation of the main arms takes place, the movable platform is displaced in a horizontal plane, i.e., without appreciable displacement in the vertical plane. Although the precise sizing may vary within specific limits, nonetheless, according to the tests and calculations carried out by the inventor, one of the conditions to be fulfilled is that the length of the auxiliary arms should be equal to or greater than half the travel of the rectilinear trajectory of the movable platform.

[0009] For greater understanding thereof, drawings representing an exemplary embodiment of the invention are appended by way of non-limiting example.

[0010] Figure 1 shows a perspective view of a platform assembly for supporting shuttering for vertical walls and the like which incorporates the present invention.

[0011] Figure 2 shows a view in front elevation of the same structure as Figure 1.

[0012] Figure 3 is a view in side elevation of the same

structure as shown in Figures 1 and 2.

[0013] Figure 4 shows a plan view of the same structure as in Figures 1, 2 and 3.

[0014] Figure 5 shows a view in side elevation of the support structure of the movable platform in the position for application of the shuttering panel to the wall.

[0015] Figure 6 shows a view similar to that of Figure 5 in an intermediate position of the movable platform.

[0016] Figure 7 is a view in side elevation, similar to Figures 5 and 6, showing the movable platform in the position in which the shuttering panel is separated from the wall.

[0017] As will be seen from the drawings, the movable platform of the present invention forms part of a single or double stand assembly 1 intended for its progressive ascending displacement with respect to a wall to be concreted 2, or a similar structure, supporting the shuttering panels 3. In the example shown, the stand has two fixed platforms 4 and 5, intended for the movement of personnel, and a movable platform formed by a vertical support frame 6, which bears the shuttering panels 3, and respective identical support and displacement assemblies 7 and 8, located at each end of the frame 6. The support assembly 7 has been shown in more detail in Figures 5, 6, and 7.

[0018] As may be observed in said figures, the movable support assembly 7, identical to the movable support assembly 8, comprises a cross-beam or base 9 movable horizontally in its own plane, i.e. without appreciable vertical displacement, having at one end the coupling 10 intended to receive the frame 6, and at the other end a coupling 11 intended to receive one of the legs 12 and 13, Figure 1, for the safety handrail. The base 9 is articulated by points close to its ends with respective main arms 14 and 14' at the respective points 15 and 16, while said arms, with the other ends, i.e. the lower ends, as shown in the drawing, slide along vertical guides, such as the guide 18, formed in this case along a structural member 19 for supporting the upper platform 5. The rectilinear displacement along the guide 18 can be effected by means of a pivot 20 which has been shown diagrammatically in the drawing, but which may be formed, as is clear, by a bush, plain bearing, ball bearing or needle bearing, etc.

[0019] An essential element of the assembly for support and horizontal guiding of the platform 9 is formed by the auxiliary arms 21 and 22, which are articulated by their upper end to the fixed support structure of the movable platform, in this case represented by the vertical members of the structure 19 and 23, at the respective upper points 24 and 25 and which are articulated by the lower ends at the points 26 and 27 on an intermediate point of the actual main arms 14 and 14'. The auxiliary arms 21 and 22 kinematically correct the trajectory of the movable platform 9 and support the vertical load thereof in suspension from the points 24 and 25.

[0020] Although the sizing characteristics of the platform assembly and its actuating means may vary within

certain limits, one of the characteristics which must be fulfilled is that the intermediate levers 21 and 22 should have a length which is equal to or greater than half the rectilinear travel of the platform 9.

[0021] In the description and drawings, for the sake of greater simplicity, only a single movable platform has been shown; however, it is possible to couple two or more horizontally movable support bases with their main arms and auxiliary arms along the same stand, supporting the frame bearing the shuttering panel or panels for the wall.

[0022] Although the present invention has been shown and described on the basis of a preferred example, it will be understood that significant modifications may be introduced therein which are included in the scope of the invention, as defined in the following claims.

Claims

1. Movable platform for supporting shuttering for vertical walls and the like of the type used in vertically displaceable stands for shuttering vertical walls and the like, **characterized in that** it comprises a movable base for supporting the frame bearing the wall shuttering and other accessories, articulated in positions close to its front and rear ends to respective main arms, which at their other ends are guided in rectilinear vertical guides of the fixed structure of the stand which supports the movable platform, said main arms further being articulated, at intermediate positions, to the lower ends of respective auxiliary arms, which are themselves articulated by their upper ends to the actual fixed support structure of the stand, such that the displacement of the base supporting the shuttering, resulting from the displacement of the arms, takes place in its own horizontal plane without appreciable vertical displacement.
2. Movable platform for supporting shuttering for vertical walls and the like, according to claim 1, **characterized in that** the vertical guides for the lower ends of the main arms articulated on the horizontally displaceable base, bearing the shuttering panel, are formed in vertical members of the structure of the stand bearing the movable platform.
3. Movable platform for supporting shuttering for vertical walls and the like, according to claim 2, **characterized in that** the main arms are equipped at their lower ends with bearings coupled to the vertical guides of the support structure of the movable platform.
4. Movable platform for supporting shuttering for vertical walls and the like, according to claim 3, **characterized in that** the articulation bearings are formed by bushes.

5. Movable platform for supporting shuttering for vertical walls and the like, according to claim 1, **characterized in that** the length of the auxiliary arms articulated by their ends, respectively to the main arms and to the fixed support structure of the movable platform, have a length equal to or greater than the horizontal travel of the movable platform.
6. Movable platform for supporting shuttering for vertical walls and the like, according to claim 1, **characterized by** the coupling of two or more horizontally displaceable support bases by their main arms and auxiliary arms along the same stand, supporting the frame bearing the shuttering panel or panels for the wall.

Amended claims in accordance with Rule 137(2) EPC.

1. Movable platform (1) for supporting shuttering (3) for vertical walls (2) and the like of the type used in vertically displaceable stands for shuttering vertical walls (2) and the like, **characterized in that** it comprises a movable base for supporting the frame (6) bearing the wall shuttering (3) and other accessories, articulated in positions close to its front and rear ends to respective main arms (14,14'), which at their other ends are guided in rectilinear vertical guides (18) of the fixed structure of the stand which supports the movable platform, said main arms (14,14') further being articulated, at intermediate positions (26,27), to the lower ends of respective auxiliary arms (21,22), which are themselves articulated by their upper ends (24,25) to the actual fixed support structure of the stand, such that the displacement of the base (9) supporting the shuttering (3), resulting from the displacement of the arms (14,14'), takes place in its own horizontal plane without appreciable vertical displacement.

2. Movable platform for supporting shuttering for vertical walls and the like, according to claim 1, **characterized in that** the vertical guides (18) for the lower ends of the main arms (14,14') articulated on the horizontally displaceable base (9), bearing the shuttering panel (3), are formed in vertical members (19,23) of the structure of the stand bearing the movable platform.

3. Movable platform for supporting shuttering for vertical walls and the like, according to claim 2, **characterized in that** the main arms (14,14') are equipped at their lower ends with bearings (20) coupled to the vertical guides (18) of the support structure of the movable platform (9).

4. Movable platform for supporting shuttering for ver-

tical walls and the like, according to claim 3, **characterized in that** the articulation bearings (20) are formed by bushes.

5. Movable platform for supporting shuttering for vertical walls and the like, according to claim 1, **characterized in that** the length of the auxiliary arms (21,22) articulated by their ends, respectively to the main arms (14,14') and to the fixed support structure of the movable platform (24,25), have a length equal to or greater than the horizontal travel of the movable platform (9).

6. Movable platform for supporting shuttering for vertical walls and the like, according to claim 1, **characterized by** the coupling of two or more horizontally displaceable support bases (9) by their main arms (14,14') and auxiliary arms (21,22) along the same stand, supporting the frame (6) bearing the shuttering panel or panels (3) for the wall (2).

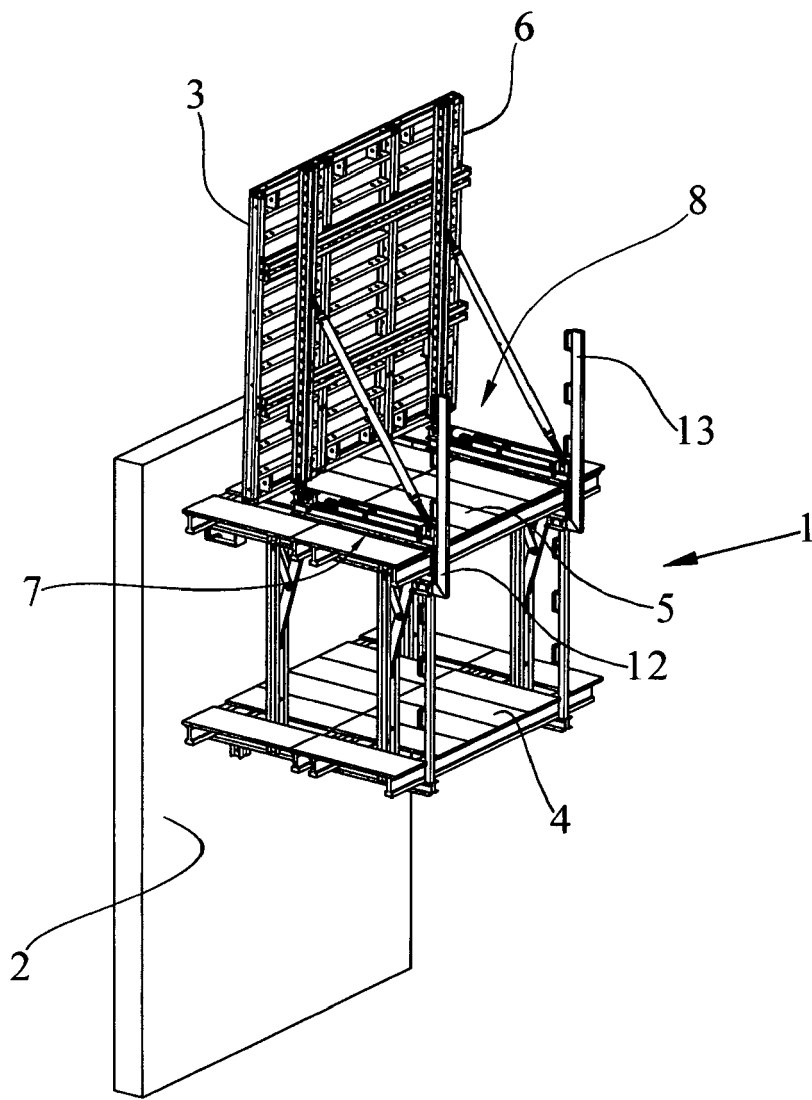


FIG.1

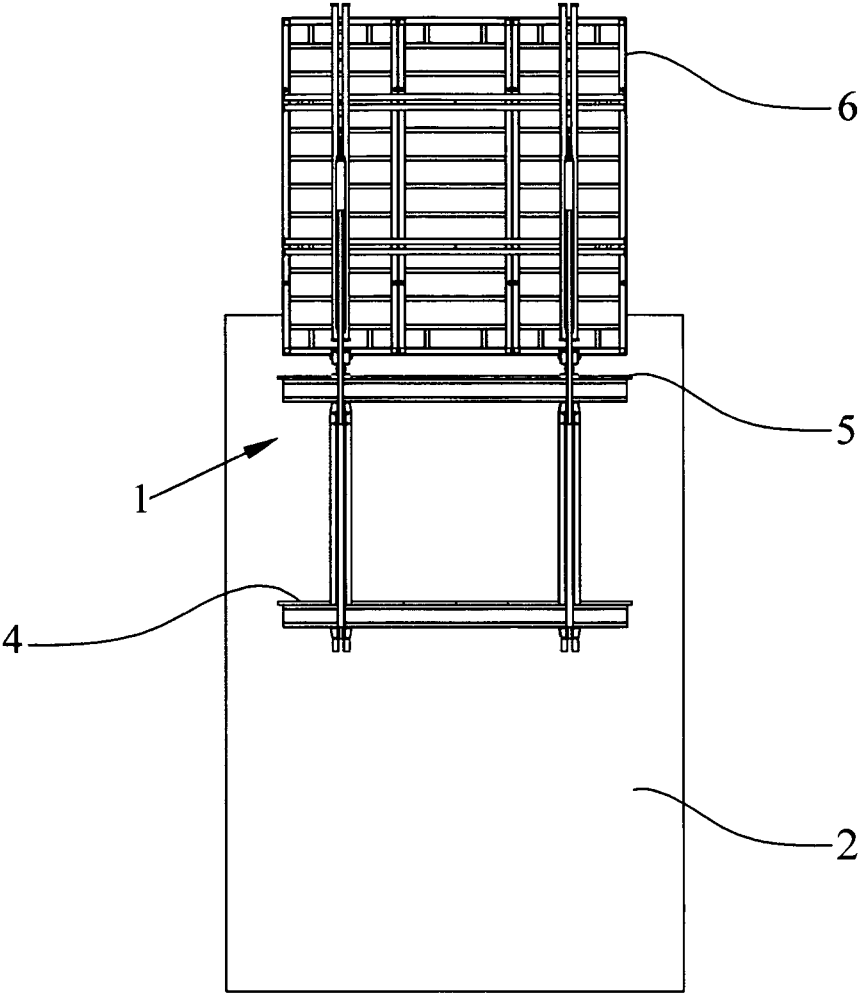


FIG.2

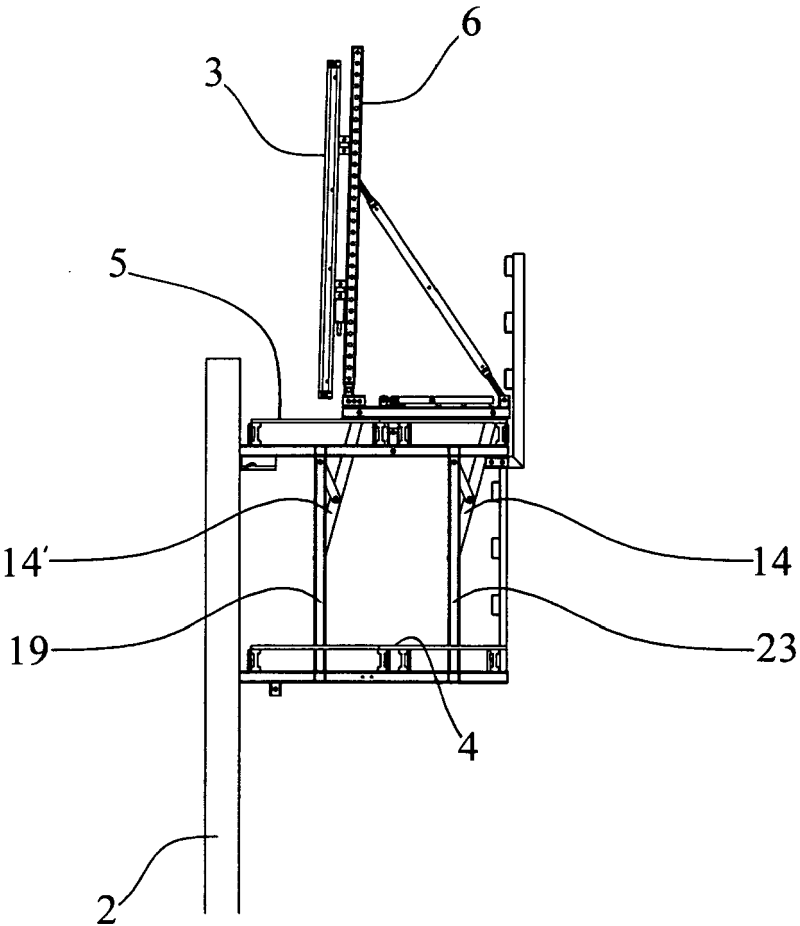


FIG.3

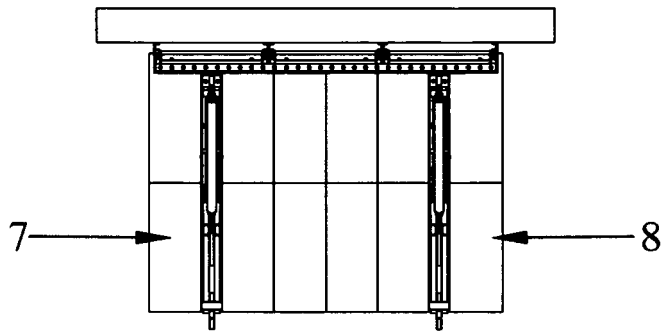


FIG.4

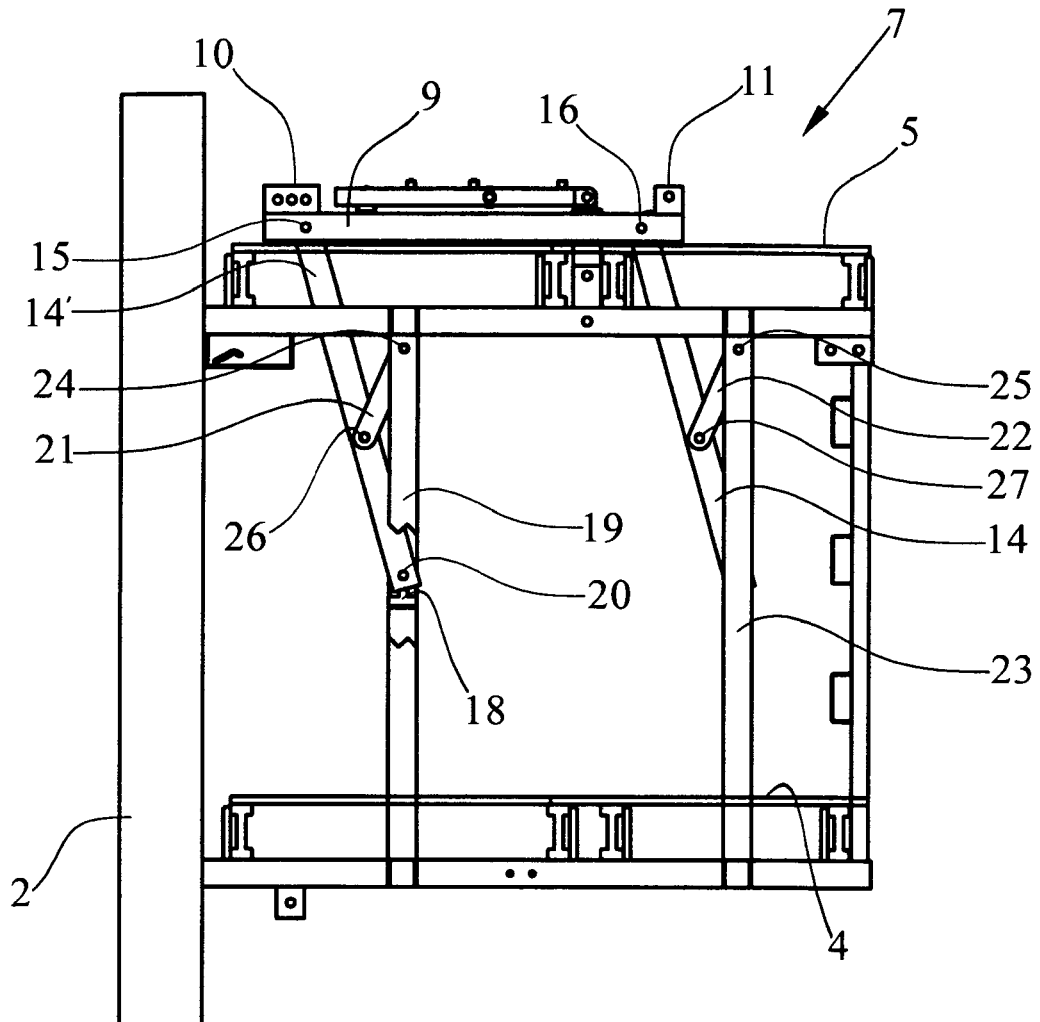


FIG.5

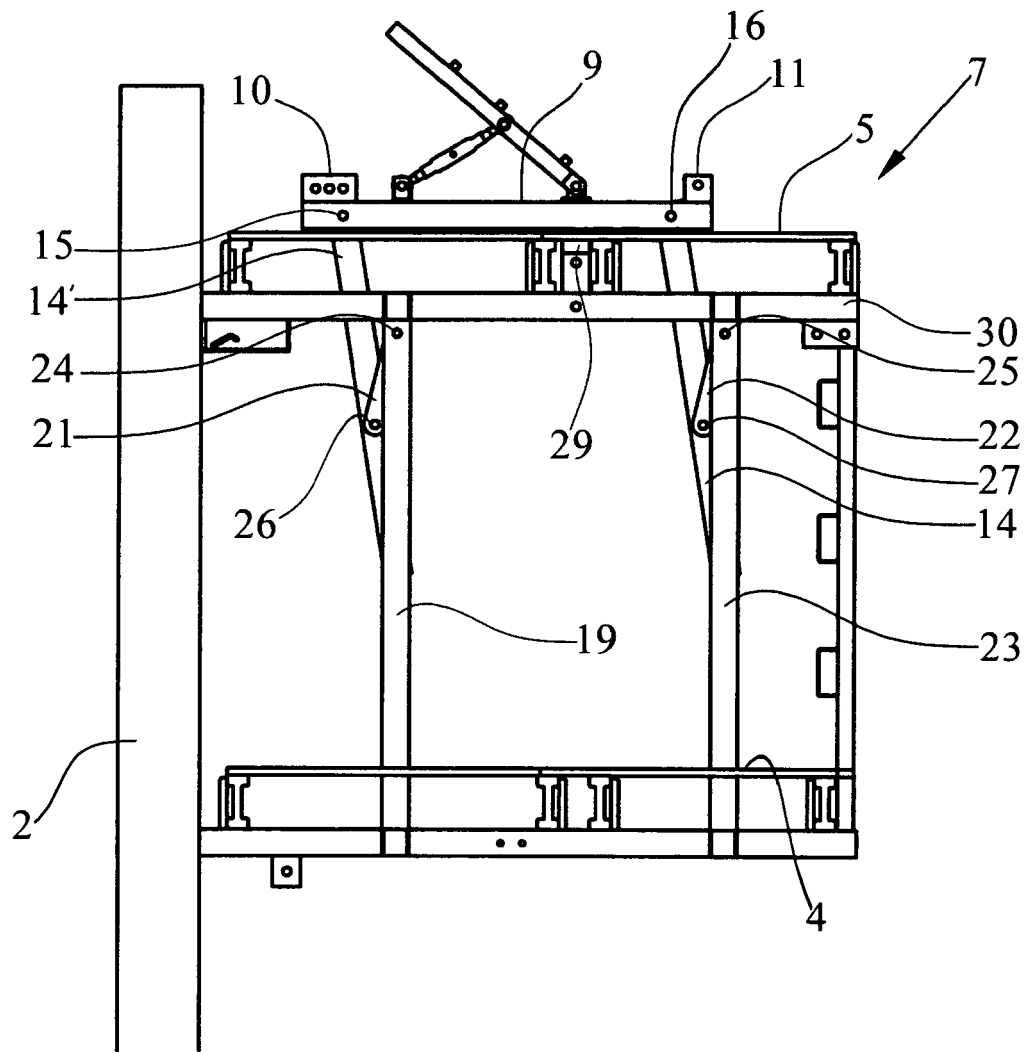


FIG. 6

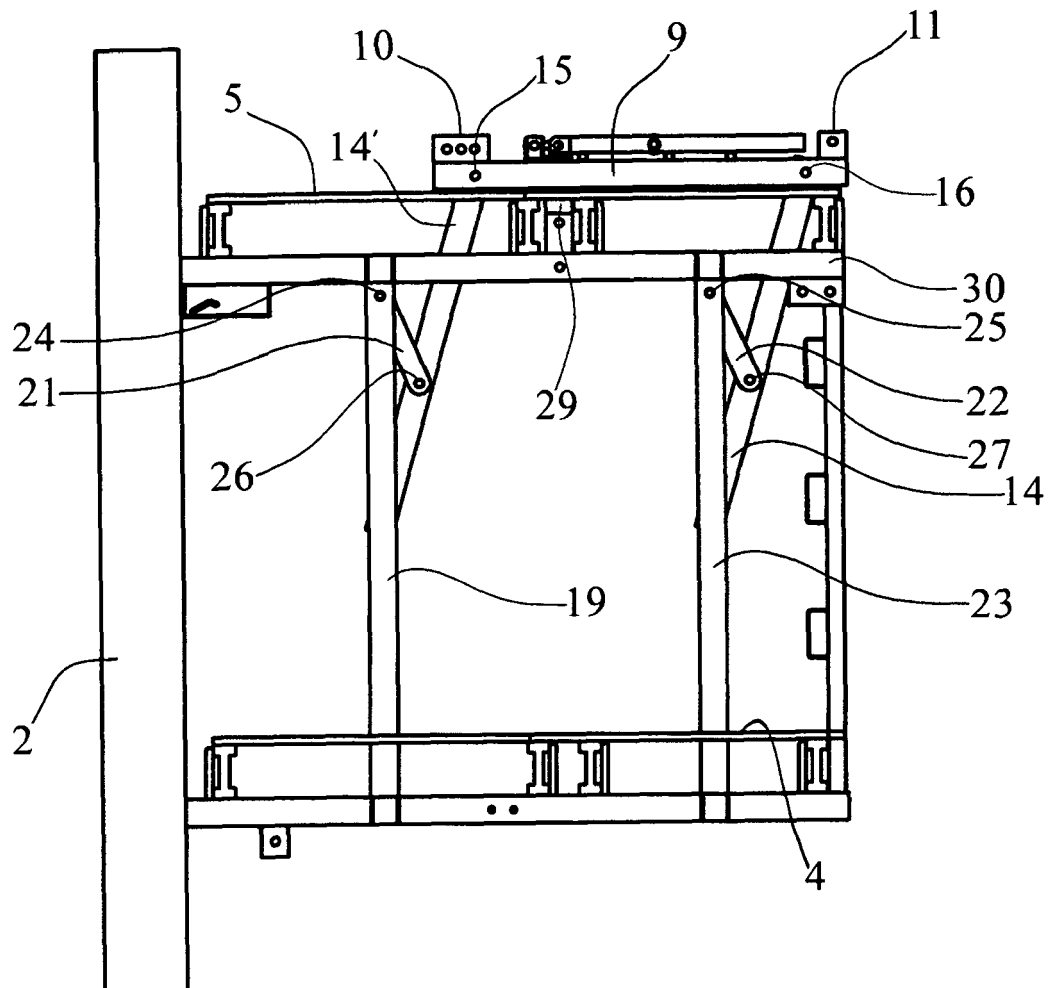


FIG.7



EUROPEAN SEARCH REPORT

Application Number
EP 08 38 0298

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 March 2009	Examiner Scharl, Willibald
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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