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(54) Sliding panel display unit

(57) A sliding panel display unit, comprising a series of bottom rails (1) assembled on a bottom platform (2), an identical number of top guides (3) that are approximately point guides, and a panel (6) assembled between each bottom rail and top guide, according to the plane defined by them. The platform (2) consists of a plate having a thickness approximately equal to that of the rails (1) and incorporates stops limiting panel movement. The top guides (3) are suspended from a strut (4) parallel to the plate (2).

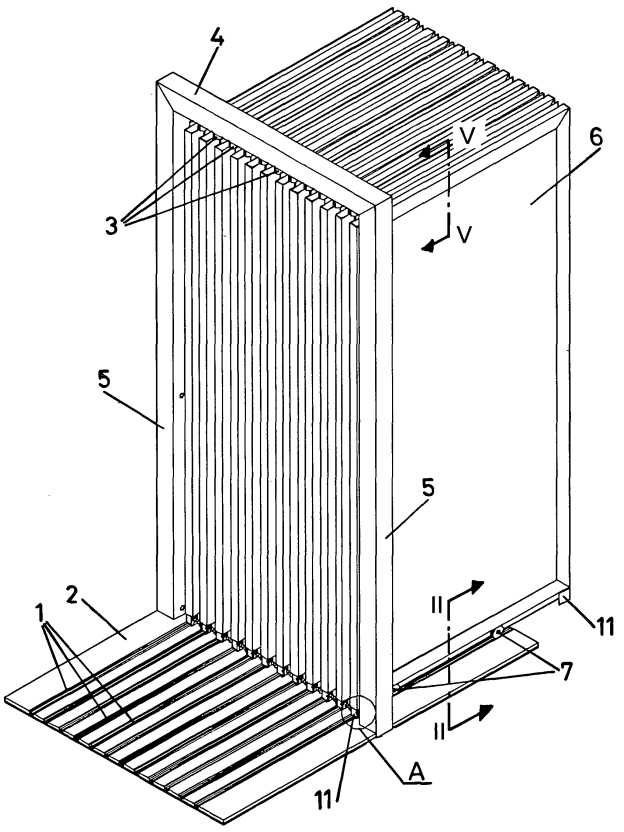


FIG. 1

EP 1 623 656 A1

Description

[0001] The present invention refers to a sliding panel display unit, comprising a structure in which a series of panels are assembled with sliding capacity, the articles to be displayed being arranged in the panels.

[0002] Display units of the type set forth are widely used for displaying ceramic tiles, fixture pieces, etc.

[0003] More specifically, the display unit of the invention is of the type formed by a series of bottom rails which are assembled in parallel position on a platform or bedplate, and by a series of top guides that are approximately point guides which are located in coincidence with the rails. Arranged between each bottom rail and the corresponding top guide, according to the plane defined by them, there is a panel having on its top edge means of coupling and sliding on the top guide, whereas assembled on the bottom edge are wheels or runners which will roll or slide along the corresponding rail. The panels will be slidable along their plane, guided between the bottom rail and the top guide between end positions.

[0004] In display units of the type set forth, the bottom rails are assembled on a bedplate or platform projecting considerably from the surface of the floor on which the display unit is installed. This circumstance implies a drawback because the display unit is a considerable alteration of the passable surface of the floor of the establishment in which the display unit is assembled.

[0005] Another drawback of the display units of the type described is centered on the difficulty to replace the ceramic tiles displayed in the panels.

[0006] The present invention has as an object a display unit of the type described in which the bedplate or platform on which the bottom rails are assembled can be considerably reduced in height, even being able to completely eliminate said platform, with the subsequent advantages of accessing the display panels and of appearance.

[0007] Another object of the invention is to facilitate the operations of replacing the displayed ceramic tiles by means of a special constitution of the structure of the panels and better access to the means of handling said structure.

[0008] A further object of the invention is to provide the display unit with a much more versatile support structure than in traditional display units, such that it allows different assembly forms, as well as the combination of two or more display units in different relative positions.

[0009] According to a first feature of the invention, the bottom bedplate or platform is made up of a plate or panel of little thickness, approximately equal to or slightly greater than the thickness of the rails, on which said rails are arranged without projecting from the top surface of the plate or panel. Said plate or panel may be formed by the very surface of the floor of the establishment in which the display unit is installed.

[0010] The bedplate or platform thus does not project, or it does so by a small height, with respect to the passable surface of the establishment.

[0011] The rails may be formed by a section of small height, which is imbedded in the plate or panel and on which the bottom wheels or runners of the panel will roll or slide.

[0012] The panels will slide on the bottom rails by means of the top guides between end positions defined by stops assembled in the bottom plate or panel, close to the rails, the panels possibly being provided with a bottom locking lever coupled on said stops when said panels reach the corresponding end position so as to act as a brake against the accidental sliding thereof.

[0013] According to an embodiment, said stops are made up of a runner located next to each rail and is formed by a straight arm parallel to the rail which is assembled on a section fixed to the bottom plate or panel with the ability to slide thereon in a direction parallel to the rails. This arm is finished at its ends in top heads of different heights. The head of greater height acts as a stop against which either of the vertical sections of the panels collides when said panels move in either direction, limiting such movement. The heads further limit the movement of the arm on the section fixed to the bottom plate.

[0014] This special composition of the stops limiting the end positions of the panels allows said panels to be able to move in either direction such that when a panel reaches one of the end positions, it is slightly spaced from the panels occupying the opposite end position.

[0015] This circumstance facilitates access to the panels for manipulating the means allowing the replacement of the displayed pieces.

[0016] According to a preferred embodiment, the bottom wheels of the panels have a tread which will rest on the surface of the plate configuring the bottom bedplate of the display unit, and a gear ring that is coaxial and integral with the tread, but of a larger diameter, such that it projects peripherally with respect to said tread. For its part, the bedplate or platform has a series of longitudinal alignments of small windows or holes in which the teeth of gear ring are introduced. The wheel or wheels of each panel engage with one of the alignments of the windows or holes, forming a rack which will be useful as a guide for panel movement. With this embodiment, the thickness of the plate forming the bedplate or platform can be reduced to a minimum. These windows or holes could even be made on the passable surface of the floor of the establishment in which the display units are installed. The alignments of windows and holes will thus form the bottom rails for the panels.

[0017] For their part, the top guides are suspended from a straight strut, parallel to the surface of the plate forming the bottom bedplate or platform. This strut may be supported by two vertical sections or columns starting perpendicularly from the plate, on both sides of the rail assembly. The strut may also be cantilever supported by a vertical wall or panel limiting the display unit on one side.

[0018] The top guide may consist of one or more

wheels that can be introduced in and slide on a groove the panels have along their top edge.

[0019] The bottom rails can all be arranged in a position parallel to one another or making up two or more groups, the rails running parallel in each group and every two consecutive groups of rails forming a preferably acute angle. The top guides, duly positioned on the strut that supports them, will have an identical arrangement.

[0020] With the makeup set forth, the display unit may be conceived as a unit formed by a bottom plate and the top strut, between which the panels are assembled. Depending on the desired capacity, this unit may be repeated with different relative arrangements, units laterally against one another could thus be arranged, with the bottom plates being parallel, aligned, angled, etc.

[0021] Different arrangements can also be obtained by changing the trajectory of the rails, for example including two series of rails forming an angle on each plate, with the rails in an oblique direction, etc.

[0022] The top guides can consist of one or more wheels that can be introduced in and slide on a groove the panels have along their top edge.

[0023] Apart from the foregoing, display unit panels are formed by a peripheral frame and a board holding the pieces to be displayed. In a preferred embodiment of the invention, the vertical sides of the frame are made up of as many other tubular sections, for example of a square or rectangular section. One or more flaps project from one of these sections towards the inside of the frame, which flaps may be obtained by means of cuts in the wall of the section itself, and which will be useful as supports for the board holding the pieces to be displayed. Coupled on the other vertical section from the outside is a grooved section, for example of a U-shaped section, which is connected to said tubular vertical section and can move longitudinally and transversally with respect thereto. To that end, the U-shaped section has on one of its side branches one or more vertical lateral grooves through each one of which a pin passes, which pin projects in a position facing the tubular vertical section and ends in an outer head.

[0024] The angular grooves allow the U-shaped section to be able to move slightly with respect to the tubular vertical section of the frame between a maximum coupling position in which the side branches of the U-shaped section project towards the inside of the frame so as to grip the board holding the pieces to be displayed, preventing its movement, and a minimum coupling position in which said side branches do not project towards the inside of the frame, said board not being gripped so as to allow its removal from the frame.

[0025] The frame of the panels thus has supports for the boards on one of the vertical sides, whereas the opposite side has board releasing means that are removable with respect to the frame.

[0026] All the features and advantages of the invention will be better understood with the following description, made in reference to the attached drawings in which a nonlimiting embodiment is shown.

[0027] In the drawings:

Figure 1 shows a perspective view of a display unit formed according to the invention.

Figures 2 and 3 show views similar to Figure 1, showing two other embodiment variants.

Figure 4 shows a partial vertical sectional view of the display unit taken along the IV-IV section line of Figure 1 on a larger scale.

Figure 5 shows a partial vertical sectional view of the display unit taken along the V-V section line of Figure 1 on a larger scale.

Figures 6 to 10 show perspective views of different compositions obtained from a display unit or module.

Figure 11 shows a perspective view similar to Figure 1, showing an embodiment variant.

Figure 12 shows a perspective view of the same display unit at 180° with respect to Figure 11.

Figure 13 shows detail E of Figure 12 on a larger scale.

Figure 14 shows a perspective view of a detail of the bottom wheel system of the panels included in Figure 13.

Figure 15 shows a front elevational view of the bottom wheel system shown in Figure 13.

Figure 16 shows a partial perspective view of the bottom plate, showing an embodiment variant of the means of assembling the runners forming the stops for the panels.

Figure 17 shows a view similar to Figure 6 in which the sliding runner is included.

Figure 18 shows detail F of Figure 11 on a larger scale, showing panel guide members.

Figure 19 shows a vertical sectional view of an embodiment variant of the top guide members.

Figure 20 shows a perspective view of the guide member included in Figure 19.

Figure 21 shows a side elevational view of the guide member of Figure 20.

Figure 22 shows a sectional view similar to Figure 1, showing an embodiment variant for a panel with two display unit faces.

Figure 23 shows a partial bottom vertical sectional view of a panel with a double display unit face, including the bottom wheel members.

Figure 24 shows detail G of Figure 12 on a larger scale.

Figure 25 shows detail H of Figure 12 on a larger scale, with the U-shaped section of the panel assembled in the closed position.

Figure 26 shows a view similar to Figure 25 with the U-shaped section of the panel removed, in the open position.

Figure 27 shows a view similar to Figure 26 with the U-shaped section separated or removed from the vertical section of the frame.

Figure 28 shows the position change or rotation sys-

tem of the panel when one of the wheels thereof reaches a given point of the rail.

[0028] Figure 1 shows a display unit formed according to the invention, which includes a series of parallel bottom rails 1 assembled on a plate or platform 2 of small height, and a series of top guides 3 suspended from a strut 4 that is parallel to the plate and can be supported by two vertical columns or stems 5 falling perpendicularly on the plate 2 on both sides of the rail 1 assembly.

[0029] Each guide 3 is located in coincidence with one of the rails 1, defining a vertical plane therewith. A sliding panel 6 is assembled in coincidence with each one of these planes, which panel will hold the pieces to be displayed. Each panel 6 will be assembled between a top guide 3 and a bottom rail 1, the length of the rails being equal to and preferably greater than the maximum movement of the panels 6. The top guides 3 will be point guides, or in any case have a much smaller length than the range of movement of the panels 6.

[0030] The strut 4 from which the top guides 3 are suspended can be cantilevered from a rear wall 7 forming part of the furniture or display unit or else it can belong to the establishment in which the display unit is installed.

[0031] Figure 3 shows another embodiment variant in which the struts 4 are part of frames or supports 8 projecting in cantilever fashion from the rear wall 7. In this case, the rails 1 run in a direction that is perpendicular to the wall 7, whereas in the case of Figure 2, the rails 1 run in a direction that is parallel to said wall. The rails 1 may also run in an oblique direction with respect to the wall 7.

[0032] According to a possible embodiment shown in Figure 4, the panels 6 incorporate at their bottom edge at least two wheels 9 assembled on the section of the corresponding rail 1. For their part, the top guides 1 can be formed by small pieces 10, Figure 5, which are fixed to the strut 4 at the bottom portion and have a vertical channel or groove 11 from the lower edge in which a flap 12 projecting vertically from the top edge of the panels can be introduced with sliding capacity. With this constitution, the panels 6 can slide in their plane, guided between the bottom rail 1 and the top guide 3 formed by part 10 and projection 12.

[0033] The plate 2 can incorporate a stop 13 close to each rail 1, Figure 4, against which the projections 14 projecting from the bottom edge of the panels collide.

[0034] The wheels 9 will be positioned such that they provide good stability to the panels 6 in any of their limit positions, said wheels not reaching the ends of the rails 1.

[0035] The display unit may be designed in module form, as shown in Figures 1 to 3, and depending on the desired display capacity, these modules can form assemblies such as those shown in Figures 6 to 10, in the first of which figures two modules are placed against one another such that the plates 2 of each display unit are against one another along their longitudinal edges, with the frames defined by the strut 4 and column 5 in coplanar position. In the case of Figure 7, two modules are arranged in alignment. The rails 1 may run in an oblique direction with respect to the frame defined by the strut 4 and columns 5, as shown in Figures 8 to 10, the different modules being able to adopt a zigzag arrangement, as shown in Figure 8, laterally placed against one another, as is the case in Figure 9, and even with an arrangement at an angle, for example at a right angle, as shown in Figure 10, for arranging the display unit in a corner or the like.

[0036] These and other compositions can be achieved by means of the combination of display unit units such as those represented in Figures 1 to 3.

[0037] In the installation of the display units of the invention, the plate 2 holding the rails 1 has a thickness that is approximately equal to or slightly greater than that of the rails, such that said plate can be embedded in the floor, whereby the passable surface of the area in which the display unit is installed shows no discontinuity or any step due to the effect of the display unit.

[0038] If so desired, the rails 1 could even be installed on the very floor of the establishment or site in which the display units are arranged, the strut 4 being able to adopt any of the arrangements of Figures 1 to 3.

[0039] Figures 11 and 12 show a display unit similar to that of Figure 1 but which could also correspond to the constitution of the display units-of Figures 2 and 3, and in which the panels 6 are formed by a board 19 assembled in a peripheral frame 20. As can be seen in Figures 13 and 14, the bottom wheels 9 of the panels include a tread 21 which will rest on the surface of the plate 2 and at least one gear ring 22 engaging with a series of windows or holes 23 configuring the rails 1, every two consecutive windows or holes 23 being separated by an intermediate bridge 24 which will match the width of the notches or recesses 25 of the gear ring 22, the windows 23 therefore acting like a rack with which the teeth of the gear ring 22 engage, the latter thus acting like a pinion. The alignments 1 of windows 23 can include close to each end a window with a side flaring 23' sized so as to partially receive the tread 21 of a wheel and define a seating assuring the position of the panel at rest, with no risk of them accidentally moving for example due to floor unevenness problems.

[0040] Each one of the wheels 9 can include a single tread 21 and one or two gear rings 22 located on one or on two sides of the tread 21, or else a single gear ring 22 assembled in coincidence with the mid-plane of the tread 21.

[0041] The windows 23 can be made on the lower plate 2 or in a special rail assembled on said plate. These windows or holes could also be made on the surface of the floor of the establishment in which the display unit is installed. In any case, the windows or holes 23 and the gear rings 22 form a guide and slide means for the wheels 9 and therefore for the panels 6.

[0042] In terms of the stops limiting the run of the panels 6, they may be formed by a runner 26 for each panel,

Figures 13 and 15, formed by a straight arm 27 assembled in a section 28 fixed to the base plate 2, said arm being able to slide on the section 28 in a direction parallel to the rails 1. The arm 27 is finished at its ends with top heads 29 and 30 of different heights. When the panels 6 move in direction P of Figure 15, it will be the vertical section 31 of the frame 20 of the panel that collides against the head 30 of greater height, limiting the movement in this direction. When the panel 6 moves in the opposite direction, it will be the opposite vertical section with reference number 32 in Figures 11 and 12 that collides against the head 30. In these panel movements, the arm 27 of the runner 26 will move on the section 28 in either direction until the head 29 or 30 collides against said section 28.

[0043] This constitution of the stops limiting the end positions of the panels 6 allows said panels to move in either direction, slightly exceeding the vertical columns 5 so as to thus facilitate the assembly and removal of the panels as will be explained below.

[0044] The frame 20 of the panels is formed by two vertical sections 31 and 32, a top section 33 and a bottom section, Figures 11 and 12.

[0045] Section 28, useful as a guide member for the arm 27 of the stops according to the embodiment of Figure 13, may be replaced with pairs of lugs 35 obtained by means of cutting the plate 2, for example should the plate be metallic or of a suitable plastic material, in each one of which lugs a through opening 36 is formed, sized so as to allow the introduction of the head 29 of lesser height of the arms 27 of the stops. The lugs 35 bend slightly upwards, as indicated with reference number 35' in Figures 15 and 17, the arm 27 being introduced through them, as shown in Figure 17, so as to thus configure the guide allowing the longitudinal sliding of the arm 27 in the direction parallel to the rails 1.

[0046] As can be better seen in Figure 18, the top guides 3 of the display units can be formed by a top runner 36' on which the top section 33 of the frame of the panels can slide by means of a machining or groove 37 made in said section. The runner 36 may include one or more wheels 38 which are housed in the top portion of the machining or groove 37 of the section 33. This runner will have an end of run on both sides defined by end projections 39 limiting the groove 37.

[0047] As is shown in Figures 19 to 21, the runner 36', suspended from the strut 4, could include a wheel 40 with a vertical axis and a wheel 41 with a horizontal axis, the first one would rest on one of the side walls of the groove 37 of the top section, whereas the second one would rest on the bottom of said groove, as can be seen best in Figure 19.

[0048] Sections 31 and 32 have an alignment of facing boreholes along their inner wall, an angle being assembled between two of the boreholes.

[0049] The runner 36' can be provided with top elastically deformable grips 42 for its fixing to the strut 4, as seen in Figure 20.

[0050] Figure 23 shows a view similar to that of Figure 1, with the same slide system, applied to a panel 6 with pieces displayed on both surfaces, such that at least the frame of said panel will have a thickness twice that or slightly greater than the frame of the panels displaying pieces on only one of their surfaces. The sections forming the frame may internally have a central rib 43 which will define the central support means for the boards 19 on both sides. The top section 37 will include a central auxiliary section 44 on which the runner 36 of Figures 20 and 21 will be coupled. At the lower portion, the panel can include carriages or supports 45 which may be provided for example with two wheels 9 with their corresponding tread 21, and an intermediate gear ring 22.

[0051] As previously pointed out, each one of the panels 6 is formed by a board 19 and a frame 20.

[0052] As shown in figures 24 to 27, the vertical sides 31 and 32 of the frame can be defined by as many other tubular sections 47 and 48, projecting from the first one towards the inside of the frame are one or more flaps 49 obtained by means of cutting, which flaps may have an opening 50 for fixing the board 19, for example by means of screws.

[0053] Coupled on the other tubular section 48 is a U-shaped section, with reference number 51, which can partially move with respect to section 48, both in the longitudinal and transverse direction, and which is connected thereto by means of angular grooves 52 formed on one of the side branches of the U-shaped section, through which grooves the head of a screw or pin 53 can be inserted which projects in a facing position from the tubular section 48.

[0054] Once the U-shaped section 51 is assembled on the tubular section 48, said U-shaped section can occupy an outer position, shown in Figure 26, in which the pin 53 is in the outer top portion of the groove 52, and another inner complete coupling position shown in Figure 25, in which the pin 53 occupies the opposite end of the groove 52.

[0055] With this constitution, when a board 19 is to be assembled in one of the frames 20, the grooved section 51 is located in the removed position of Figure 26, a situation in which one of the vertical edges of the board will rest on the tubular section 48, whereas the opposite side of the board rests on the flap 50. Then the grooved section 51 is passed to the position of Figure 25, wherein the corresponding edge of the board is limited between the side flaps of the section 51, thus preventing their release.

[0056] In order to disassemble the panel, the reverse is done.

[0057] The grooved section 51 can be provided on one of its side branches with two grooves 52, opposite at the vertex, whereby the frames 20 of the panels will be reversible for the right-sided or left-sided assembly of the boards 19.

[0058] As shown in Figure 28, the rails 1 which may have the constitution set forth in reference to Figures 15 and 16, can have the ends thereof, at least after one of

their ends, a curved section 55 in which, when the corresponding bottom wheel of the panels 6, which is positionable, reaches it, it will follow the curved trajectory, forcing the panel 6 to swivel, rotating on the rear wheel still located on the straight section of the rail, thus positioning the panel 6 such that it provides better vision of the displayed products.

[0059] The vertical sections 31 and-32 have along their facing inner walls respective alignments of boreholes 60, Figures 18, 24 and 25, between every two facing walls, arranged between which there is a tilting angle 61, Figure 11, its height chosen according to the size of the member or panel 19, Figure 11, to be displayed.

Claims

1. A sliding panel display unit comprising a series of bottom rails (1) of a length that is equal to or greater than the range of movement of the panels 6, assembled on a bottom platform or bedplate; a series of top guides (3) that are approximately point guides equal in number to the number of bottom rails located in coincidence with them so as to define a vertical plane between each guide and rail; and a panel (6) assembled on each bottom rail and top guide according to the plane defined by them; the panel of which has on its top edge means of coupling and sliding on the top guide, complementary with said guide, whereas on its bottom edge it incorporates wheels or runners (9) which can move along the corresponding rail (1), **characterized in that** said platform or bedplate consists of a bottom plate having a thickness approximately equal to or slightly greater than that of the rails (1), the plate of which incorporates stops limiting the panel movements; and **in that** the top guides are suspended from a top strut (4) parallel to said plate.

2. A display unit according to claim 1, **characterized in that** the rails (1) are formed by alignments of grooves or holes (23) and the wheels (9) moving in the rails comprise a tread (21) resting on the surface of the plate (2) and at least one gear ring (22) coaxial with said tread, but with a larger diameter, the teeth of said ring being sized and spaced such that they are introduced in the windows or holes of the alignments of windows or holes so as to form a rack and pinion.

3. A display unit according to claim 2, **characterized in that** each alignment of grooves (23) includes, at least on one of its ends, a window having a side flaring sized so as to allow the seating of the tread of a wheel.

4. A display unit according to claim 1, **characterized in that** the stops limiting panel movements (6) are formed by a runner (26) formed by a straight arm (27) assembled next to each rail (1) on a guide section (28) fixed to the base plate (2), on the section of which it can slide in a direction parallel to the rails (1); the arm of which finishes on its ends in top heads (29 and 30) of different heights limiting the movement of said arm when it collides against the section (28); the head of greater height (30) further defining a stop against which either of the vertical sections (31 and 32) of the panels collides when said panels move in either direction.

5. A display unit according to claim 3, **characterized in that** the guide section (28) is formed by two opposite lugs (35) obtained by means of cutting the plate itself, which partially lift up and have respective openings (36) through which the arm (27) of the runner can be introduced.

6. A display unit according to claim 1, **characterized in that** each top guide consists of a runner (36) provided with at least one wheel (38, 40, 41) that can be introduced in a groove (37) that the panels (6) have on their top edge, the groove of which is slidable on the wheel of said runner.

7. A display unit according to claim 1, **characterized in that** the top guide is formed by a small part (10) which has, from its bottom edge, a vertical groove (11), parallel and coplanar with the corresponding bottom rail (1), in which a flap (12) projecting from the top edge of the panel (6) is inserted and can slide.

8. A display unit according to claim 5, **characterized in that** the runner (36) holds two wheels, one wheel (40) having a vertical axis, resting on one of the side walls of the top grooves of the panels, and another wheel (41) having a horizontal axis, resting on the bottom of said groove.

9. A display unit according to claim 1, **characterized in that** the top strut from which the guides are suspended is supported by two columns (5) starting from the bottom plate (2) perpendicularly on either side of the rails (1).

10. A display unit according to claim 1, **characterized in that** the top strut (4) from which the guides are suspended is cantilevered from a wall (7) perpendicular to the bottom plate (2).

11. A display unit according to claim 1, wherein the panels (6) comprise a peripheral frame (20) and a removable board (19), **characterized in that** one of the vertical sides (32) of the frame is gripped by a movable U-shaped section (51), the side branches of which project towards the inside of the frame so as to grip the board (19), whereas the other vertical

side (31) of the frame is provided with support flaps (49) for said board, one of the side branches of the U-shaped section (51) being provided with at least one angular groove (52) through which there is inserted a pin (53) projecting from the frame in a position facing the vertical side (32) and finished in an end head, so as to be used as a guide and retaining member of the U-shaped section during its movement with respect to the side (32) of the frame in which it is assembled.

12. A display unit according to claim 10, **characterized in that** the U-shaped section (51) is provided on one of its side branches with two angular grooves (52) close to one another and opposite at the vertex.

13. A display unit according to claim 1, **characterized in that** the bottom rails (1) finish in an arched section (55), from at least one of their ends, with a curve coinciding in all the rails, the bottom wheels of the panels (6) being freely positionable.

14. A display unit according to claim 11, **characterized in that** the vertical sides (31 and 32) of the frame have at their facing inner surfaces respective alignments of boreholes (60) between two of which a tilting angle (61) located at the same height is assembled.

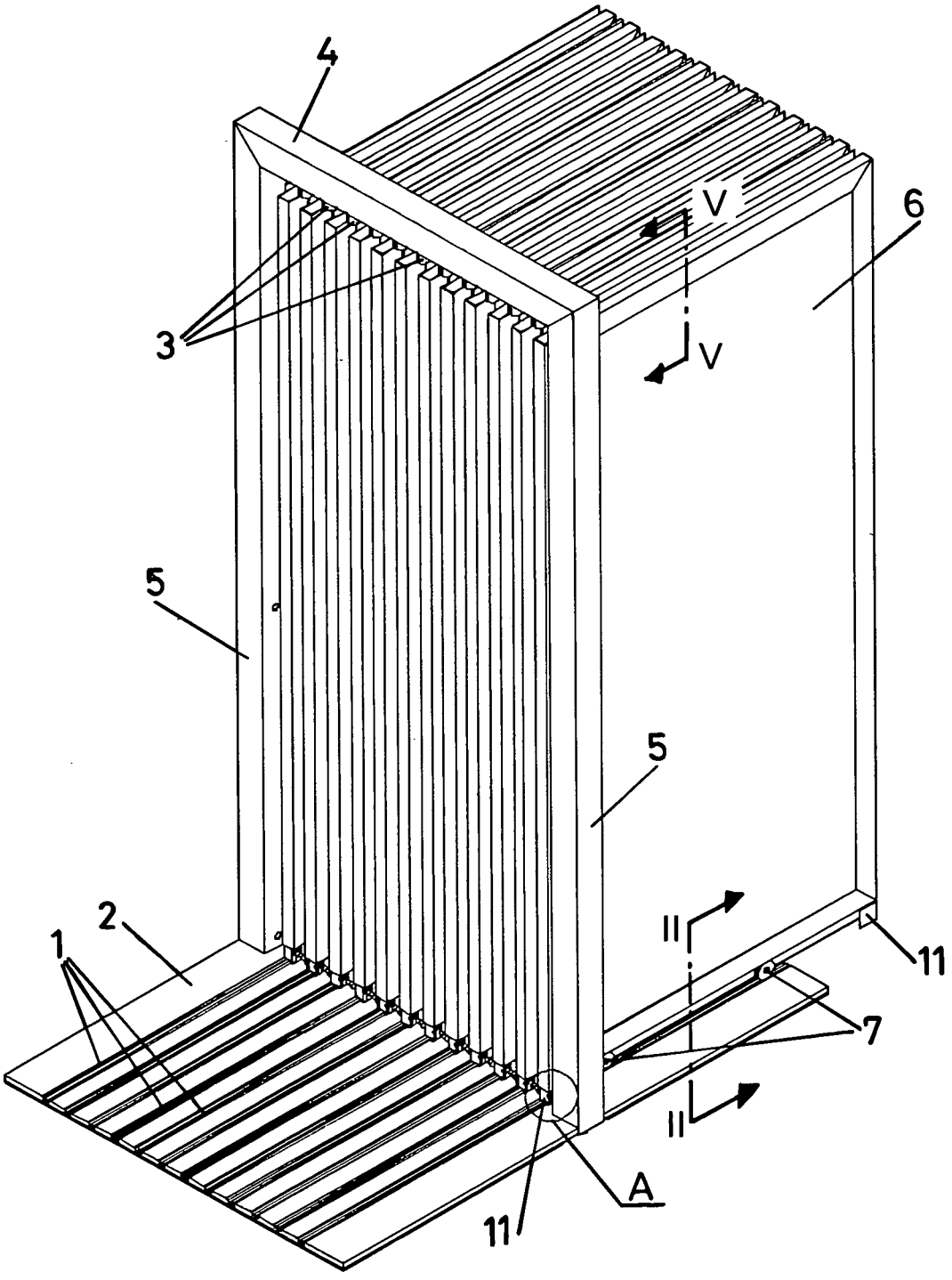


FIG. 1

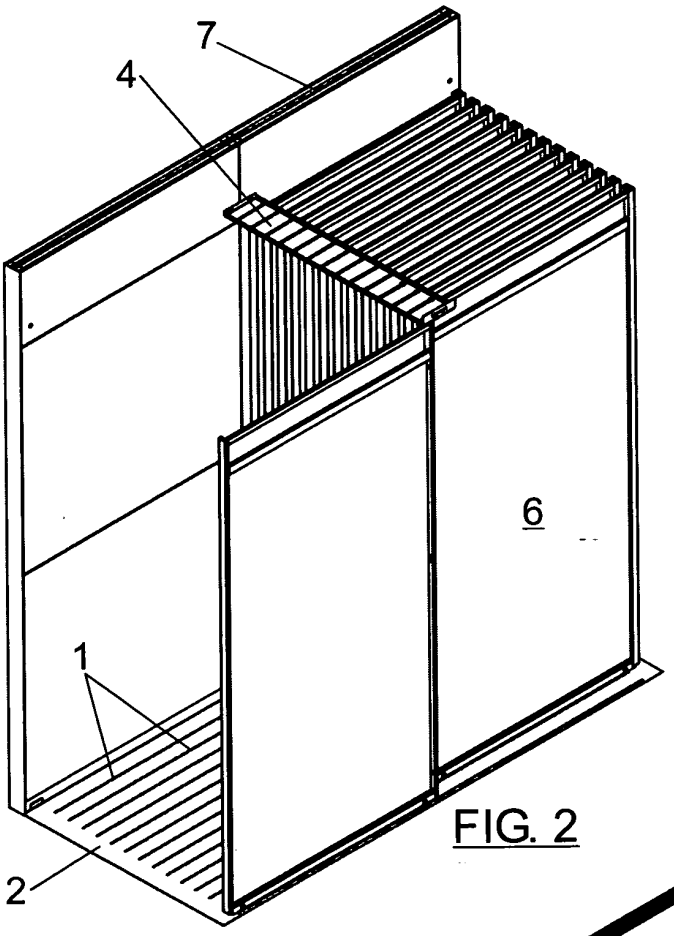


FIG. 2

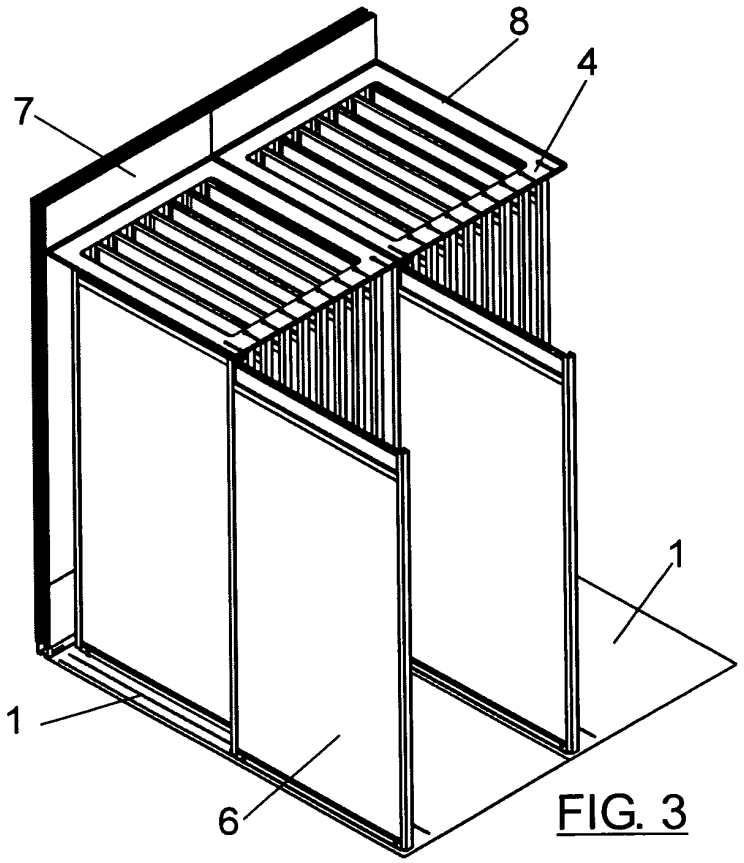


FIG. 3

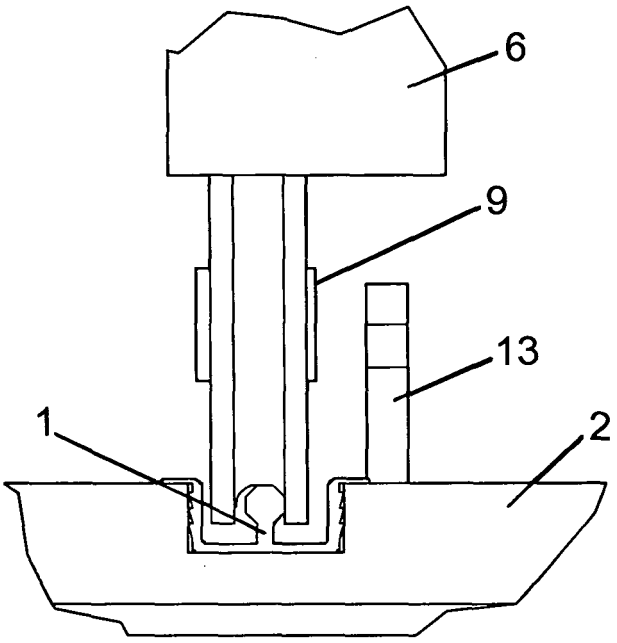


FIG. 4

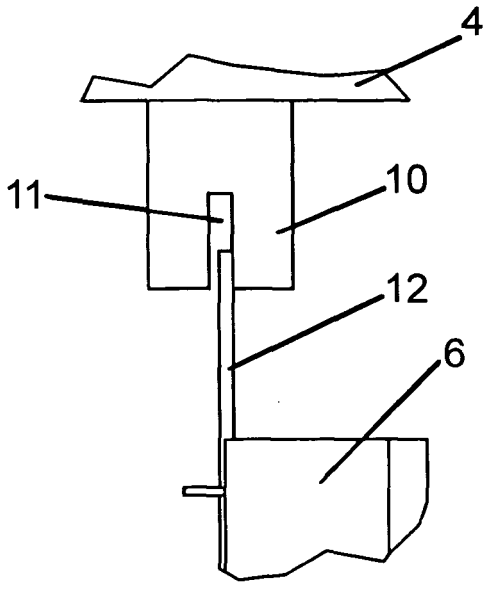


FIG. 5

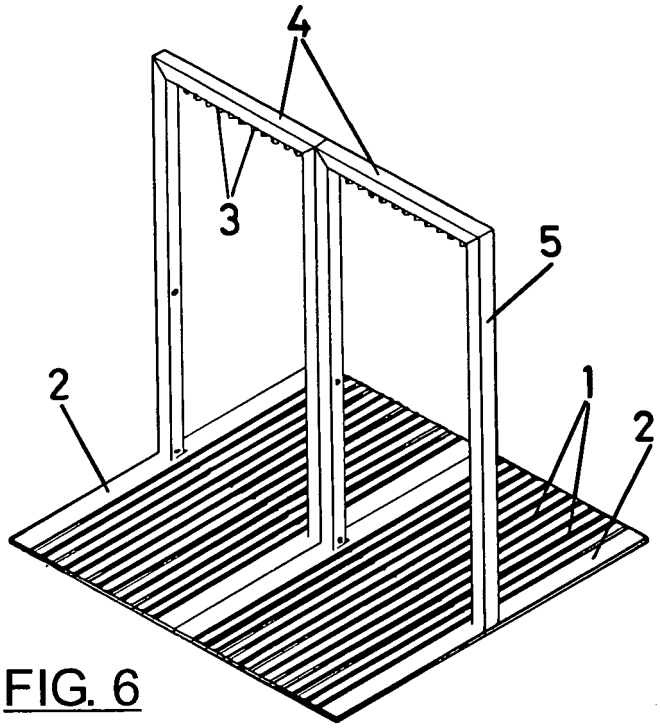


FIG. 6

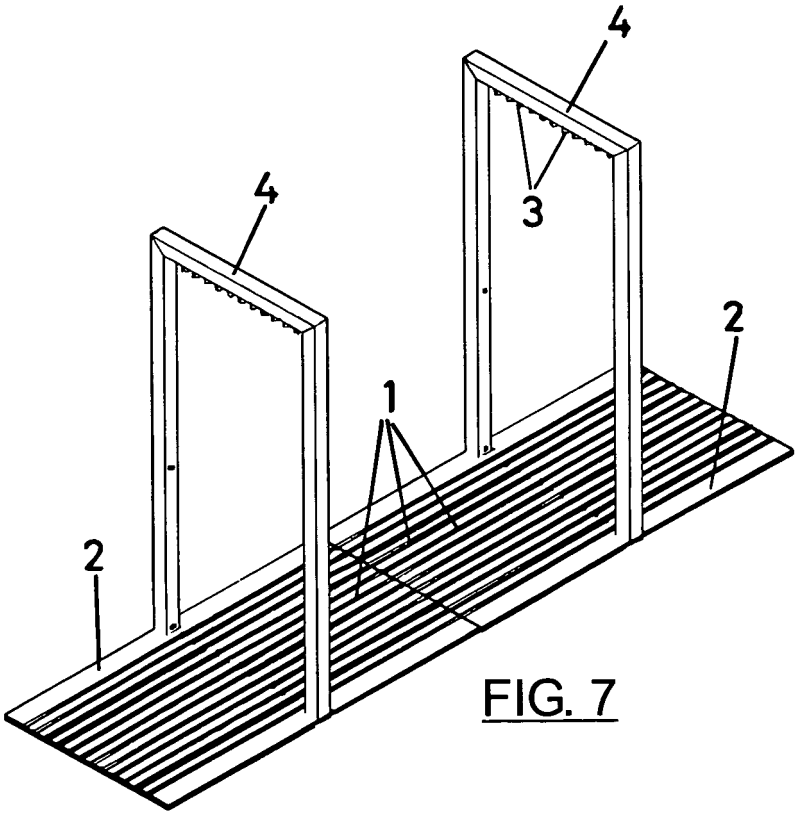


FIG. 7

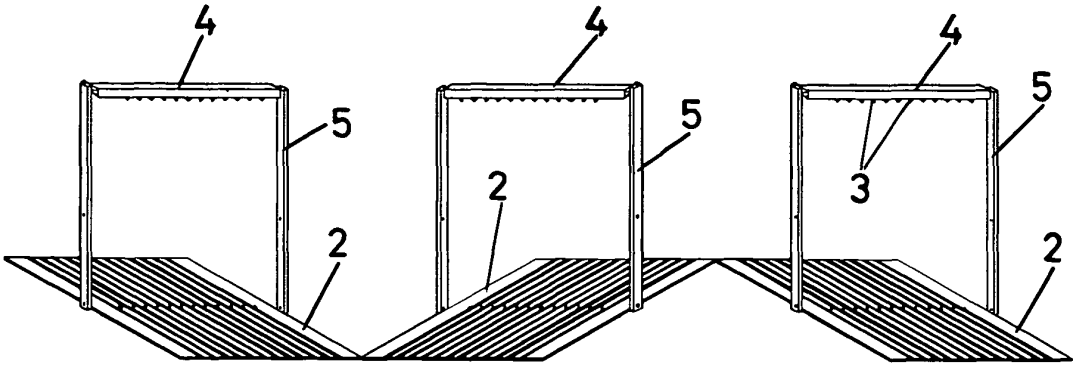


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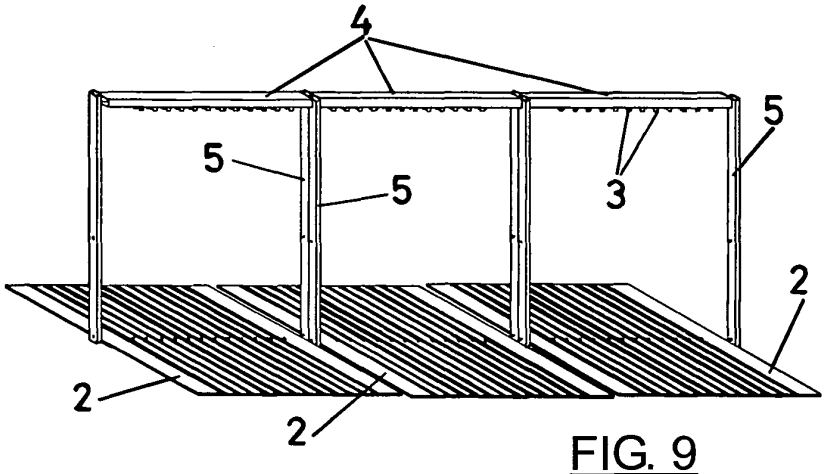


FIG. 9

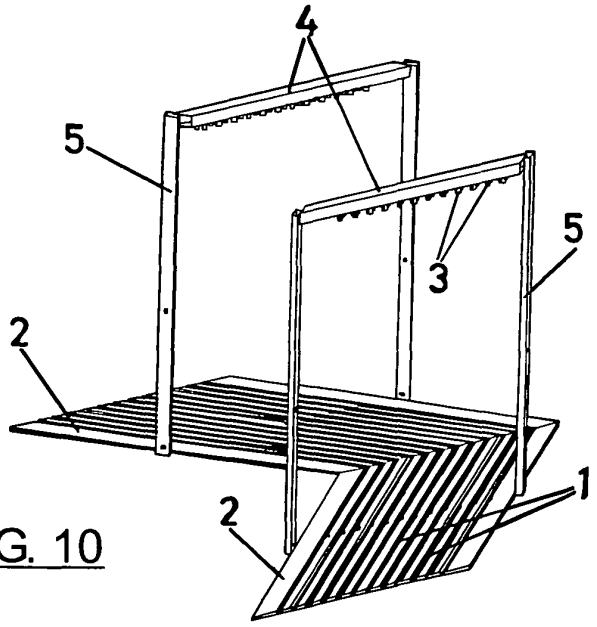


FIG. 10

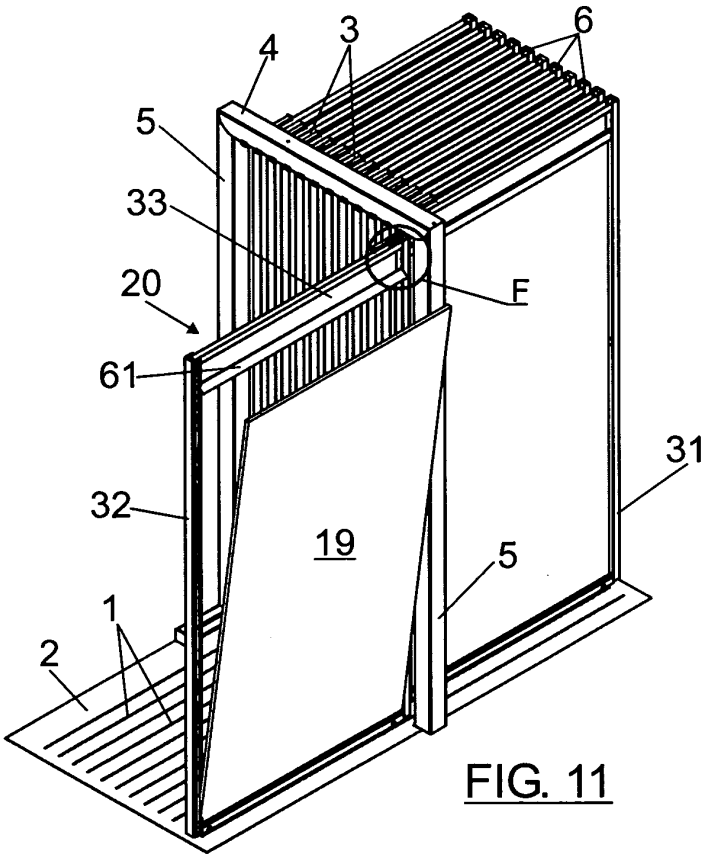


FIG. 11

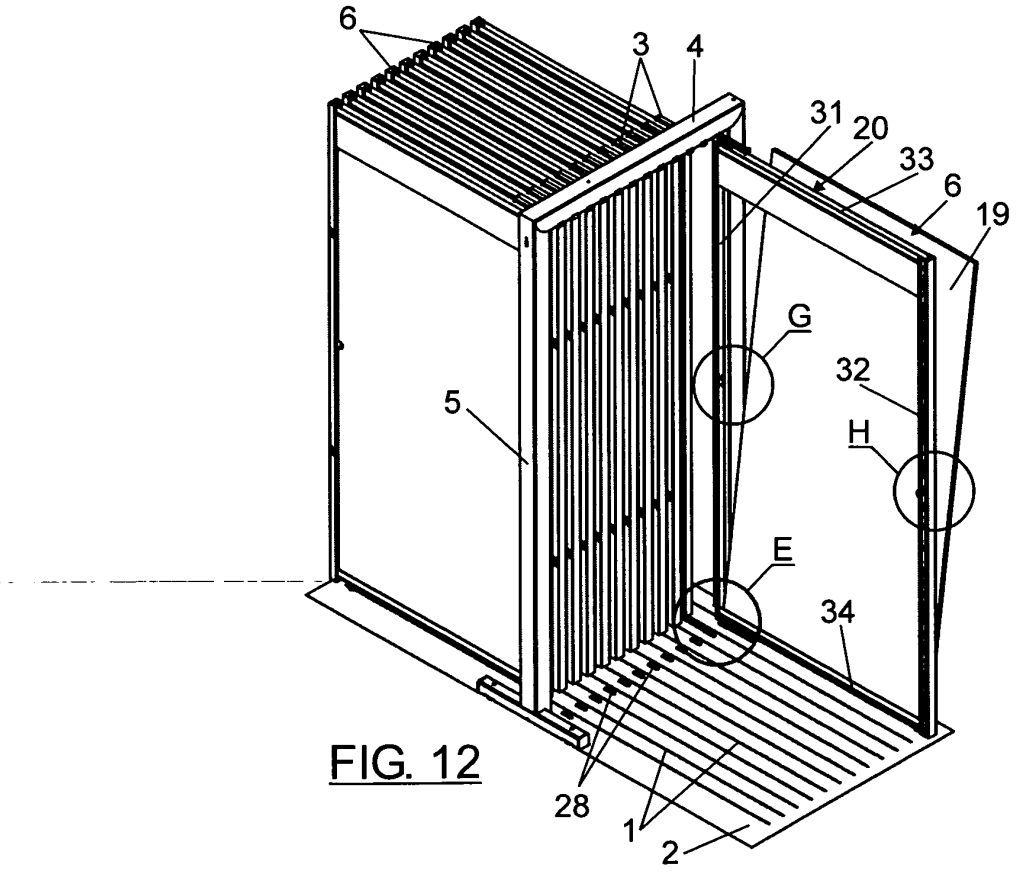


FIG. 12

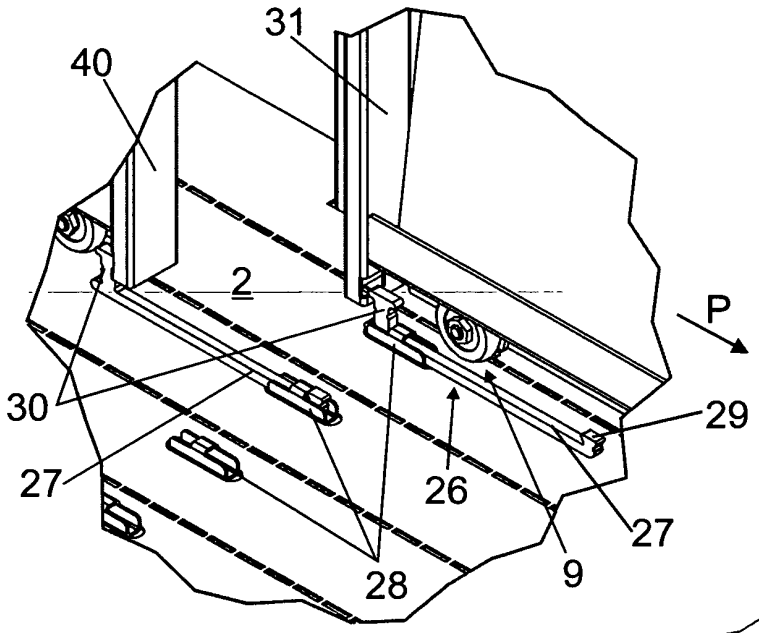


FIG. 13

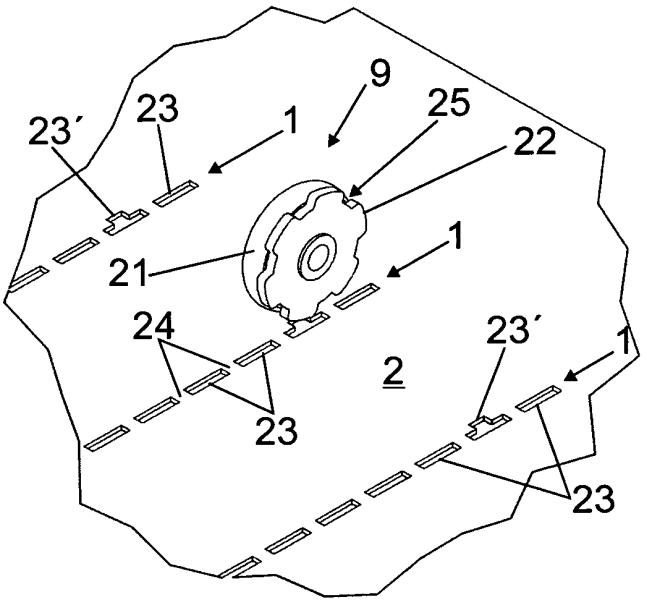


FIG. 14

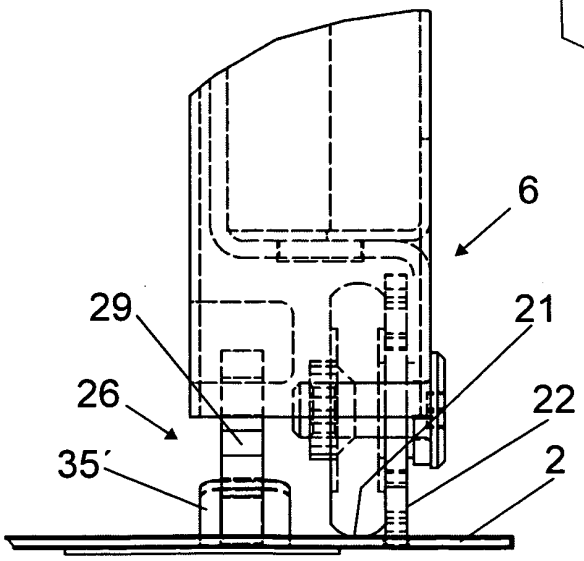


FIG. 15

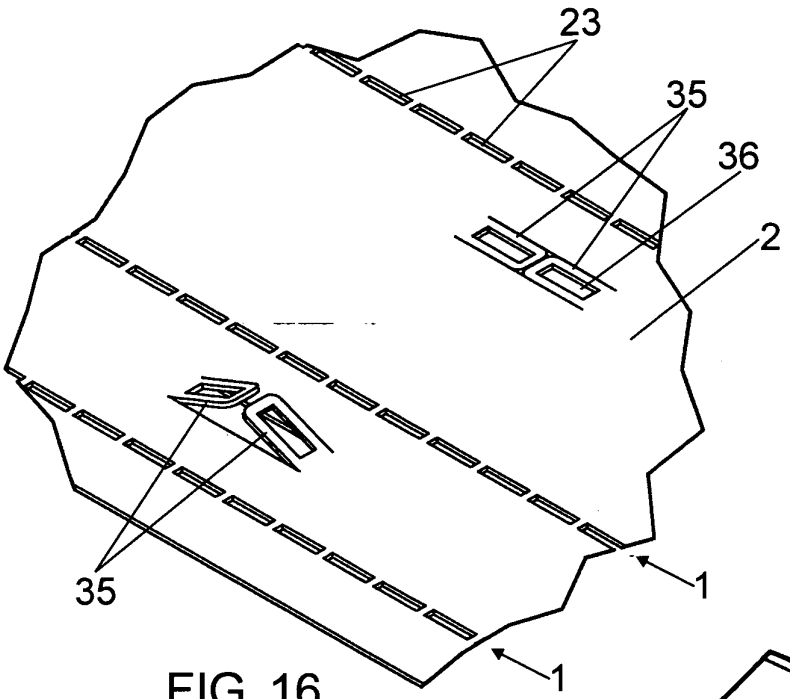


FIG. 16

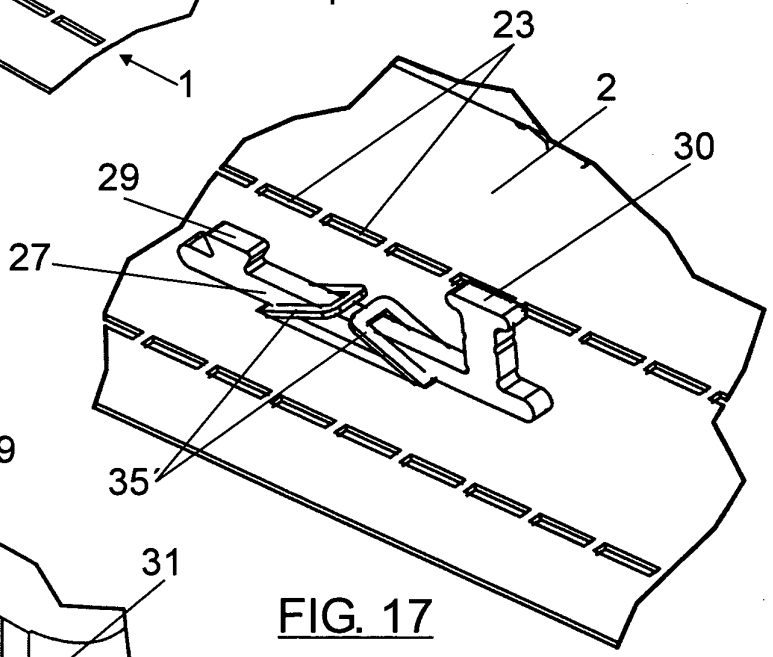


FIG. 17

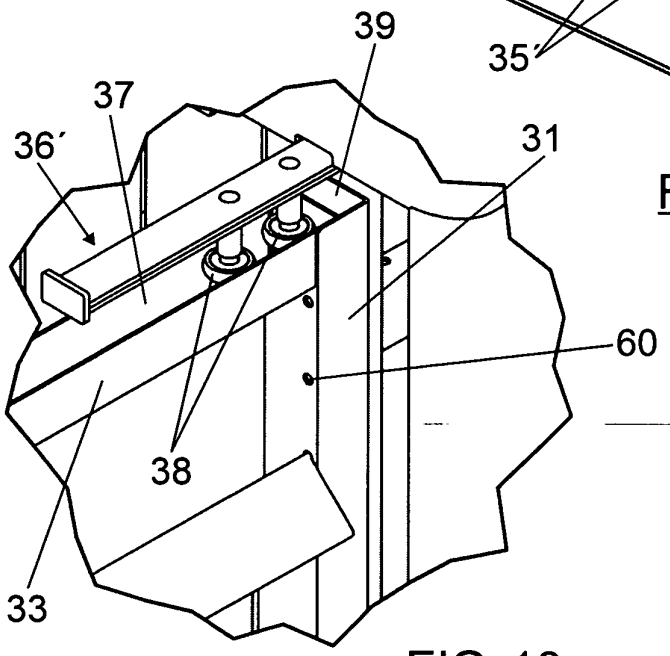


FIG. 18

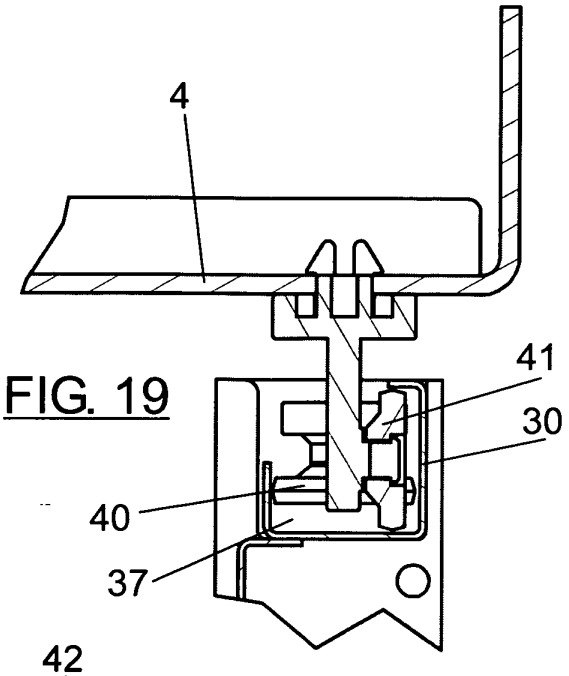


FIG. 19

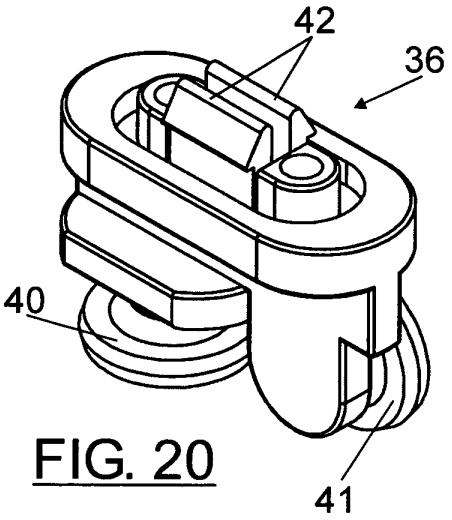


FIG. 20

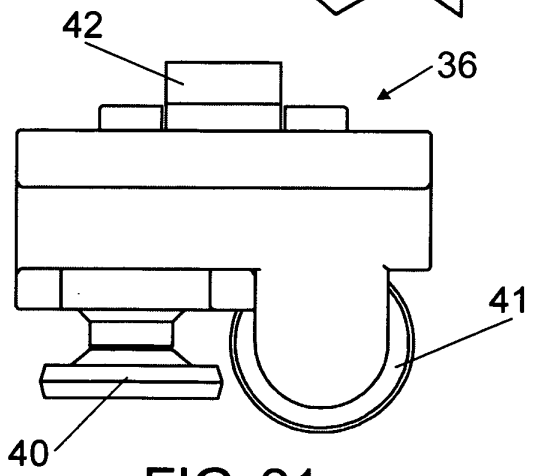


FIG. 21

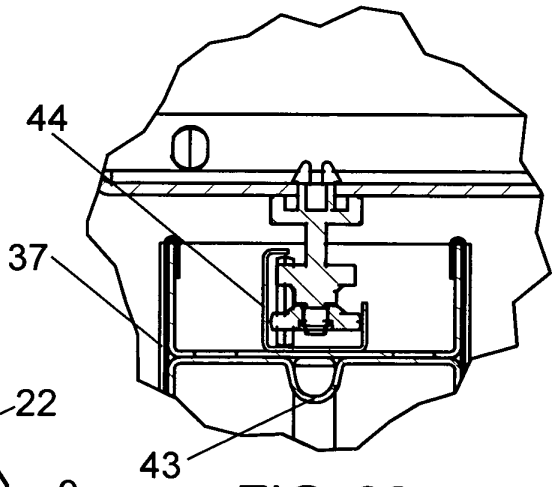


FIG. 22

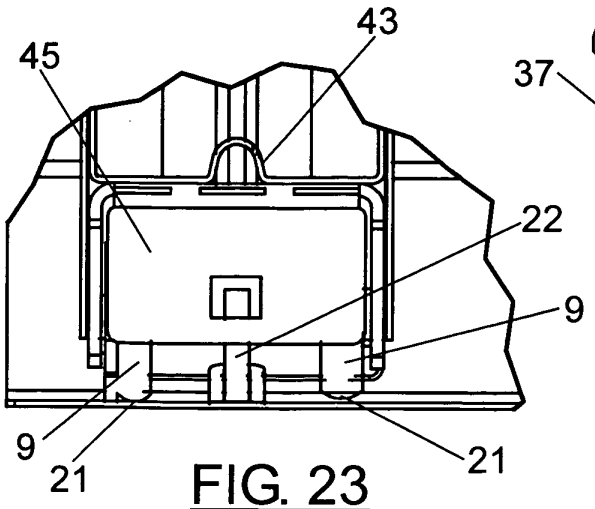


FIG. 23

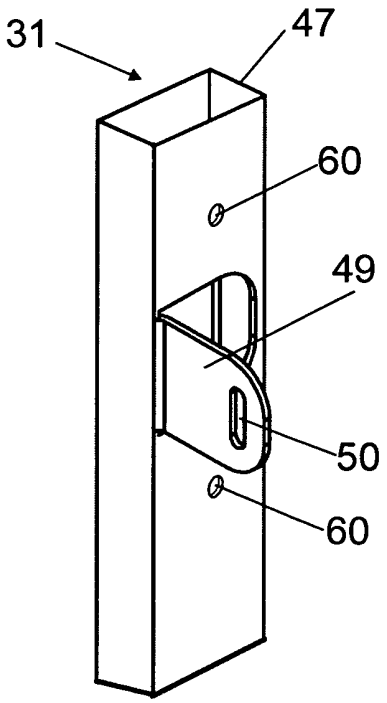


FIG. 24

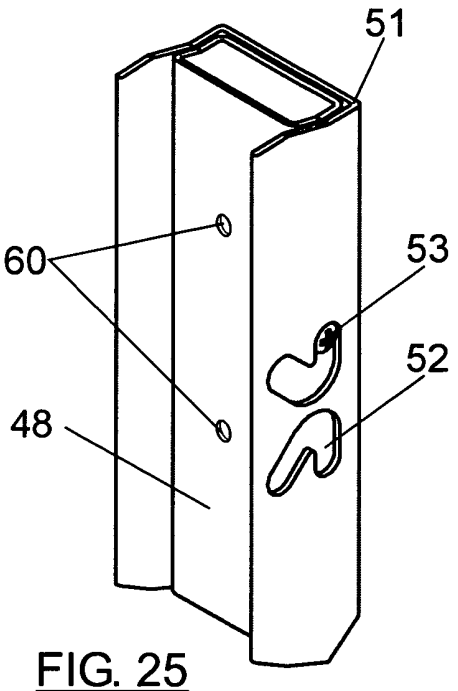


FIG. 25

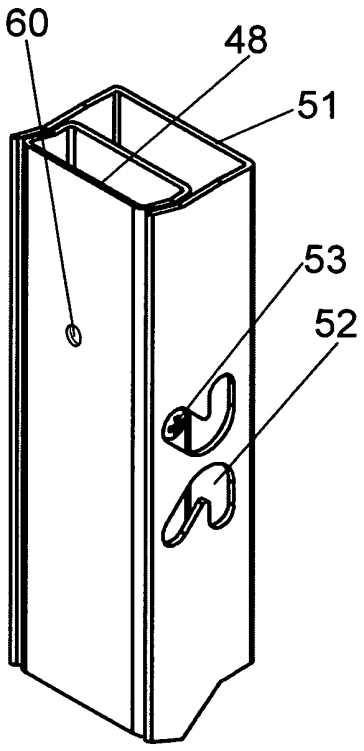


FIG. 26

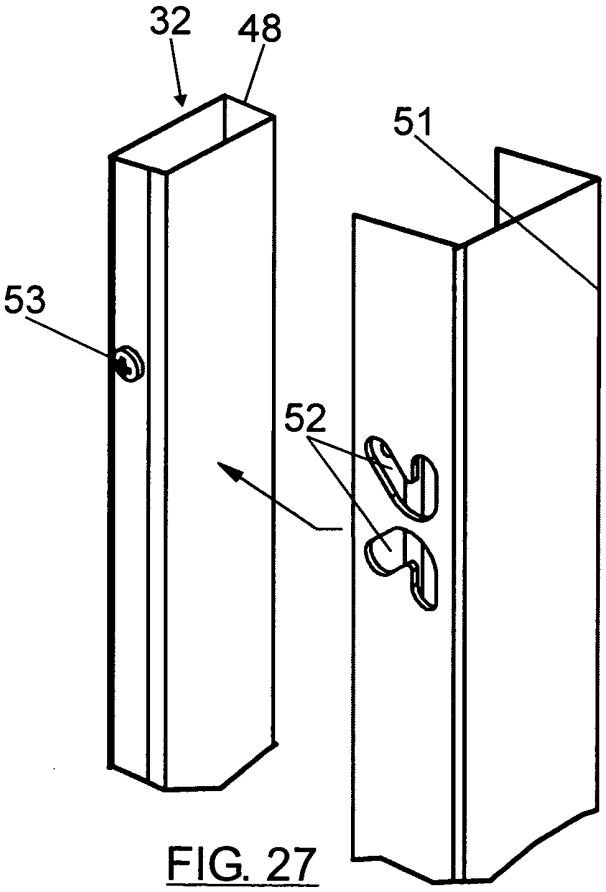


FIG. 27

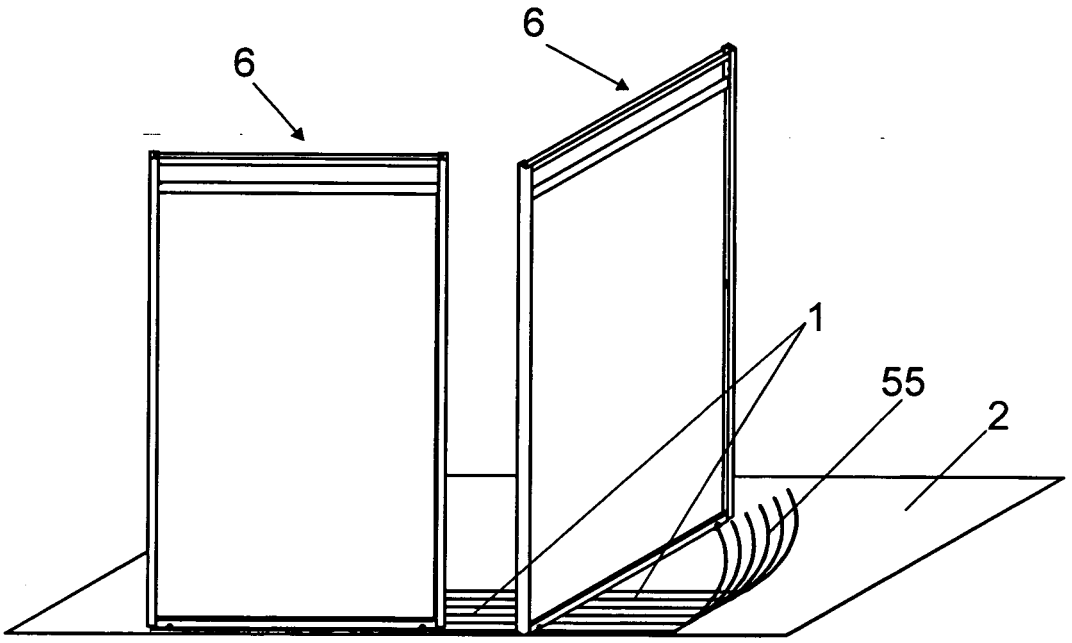


FIG. 28

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 38 0090

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X A	FR 2 464 680 A (EYCHENNE JEAN) 20 March 1981 (1981-03-20) * page 2, line 9 - page 3, line 20; figures * -----	1 6	A47F7/00 G09F15/00 G09F5/00
X	DE 85 07 662 U1 (SCHINDLER, ALFONS, 6484 BIRSTEIN, DE) 12 September 1985 (1985-09-12) * page 4; figures * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A47F
G09F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	14 July 2005	Pineau, A

CATEGORY OF CITED DOCUMENTS

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14-07-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2464680 A	20-03-1981	FR 2464680 A1	20-03-1981
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82