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(54) **Wall construction with panels that can be shifted and rotated**

(57) Improved wall construction which is provided with panels (2) provided between two rails, whereby every panel (2) is at least provided with two points of rotation (8) with which every panel (2) is provided in the above-mentioned rails such that it can be shifted and rotated, characterised in that every moveable panel (2) is also provided with a pin (9) that can be moved between a first position whereby the pin (9) can be shifted in one of the rails (3 or 4), and a second position whereby the pin (9) is lifted out of the rail (3 or 4), and whereby switching means (16) are provided which automatically move the pin (9) from one position to the other.

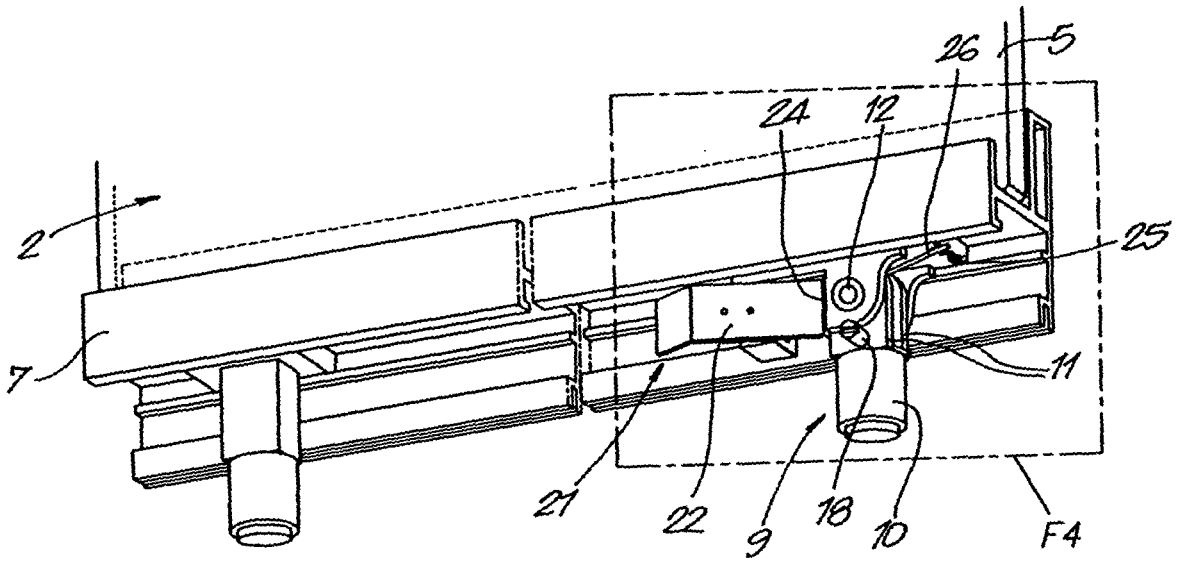

Fig.3

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Description

[0001] The present invention concerns an improved wall construction.

[0002] In particular, the invention concerns a wall construction of the type which mainly consists of a number of panels provided between two parallel rails in such a manner that they can be shifted and rotated, whereby every panel concerned is at least provided with two points of rotation situated on an axis of rotation, with which every panel is provided in an upper rail and a lower rail respectively such that it can be shifted and rotated.

[0003] Such wall constructions are applied for example as balcony glazing systems or the like, whereby the panels concerned can be shifted sideways, where they can be rotated around the above-mentioned points of rotation.

[0004] It is known that wall constructions are provided with a guiding pin at the bottom which can shift in the above-mentioned lower rail at a distance from the above-mentioned axis of rotation.

[0005] In order to be able to rotate the panels around the above-mentioned points of rotation, openings are provided in the above-mentioned lower rail, through which the above-mentioned guiding pin from the lower rail can be guided.

[0006] A disadvantage of such known wall constructions is that the lower rail should always be necessarily situated at least partly above the floor level, since it is not possible for the panels to rotate otherwise, as the guiding pin cannot be moved out of this lower rail.

[0007] Since the lower rail cannot be concealed in the floor, the construction that is obtained is not very aesthetical and moreover can be tripped over when the panels are folded open.

[0008] Another disadvantage of such known wall constructions is that, as openings must be provided in the lower rail, the production of such a lower rail is relatively time-consuming and consequently expensive as well.

[0009] The present invention aims to remedy one or several of the above-mentioned and other disadvantages.

[0010] To this end, the invention concerns a wall construction of the above-mentioned type, whereby every movable panel is also provided with a pin that can move between at least two positions, a first position whereby the pin can be shifted in one of the above-mentioned rails, and a second position respectively, whereby the pin is lifted out of the rail and whereby means are provided which automatically move the pin from one position into the other when a panel concerned is shifted, such that in the second position of the pin, the panel can rotate around the above-mentioned points of rotation.

[0011] An advantage of such an improved wall construction according to the invention is that, as the pin can be moved into a position whereby this pin is lifted out of the rail, the rail concerned can be entirely concealed in the floor and thus it can be hidden from view and it will no longer entail any risk of being tripped over.

[0012] Another advantage of an improved wall construction according to the invention is that no openings must be provided in the lower rail, such that time and money can be saved when producing such rails.

[0013] In order to better explain the characteristics of the invention, the following preferred embodiment of an improved wall construction according to the invention is described as an example only without being limitative in any way, with reference to the accompanying drawings, in which:

figure 1 schematically represents an improved wall construction according to the invention, seen in perspective;
figure 2 represents the wall construction according to figure 1 for another position;
figure 3 represents a disassembled view of the part indicated by F3 in figure 2, but to a larger scale;
figure 4 represents the part indicated by F4 in figure 3, but to a larger scale;
figure 5 represents a section according to line V-V in figure 4;
figures 6 and 7 represent sections according to the respective lines VI-VI and VII-VII in figure 5;
figure 8 represents a section according to line VIII-VIII in figure 7;
figures 9, 10 and 11 represent the operation of an improved wall construction according to the invention.

[0014] Figures 1 to 8 represent an improved wall construction 1 according to the invention which mainly consists of a number of panels 2 provided between two parallel rails, an upper rail 3 and a lower rail 4 respectively, in such a manner that they can be shifted and rotated.

[0015] Every panel 2 is in this case made in the shape of a window frame 5 clamped between an upper beam 6 and a lower beam 7 respectively.

[0016] Every panel 2 concerned is at least provided with two points of rotation 8 situated on an axis of rotation, made for example in the shape of guiding wheels and/or guiding pins with which every panel 2 is provided in a shifting and rotating manner in the above-mentioned upper rail 3 and the lower rail 4 respectively.

[0017] According to the invention, every moveable panel 2 concerned is also provided with a pin 9 which is represented in greater detail in figures 4 to 7, and which can be moved between at least two positions, a first position whereby the pin 9 can be shifted in one of the above-mentioned rails, in this case the lower rail 4, and a second position respectively, whereby the pin 9 is lifted out of said rail.

[0018] In this case, the above-mentioned pin 9 is made in the shape of a cylindrical part 10 which is hinge-mounted, by means of two legs 11, around a pivot having an axial direction A-A', whereby this pivot 12 rests on a base 13, provided such that it can shift in the lower beam 7,

such that the pin 9 can rotate around the axis A-A' directed crosswise to the surface of the panel 2.

[0019] As is represented in detail in figures 6 and 7, in the given example, the above-mentioned legs 11 of the pin 9 are each made in the shape of a rectangular plate which is fixed to the cylindrical part 10 and which is provided with a first stop surface 14 at its free side edge.

[0020] Further, the pin 9 also comprises a second stop surface 15 directed at right angles to the first stop surface 14 and which runs parallel to the above-mentioned axis A-A'.

[0021] According to the invention, the improved wall construction 1 also comprises switching means 16 which, when a panel 2 concerned is shifted, automatically move the pin 9 from one position to the other position, either from the first to the second position or from the second to the first position.

[0022] According to a preferred characteristic of the invention, the above-mentioned switching means 16 are formed of a cam 17 provided on the lower rail 4 on the one hand, and of a cam follower 18 provided on the pin 9 on the other hand.

[0023] As is represented in detail in figures 4 to 7, the cam 17 is made in the shape of a standing cog provided on the above-mentioned lower rail 4 and which has a conically widening part 19 on one far end that can work in conjunction with the above-mentioned cam follower 18.

[0024] Further, the cam 17 has a flat surface 20 on at least one side, in this case over its entire length, which can work in conjunction with locking means 21 to lock the pin 9 against rotating.

[0025] The above-mentioned locking means 21 are in this case made in the form of a leaf spring 22 having the shape of a buckled metal plate which, as is clear from figure 8, is fixed to the base 10 by means of a support 23, such that this leaf spring, when it is not under tension, always extends opposite an aforesaid stop surface 14 or 15 of the above-mentioned pin 9 with one far end 24 so as to lock it.

[0026] Resetting devices 25 are preferably provided as well, which in this case are made in the form of a spring 26, in particular a torsion spring provided round the pivot 12 of the pin 9 and which in this case exerts a force on the pin 9, whereby the pin 9 is pushed in the direction of its first position.

[0027] If required, the above-mentioned upper and/or lower beams 6 and 7 can be sealed by means of a cover plate 27 at their free ends, but this is not strictly necessary according to the invention.

[0028] As is represented in greater detail in figure 4, at least the cover plates 27, which are provided at the free ends of the lower beam 7, have a groove-shaped recess 28 that is large enough to make it possible for the lower beam 7 to slide over the above-mentioned cam 17.

[0029] Finally, the panels 2 are provided with an additional guiding wheel 29 on their top side, in this case opposite their above-mentioned pin 9, which is provided such in the above-mentioned upper rail 3 that it can rotate.

[0030] The working of an improved wall construction 1 according to the invention is very simple and as follows.

[0031] When a condition as represented in figure 1 is taken as a basis, the above-mentioned pin 9 is situated in the lower rail 4, as a result of which the panel 2A is locked against rotating, but whereby this panel 2A can nevertheless be shifted in the longitudinal direction of the rails 3 and 4.

[0032] When, as represented in figure 2, a panel 2A is shifted sideways in the direction of a far end 30 of the above-mentioned rails 3 and 4, the above-mentioned locking means 21 will be deactivated at a given moment, such that, as represented in figure 9, the leaf spring 22 is pushed against the flat side 20 of the cam 17, as a result of which said leaf spring 22 will topple, such that the above-mentioned free end 24 of the leaf spring 22 of the second stop surface 15 is moved away from the pin 9.

[0033] As the panel 2A is pushed further to the far end 30, the above-mentioned cam follower 18 is subsequently pushed up against the conically widening part 19 of the cam 17, such that the pin 9 round the pivot 12 is tilted up and is thus lifted out of the lower rail 4.

[0034] When the panel 2A is pushed further past the cam 17, the leaf spring 22 will no longer be deformed by the cam 17, as a result of which said leaf spring 22 goes back into its initial position of rest, as represented in figure 10, whereby it now ends up with its above-mentioned free end 24 opposite the first stop surface 14 of the pin 9 and thus locks this pin 9 in its upward turned position.

[0035] At this time, the panel 2A is no longer locked against rotating by the pin 9, but the guiding wheel 29 is still situated in the upper rail 3.

[0036] In order to be able to unfold the panel 2A, a recess 29 is provided in the upper rail 3 through which the above-mentioned guiding wheel 29 can be moved, and which is in this case situated practically opposite the above-mentioned cam 17, at a distance from the free end 30 of the upper rail 3 which is larger than the width of the panels 2.

[0037] Consequently, by correctly positioning the panel 2A, said panel 2A can be unfolded around the points of rotation 8 and be shifted further sideways up to the far end 30 of the rails 3 en 4.

[0038] In an analogous manner, a following panel 2B can be shifted sideways and can be unfolded, until all the panels 2 are collected at the far end 30 in an unfolded position, such that a free passage is created between the upper rail 3 and the lower rail 4.

[0039] In order to close the wall construction 1 again, the above-mentioned panels 2 are closed again, whereby the guiding wheel 29 of each panel 2 is first guided through the above-mentioned recess 29.

[0040] Next, the panel 2 is shifted between the rails 3 and 4, away from the above-mentioned far end 30, such that the leaf spring 22 will be pushed in again as it passed the cam 17, as represented in figure 11, and such that the free end 24 of this leaf spring 22 is folded forward,

as a result of which the pin 9 is no longer locked against rotating around the pivot 12.

[0041] Thanks to the presence of the above-mentioned resetting devices 25, the above-mentioned pin 9 is subsequently pushed down, such that as the panel 2 shifts along the cam 17, the cam follower 18 shifts downward over the conically widening part 19 and the pin 9 is situated in its first position again, whereby a locking against rotation round the above-mentioned points of rotation 8 is obtained.

[0042] According to the invention, the presence of the above-mentioned resetting devices 25 is not always required, since the above-mentioned pin 9 can also sink in the lower rail 4 under the influence of the gravitational force.

[0043] According to a variant of an improved wall construction 1 according to the invention which is not represented in the figures, locking means 21 in the form of a leaf spring or the like are provided on either side of the above-mentioned support 23, whereby the free ends of these leaf springs are directed towards the pin 9 so as to be able to co-operate with a respective stop surface 14 or 15.

[0044] An advantage of such an improved wall construction 1 according to the invention is that the panels 2 can be adjusted, as a function of the far end of the rails 3 and 4, there where the panels 2 need to be collected in an unfolded condition.

[0045] To this end, the above-mentioned base 13 must be shifted in an appropriate manner in the lower beam 7 of the respective panels 2 and be fixed, such that either of the leaf springs can work in conjunction with the cam 17, whereby the cam 17 must be correctly positioned in the lower rail 4 as well, i.e. with its conically widening part 19 directed to one of both far ends.

[0046] In the given example, the respective panels are provided with an additional guiding wheel 29 at the top, but the presence of such an additional guiding wheel 29 is not required according to the invention.

[0047] It is clear that, according to a variant of an improved wall construction 1 according to the invention, the above-mentioned pin 9 can also be mounted in the upper beam 6 instead of in the lower beam 7, and that the above-mentioned cam 17 is provided on the upper rail 3.

[0048] The working of such a variant is analogous to that of the above-described embodiment.

[0049] According to a special characteristic of the invention, at least the rail 3 or 4, in which the above-mentioned pin 9 extends in its first position, is entirely concealed in the ceiling or the floor.

[0050] Naturally, the improved wall construction 1 is not restricted to standing walls, but it can also serve as a floor slab or roofing sheet that can be sealed.

[0051] The present invention is by no means restricted to the embodiments given as an example and represented in the accompanying drawings; on the contrary, such an improved wall construction 1 according to the invention can be made in all sorts of shapes and dimensions while still remaining within the scope of the invention.

Claims

1. Improved wall construction which mainly consists of a number of panels (2) provided between two parallel rails, an upper rail (3) and a lower rail (4) respectively, in such a manner that they can be shifted and rotated, whereby every panel (2) concerned is at least provided with two points of rotation (8) situated on an axis of rotation, with which every panel (2) is provided in the above-mentioned upper rail (3) and lower rail (4) respectively such that it can be shifted and rotated, **characterised in that** every moveable panel (2) concerned is also provided with a pin (9) that can be moved between two positions, a first position whereby the pin (9) can be shifted in one of the above-mentioned rails (3 or 4), and a second position respectively, whereby the pin (9) is lifted out of the rail (3 or 4), and whereby switching means (16) are provided which automatically move the pin (9) from one position to the other as a panel (2) concerned is shifted, such that in the second position of the pin (9), the panel (2) can rotate round the above-mentioned points of rotation (8).

2. Improved wall construction according to claim 1, **characterised in that** the above-mentioned switching means (16) are formed of a cam (17) provided on the rail (3 or 4) concerned on the one hand, and of a cam follower (18) of the pin (9) on the other hand.

3. Improved wall construction according to claim 1 or 2, **characterised in that** the above-mentioned pin (9) can rotate round an axis (A-A') which is directed crosswise to the surface of the panel (2).

4. Improved wall construction according to any one of the preceding claims, **characterised in that** it is provided with resetting devices (25) for the above-mentioned pin (9).

5. Improved wall construction according to claim 4, **characterised in that** the above-mentioned resetting devices (25) are made in the shape of a spring (26).

6. Improved wall construction according to any one of the preceding claims, **characterised in that** it comprises locking means (21) for the pin (9).

7. Improved wall construction according to claim 6, **characterised in that** the above-mentioned locking means (21) are made in the form of a leaf spring (22) that works in conjunction with a flat side (20) of the cam (17).

8. Improved wall construction according to claim 7, **characterised in that** the above-mentioned pin (9) is provided with two stop surfaces (14 and 15) that can work in conjunction with a far end (24) of the above-mentioned leaf spring (22).

9. Improved wall construction according to any one of the preceding claims, **characterised in that** the above-mentioned pin (9) is provided on a base (13) which can be shifted in a beam (6 or 7) of the panel (2).

10. Improved wall construction according to any one of the preceding claims, **characterised in that** the above-mentioned cam (17) is provided at a distance from the far end (30) of the rail (3 or 4) which is larger than the width of the above-mentioned panel (2).

11. Improved wall construction according to any one of the preceding claims, **characterised in that** the rail (3 or 4) concerned in which the pin (9) extends in its first position is entirely concealed in the floor or the ceiling.

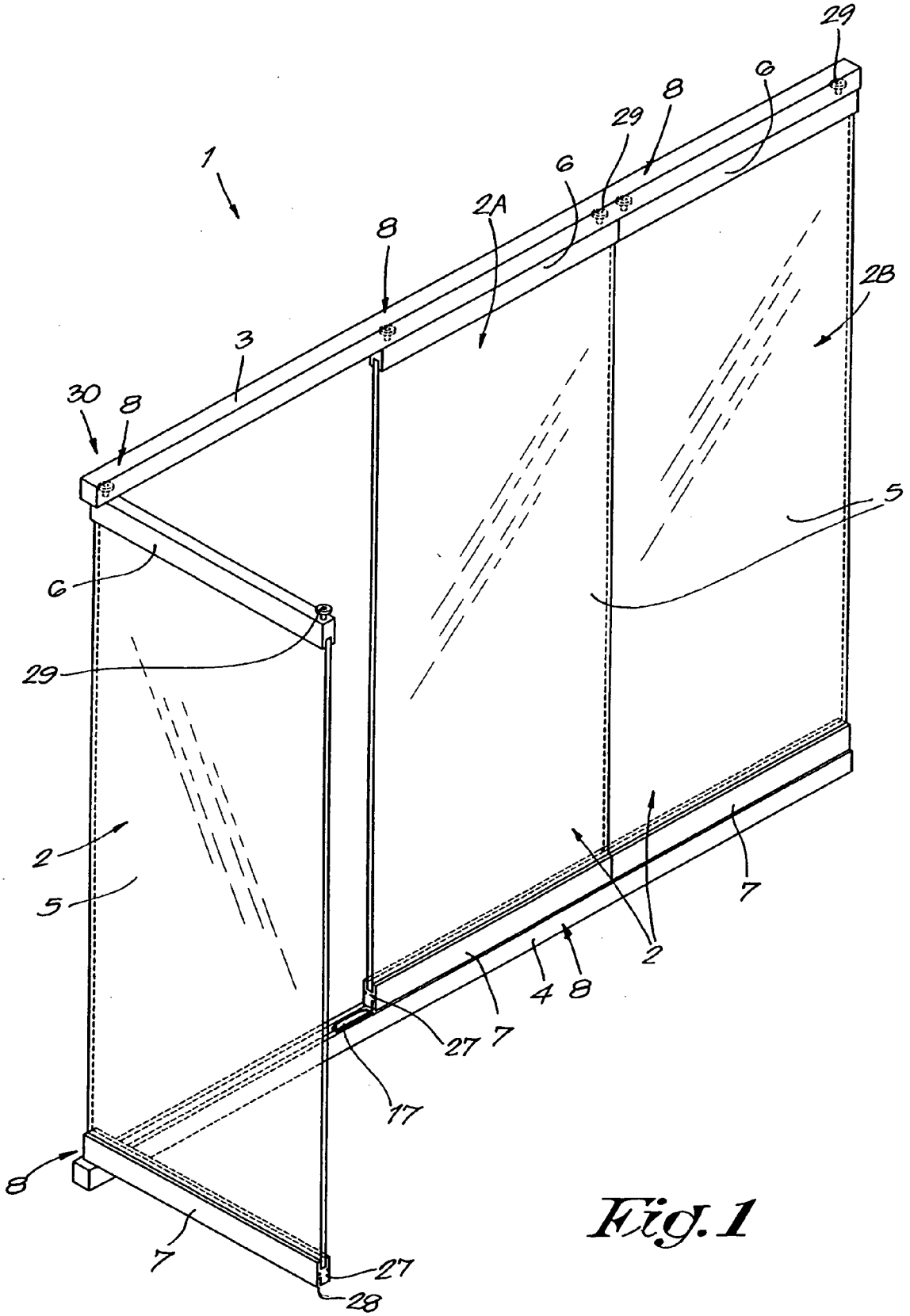


Fig. 1

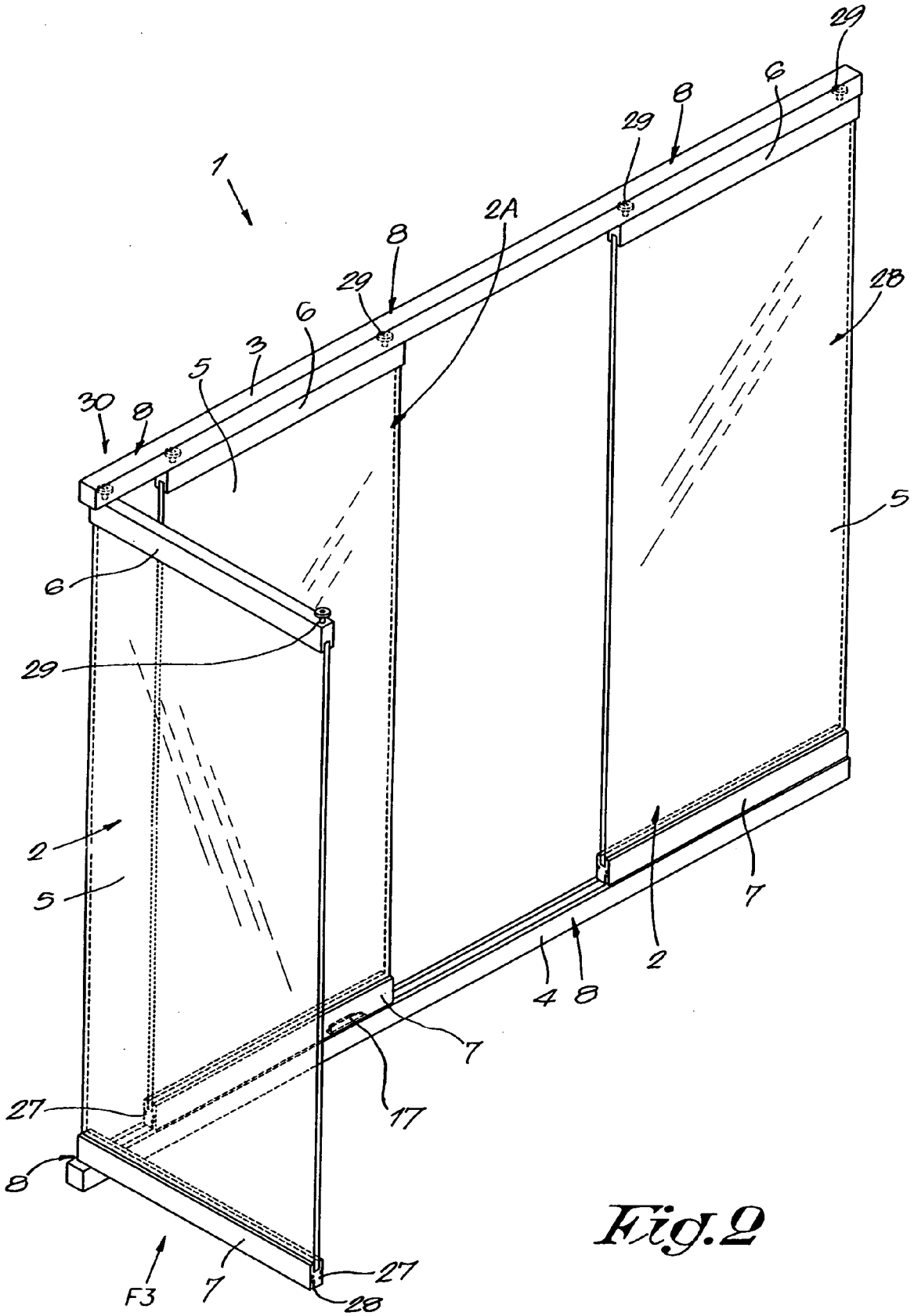


Fig.2

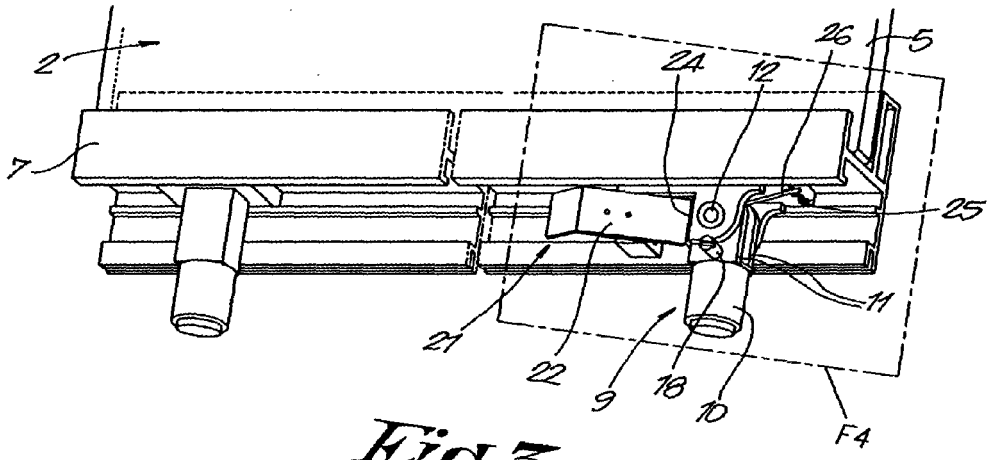


Fig.3

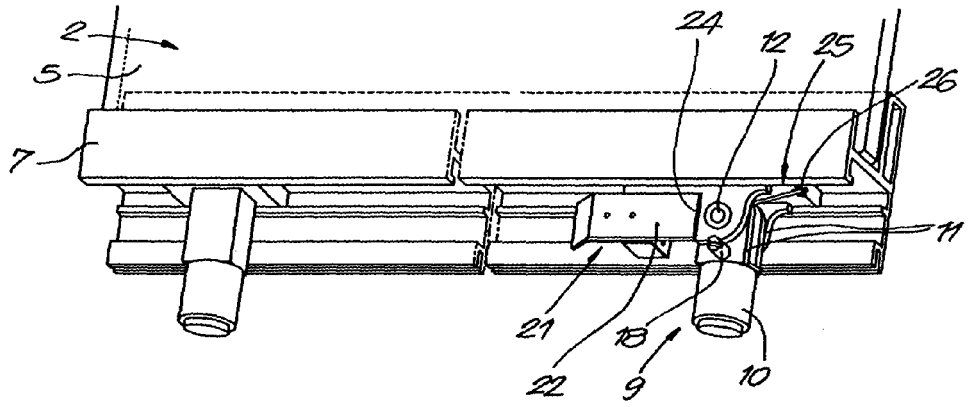


Fig.9

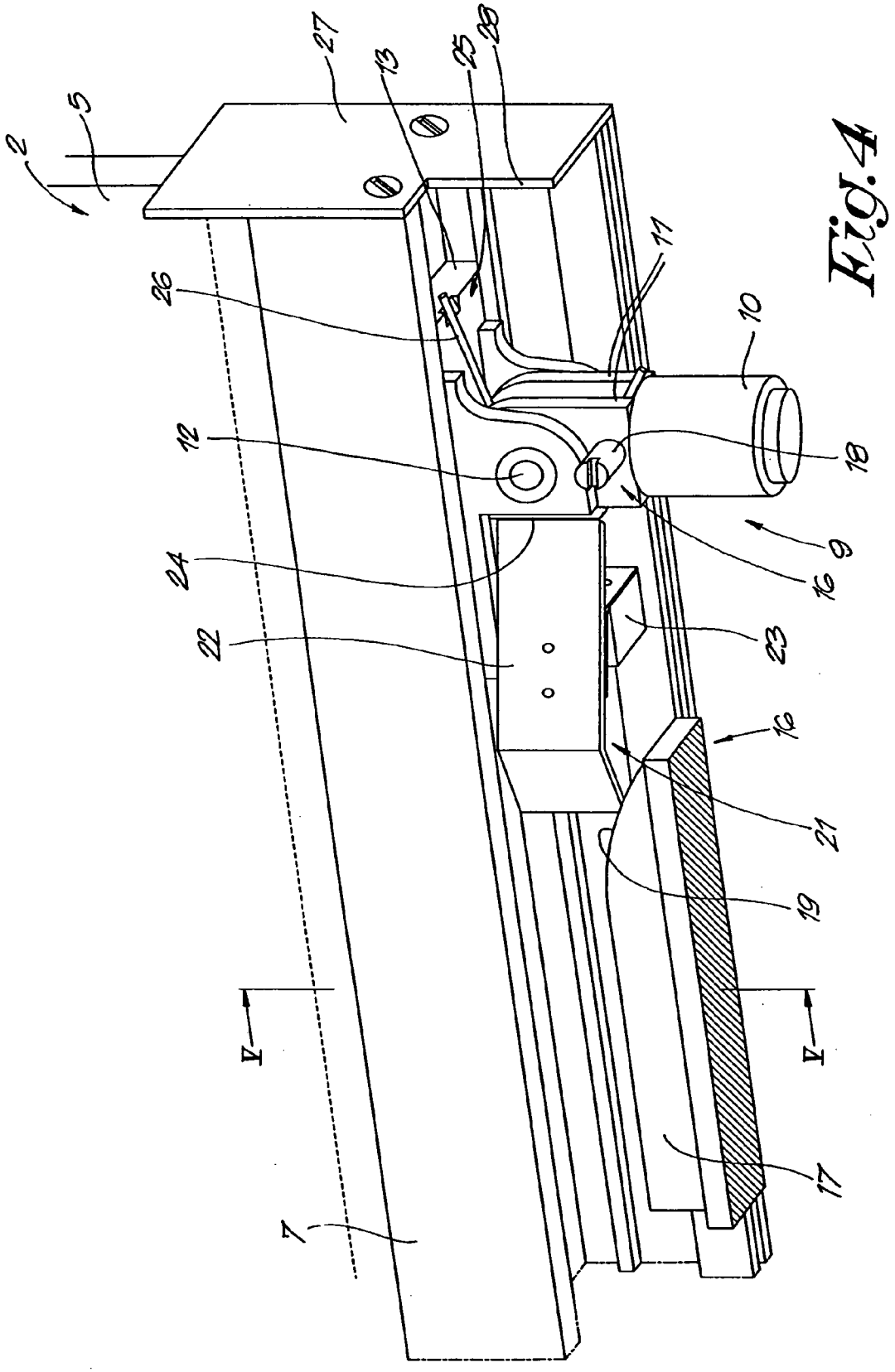
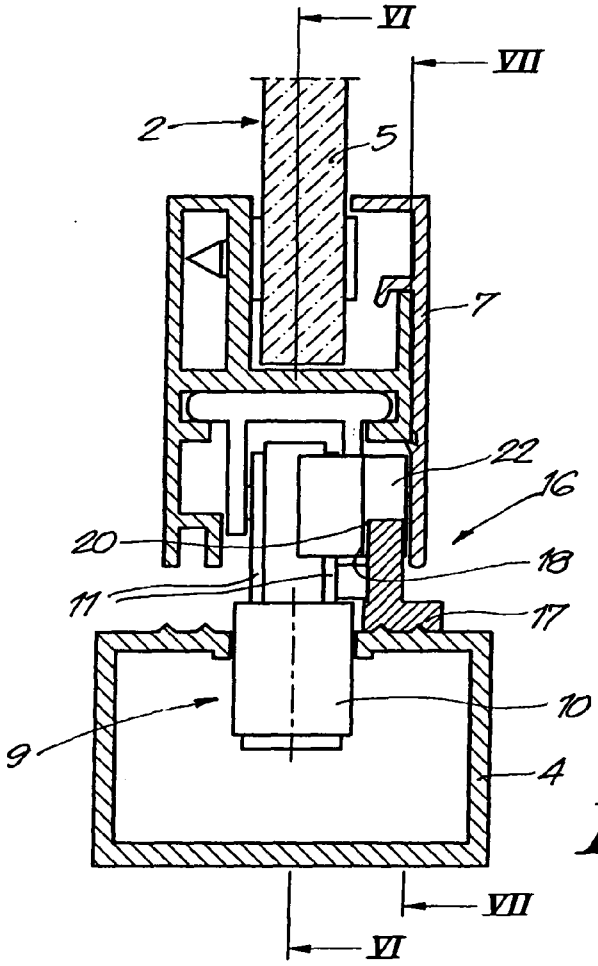


Fig.4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VI

Fig.5

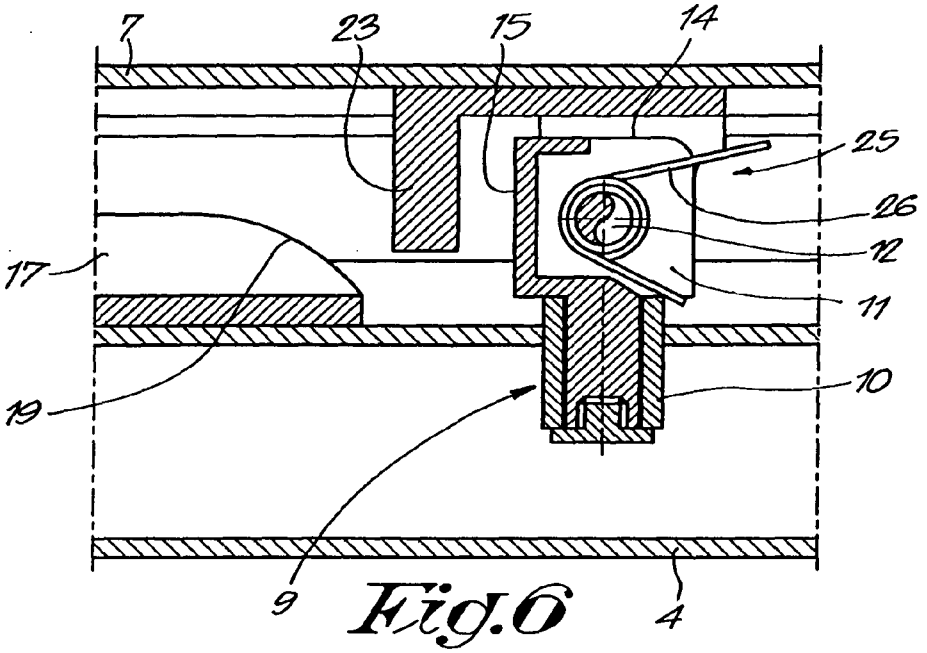
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Fig.6

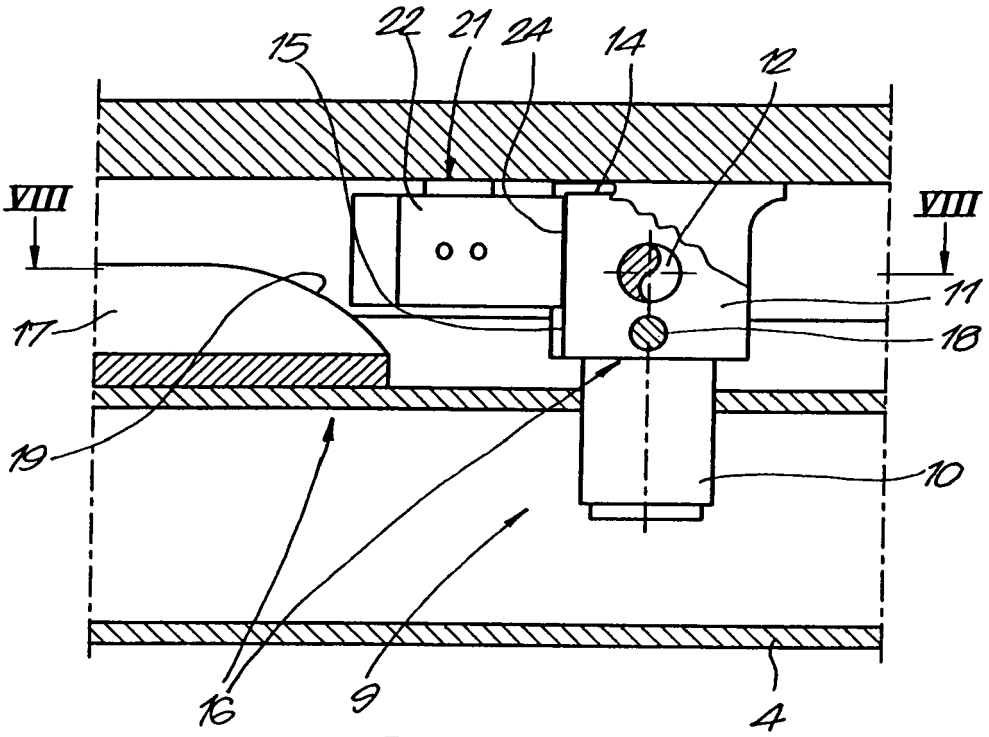
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Fig.7

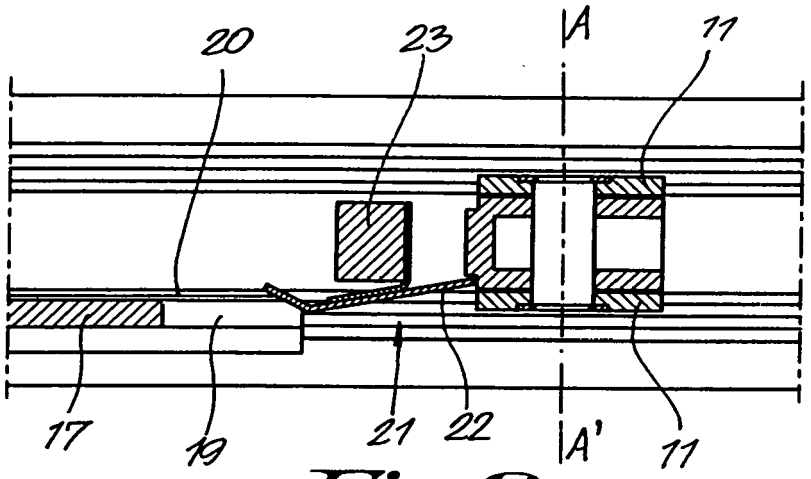
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Fig.8

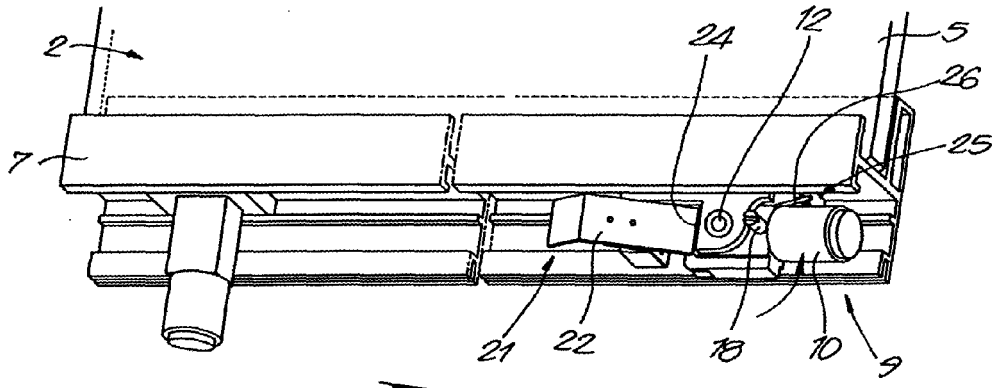

Fig.10

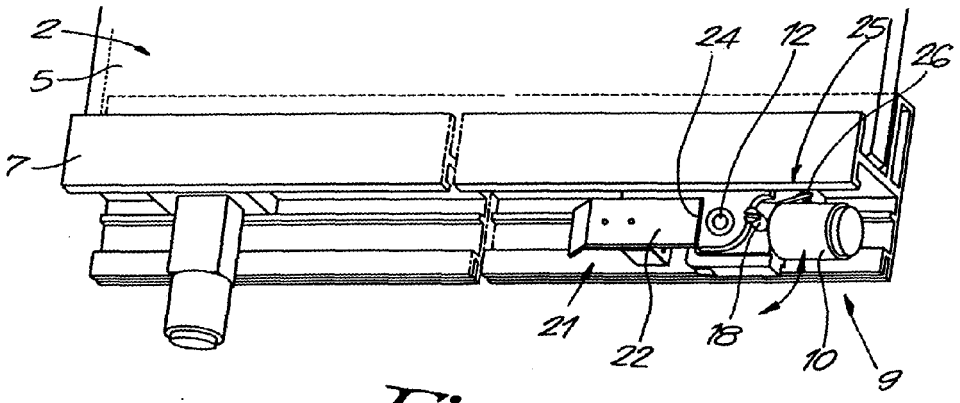

Fig.11