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(54) Window or door frame construction for continuous-glazing buildings, including an improved opening system

(57) A window or door frame including an improved opening system, comprises at least an openable glazed panel, and being characterized in that said panel is adapted to selectively turn about the horizontal top side thereof, or about the horizontal bottom side thereof.

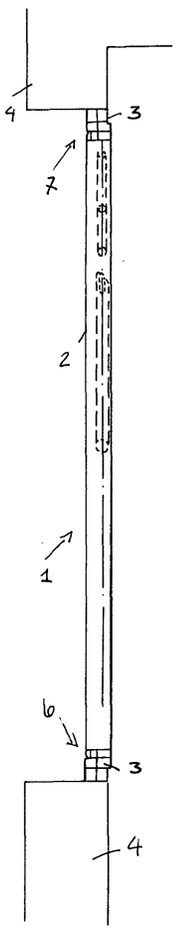

Fig. 1

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a window or door frame, including an improved opening system.

[0002] More specifically, the present invention relates to a window or door frame, which can be used in buildings having, large glazed surfaces, in which the problem of properly cleaning the outer surface of the glazed panels frequently occurs.

SUMMARY OF THE INVENTION

[0003] The aim of the present invention is to provide such a window or door frame construction which has been specifically designed for use in buildings having large glazed surfaces, to facilitate the cleaning of the outer surface of the glazed panels.

[0004] Within the scope of the above mentioned aim, a main object of the present invention is to provide such a window or door frame construction which is very strong and reliable in operation.

[0005] Another object of the present invention is to provide such a window or door frame construction which can be easily used by the user.

[0006] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a window or door frame construction, including an improved opening system, having at least an openable glazed panel, characterized in that said panel can be selectively turned either about a horizontal top side thereof or about a horizontal bottom side thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of the invention, which is illustrated, by way of an indicative, but not limitative, example, in the accompanying drawings, where:

Figure 1 is a cross-sectioned side elevation view of the window or door frame construction according to the present invention, shown in a closed position thereof;

Figure 2 is a view similar to figure 1, illustrating the window or door frame construction in its opened position, with the glazed panel being turned about the bottom side thereof, or with a "wasistas" type of pattern;

Figure 3 is a view similar to figure 2, showing the frame construction in its opened position, with the glazed panel being turned about the top side thereof;

Figure 4 is a broken away cross-sectioned side elevation view, on an enlarged scale, of the frame construction, shown in an open position thereof, in a wasistas type of opening pattern;

Figure 5 is a view similar to figure 4, but showing the frame construction in a bottom opened position thereof, i.e. with the glazed panel being turned about the horizontal top side thereof;

Figure 6 is a further view, similar to figure 5, but illustrating the frame construction in its closed position or condition;

Figure 7 is a front elevation view illustrating the left top angle or corner of the frame construction;

Figure 8 is a further front elevation view showing the bottom left corner of the frame construction; and

Figure 9 is a front elevation view showing the top left corner of the frame construction.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0008] With reference to the number references of the above mentioned figures, the window or door frame construction, according to the present invention, which has been generally indicated by the reference number 1, comprises a glazed panel 2, mounted on a fixed framework 3, applied to a wall 4.

[0009] More specifically, the glazed panel 2 comprises a panel frame 5, coupled to the fixed frame 3 by bottom pivot means, allowing the glazed panel 2 to turn about its bottom horizontal side 6, as well as top pivot means allowing the glazed panel 2 to rotate about its horizontal top side 7.

[0010] Moreover, the glazed panel 2 is coupled to the fixed framework or frame 3 by two pairs of coupling levers, respectively a top coupling lever 8 and a bottom coupling lever 9.

[0011] The rotary movement of the glazed panel 2, with respect to the bottom or top pivot means, can be selectively controlled by control means for controlling the pivot means, i.e. for respectively engaging and disengaging the pivot means, alternately, by engaging the bottom pivot means and simultaneously disengaging the top pivot means.

[0012] Thus, it is possible to rotate the glazed panel about the bottom side 6 thereof (figure 2), or engage the top pivot means and, simultaneously, disengage the bottom pivot means, to allow said glazed panel to rotate about the top side 7 thereof (figure 3).

[0013] The top lever pair 8 will limit the opening of the glazed panel 2, as it is rotated about the bottom side 6 thereof, whereas the bottom lever pair 8 will hold the glazed panel 2 at an opened position or condition thereof, as it is rotated about the top side 7.

[0014] Advantageously, each top lever 8 operates as urged by a resilient element, such as a coil spring 9, held in the side upright of the fixed frame 3, to dampen the

opening of said glazed panel.

[0015] The above mentioned control means comprises, in particular, a lever 10 which can be rotated to at least three positions, i.e.: a closed window position, an open window position, in which the window is open at the top thereof, with a wasistas type of opening pattern, and a bottom opened window position.

[0016] In particular, as the lever 10 is rotated, it will control a plurality of elongated elements, which are flexible at least at the corners of the fixed frame 3, and associated with the pivot means.

[0017] The bottom pivot means comprise at least a pair of bottom pins 11, each associated with a respective bottom rod 12 in turn coupled to the control lever 10.

[0018] The top pivot means comprise, in turn, at least a pair of top pivot pins 13, each of which is associated with a respective top rod 14.

[0019] Each said top rod 14 is associated with a corresponding side rod 15, which can slide along the upright of the fixed frame 3, through a flexible blade element 16 designed for transmitting the motion of the side rod 15 to the respective top rod 14.

[0020] As is shown, each side rod 15 is coupled to a respective bottom rod 12 by a flexible blade element 17, designed for transmitting motion from'the bottom rod 12 to the respective side rod 15.

[0021] The control lever 10 is operatively kinematically coupled to the bottom rods 12, thereby, for each rotation of said control lever 10, the two rods 12 will be oppositely driven, i.e. either both outwardly, or both inwardly.

[0022] The control lever 10 defines at least three operating positions: a closed window position, in which all the bottom pivot pins 11 and top pivot pins 13 engage respectively recesses formed in the frame 3 and the glazed panel 2 is closed; a position in which the window is open at the top thereof, with a wasistas type of opening pattern, in which the bottom rods are urged by the rotating lever 10 outwardly so as to cause the bottom pivot pins 11 to engage the respective recesses of the fixed frame, whereas the top pivot pins 13 are withdrawn so as to disengage the top recesses; a position in which the window is open at the bottom thereof, where the bottom pivot pins 11 are withdrawn so as to disengage their respective recesses, whereas the top pivot pins 13 engage the respective recesses of the fixed frame.

[0023] In the bottom opened condition of the window, as shown in figures 3 and 5, it is possible to easily access the outer surface of the glazed panel from inside the building, to easily clean said outer surface.

[0024] In this connection, it should be pointed out that the opening and closing operations of the movable window wings would be facilitated by a perfect balancing of said wings, afforded by the device of the invention.

[0025] This feature would allow to greatly reducing the exposed to the view surfaces of the wing uprights and cross members.

[0026] It has been found that the invention fully achieves the intended aim and objects.

[0027] In fact, the invention provides a window or door frame, specifically designed for application in buildings having large glazed surfaces, in which the downward and inward opening of the glazed panel allows to easily clean the outer surface of said glazed panel, from the inside of the building.

[0028] In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, according to requirements and the status of the art.

Claims

1. A window or door frame construction, including an improved opening system, having at least an openable glazed panel, **characterized in that** said panel can be selectively turned either about a horizontal top side thereof or about a horizontal bottom side thereof.

2. A window or door frame construction, according to Claim 1, **characterized in that** said glazed panel is mounted on a fixed frame coupled to a wall or to a bearing structure of the building face and comprising a frame coupled to said fixed frame by bottom pivot means, allowing said glazed panel to rotate about the horizontal bottom side thereof, and top pivot means, allowing said glazed panel to rotate about the horizontal top side thereof, said glazed panel being moreover coupled to said fixed frame by two pairs of levers, respectively a top lever pair and a bottom lever pair.

3. A window or door frame construction, according to Claim 1 or 2, **characterized in that** the rotation of said glazed panel, with respect to said bottom or top pivot means, is selectively controlled by control means for controlling said pivot means, respectively for engaging or disengaging said pivot means, alternately, by respectively engaging said bottom pivot means and simultaneously disengaging said top pivot means, to allow said glazed panel to rotate about the bottom side thereof, or by engaging said top pivot means and simultaneously disengaging said bottom pivot means to allow said panel to rotate about the top side thereof.

4. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** said top lever pair is so designed as to limit the opening of said glazed panel as said glazed panel is rotated about the bottom side thereof, whereas the bottom lever pair holds said glazed panel in an open position thereof as said glazed panel is rotated about the top side thereof.

5. A window or door frame construction, according to

one or more of the preceding claims, **characterized in that** each said top lever operates against an urging resilient element, such as a coil spring, held in a side upright of the fixed frame, to dampen the opening of said glazed panel.

6. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** said control means comprise a lever which can be rotated to at least three positions: a closed window position, a position at which said window is opened at the top thereof, with a wasistas type of opening pattern, and a position in which said window is opened at the bottom thereof.

7. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** said control lever controls, as it is rotated, a plurality of elongated elements, which are flexible at least at the corners of said fixed frame, and being coupled to said pivot means.

8. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** said bottom pivot means comprise at least a pair of bottom pins each of which is associated with a respective bottom rod coupled to said control lever.

9. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** said top pivot means comprise at least a pair of top pins each of which is associated with a respective top rod.

10. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** each top rod is operatively coupled to a respective side rod, which can slide along the upright of the fixed frame, through a flexible blade element designed for transmitting motion from the side rod to the corresponding top rod.

11. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** each said side rod is operatively coupled to a corresponding bottom rod through a flexible blade element adapted to transmit motion from said bottom rod to said respective side rod.

12. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** said control lever is operatively kinematically coupled to said bottom rods, thereby, for each rotation of said control lever, said two rods are oppositely driven, i.e. both outwardly or both inwardly.

13. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** said control lever defines at least three operating positions: a closed window position, in which all the bottom and top pivot pins are engaged in respective recesses of said fixed frame and said glazed panel is closed; an open window position in which the window is open at the top thereof, with a wasistas type of open pattern, in which the bottom rods are outwardly urged by the rotating lever, to cause the bottom pivot pins to engage their respective recesses of said fixed frame, said top pivot pins being withdrawn so as to disengage the top recesses therefor; an open window position, in which the window is open at the bottom thereof, where the bottom pivot pins are withdrawn thereby disengaging their respective recesses, whereas the top pivot pins engage their respective recesses in said fixed frame.

14. A window or door frame construction, according to one or more of the preceding claims, **characterized in that** said it comprises one or more of the disclosed and/or illustrated characteristics.

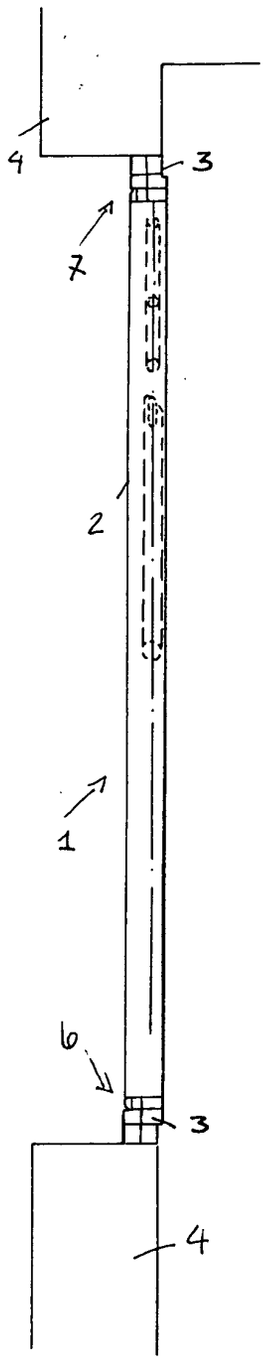

FIG. 1

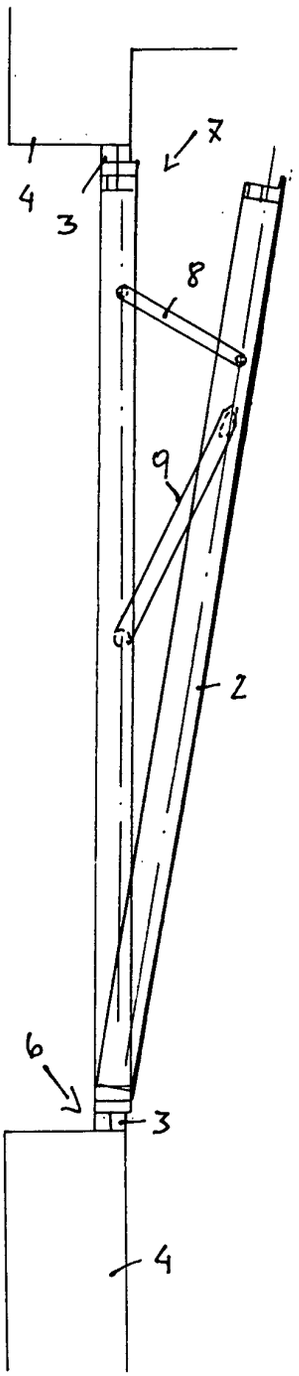

FIG. 2

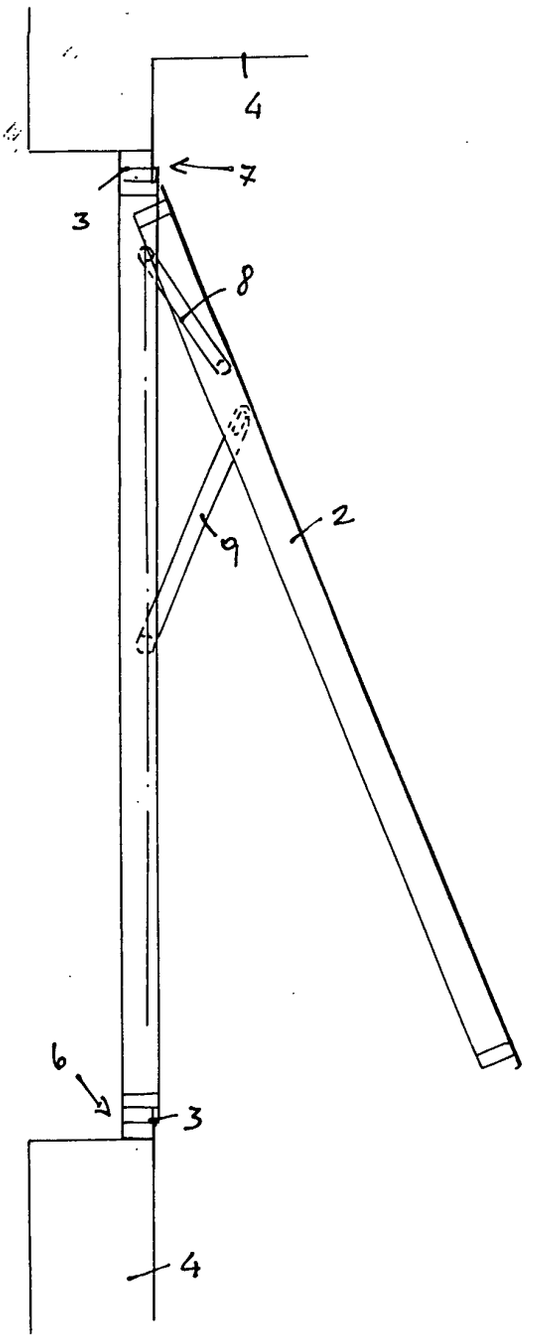

FIG. 3

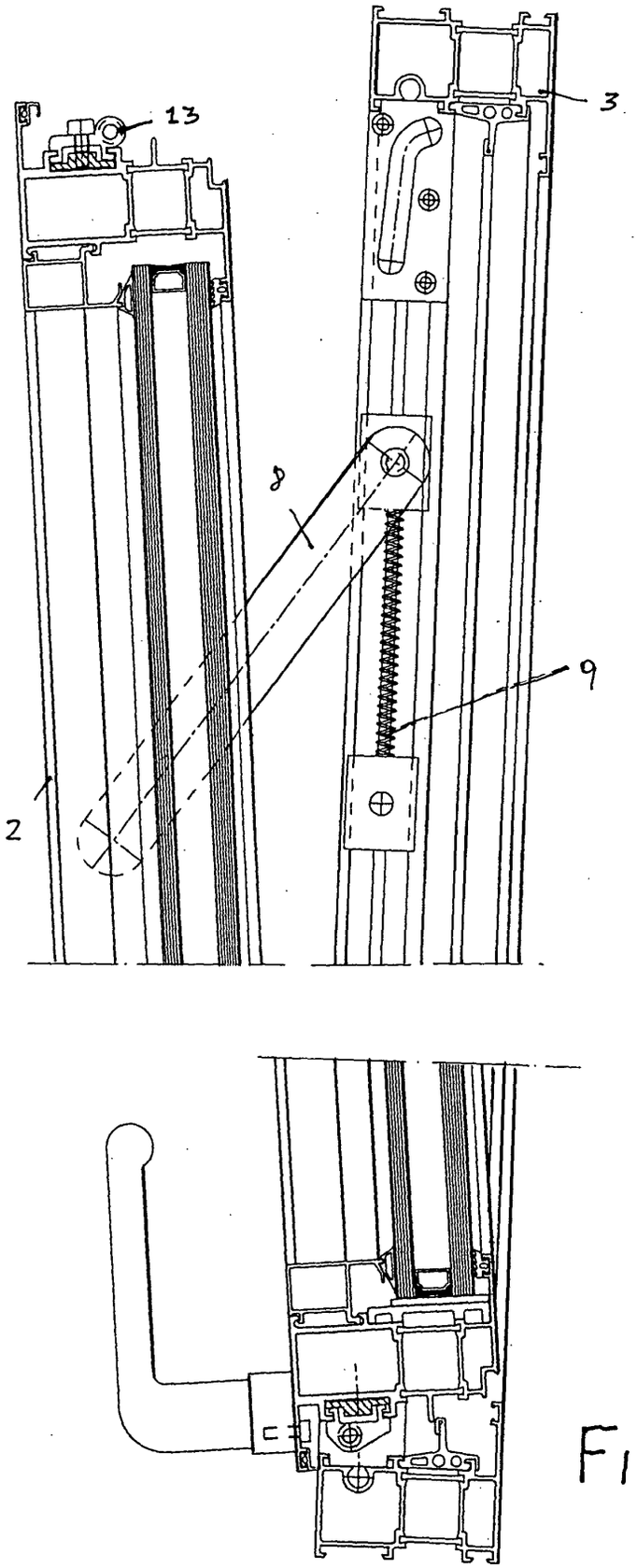

FIG.4

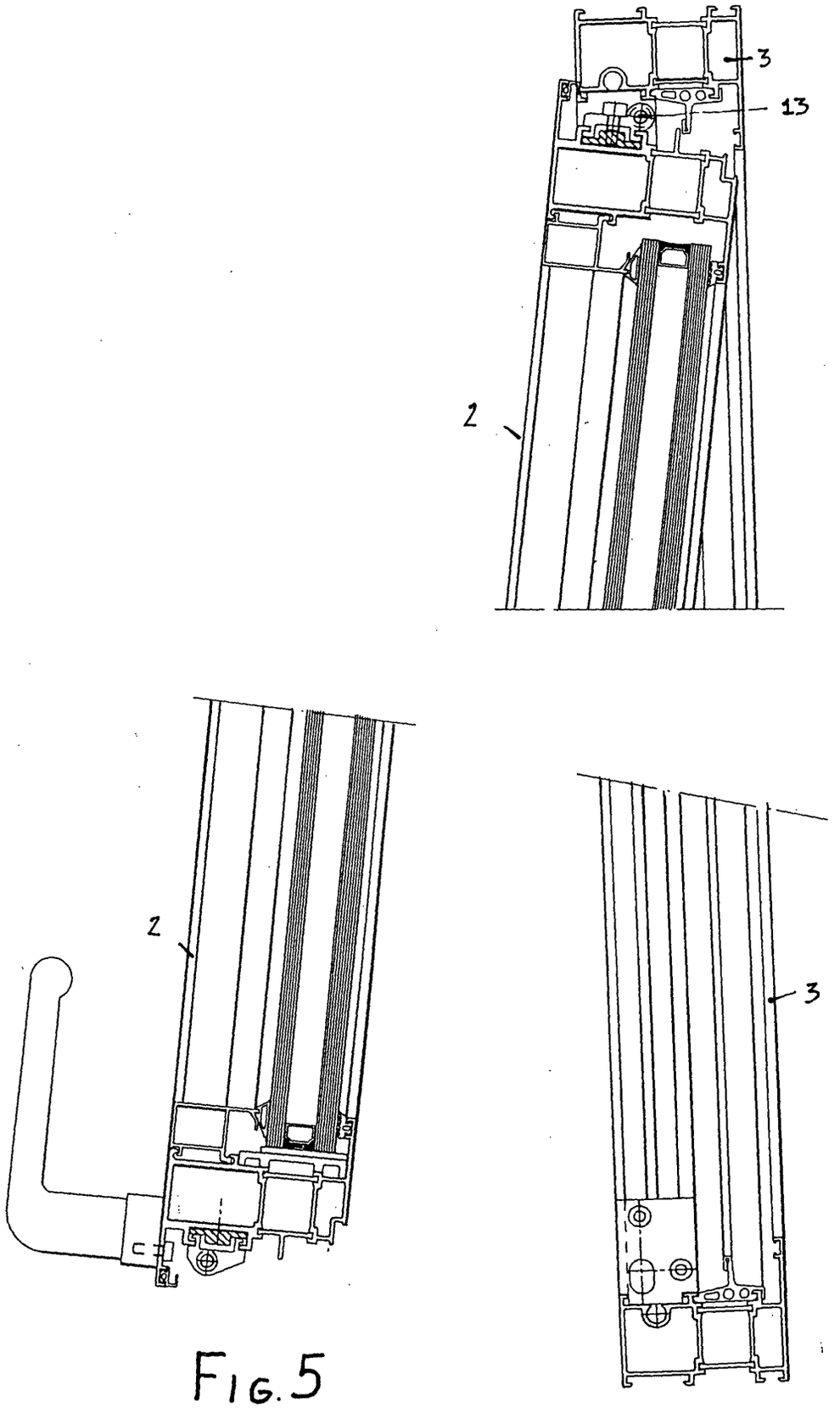

FIG. 5

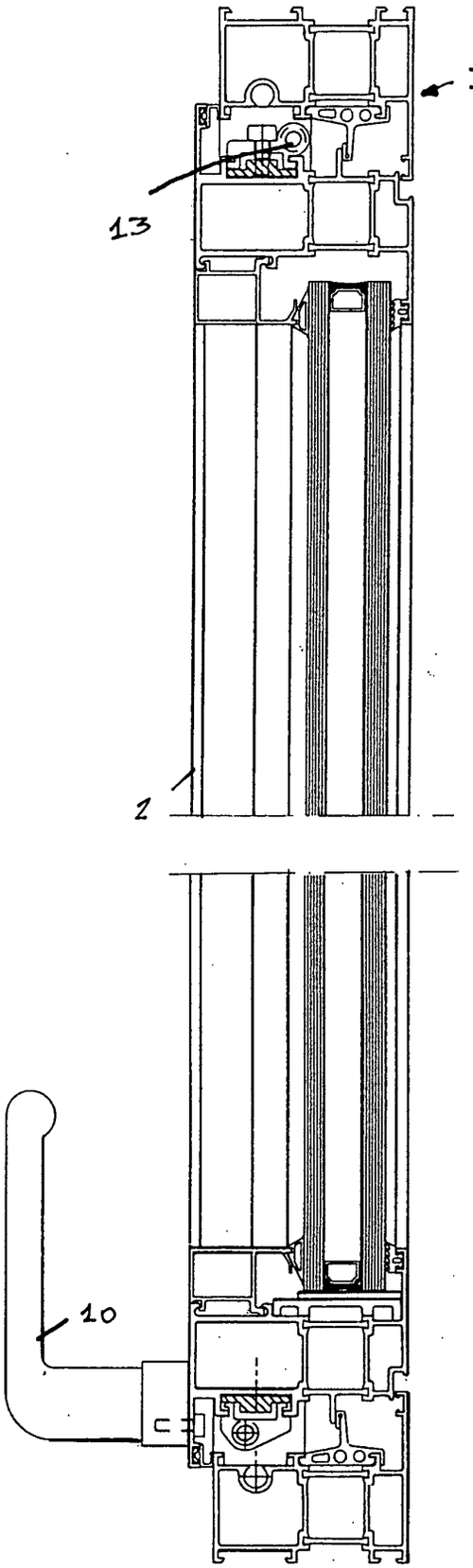

FIG. 6

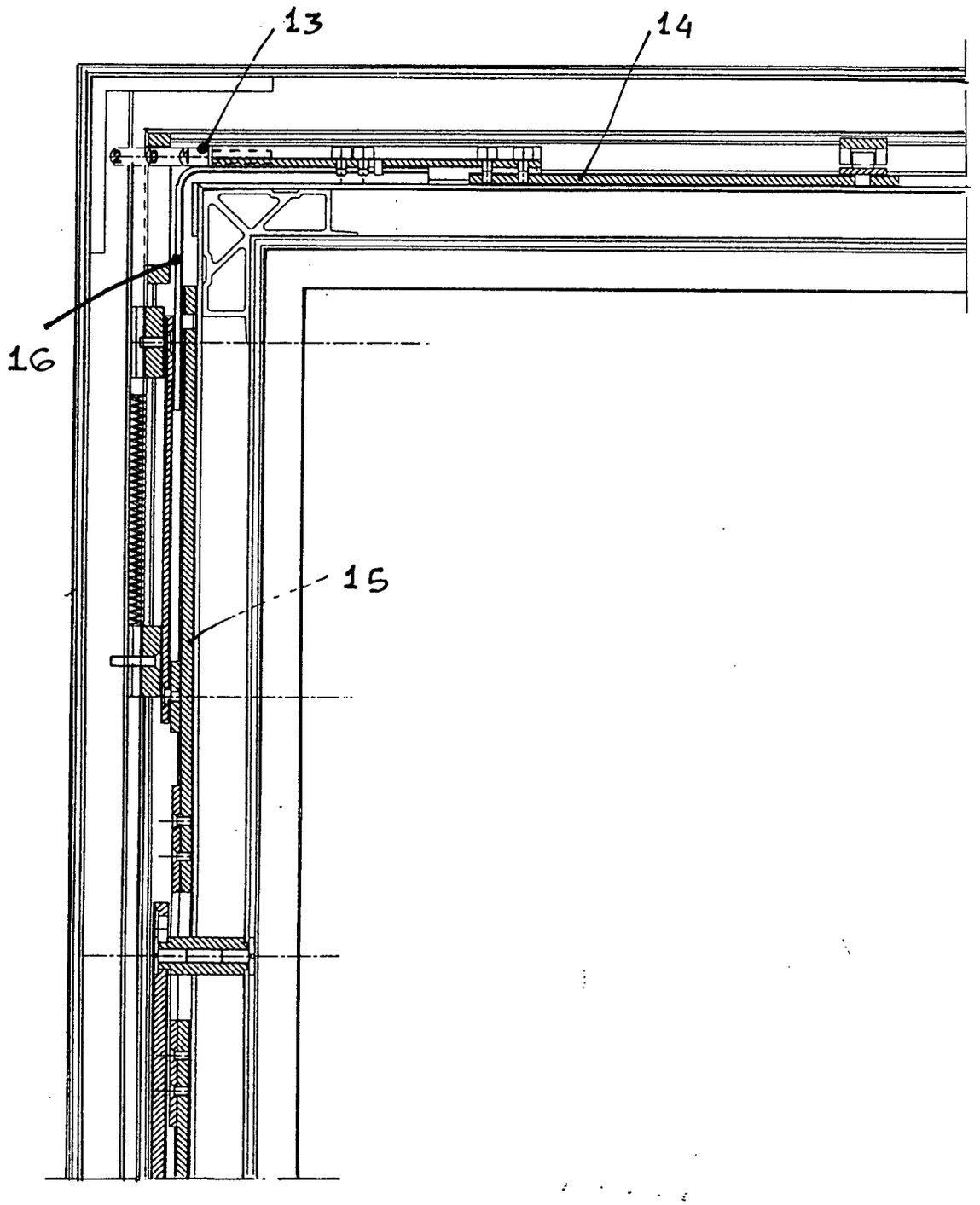

FIG. 7

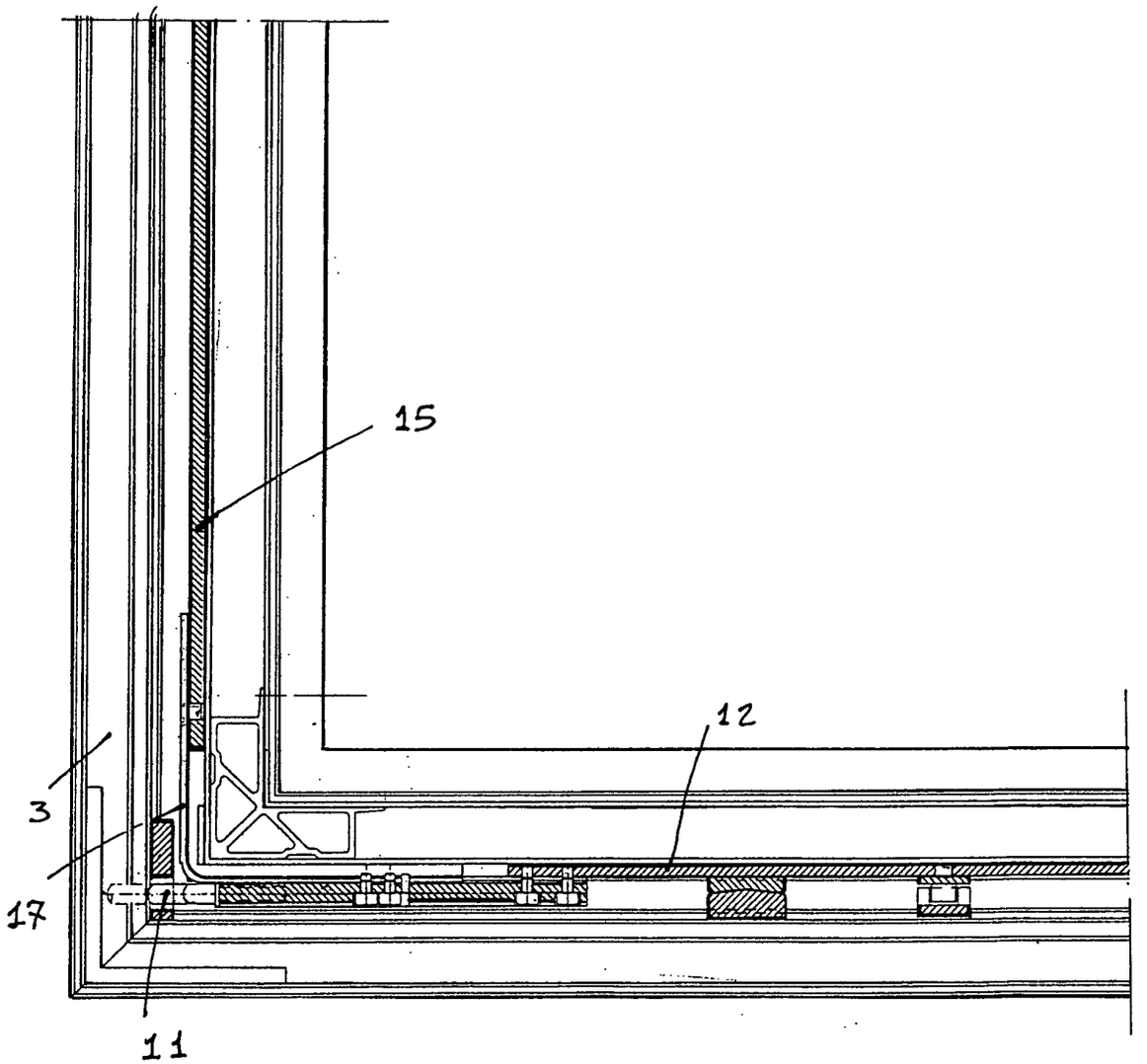

FIG. 8

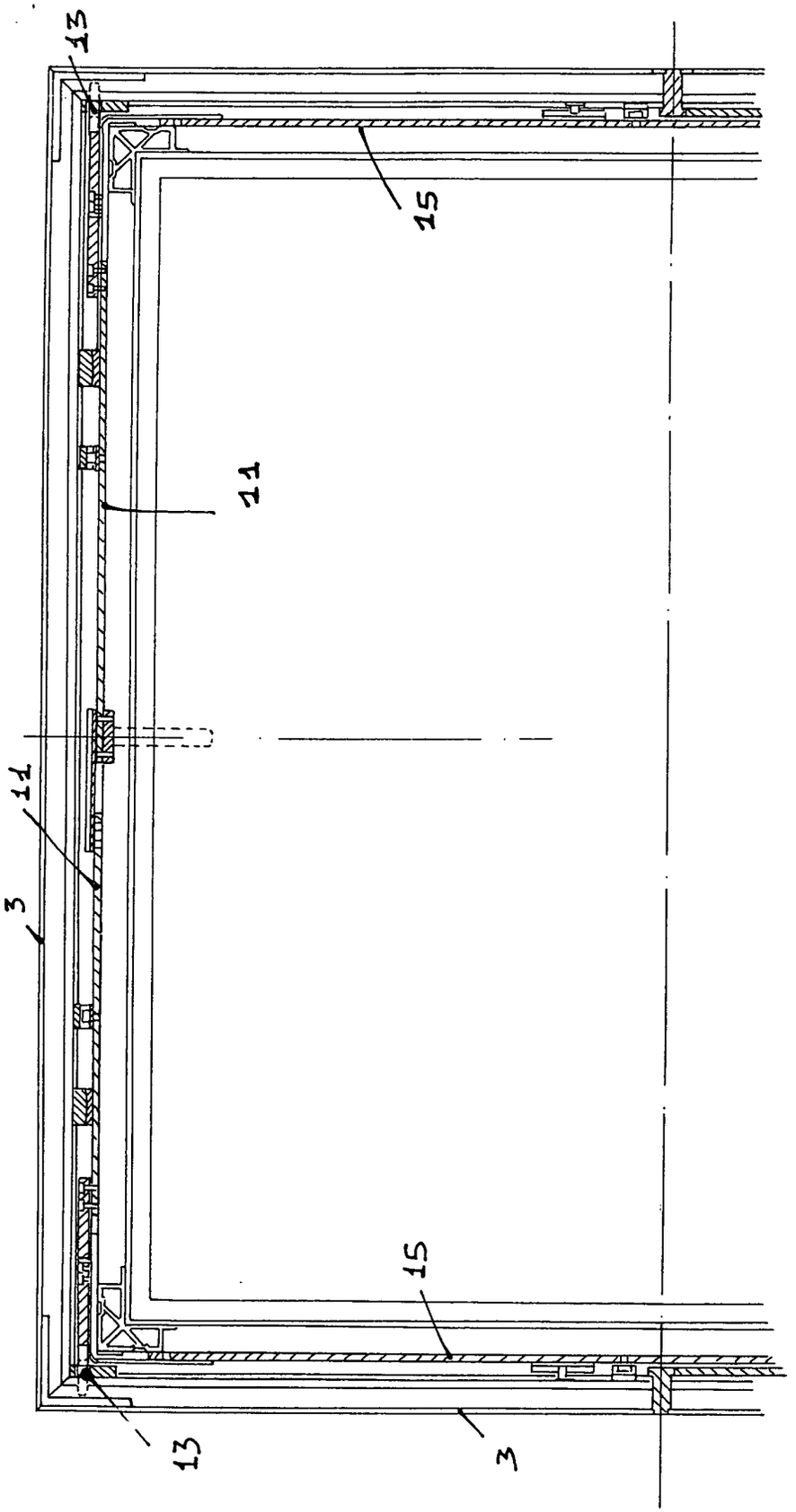

FIG. 9