Nov. 7, 1939. R. H. WAGNER 2,179,362

GUIDING MEANS FOR DOORS

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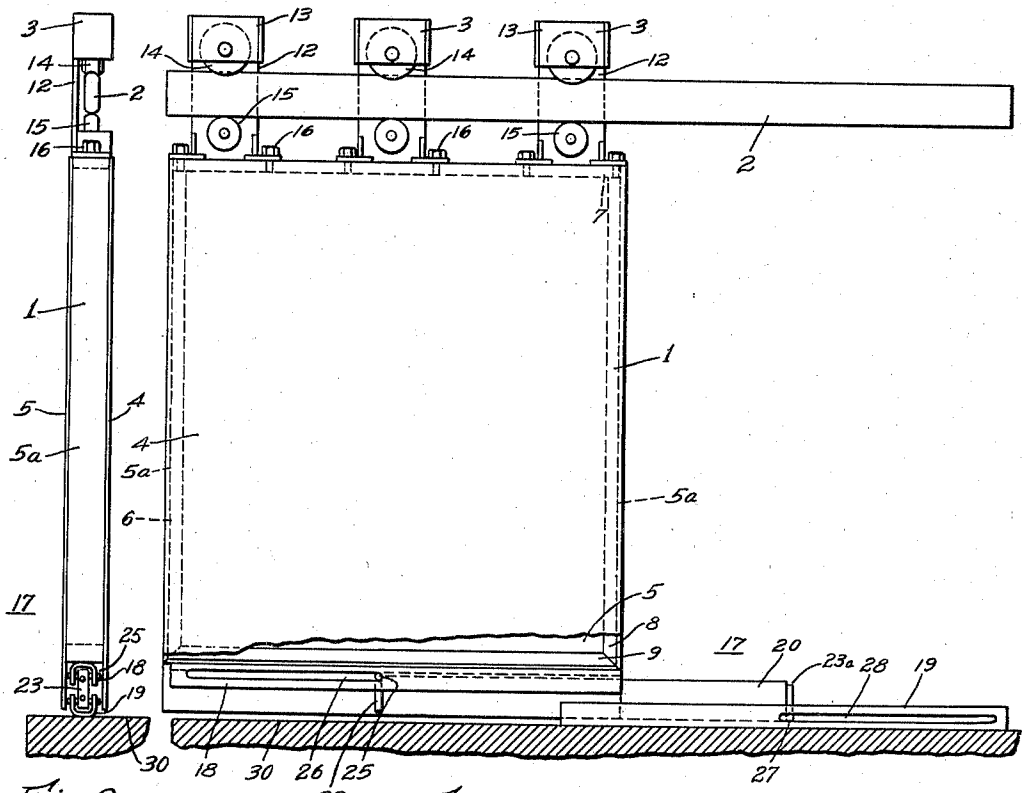


Fig. 2.

Fig. 1.

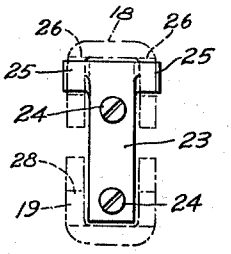


Fig. 5.

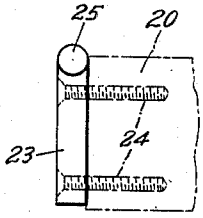


Fig. 4.

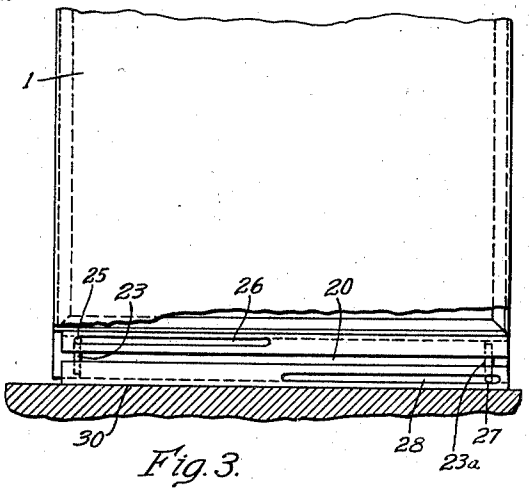


Fig. 3.

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GUIDING MEANS FOR DOORS

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3 Claims. (Cl. 16—90)

My invention relates to guiding means for doors and more particularly to guiding mechanism for the bottom portions of horizontally sliding doors for elevators.

In the majority of elevator installations, horizontally sliding doors are used at the floor landings. This type of elevator door is usually supported by means of hangers which are secured to the door tops and which are provided with small wheels or rollers that ride on a track rail mounted above the door so that the door will slide easily into and out of its closed position. Where the door is supported by sliding hangers, it is necessary to provide some means for guiding and maintaining its lower portion in line with the doorway opening and for preventing it from swinging out of its vertical position.

Usually the guiding means heretofore provided has included a groove or channel in the sill for the door, and one object of my invention is to provide a guiding means for horizontally sliding doors which will not require a channel or groove in the door sill.

Another object is to provide a guiding means that may be readily and easily applied to doors which are already installed in elevator systems.

A further object is to provide a guiding means which shall be simple and effective in operation and economical to manufacture, install and maintain in operation.

For a a better understanding of my invention, reference may be had to the accompanying drawing, in which:

Figure 1 is a view in front elevation of a horizontally slidable elevator door provided with a guiding means constructed in accordance with my invention, the lower portion of the door being broken away to provide a clear illustration of the guiding means;

Fig. 2 is a view taken from the left-hand edge of the door shown in Fig. 1;

Fig. 3 is a view in front elevation of the lower portion of the door shown in Fig. 1 in its open position;

Fig. 4 is an enlarged view in front elevation of the stop member applied to the front end of the guiding stick in the guiding means shown in Fig. 2; and

Fig. 5 is a view in side elevation of the stop member shown in Fig. 4.

Referring more particularly to the drawing, I have illustrated a horizontally slidable door 1 suspended from a track rail 2 by means of a plurality of hangers 3. The door may be constructed in any suitable manner as by providing a front panel sheet 4, a rear panel sheet 5 and edge panels 5a, secured to each other by means of bracing bars 6, 7, 8 and 9 which are disposed between the sheets at their outer edges. The bracing member 9 is disposed above the lower edge of the door a sufficient distance to permit the installation of a door guiding means.

Each of the hangers 3 comprises a vertical sheet 12 of metal having a bent-over portion 13 which houses a roller 14 disposed to ride upon the upper edge of the track rail 2. A guarding roller 15 is mounted on the vertical strip 12 in position to engage the lower edge of the track rail 2 to prevent the door from leaving its correct position on the track rail. Each of the hangers is attached to the upper edge of the door by means of a pair of bolts 16 which extend downwardly into the bracing strip 7. The doors may be moved along the track rail 2 either by hand or by any suitable door operating mechanism (not shown).

In sliding doors of this character it is necessary to provide a guiding means for preventing the lower edge portion of the door from swinging sideways as the door slides along the track rail 2. In accordance with my invention, I have provided a novel guiding means 17 for the bottom portion of the door comprising an upper guiding member 18, a cooperating lower guiding member 19 and an intermediate guiding member 20 disposed in engagement with the upper and the lower guiding members.

The upper guiding member 18 is shown as an inverted channel member secured to the underside of the brace member 9 between the side panels 4 and 5 of the door and extends approximately the full width of the door. The lower guiding member 19 is illustrated as an upwardly facing channel member of approximately the same length as the channel member 18 and as mounted on the floor in position to be under the door when it is in its open position, but not extending over the door sill 30 of the doorway. The intermediate guiding member 20 is illustrated as a guiding stick having its upper portion disposed in the channel member 18 and its lower portion disposed in the lower channel member. The guide stick is not quite as long as either of the channel members and slides back and forth therein in accordance with the opening or closing movements of the door. The means for maintaining the guide stick in its guiding position regardless of the position of the door comprises a guide stop member 23 mounted on the front end of the guide stick and a guide stop member 23a mounted on the rear end of the guide stick by a plurality of screws 24. The guide stop 23 on the front end of the stick is T shaped, having a pair of side projections 25 at its upper end which extend into a pair of slots 26 in the portion of the door channel member extending toward the front edge of the door. The guide stop 23a mounted on the rear end of the guide stick has an inverted T shape, having a pair of projecting members

27 which extend outwardly from its lower end into a pair of cooperating slots 28 disposed in the rear portion of the channel member 19. Preferably, the slots 28 extend only through the rear half of the channel member 19.

The guide stick is preferably constructed of a composition of a phenolic condensation product graphite impregnated and provided with a suitable filler such as is sold under the trademark "Micarta". The graphite impregnation of the stick causes it to slide easily along the channel members in guiding the movement of the door

By the foregoing, it will be obvious that, when the door 1 is moved from its closed position shown in Fig. 1 to the right into its open position as shown in Fig. 3, it will slide along the guide stick 20 until the projecting members 25 strike the outer end of the slots 26 in the upper channel member 18. At this point, the channel member 18 will pick up the projections 25 on the guide stop member 23 and the further movement of the door 1 toward its open position forces the guide stick 20 to travel along in the channel member 19 until the projecting members 27 on the rear end of the guide stick reach the rear end of the slots 28 in the lower channel member 19, at which point, the guide stick 20 will be brought to a stop and further opening movement of the door 1 will be prevented.

In moving the door from its open position to its closed position, the door will again slide on the guide stick 20 until the projecting members 25 are picked up by the rear ends of the slots 26 and then the guide stick will be dragged along the channel member 19 until its projecting members 27 reach the outer end of the slot 28. At this point, the further outward movement of the guide stick toward the door closed position will be stopped and further closing movement of the door will be prevented.

It will be obvious that when the door is in its closed position, the guide stick 20 has the upper portion of its front half disposed in the channel member 18 and the lower portion of its rear half disposed in the channel member 19, thereby preventing any sideways swinging of the door when it is closed. Also, when the door is in its open position, the presence of the guide stick 20 in the cooperating channel members 18 and 19 will prevent any side swinging of the door. Also, it will be obvious that the door sill for the door may be entirely free of any grooves, tracks or other obstructions or dirt-collecting devices such as are usually necessary in horizontally sliding door constructions. It will also be obvious that the guiding means will not be likely to encounter any obstructions or dirt on the door sill when the door is being moved to its closed position. It will also be obvious that the rear portion of the guiding member 17, which is rather open in construction, will be located behind the necessary construction walls (not shown) necessary to cover the hatchway shaft at the side of the doorway. It will also be obvious that the guide construction may be used for sliding doors in many other positions as well as for the one illustrated in connection with elevators.

Although I have illustrated and described only one specific embodiment of my invention, it is to be understood that changes therein and modifications thereof may be made without departing from its spirit and scope.

I claim as my invention:

1. In a horizontal sliding elevator door supported by hangers on an overhead track rail, a guiding means comprising an inverted channel member mounted on the under edge of the door, an upwardly opening channel member mounted on the floor at one side of the doorway to be served by the door in position to be under the door in its open position but not extending over the door sill, a guiding stick disposed in the cooperating upwardly opening channel member and the inverted channel member, said guiding stick having less height than the height of the channel formed by the cooperating channel members, whereby the stick guides but does not support the door.

2. In a horizontal sliding elevator door supported by hangers on an overhead track rail, a guiding means comprising an inverted channel member mounted on the under edge of the door, an upwardly opening channel member mounted on the floor at one side of the doorway to be served by the door in position to be under the door in its open position but not extending over the door sill, a guiding stick disposed in the cooperating upwardly opening channel member and the inverted channel member. said guiding stick having less height than the height of the channel formed by the cooperating channel members, whereby the stick guides but does not support the door, a T-shaped member mounted on the outer end of the guide stick with its upper T-projections disposed in cooperating slots in the channel member attached to the door, and an inverted T-shaped member mounted on the rear end of the guide stick with its lower T-projections extending into cooperating channels in the lower channel member to limit the position of the guide stick to a guiding position in any opening or closing position of the door.

3. In a horizontally sliding elevator door supported by hangers on an overhead track rail, a guiding means comprising a horizontal upper channel member having a downwardly opening channel, means for securing said upper channel member to the lower portion of the door, a lower horizontal channel member having an upwardly opening channel, means for securing the lower channel member to the floor at one side of the door and in position to be under the door when it is in its open position, the upper channel member having slots in the portions of its side walls near the front edge of the door and the lower channel member having slots in the portions of its walls extending toward the rear edge of the door when in its open position, a horizontal guide stick having its upper portion disposed in the channel of the upper channel member and its lower portion disposed in the channel of the lower channel member, said guiding stick having less height than the height of the channel formed by the cooperating channel members, whereby the stick guides but does not support the door, a T-shaped stop member mounted on the front end of the guide stick with its side projections disposed in the slots of the upper channel member, and an inverted T-shaped stop member mounted on the rear end of the guide stick with its side projections disposed in the slots of the lower channel member whereby movement of the door will maintain the guide stick in guiding position in the channel members regardless of the position of the door.

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