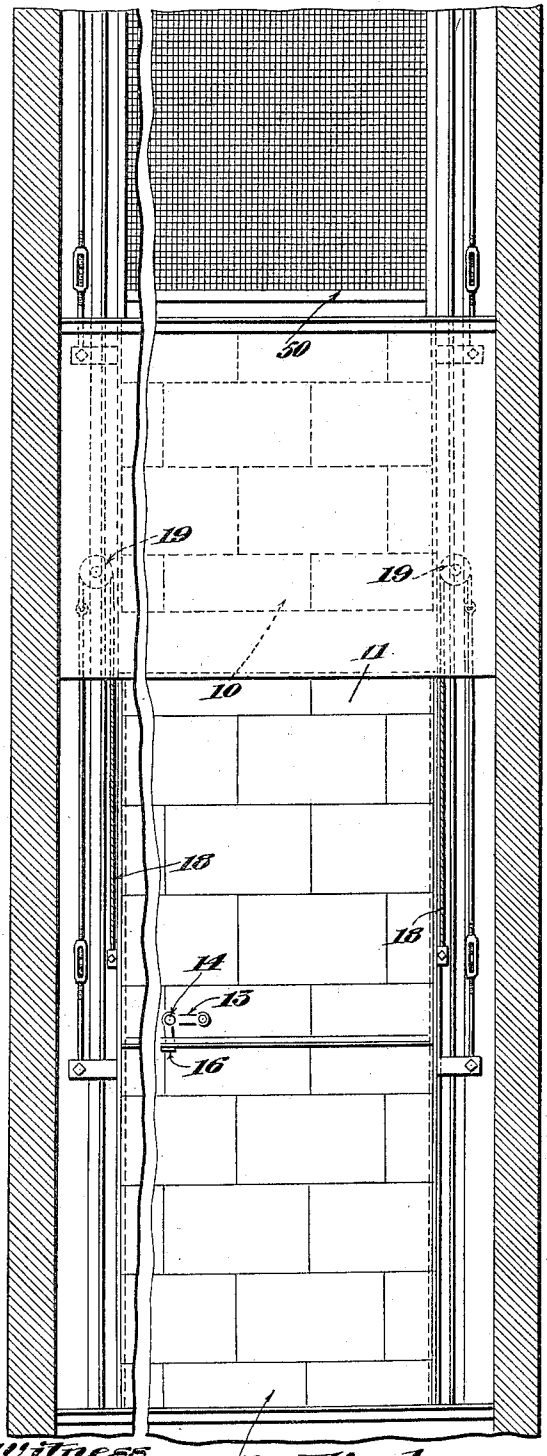
Feb. 19, 1924. 1,483,871

W. A. DAVIS

ELEVATOR GATE MECHANISM

Filed Oct. 11, 1919 2 Sheets-Sheet 1



Witness
M. G. Orgain

10 Fig. 1

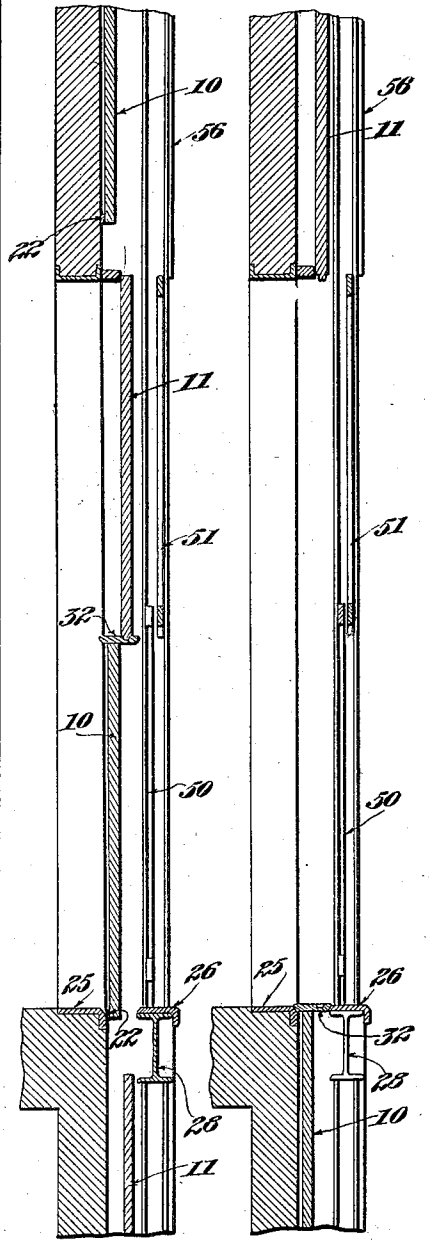


Fig. 2

Fig. 3

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ELEVATOR GATE MECHANISM

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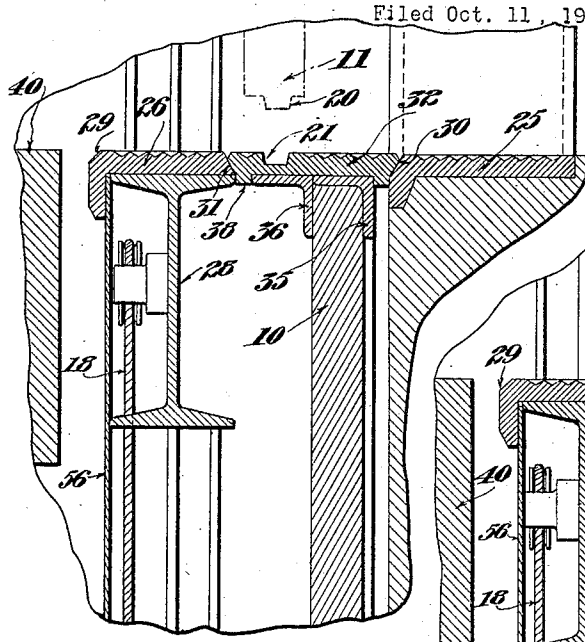


Fig. 4

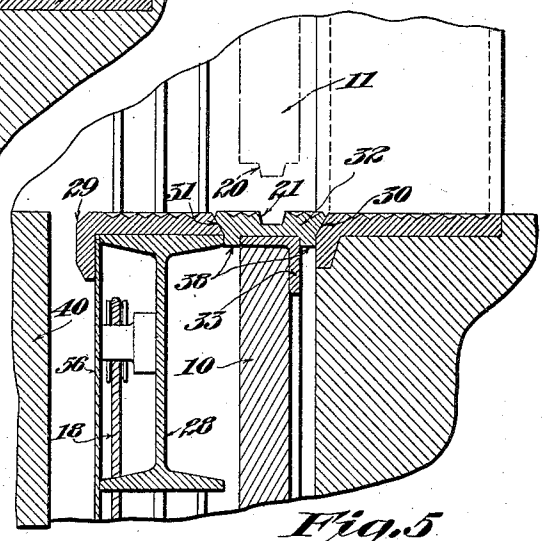


Fig. 5

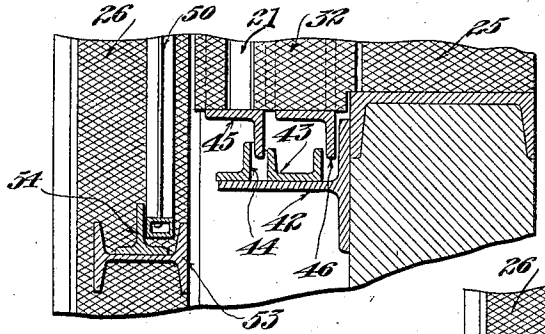


Fig. 6

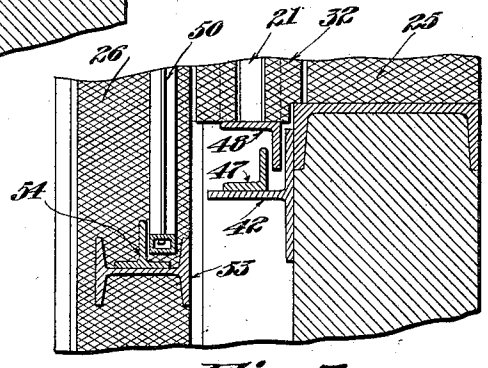


Fig. 7

Witness

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UNITED STATES PATENT OFFICE.

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ELEVATOR-GATE MECHANISM.

Application filed October 11, 1919. Serial No. 330,114.

To all whom it may concern:

Be it known that I, WILLIAM A. DAVIS, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Elevator-Gate Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to elevator gate mechanisms and more particularly to gate mechanisms of this character employed in connection with freight elevators.

The construction of gate mechanism ordinarily employed for guarding the openings of freight elevators, more particularly those of large capacity, comprises a vertically sliding two-part gate. When the gate is opened one part is raised above the door opening and the other part is lowered below the door opening in such a manner that the upper edge of the lower half is substantially flush with the floor level.

With this construction, when freight is trucked or vehicles are moved from the elevator to the building floor or vice versa, the wheels pass over and are supported by the lower half of the gate, and accordingly one object of the invention is to improve the construction of elevator gate mechanisms of this character in such a manner that the lower half of the gate is rigidly located in a fixed position when the gate is opened to afford a solid bridge over which the wheels of a truck or vehicle may pass.

With this object in view one feature of the invention contemplates the provision in a construction of this character of gate supporting members positioned upon opposite sides of the gate and extending throughout the length of the opening, these supporting members having inclined faces which are adapted to receive and cooperate with correspondingly inclined faces formed upon the top portion of the lower half of the gate to rigidly support the gate in a predetermined position with respect to the floor.

In the simplest and most efficient form of the invention which has yet been devised, one of the gate supporting members is formed as a part of the floor and the cooperating supporting member is in the form of an auxiliary threshold spaced away from the edge of the floor to allow passage of the gate therebetween and bridging the opening between the top of the gate and the adjacent edge of the elevator car.

In constructions of this type the gates constitute not only a guard for the elevator opening but a fire door which prevents the ingress or egress of air drafts to and from the elevator shaft when the opening is closed. It is consequently necessary that the doors shall be of substantial size and weight in order to accomplish the desired result.

It is another feature of the present invention to provide auxiliary gates which are operated during the use of the elevator and which slide inside of the heavy fire doors thus dispensing with the necessity of opening and closing the fire doors during the continued operation of the elevator.

Still further features of the invention consist in certain novel features of construction, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art from the following description.

In the accompanying drawings illustrating the preferred form of the invention, Figure 1 represents a front elevation of an elevator shaft embodying the improved gate mechanism; Figs. 2 and 3 are sectional elevations illustrating the position of the two-part sliding fire doors when opened and closed; Fig. 4 is a detail illustrating the manner in which the lower half of the sliding gate is supported upon opposite sides, this figure illustrating a construction in which the two halves of the sliding gate are offset with relation to one another; Fig. 5 is a view similar to Fig. 4, illustrating a construction in which the two halves of the gate mechanism slide in alinement with one another; Fig. 6 is a detail illustrating a section in plan of the ways for guiding two parts of the fire door gate when the two parts of the fire door are offset, as shown in Fig. 4; and Fig. 7 is a similar view illustrating the construction when the two parts of the door are respectively located in alignment, as shown in Fig. 5.

The gate mechanism, shown in the illustrated embodiment of the invention comprises a two-part sliding gate having the lower half indicated at 10 and the upper half indicated at 11. The two parts of the gate

may be constructed in the usual manner so that when closed, as shown in Fig. 1, they completely close the elevator opening and prevent the entrance or exit of fire. These doors are normally locked in closed position by a latch 13 pivoted upon the upper half of the door at 14 and having a lower inturned end 16 adapted to engage beneath a shoulder formed upon the lower half of the door 10. This latch is mounted upon the inside of the doors adjacent the elevator shaft so that it is accessible only to the operator. The two halves of the doors are connected in the usual manner through cables 18 passing over pulleys 19 which cause the two halves to move in opposite directions to open and close the door. When the main gate is closed a tongue 20 formed upon the lower face of the part 11 is seated in a corresponding groove 21 formed in the upper face of the part 10 to prevent any circulation of air between the two halves of the gate. In addition, the lower part 10 of the gate is provided with a projecting ledge 22 which closes the space between the edge of the gate and the floor threshold when the gate is closed.

When the two halves of the gate are separated to uncover the elevator opening, the lower half of the gate is rigidly supported upon opposite sides by supporting members 25 and 26 respectively. The supporting member 25 may preferably take the form of an angle iron secured to the floor, adjacent the elevator well, and the support 26 is preferably in the form of a channel beam 28 extending across the elevator opening between the permanent floor and the car and rigidly secured at its opposite ends in any suitable manner. This channel beam is provided with an angle iron 29 mounted upon the top, as shown in the drawings. The two supporting members 25 and 26 are provided with oppositely inclined faces 30 and 31 which receive correspondingly inclined faces formed upon a bar 32 secured to the top of the part 10 of the door. When the two parts of the sliding door are mounted in alignment with one another, this bar 32 may have the form shown in Fig. 5, whereas when the two parts are offset with relation to one another the bar may take the form shown in Fig. 4. In the first instance the bar is supported on top of a single angle iron 33 secured to the door, whereas in the second instance a pair of such angle irons 35 and 36 are provided as shown in Fig. 4. In either case the bar is provided with depending ledges 38 which embrace the angle iron and serve to locate the bar in the proper position relative to the door.

With this construction it will be observed that a substantially continuous floor, free from projections, is provided from the edge of the support 26 on to the permanent floor of the building so that a truck or vehicle may be transported from the floor of the car, indicated at 40, across the auxiliary threshold 26, the top of the gate 32 on to the floor 25. The provision of the inclined faces upon the supporting members between which the door is received constitutes an important feature of the present invention as these surfaces cause the door to be held rigidly from sidewise movements when a vehicle passes thereover, and at the same time, prevent the lodgement of dirt or other foreign material which would prevent the proper seating of the door. It will be observed from an inspection of Figs. 4 and 5 of the drawings that the depending ledges are provided with straight faces which engage between correspondingly shaped walls formed upon the opposite supports and serve to rigidly brace the door against sidewise movements. Upon referring to Figs. 6 and 7 of the drawings which illustrate the sections in plan of a portion of the gate mechanism, will be seen the method of guiding the two parts of the gate when these parts are offset and in alignment respectively. As shown in both constructions, a T-shaped beam 42 is mounted vertically at the side of the opening and in the construction shown in Fig. 6 has a U-shaped channel bar 43 and an angle bar 44 secured thereto which constitute guides for angle bars 45 and 46 secured to the edges of the parts 10 and 11. As shown in Fig. 7, the single angle bar 47 is secured to the T-beam 42 and forms a guide for angle bars 48 secured to both halves of the door. The two halves of the door may be offset with relation to one another when the height between the floors of the building is insufficient to permit doors upon adjacent floors to be opened at the same time. In case the height between the floors is sufficient for this purpose the two halves of the door may be supported in alignment.

According to the present invention the heavy fire doors are opened in the morning at the beginning of the day's work and closed at night, the elevator openings being guarded in the meantime by light auxiliary gates which are operated by the movement of the elevator car. This feature avoids the wear and tear incident to the raising and lowering of the heavy doors, as is now the case in existing constructions. Upon reference to the drawings it will be observed that a pair of light gates 50 and 51 are located within each elevator opening inside of the main doors, the lower gate of each pair when closed resting upon the top of the auxiliary threshold 26. These gates guard the entire elevator opening and slide in ways formed by a vertical channel 53 and a cooperating T-beam 54, shown in Figs. 6 and 7. The gates are connected with the elevator car in the usual manner so that when the car approaches the floor the gates are

raised automatically and when the car leaves the floor the gates are allowed to drop either by gravity or through the medium of the car itself. Inasmuch as this operating connection is old and well known in the art, it is not herein shown. If desired, the auxiliary gates may be separated from the elevator shaft by a partition 56.

It will be observed that with this construction the fire doors are normally opened and closed only once during each twenty-four hours, the auxiliary gates in the meantime serve to protect the opening. This feature is of great importance especially in those buildings having a large elevator opening necessitating large and heavy doors.

While it is preferred to employ the specific construction and arrangements of parts shown and described, it will be understood that this construction and arrangement is not essential except so far as specified in the claims, and may be changed or modified without departing from the broader features of the invention.

The invention having been described, what is claimed is:

1. An elevator gate mechanism comprising a two-part vertically sliding door at one side of the elevator well, the lower part being adapted to have the top edge flush with the floor level when the door is open, and two supporting members for the lower part of the door positioned upon opposite sides of the door and extending throughout the width of the door opening, the supporting members having inclined faces which are adapted to receive and rigidly support correspondingly inclined faces formed upon the upper portion of the lower door section to rigidly support the section in a predetermined position with the upper edge flush with the tops of the supporting members.

2. An elevator gate mechanism comprising a two-part sliding gate, an angle bar secured to the threshold of the building floor adjacent the gate and having an inclined face, an auxiliary threshold extending across the elevator opening and spaced away from the edge of the building floor to permit the passage of the gate therebetween, the auxiliary threshold bridging the space between the top of the gate and the floor of the elevator car and having a face inclined oppositely to that of the angle bar, and a bar supported upon the top of the lower part of the gate and having oppositely inclined faces adapted to be received between and cooperate with the inclined faces formed respectively upon the angle bar and auxiliary threshold to form a rigid bridge between the auxiliary threshold and building floor.

3. The combination with a vertical elevator shaft having an opening extending thereinto above a building floor of a two part fire door sliding vertically within the opening at one side of the elevator shaft, means for rigidly supporting the lower part of the door when the latter is open with the upper edge substantially flush with the building floor, a light auxiliary gate located between the fire door and elevator shaft, and guide members for causing the auxiliary gate to move vertically.

4. An elevator gate mechanism comprising a two-part sliding door, an angle bar secured to the threshold of the building floor adjacent the door and having an inclined face, an eye beam extending across the elevator opening and spaced away from the edge of the building floor to permit passage of the door therebetween, an auxiliary threshold mounted upon the eye beam and bridging the space between the top of the door and the floor of the elevator car and having a face inclined oppositely to that of the angle bar, and a grooved bar supported upon the top part of the lower door section and having oppositely inclined faces adapted to be inserted between and cooperate with the inclined faces formed respectively upon the angle bar and auxiliary threshold to form a rigid bridge between the auxiliary threshold and building floor.

5. The combination with a vertical elevator shaft having an opening extending thereinto from above a building floor of an auxiliary threshold extending across the opening at substantially the level of the building floor and spaced therefrom to permit a sliding door to be received between the threshold and edge of the building floor, a two part vertically sliding door, the lower part being adapted to have the top edge substantially flush with the floor level when the door is open, and means for rigidly supporting the lower part of the sliding door from the auxiliary threshold when the door is open with the top edge of the lower part substantially flush with the building floor whereby a rigid and continuous bridge is provided between the elevator car and the building floor.

WILLIAM A. DAVIS.