Oct. 20, 1931. A. C. PALM 1,828,065

ELEVATOR DOOR

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Fig. 1.

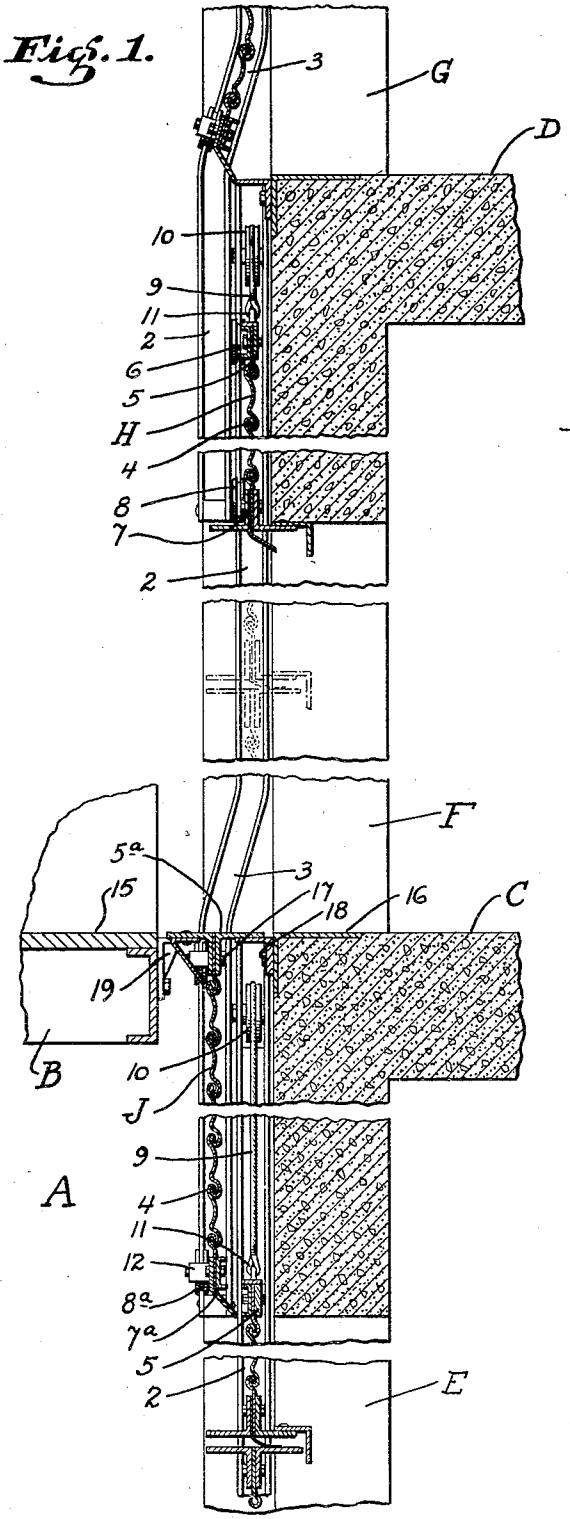
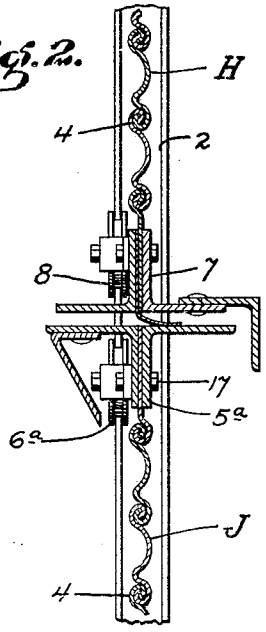


Fig. 2.



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Fig. 3.

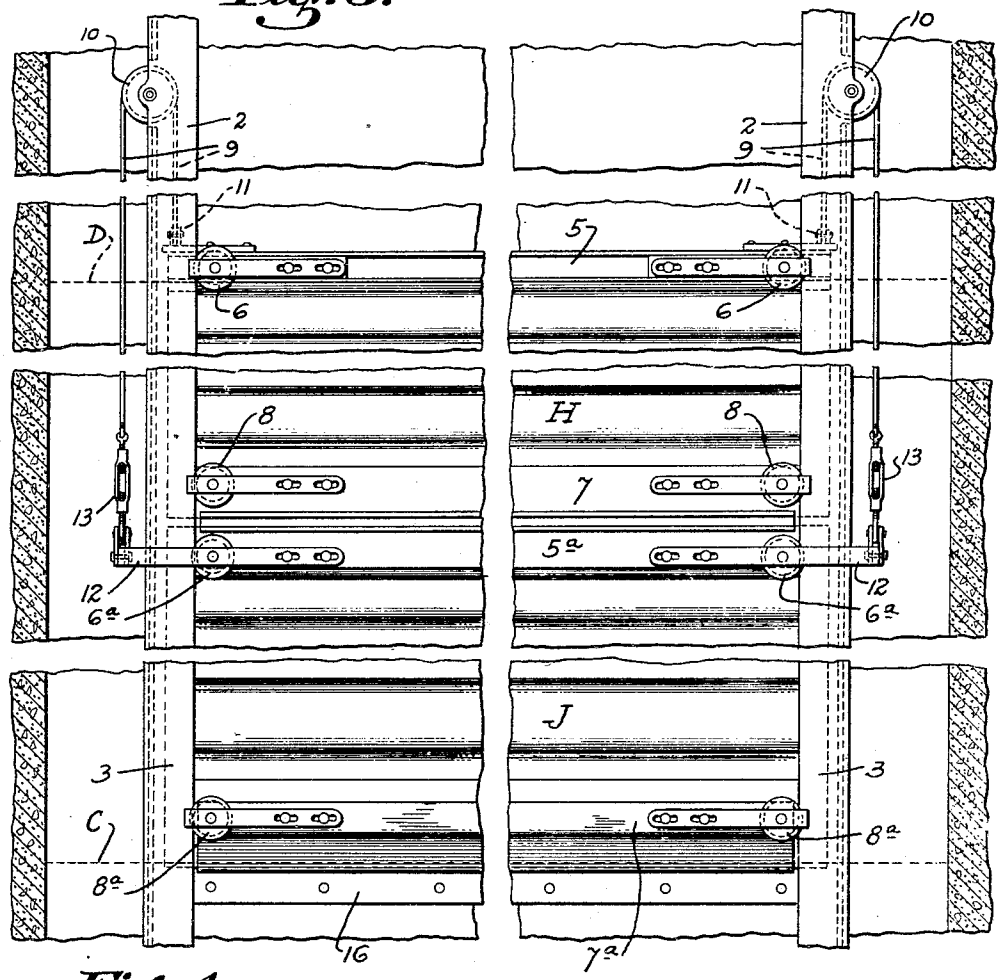
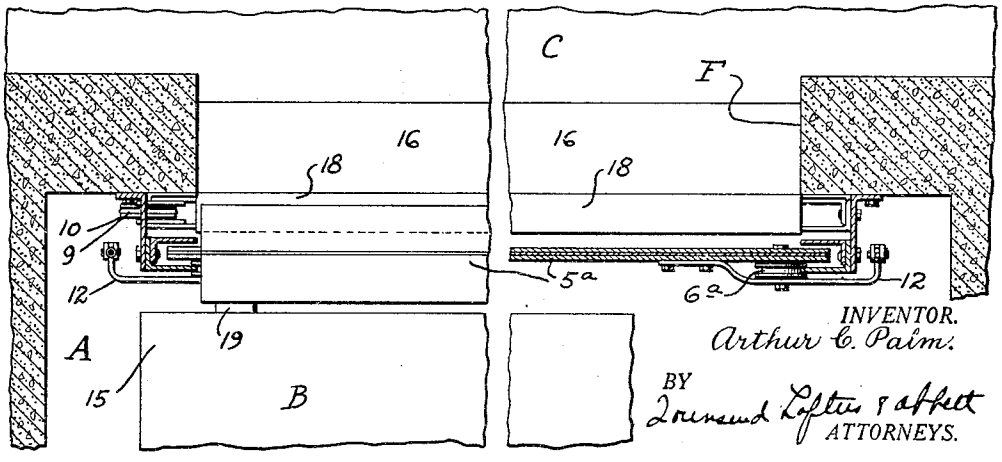


Fig. 4.



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Fig. 5.

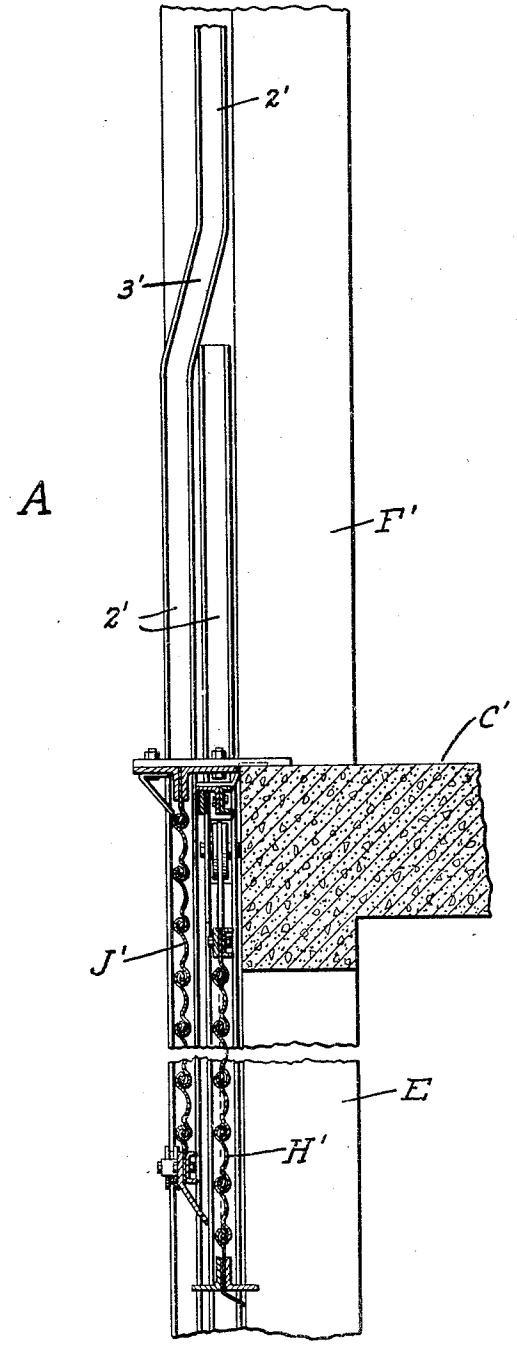
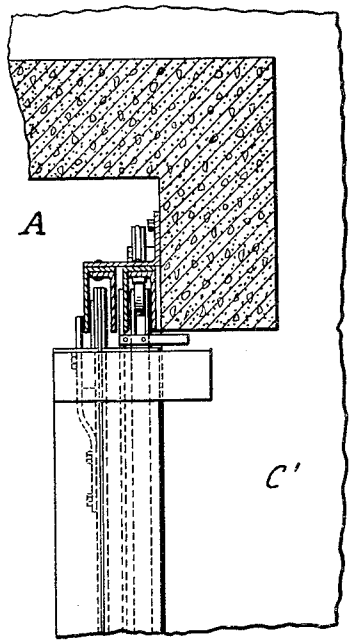


Fig. 6.



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Patented Oct. 20, 1931 1,828,065

UNITED STATES PATENT OFFICE

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ELEVATOR DOOR

Application filed June 25, 1930. Serial No. 463,652.

This invention relates to elevator doors of the counterbalanced type such as used in freight elevators and the like, and especially to an elevator door wherein a trucking platform is provided to completely bridge the space or gap between the floor sill of a building and the floor of the elevator.

Doors of this character are not new and are divided into two general types; one type in which the material of the door is relied upon in a large measure to support the trucking platform; and a second type in which the load on the trucking platform is transmitted to the floor sill of the building and stop members secured in the guide rails of the door. Neither structure, however, provides a trucking platform which completely bridges the gap between the floor sill of the building and the floor of the elevator, nor is any portion of the load on the trucking platform transmitted to the floor of the elevator.

The object of the present invention is to generally improve and simplify the construction and operation of elevator doors of the character described; to provide an elevator door and a co-operating trucking platform which completely bridges the gap between the floor sill of a building and the floor of an elevator so as to provide a continuous even trucking surface between the floor of the elevator and the floor of the building; to provide a trucking platform which is adapted to be supported both by the floor of the elevator and the floor sill of the building; and further, to provide an elevator door and a co-operating trucking platform which is laterally movable during opening of the door so as to render it possible to completely span the space or gap between the floor of the elevator and the floor of the building.

The invention is shown by way of illustration in the accompanying drawings, in which—

Fig. 1 is a central vertical section of a portion of an elevator shaft in a building, said section showing a portion of an elevator and a portion of two floors in a building, said section also showing the door openings leading from the floors to the elevator and the doors whereby said openings are closed,

Fig. 2 is an enlarged section of a portion of two co-operating doors,

Fig. 3 is a section taken at right angles to Fig. 1 and showing a set of doors in closed position,

Fig. 4 is a plan section of one of the doors,

Fig. 5 is a section similar to Fig. 1 showing a modified form of door structure, and

Fig. 6 is a partial plan section of the door structure shown in Fig. 5.

Referring to the drawings in detail and particularly Figs. 1 to 4, inclusive, A indicates an elevator shaft, B an elevator operable therein, C and D the second and third floors of a building, E a door opening leading to the first floor of a building, F a door opening leading to the second floor, and G a door opening leading to the third floor.

Two doors are employed as a closure for each door opening, there being an upper door such as indicated at H and a lower door such as indicated at J. The doors are guided between guide rails 2 and these guide rails are offset adjacent their lower ends as indicated at 3. The doors are of the flexible or curtain type and consist of pivotally connected interlocked slats such as indicated at 4. The uppermost slat of the door H is secured to a cross bar 5 on the outer ends of which are mounted adjustable guide rollers 6 while the lowermost slat in the door H is attached to a cross bar 7 which is provided with adjustable guide rollers 8. The slats in the lower door J are similarly constructed and are connected to an upper cross bar 5*a* having guide rollers 6*a* and to a lower cross bar 7*a* provided with guide rollers 8*a*. The doors are vertically movable in the guide rails and the provision of guide rollers 6*a*, 8*a* at the opposite corners insures free movement and positively prevents any binding action. The doors are of the counterbalanced type and as such move in opposite directions when opening, the upper door H moving upwardly and the lower door J moving downwardly during the opening operation. One door can thus counterbalance the other and this is accomplished by connecting the doors through cables 9 passing over guide sheaves 10, the cables being secured at their

upper ends as at 11 to cross bar 5 and at their lower ends to brackets 12 secured to the cross bar 5*a*, turn buckles 13 being mounted in the cables to insure perfect adjustment of the doors.

The doors will assume a common plane in the door openings E, F and G when closed and the upper doors will move vertically in this common plane during the opening operation, while the lower doors J will move both vertically and laterally due to the offset 3 in the guide rails. This lateral movement is important as will hereinafter appear, as it first of all permits the provision of a trucking platform which is adapted to completely bridge the space between the elevator floor 15 of the elevator B and the sill plate 16 of the building floor; and secondly, it permits the use of this type of doors where the space between the door openings and the floor C is limited as shown in Fig. 5.

The trucking platform is, in this instance, represented by the bar indicated at 5*a*. This bar consists of two angle bars bolted together as indicated at 17 in Fig. 1. As such it forms the upper edge of the door or curtain or it may be said that it is carried by the upper edge of the door or curtain. The sill 16 is provided with an angle bar 18 which forms a ledge or shoulder to support one side of the trucking platform and an angle bar or lugs 19 are secured to the side of the elevator so as to form a supportfor the opposite side of the trucking platform. By supporting the trucking platform in this manner the door J is relieved of all loads, strains and stresses. Furthermore, the load imposed on the trucking platform is evenly distributed between the floor sill of the building and the floor of the elevator and a uniform smooth, flat trucking surface is formed between the floor of the elevator and the floor of the building, the lateral movement of the door J and the trucking platform during the opening operation insuring complete bridging of the gap between the elevator and the floor of the building.

In the structure shown in Fig. 1, it will be understood that a flexible door is required as indicated at J so as to permit lateral movement of the trucking platform, but flexibility of the upper door indicated at H is not essential as this moves vertically in a common plane both during the opening and closing operation, hence a rigid panel door may be employed if desired.

In Fig. 5, it will be noted that one floor is shown at C′ and two door openings, one at E′ and one at F′. In this instance the space between the upper edge of the door opening E and the floor surface C is not sufficient to provide space for the door indicated at H′. If this door is to be opened it must move upwardly into the door opening F′, hence the guide rail has been extended as shown at 2′ while the offset in the guide rail 3 has been raised as indicated at 3′. With this arrangement the door J′ still moves laterally and vertically in its guide rail and so does the door indicated at H′, the only difference being that when the door H′ is opened it will assume a position directly behind the door indicated at J′. Hence the importance of offsetting the guide rail 3 or 3′ has two functions, first that of transmitting lateral movement to the trucking platform so as to insure complete bridging of the gap between the elevator floor and the floor of the building; and secondly, to provide space for two doors where this is necessary as shown in Fig. 5.

While certain features of the present invention are more or less specifically described, I wish it understood that various changes may be resorted to within the scope of the appended claims. Similarly, that the materials and finishes of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. The combination with an elevator and the shaft in which it operates, said shaft having a door opening leading to a floor in a building, of a vertically movable door normally forming a closure for said opening, said door when opened adapted to descend below the sill of the opening, and a trucking platform carried by the upper edge of the door and adapted to completely bridge the space between the sill of the building and the floor of the elevator.

2. The combination with an elevator and the shaft in which it operates, said shaft having a door opening leading to a floor in a building, of a vertically movable door normally forming a closure for said opening, said door when opened adapted to descend below the sill of the opening, a trucking platform carried by the upper edge of the door and adapted to completely bridge the space between the sill of the building and the floor of the elevator, and means whereby said trucking platform is supported when in trucking position both by the sill and the floor of the elevator.

3. The combination with an elevator and the shaft in which it operates, said shaft having a door opening leading to a floor in a building, of a vertically movable door normally forming a closure for said opening, said door when opened adapted to descend below the sill of the opening, a trucking platform carried by the upper edge of the door and adapted to completely bridge the space between the sill of the building and the floor of the elevator, means on the sill of the building to receive and support one side of the trucking platform, and means on the eleva-

tor to receive and support the opposite side of the trucking platform, said supporting means insuring a level trucking surface between the floor of the building and the floor of the elevator.

4. The combination with an elevator and the shaft in which it operates, said shaft having a door opening leading to a floor in a building, of a vertically movable door normally forming a closure for said opening, said door when opened adapted to descend below the sill of the opening, guide means for the door whereby the door is moved laterally towards the elevator while descending, and a trucking platform carried by the upper edge of the door and actuated by the guide means to completely bridge the space between the sill and the floor of the elevator.

5. The combination with an elevator and the shaft in which it operates, said shaft having a door opening leading to a floor in a building, of a vertically movable door normally forming a closure for said opening, said door when opened adapted to descend below the sill of the opening, guide means for the door whereby the door is moved laterally towards the elevator while descending, a trucking platform carried by the upper edge of the door and actuated by the guide means to completely bridge the space between the sill and the floor of the elevator, and means whereby said trucking platform is supported when in trucking position both by the sill and the floor of the elevator.

6. The combination with an elevator and the shaft in which it operates, said shaft having a door opening leading to a floor in a building, of a door forming a closure for said opening, said door when opened adapted to descend below the sill of the opening, a trucking platform carried by the upper edge of the door, and guide means whereby the trucking platform is moved laterally towards the elevator while descending so as to completely bridge the space between the sill of the floor building and the floor of the elevator.

7. The combination with an elevator and the shaft in which it operates, said shaft having a door opening leading to a floor in a building, of a door forming a closure for said opening, said door being flexible and when opened adapted to descend below the sill of the opening, a trucking platform carried by the upper edge of the door, and guide means whereby the door and the trucking platform are moved laterally toward the elevator while descending so as to completely bridge the space between the sill of the floor and the floor of the elevator.

8. The combination with an elevator and the shaft in which it operates, said shaft having a plurality of door openings leading to the several floors in the building, a door for each of said openings to form a closure therefor, said doors being all positioned on a common plane when in closed position, and guide means for the doors whereby the doors may be moved vertically while opening the same and at the same time laterally so that one door may be positioned exterior of an adjacent door when in an open position.

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