Sept. 1, 1925. 1,551,687

C. W. PEELLE

ELEVATOR DOOR

Filed Dec. 12, 1924

Fig. 1.

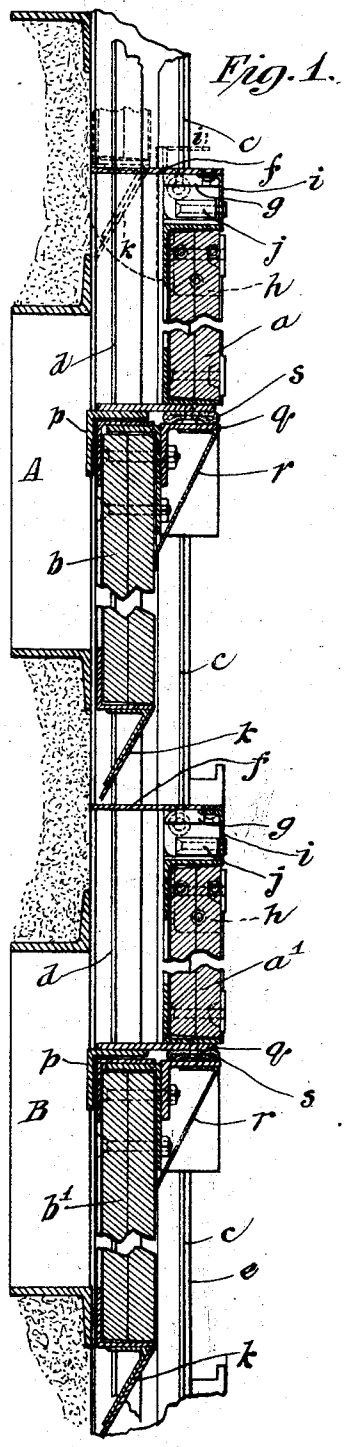


Fig. 2.

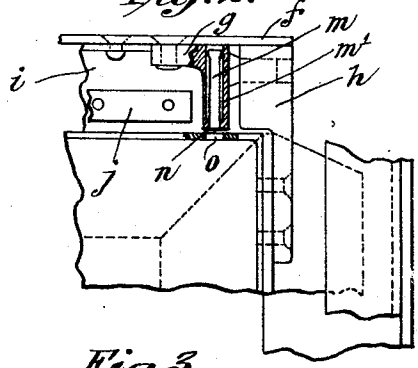


Fig. 3.

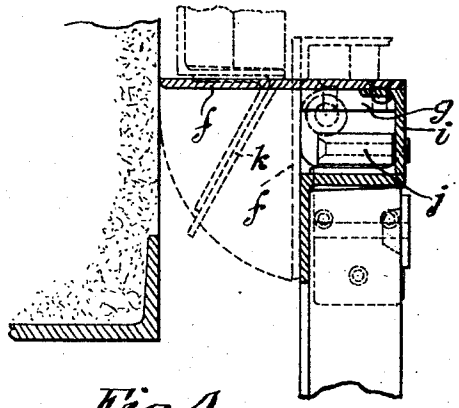
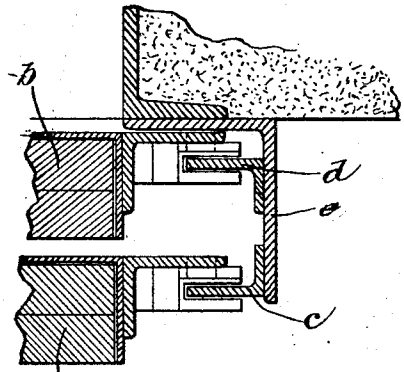


Fig. 4.



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ATTORNEY.

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UNITED STATES PATENT OFFICE.

CHARLES W. PEELLE, OF NEW YORK, N. Y., ASSIGNOR TO THE PEELLE COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

ELEVATOR DOOR.

Application filed December 12, 1924. Serial No. 755,443.

To all whom it may concern:

Be it known that I, CHARLES W. PEELLE, a citizen of the United States, residing at Douglas Manor, in the borough of Queens, city of New York, county of Queens, and State of New York, have invented certain new and useful Improvements in Elevator Doors, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to elevator doors, and more particularly to fireproof warehouse elevator doors of the so-called counterbalanced pass-type.

The word "pass-type" when applied to elevator doors refer broadly to a construction and arrangement of doors in which the two vertically and oppositely movable sections of a door, connected by flexible chains, or other connecting means passing over sheaves, during their opening movement, overlap door sections at adjacent door openings above or below, or both, the door opening closed by any particular door. This pass-type construction of door is employed when the door opening at any floor is of a height which does not afford sufficient space above or below that opening to receive a door section when a door is fully open, even though the doors at the adjacent floors are closed. In some instances the space between the lintel of one door opening and the sill of the opening above will not exceed from twelve to eighteen inches, while the door sections themselves may be five or six feet in height.

For many years fireproof elevator doors have been constructed in which the opposite and vertically movable sections of each door are each mounted upon separate rails or guides. These rails or guides have extended vertically in parallel relation to each other, both rails commonly being continuous from the top to the bottom of the shaft, or throughout the entire series of door openings closed by the counterbalanced doors. With this rail construction, the sections of each door have vertical movement in opposite directions but in parallel planes. In later developments of the pass-type of door, a rail construction has been employed by which when the doors are closed their sections will be in substantially the same vertical plane, but by which, during the opening movements, the different sections will have a horizontal component of movement permitting them to pass from this plane to a parallel plane so as to pass or lap a door at an adjacent door opening. This last named pass-type of door requires for its convenient installation and operation, a spacing of approximately eighteen inches between the sill of one door opening and the lintel of the opening below, or vice versa, and doors now being extensively manufactured have been found adequate to meet the conditions where sufficient space is available for their proper installation. This construction of door, from the fire retardant viewpoint, has the advantage that when it is closed, both door sections are brought close to the wall of a shaft so as to afford the minimum clearance about the door through which, in the event of fire, flames or gases may pass from a shaft to the floor of a building, or in the opposite direction.

The doors, the sections of which have movement in parallel vertical planes only, have heretofore possessed the disadvantage that from the viewpoint of fire protection, the spaces about and above the door section positioned more within the shaft, ordinarily the upper section of the door, are such that they permit flames, gases and water to pass the door section, and hence have never been approved by the authorities as affording adequate fire protection.

With the above conditions in mind, I have provided an elevator door in which the two sections have simultaneous, vertical movement in opposite directions in parallel vertical planes, one of these sections, the one positioned more within the shaft, being provided with a shield so constructed that when the door at any opening is closed, and the door at the adjacent opening is also closed, it will automatically assume a position to substantially completely close the gap between this door section and the elevator shaft, while being capable of being moved to a position which will permit the door section carrying same to pass a door section

at the adjacent floor, or the door section at this floor to pass the door carrying the shield. This lintel shield, which may be aptly termed a movable lintel, is so constructed and mounted upon the door as to afford no material spaces or passages between it and the top of the door carrying it, when the latter is either in the open or in the closed position. Furthermore, this movable lintel or shield in its functioning is entirely automatic, its movement from its operative position in closing the gap between the door section and the wall of a shaft during the movement of a door cooperating therewith, resulting from the opening and the closing movements of the door carrying it, or the door at the adjacent floor, so that under normal conditions, or when a door is closed, a barrier effective to prevent the passage of flames, smoke, gases and water to or from an elevator shaft about the door section is afforded.

Of course it will be understood that the rail structure affords a barrier at both side edges of the door section, and that the other door section serves as a barrier at the bottom thereof.

To secure this result and avoid the presence of springs, I preferably so construct this movable lintel or shield that while it is permitted to have pivotal movement to and from its closed position, it will be so overweighted as to cause its automatic action.

In the event of a fire, and the direction of a stream of water from a fire hose against the top of a door, there is always likelihood that the force of this stream, if directed against this lintel or shield, will so actuate it as to permit the water to pass through the gap between the door section and the wall of a shaft and also permit flames, smoke or heated gases to pass between the door sections carrying the shield and the shaft. To obviate this condition I provide means controlled by a fusible medium, whereby in the event of excessively high temperatures within the shaft, the movable lintel or shield will be positively locked against movement, and thus obviate the objectionable conditions above referred to.

A door embodying my invention has been found to afford a degree of protection with a type of door having sections movable in parallel vertical planes, which has not heretofore been attained by doors of this construction, and one which has been approved by the authorities whose duty it is to pass upon the adequacy of door structures so far as the reduction of the fire hazard is concerned.

The invention consists primarily in an elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, and means acting upon said shield whereby pivotal movement thereof is permitted upon engagement between same and a door section at an adjacent landing, to afford clearance for relative movement of said door sections, and said shield is caused to automatically assume its normal position when it is disengaged from said other door section; and in such other novel features of construction and combination of parts as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings,

Fig. 1 is a vertical section of elevator doors embodying my invention, upon adjacent floors;

Fig. 2 is an enlarged view of a portion of the upper door section from the floor side of the door;

Fig. 3 is an enlarged vertical section of the portion of the door shown in Fig. 2; and

Fig. 4 is a horizontal section showing the rail construction and a portion of the movable lintel or shield.

Like letters refer to like parts throughout the several views.

In the embodiment of the invention shown in the drawings, A indicates the door opening upon one floor of a building, and B the opening upon the floor below. Closing the opening A is an elevator door composed of an upper section *a* and a lower section *b*, these sections being mounted respectively upon guides or rails *c* and *d* which extend throughout substantially the entire height of a shaft, similar guides or rails being employed adjacent each jamb of the door opening within the shaft. The rails *c* and *d* are carried by what is known as a wall angle *e* which serves as a barrier to prevent flames, gases and smoke from passing about the sides of the various door sections *a* and *b*.

The lower door opening B is closed by a door similar to that closing the opening A, consisting of two sections *a'* and *b'* mounted upon the rails *c* and *d* respectively.

The door at each opening A and B has the upper section *a* or *a'* mounted upon the rail *c*, which are positioned inwardly of the shaft with relation to the rails *d*, and the lower section *b* or *b'* mounted thereon. By this construction a pocket is formed between each of the sections *a*—*a'* and the wall of the shaft, adapted to receive the lower section, as *b*, of the door closing the opening of the floor above, thus permitting the upper

section of the door upon one floor to have its top edge positioned in close proximity to the lower edge of the lower door section on a floor immediately above. This construction of the doors, also permits the upper section at one opening to pass the lower section of a door at the landing above, during the opening movement of a door. Hence when the door sections are arranged as described, the upper section of any door may pass the lower section of the door above, and the lower section of that door may pass the upper section of the door below, which is a condition characteristic of the so-called "pass-type" of doors.

The sections *a*—*b* and *a'*—*b'* are connected by the usual flexible connecting means common to doors of the so-called counterbalanced type, permitting and causing the simultaneous movement of these sections in opposite directions upon parallel vertical planes during the opening and closing movement of the doors.

The foregoing construction is old and well known in this art, my invention relating more particularly to a construction in which the pocket formed between the upper door section and the wall of the elevator shaft is so closed under all conditions as to prevent the passage of flames, smoke or gases across the top of this door to within the floor of a building, the opening of which is closed thereby, or from said floor to within the shaft.

Carried by the door section more remote from the wall of the shaft is a shield *f* which extends across the top of said door section, toward and into close proximity to the wall of a shaft above the lintel of the door opening A or B. I provide the door section with pivotal supports for this shield consisting of trunnion fitting *g* co-operating with brackets *h* secured to the opposite side bars of the door and projected upwardly of the top bar thereof. These fittings and brackets are so set that the trunnions come close to the face of the door presented toward the wall of a shaft and are so set below the shield as to permit the shield, when actuated by engagement with the section of the door above, to assume a position parallel with the section carrying it, and thus occupy the minimum of space and afford sufficient clearance at the entrance to the pocket for the reception of said section of the door for the opening on the floor above. Secured to or forming a part of the shield *f* is an angle *i* positioned adjacent the face of the door section presented inwardly of the shaft and extending into close proximity to, or in engaging relation with, the top bar thereof. The shield *f* and angle *i* extend for substantially the entire width of the door, in fact being slightly in excess of the width of the door to the extent of the thickness of the brackets *h*. The upper face of said brackets may be curved where required to permit the free pivotal movement of the shield *f* and angle *i*. The construction of said shield and said angle is such as to form a sufficiently tight joint above the top of the door section proper to form a barrier adequate to prevent the passage of any material volume of flames, smoke or gases.

Acting upon the shield *f* is means which will permit pivotal movement of said shield as a result of the engagement between same and the door section at an adjacent floor, whether this engagement results from the movement of the section carrying the shield or the movement of said other section, and cause said shield to assume its normal position in substantial engaging relation to the wall of the shaft upon the disengagement of same with the said other door section. This means in the form of the invention shown, comprises counterweights *j* secured to the angle *i* and projecting towards the wall of the shaft.

The weights *j* are so positioned toward the bottom of the angle *i* as to secure a normal overbalanced condition of the shield structure in its entirety, whether this shield is in position to close the gap between the door section carrying same and the wall of the shaft, or whether it is turned so as to position the shield parallel with the door as a result of the movement of the door section carrying same, or the co-operating door section closing an opening at the adjacent floor.

The construction of the shield, and the manner of mounting same as above described, results in a condition in which the shield *f* has a normal tendency to assume and remain in a horizontal plane, but under normal conditions is free to have pivotal movement as a result of relative movement of the door section carrying same and the door section adapted to enter the pocket closed by this shield.

In the form of the invention shown, the door section adapted to engage or be engaged by the shield *f* is provided with a bevelled toe guard and flame angle *k*, the pitch of which is approximately 45°. This angle is riveted or otherwise secured to the lower bar of the door section carrying same, and projects downwardly toward the wall of the shaft extending in fairly close proximity to said wall. This shield in the movement of the door section carrying same, or the door section carrying the shield, engages the shield *f* adjacent the wall of the shaft, thus ensuring a gradual movement of the shield and lessening the danger of breakage of parts through a too violent or rapid movement of said shield.

By the normal operation of the door, I have reference to the ordinary procedure of opening and closing the door by the opera-

tor when the elevator car is in ordinary use. In the event of fire, however, and the development of an excessive temperature about the door as a result, it is desirable to reduce the fire hazard due to the pocket between the door section and the wall of the shaft by preventing this shield from functioning in its normal manner. To secure this result, I provide means operative to prevent the pivotal movement of the door, which means is normally maintained in its inoperative relation by a fusible medium so that it will come into operation only as a result of the melting of this medium.

In the form of the invention shown, the means for preventing pivotal movement of the door consists of a hardened bolt or pin m slidably mounted in a pocket m' formed in either or both fittings g and opening downwardly of these fittings when the shield f is in its horizontal position. Such a bolt or pin is preferably mounted in each trunnion fitting g so as to afford supporting means therefor having pivotal movement with the door, and preferably is surfaced with copper or some other non-corrosive material so as to minimize likelihood of its failure to operate in an emergency after a long period of disuse. The pin is normally held in position within its recess by a fusible barrier n closing or partially closing the open end of the recess.

Formed in the top bar of the door section a or a', and carrying the shield, is a socket o adapted to receive this bolt. It is not essential that the bolt shall be mounted in the trunnion fitting g, the use of this fitting for this purpose being merely a matter of economy and convenience.

In the accompanying drawings, the door sections a—a' are shown as being provided with the usual or customary offset astragal construction p, and the sections b—b' with the usual truck bar q, and its toe guard r projecting to a point below the co-operating section of the door. The upper door sections a—a' are provided with the usual bumpers s.

The operation of the herein described elevator door is substantially as follows:—

In warehouses using doors of the general construction herein referred to, all doors in a shaft are supposed to be closed except when an elevator car is at a floor, and the door is open to permit ingress to, or exit from, the floor by way of the elevator. When the doors are so closed, the shield f of each door will be in horizontal position, as shown in Figs. 1 and 2 of the drawings, thus effectively closing the gap between the door carrying same and the wall of a shaft. The pass-type of door requires for its operation, doors at adjacent door openings adapted to co-operate with each other to the extent of moving the shield or movable lintel during the opening movement of either of these doors. For example, in opening the door at the opening A, the door at the opening B remains closed, but nevertheless the door section b in its descent during its opening movement, by reason of the short distance between the sill of the opening A and the lintel of the opening B must pass between the section a' of the door opening B and the wall of the shaft, and in so doing must engage and actuate the shield f carried by the door section a', to permit the section b to enter the pocket formed between this section and the wall of a shaft, or to lap the section a'.

As the flame angle or toe guard k engages the shield f close to the wall of a shaft, it will cause said shield to pivot about the trunnion fittings g and assume a parallel position with relation to both sections b and a', this movement, by reason of the inclination of the angle or guard k being more or less gradual according to the speed of movement of the section b. Ordinarily the initial opening movement of a door is slow so that there is little likelihood of the breakage of the trunnion fittings g or brackets h while thus actuating the shield.

As the shield f is thus turned upon its pivot, the counterweights j will be so moved as to bring them to a position where they will exert their maximum effect in overbalancing the portion of the shield f between the trunnions of the fittings g and the wall of a shaft, and be so off center as to ensure a return pivotal movement of the shield with the movement of the door as this is permitted by the passage of the flame angle or toe guard k past the upper portion of the door section a' and its shield f. This same operative effect is secured when the door at the opening B is opened, the sole difference being that the section a' of this door has movement in relation to the section b so as to pass inwardly of it and the shaft. In either instance the operation of the shield results from its engagement with, and disengagement from, the door section at an adjacent floor.

Under normal conditions the bolt m is retained within its recess m' by the fusible barrier n, thus offering no obstruction to the pivotal movement of the shield. In the event of fire, however, it is desirable to make the barrier afforded by the shield f and its angle i permanent when the temperature about the door is sufficiently high, as by the presence of a flame either on the shaft or on the floor side of the door, to make the passage of flames and smoke across the top of the upper door section imminent. Furthermore, under some conditions the stream from a hose may be directed against this shield, or a considerable volume of water may flow from a floor above, both of

which, if the shield were not restrained to prevent its pivotal movement, would permit such water to pass from the shaft to upon the floor, the door opening of which is closed by a door. With any serious fire, there is always a likelihood of back drafts, which, if the shield were not restrained, would cause the actuation of this shield, and thus permit flames, smoke and gases to follow from the shaft to the floor of a building about a door, through the door opening closed by said door. These results can follow only when a fire has reached a point where the temperature about a door has become materially elevated, so that this elevated temperature can be relied upon with a reasonable degree of certainty to melt the fusible medium *n* and permit the bolt *m* to drop within the socket *o* in the top bar of a door carrying a shield *f* before there has been opportunity for any of these agencies to actuate the shield in the manner described.

By using a hardened steel bolt *m* the shield may be held sufficiently firmly to resist the force of a stream of water, or the suction from back drafts. By coating this bolt with copper or other non-oxidizing material, the likelihood of its freezing in position through corrosion after long non-use, is avoided. In fact this bolt mechanism is merely a precautionary expedient, and in many instances occasion requiring it to act will never arise. If, however, there should be such an occasion, the construction and conditions must be such as to ensure reasonable certainty of its functioning.

By using a gravity bolt, spring action is not relied upon, and in fact in fireproof structures, wherein the fire hazard is a factor, the use of springs is to be deprecated. It is for this same reason that the counterweights *j* are used instead of springs acting upon the shield, since such weights are more reliable than springs would be.

The desired results can be secured only by mounting the shield *f* upon the door section itself, so that it has movement with the door during the opening and closing movements thereof while being positioned within the shaft and above the lintel of the door in a manner to effectively supplement the lintel of the door opening in closing the shaft about the top of the opening adjacent the door structure.

It may be noted that the direction of a stream of water, or the action of back drafts toward the shaft from a floor of a building cannot in any way operate the shield since the angle *i* will limit the movement of the shield in passing from the vertical to a horizontal position.

It is not my intention to limit the invention to the precise details of construction shown in the drawings, it being apparent that such may be varied in adapting the invention to doors of different dimensions or designs, without departing from the spirit and scope of the invention.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, and means acting upon said shield whereby pivotal movement thereof is permitted upon engagement between same and a door section at an adjacent landing, to afford clearance for relative movement of said door sections, and said shield is caused to automatically assume its normal position when it is disengaged from said other door section.

2. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remove from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, means acting upon said shield whereby pivotal movement thereof is permitted upon engagement between same and a door section at an adjacent landing, to afford clearance for relative movement of said door sections, and said shield is caused to automatically assume its normal position when it is disengaged from said other door section, means whereby pivotal movement of said shield may be prevented, and a fusible medium normally making said last named means inoperative, but permitting it to become operative in the event of fire.

3. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the elevator shaft, a shield carried by the section more remote from the wall of the shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, and weights carried by said shield and overbalancing same, whereby said shield is permitted to have pivotal movement upon engagement between same and a door section at an adjacent floor to

afford clearance for relative movement of said door sections, and is caused to automatically assume its normal position when it is disengaged from said other door section.

4. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, an angle carried by the edge of said shield above and extending toward and into substantial engagement with the top of a door section whereby the space between said shield and said door section is closed, and means acting upon said shield whereby pivotal movement thereof is permitted upon engagement between same and a door section at an adjacent landing, to afford clearance for relative movement of said door sections, and said shield is caused to automatically assume its normal position when it is disengaged from said other door section.

5. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivoted supports for said shield, an angle carried by the edge of said shield above and extending toward and into substantial engagement with the top of a door section whereby the space between said shield and said door section is closed, and weights carried by said shield and overbalancing same, whereby said shield is permitted to have pivotal movement upon engagement between same and a door section at an adjacent floor to afford clearance for relative movement of said door sections, and is caused to automatically assume its normal position when it is disengaged from said other door section.

6. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, an angle carried by the edge of said shield above and extending toward and into substantial engagement with the top of a door section whereby the space between said shield and said door section is closed, weights carried by said shield and overbalancing same, whereby said shield is permitted to have pivotal movement upon engagement between same and a door section at an adjacent floor to afford clearance for relative movement of said door sections, and is caused to automatically assume its normal position when it is disengaged from said other door section, means whereby pivotal movement of said shield may be prevented, and a fusible medium normally making said last named means inoperative, but permitting it to become operative in the event of fire.

7. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, means acting upon said shield whereby pivotal movement thereof is permitted upon engagement between same and a door section at an adjacent floor, to afford clearance for relative movement of said door sections, and said shield is caused to automatically assume its normal position when it is disengaged from said other door section, means carried by and movable with said shield having a recess therein which extends vertically when the shield extends horizontally, a bolt slidably mounted in said opening, the door section carrying said shield having a socket therein adapted to receive said bolt, and a fusible medium normally retaining said bolt within said recess.

8. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, means acting upon said shield whereby pivotal movement thereof is permitted upon engagement between same and a door section at an adjacent floor, to afford clearance for relative movement of said door sections, and said shield is caused to automatically assume its normal position when it is disengaged from said other door section, means carried by and movable with said shield having a recess therein which extends vertically when

the shield extends horizontally, a bolt, having its surface provided with a non-oxidizable coat, slidably mounted in said opening, the door section carrying said shield having a socket therein adapted to receive said bolt, and a fusible medium normally retaining said bolt within said recess.

9. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the wall of the elevator shaft, and extending therefrom into close proximity to said wall, pivotal supports for said shield, an angle carried by the edge of said shield above and extending toward and into substantial engagement with the top of a door section whereby the space between said shield and said door section is closed, weights carried by said shield and overbalancing same, whereby said shield is permitted to have pivotal movement upon engagement between same and a door section at an adjacent floor to afford clearance for relative movement of said door sections, and is caused to automatically assume its normal position when it is disengaged from said other door section, means carried by and movable with said shield having a recess therein which extends vertically when the shield extends horizontally, a bolt slidably mounted in said opening, the door section carrying said shield having a socket therein adapted to receive said bolt, and a fusible medium normally retaining said bolt within said recess.

10. An elevator door embodying therein connected sections having simultaneous vertical movement in opposite directions, guides for said sections respectively extending in parallel planes whereby one of said sections is more remote from the wall of the shaft than the other, a shield carried by the section more remote from the elevator shaft and extending therefrom into close proximity to said wall, co-operating brackets and trunnion fittings carried by said door section and said shield respectively, an angle carried by the edge of said shield and extending toward and into substantial engagement with the top of a door section, whereby the space between said shield and said door section is closed, weights carried by said shield and overbalancing same, whereby said shield is permitted to have pivotal movement upon engagement between same and the door section at an adjacent floor to afford clearance for relative movement of said door sections, and is caused to automatically assume its normal position when it is disengaged from said other door section, said trunnion fitting extending at substantially right angles to said shield, and having a recess therein opening downwardly thereof, and the door carrying said shield having a socket therein in substantial alinement with said recess when said shield is in its horizontal position, a bolt slidably mounted in said recess, and a fusible medium normally retaining said bolt within said recess.

In witness whereof I have hereunto affixed my signature this 4th day of December, 1924.

CHARLES W. PEELLE.