May 3, 1932. H. C. WALDMAN 1,856,895

FIRE STOP FOR ELEVATOR DOORS

Filed May 10, 1929

Fig. 1.

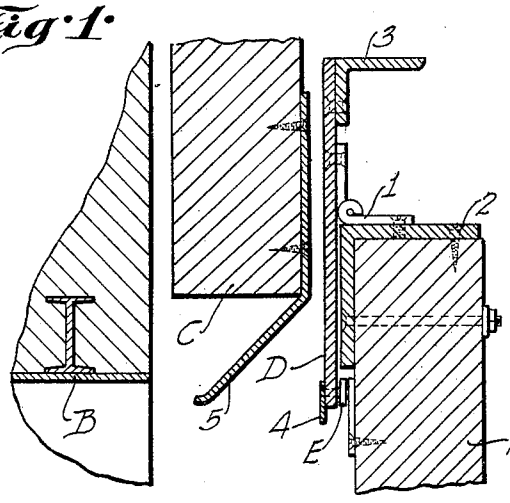


Fig. 2.

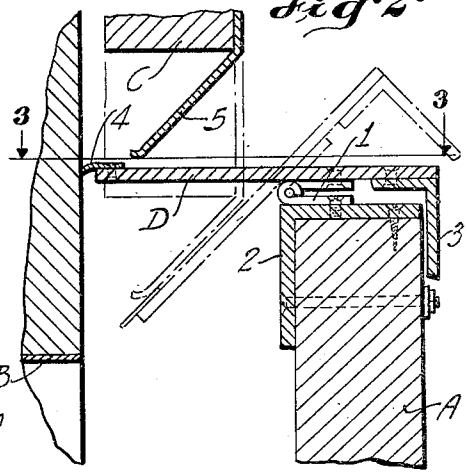


Fig. 3.

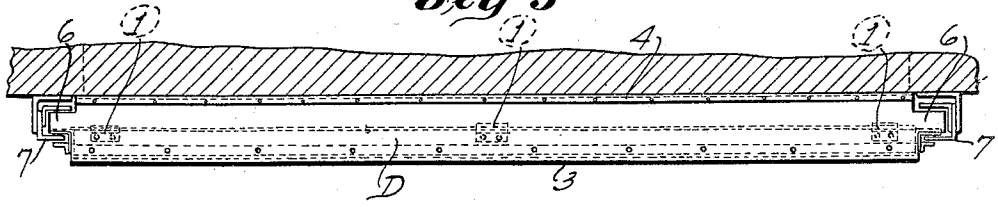


Fig. 4.

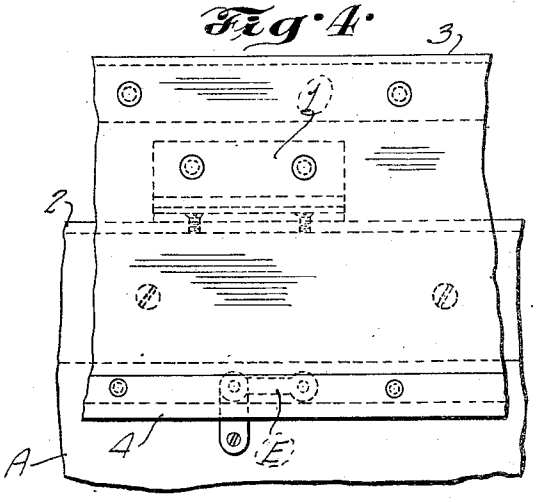
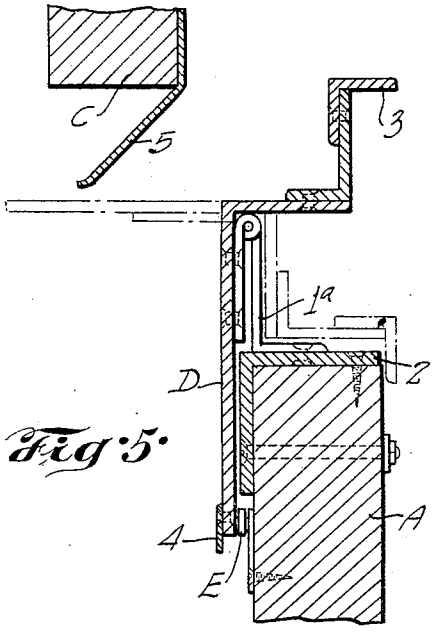


Fig. 5.



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UNITED STATES PATENT OFFICE

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FIRE STOP FOR ELEVATOR DOORS

Application filed May 10, 1929. Serial No. 361,914.

This invention relates to counterbalanced fire doors for elevator shafts, of the type in which the top and bottom sections of the door are arranged in parallel relation to each other, but in different vertical planes, so as to provide a space between the top section of the door and the lintel of the door opening that will receive the bottom section of a vertically-aligned door, of the same type, located on the floor above, when said upper door is moved into its open position.

One object of my present invention is to provide a fire stop for the space between the lintel of the door opening and the top section of the door, that is inexpensive to build and install, of such design that it will not obstruct the door opening, and of such construction that in the event of a fire, it will effectively prevent air, smoke or a flame from escaping from the elevator shaft into the room, or vice versa.

Another object is to provide a fire door structure of the general type mentioned, that is equipped with a fire stop of novel construction, which is normally maintained in an inactive or inoperative position by a fusible device, which, in the event of a fire, will release said stop and permit it to move automatically into such a position that air, fire or smoke cannot circulate upwardly through the space between the lintel and the top section of the door, or even over the upper edge of the top section of the door.

Another object is to provide a fire door structure of the general type mentioned, in which the top section of the door has oscillatingly mounted thereon a fire stop, which is of such design that it will not interfere with the downward movement of the bottom section of the door located at the floor above, in the event said upper door is moved into its open position.

And still another object of my invention is to provide a counterbalanced fire door for elevator shafts whose top section is equipped with a rockable or oscillating fire stop, which, when arranged in its operative position, cuts off the circulation of air, flame or gases between said top section and the lintel of the door opening and also upwardly through the guides at the side edges of the door in which the door travels. Other objects and desirable features of my invention will be hereinafter pointed out.

Figure 1 of the drawings is a sectional view, illustrating an elevator fire door of the counterbalanced type equipped with a fire stop constructed in accordance with my invention, showing said fire stop arranged in its inactive or inoperative position.

Figure 2 is a similar view, showing said fire stop arranged in its operative position.

Figure 3 is a top plan view of said fire stop, illustrating said stop in its operative position.

Figure 4 is a fragmentary front elevational view of said fire stop, illustrating said stop in its inoperative position; and

Figure 5 is a view similar to Figure 1, illustrating a modification of my invention.

In the accompanying drawings which illustrate the preferred form of my invention, A designates the top section of a counterbalanced fire door, and B designates the lintel of the opening which said door closes, the top section A of the door being spaced away from said lintel, so as to provide a space for receiving the bottom section C of the vertically-aligned door located at the floor above when said bottom section is moved downwardly, so as to open said upper door. The top section A of the door is provided with a fire stop D, formed preferably by a flat metal plate or strip that is hinged or pivotally connected to the upper edge of said top section A in such a way that it can assume a vertical or upright position, as shown in full lines in Figure 1, or assume a horizontal position, hereinafter referred to as its operative position, as shown in full lines in Figure 2. Any suitable means can be used for pivotally mounting the stop D on the top section A of the door, but I prefer to use hinges 1 that are attached to said stop and to an angle 2, which is fastened to the upper edge of the top section of the door. The hinges 1 may either be of the type shown in Figures 1 and 2 that comprise two flat leaves, one of which is attached to the angle 2 and the other to the stop D, or they may be of the type shown in

Figure 5, wherein the leaves or portions 1ª of the hinges that are attached to the angle 2 on the door are substantially L-shaped.

Normally, the fire stop D is maintained in its inoperative position shown in Figure 1 by means of a fusible device or fuse link E of any preferred type, arranged so as to serve as a retaining device or securing device for the lower edge portion of the fire stop D, thereby holding said fire stop in such a position that it will not interfere with the downward movement of the bottom section C of the door located at the floor above. In the event of a fire the link or other fusible device E ruptures or breaks, whereupon the stop D will swing automatically into its operative position shown in Figure 2. The stop D can be rockably mounted on the top section A of the door in such a way that gravity causes said stop to move into its operative position as soon as the fusible element E breaks and releases said stop, or, if desired, any other suitable means may be used to move the stop into its operative position, in the event of a fire. I prefer to attach an angle 3 to the edge of the stop D in such a way that it not only serves as a counterweight to automatically move said stop into its operative position when the fusible element E ruptures, but it also serves as a means to prevent air, fire or smoke from circulating through the space between the upper edge of the door section A and the stop D. As shown in Figure 2, the movement of the stop D into its operative position causes the angle 3 on said stop to be arranged in overlapping relationship with the upper edge portion of the door section A, thereby serving as a closure for the space between the stop D and the angle 2 at the upper edge of the door section A on which said stop is mounted. In order to produce a tight joint between the other edge of the stop D and the portion of the wall of the elevator shaft located above the lintel B, a gasket 4, formed preferably of a fire-proof, flexible material or fabric, is attached to the free edge of the stop D, as shown in the drawings.

The fire stop D is normally held in its inoperative position, or in an upright position, wherein it does not interfere with the downward movement of the bottom section C of the door located at the floor above. In order, however, that said stop will not interfere with the downward movement of the door section C, in the event the door of which said section C forms a part is opened when the fire stop D is in its operative position, a tripping device 5, formed preferably by an inclined or cam-shaped member, is attached to the lower edge of the door section C in such a way that it is capable of co-acting with the stop D to move said stop out of the way, or cause it to tilt and swing out of the path of the door section C in the event said door section is moved downwardly when the stop D is in its operative position, all as shown in Figure 2. Preferably, the stop D is provided at its ends with extensions 6, shown in Figure 3, which are so proportioned and arranged that when said stop moves into its operative position, the extensions 6 at the ends of same will be positioned horizontally in the stationary side guides 7 in which the door section A travels, thereby serving as closures for said guides, which prevent air, smoke and fire from circulating upwardly through said guides.

A fire stop of the above described construction is inexpensive to build, it is easy to install and it does not obstruct the door opening. Normally, said stop is held in an inactive or inoperative position out of the path of the door section C by a fusible element E, but in the event of a fire, said fusible element breaks, thereby permitting the stop D to swing into its operative position shown in Figure 2. When said stop is arranged in its operative position it effectively prevents air, smoke or flame from circulating upwardly through the space between the lintel and the top section A of the door, or circulating upwardly through the channel-shaped side guides in which said door section travels, and the depending portion 3 on said stop that laps over the door section A prevents air, smoke or fire from circulating through the space between said stop and the upper edge of the door section A. In the event the door located at the floor above is opened when the stop D is in its operative position, the tripping device 5 on the bottom section C of said upper door engages the stop D and moves said stop out of the path of the door section C, and when said door section C is moved upwardly back to its normal position, the stop D returns automatically to the position shown in full lines in Figure 2.

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

1. An elevator fire door structure, comprising a top door section spaced away from the lintel of the door opening, so as to form a passageway for a vertically-aligned door located at a higher level, and a fire stop rockably mounted on said top door section and provided with portions that lap over the top edge and the adjacent outer surface of said door section when said stop is in its operative position.

2. An elevator fire door structure, comprising a top door section spaced away from the wall in which the door opening is located, a fire stop oscillatingly mounted on the upper edge portion of said door section and formed from a substantially flat plate that covers the top edge of said door section when the fire stop is in its operative position, and an angle attached to said plate so as to form a depending part in said plate that laps over a

vertical face of said door section when the fire stop is in its operative position.

3. An elevator fire door structure, comprising a top door section spaced away from the wall in which the door opening is located, substantially channel-shaped guides for said door section arranged at the side edges of same, a fire stop rockably mounted on the top door section and provided with portions that cover the top edge and the adjacent portion of the outer face of said door section when the fire stop is in its operative position, and means on said stop for preventing fire, smoke and the like from circulating through the guides at the side edges of the door section.

4. In an elevator fire door structure, the combination of a top door section spaced away from the lintel of the door opening, a hinged fire stop attached to the top edge of said top door section and provided with a flexible gasket that is adapted to contact with the wall of the elevator shaft and produce a tight joint between said wall and fire stop when said stop is in its operative position, and a part on said stop that is adapted to lap over the outer face of said top door section so as to prevent gases, air or the like from circulating between said stop and the top door section when said stop is in its operative position.

HERMAN C. WALDMAN.