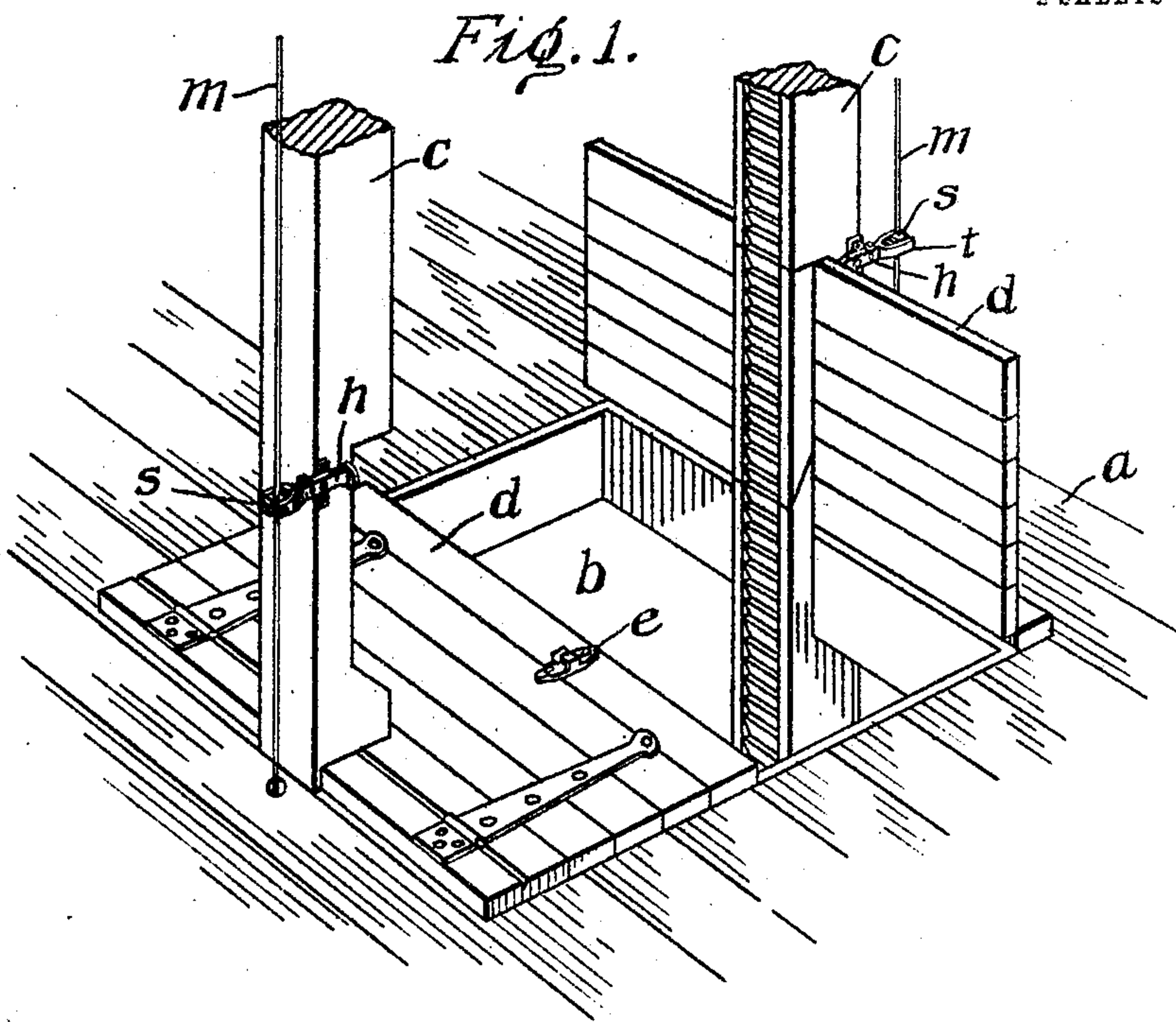
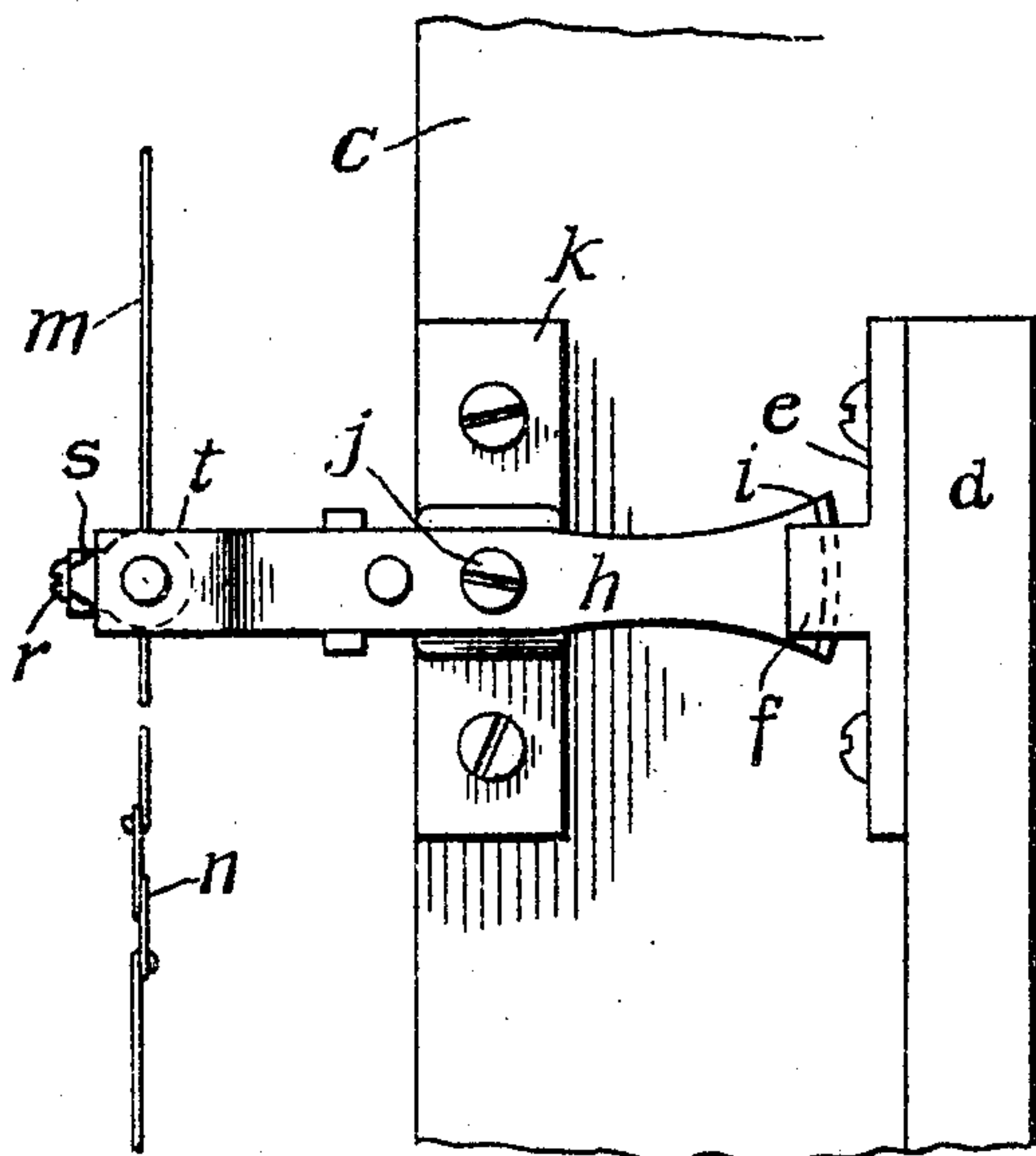


J. STEVENS.

AUTOMATIC DOOR RELEASING MECHANISM FOR ELEVATOR SHAFTS.

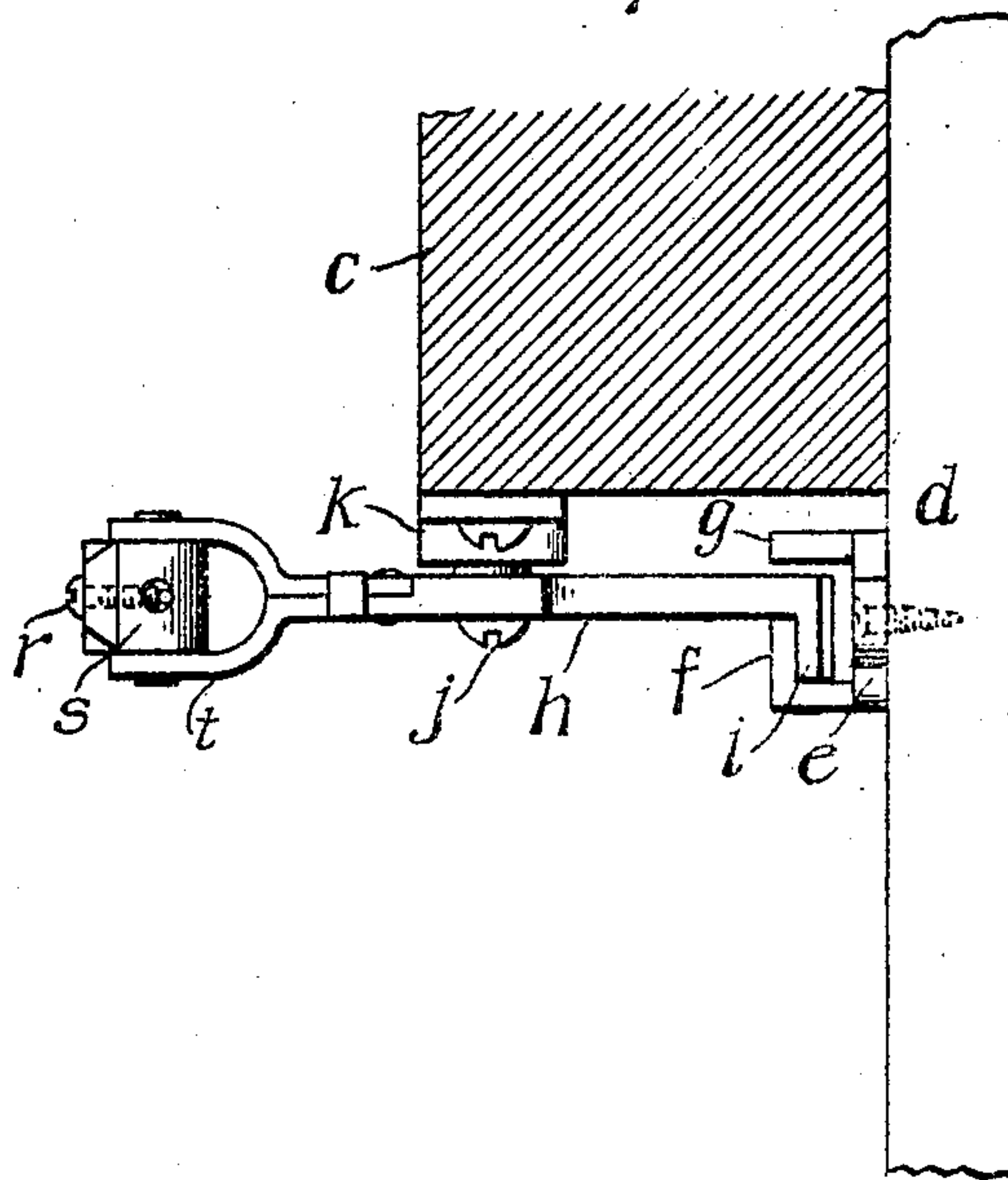
APPLICATION FILED JAN. 19, 1905.

2 SHEETS—SHEET 1.

*Fig. 2.*

WITNESSES:

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A. M. Kelly.

Fig. 3.

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No. 798,081.

PATENTED AUG. 29, 1905.

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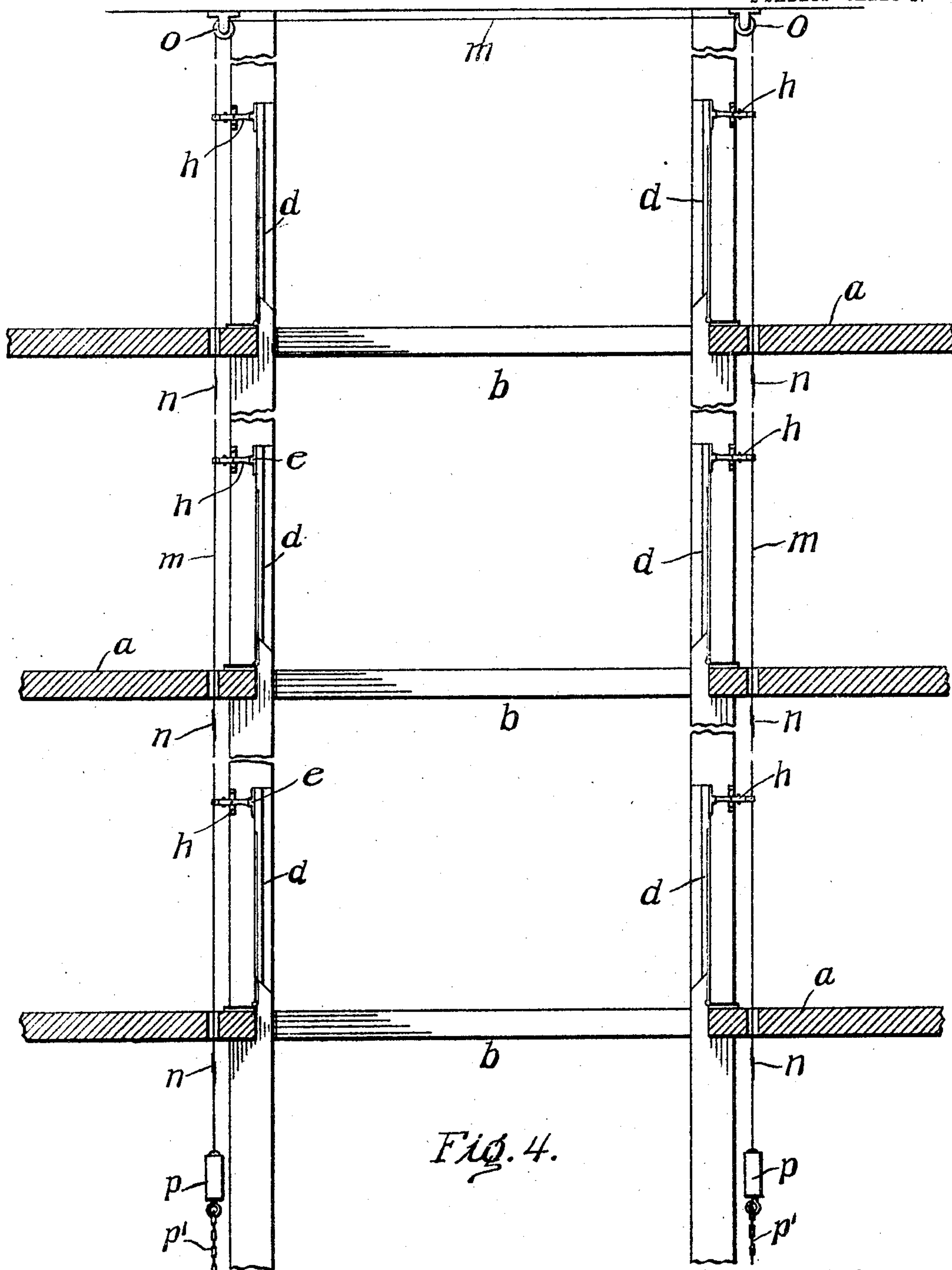


Fig. 4.

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JOHN STEVENS, OF PHILADELPHIA, PENNSYLVANIA.

AUTOMATIC DOOR-RELEASING MECHANISM FOR ELEVATOR-SHAFTS.

No. 798,081.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed January 19, 1905. Serial No. 241,712.

To all whom it may concern:

Be it known that I, JOHN STEVENS, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Automatic Door-Releasing Mechanism for Elevator-Shafts and the Like, of which the following is a specification.

It is the object of my invention to automatically effect the immediate closing of the hatch-doors of an elevator-shaft in case of fire, so that the flames may be confined and the draft afforded by the hatchway-opening may be cut off. This object I accomplish by means of a balanced cable or equivalent device operatively connected with catch devices which normally hold the door open and provided with a fusible link, the fusing of which by severing the cable unbalances it, and thereby causes it to actuate the catch devices to release the doors.

My mechanism may be so arranged that it will simultaneously actuate the catch devices on both sides of the hatchway-shaft and also so that it will simultaneously release all the doors at the different floors upon the fusing of a link at any floor, and the apparatus is equally as operative whether the fused link is on the top, the bottom, or on an intermediate floor.

In the drawings, Figure 1 is a perspective view of an elevator-hatchway, illustrating the application of my automatic door-releasing devices. Fig. 2 is an enlarged side elevation of a preferred form of catch devices. Fig. 3 is a plan view of the same; and Fig. 4 is a section of a building, illustrating the invention applied to the control of the hatchway-doors of three floors.

a is the floor, and *b* the elevator-hatchways. *c* designates the usual elevator-guides, and *d* designates the hatchway-doors, hinged in the usual manner to the floor.

On the top of each door is a catch *e*. This preferably consists of a plate secured to the door and provided with two short projecting jaws *f g*, one of which, as *f*, is angular.

On the guide-posts, adjacent to each door, is a pivoted lever *h*, the outer end of which is adapted to engage the catch *e* when the door is opened and to retain it raised. As shown, the outer end of the lever is provided with a curved flange *i*, which passes between the jaws *f g* and lies back of the angular end of the jaw *f*. In this position it will hold the door open. When the lever is rocked in either direction, it will be disen-

gaged from the catch and the door will close. The lever is shown pivoted at *j* to a small bracket *k* on the guide-post. While this particular form of catch between the door and lever is excellently adapted for the purpose and is preferred, I do not mean to limit myself thereto, as many other devices efficient for the purpose may be employed. It is sufficient for my invention that there shall be a catch of some kind to hold the door open until detached by the means hereinafter described.

The rear ends of the levers are connected with a rope, cable, or chain *m*, which is so balanced or weighted that it will maintain the levers normally in position to engage the catches on the doors, as shown in Figs. 2 and 3. This cable is provided with a fusible link *n*, and when the link is fused and the cable parts it will be unbalanced and will swing the lever or levers which it controls out of engagement with the catches on the door or doors and the latter will close.

In Fig. 4 I have shown an arrangement by which all the doors on both sides of the shaft will be closed upon the fusing of a link on any floor.

The cable *m* extends up through the floors adjacent to the guide-post on one side of the shaft, over sheaves *o o* at the top of the shaft, and down through the floors on the other side adjacent to the other guide-post. The ends of the cable are weighted, as at *p p*, and the levers or catch devices on each side are all connected with the cable, which, being balanced by the weights, will retain those devices in engaging position for the doors. A fusible link *n* is introduced in each section of the cable at each floor, and these are preferably located just under the floors, as shown.

If any link is fused, the lower portion of the cable, being released, will drop down and will disengage the levers or catch devices connected with it from the corresponding doors, which will close. At the same time the weight on the other end of the cable will pull up the remainder of the cable on the side where the parting occurred and will similarly disengage the other levers or catch devices on that side from their doors, while the resulting dropping of the cable on the other side will release all the doors on that side also. Thus upon the fusing of any link all of the hatch-doors will instantly close.

If desired, the weighted ends of the cable *n* may be fastened by chains or cords *p'* to

prevent the door-releasing devices from being manually operated. When the ends of the cable are thus fastened against upward movement, the cable cannot be shifted by hand, although such fastening will not prevent the dropping of the weights and the actuation of the door-releasing devices when any link is fused. In many cases, however, it is desirable that the ends of the cable should be left free, so that they may be manually operated, or the weighted ends may be similarly fastened by strong springs of sufficient tension to prevent accidental manipulation of the cable, but not to prevent intentional operation.

With a lever-catch of the character shown it is desirable that the swinging of the levers should not bend the cable out of a substantially straight line, which might cause it to catch in the small guide-holes in the floor and interfere with the operation. For this reason I prefer to attach the cable, as by the screw *r*, to a swinging block *s*, pivoted on a transverse axis in jaws *t* in the end of the lever. When the lever rocks, this block may swing upon its pivot, and thus preserve the alignment of the cable.

The attachment of the cable by means of the set-screw *r* also enables any door to be released by hand without shifting the cable and operating the other doors. The elevator attendant may loosen the screw *r* and rock the lever *h* to release the door without moving the cable. In some cases it is desirable that the doors should be closed at night, and the elevator attendant may thus go from floor to floor as the elevator descends, releasing and closing the doors by hand at each floor. In the morning the levers may be reattached to the cable and the apparatus put into automatically-operative condition.

While I prefer to employ a cable as the means for actuating the catch devices because of its flexibility and the facility with which it may run over sheaves in extending from one side of the shaft to the other, I do not mean to limit myself thereto, as any device will answer the purpose which affords an operative connection between the different catch devices and will become unbalanced when parted by the fusing of a link.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the door, of a catch device adapted to hold the door open, and a balanced actuating suspended cable operatively connected with said catch device between its balanced ends and containing a fusible link adapted when fused to separate said cable into two unbalanced sections.

2. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the doors on opposite sides of the hatchway, of independent

catch devices each adapted to hold its door open, and a continuous balanced cable operatively connected with each of said catch devices, and containing a fusible link, said cable being adapted, when unbalanced by the fusing of said link to separate and simultaneously actuate both of said catch devices and release the doors.

3. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the doors on opposite sides of the hatchway, of independent catch devices each adapted to hold its door open, and a balanced connection between said catch devices, having a fusible link, whereby on the fusion of said link the connection will become separated into parts and unbalanced and the doors will be simultaneously released.

4. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the doors on opposite sides of the hatchway, of independent catch devices each adapted to hold its door open, guides above said doors, a cable extending up on one side over said guides and down on the other side and connected on each side with the catch-releasing device on that side, weights on the ends of said cable acting to balance it, and a fusible link in said cable, adapted when fused to separate the cable into two unbalanced parts.

5. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the series of doors located on opposite sides of the hatchway on successive floors, of independent catch devices each adapted to hold a door open, a balanced connection between the catch devices on one side of the hatchway and those on the other, and having series of fusible links disposed at different positions in said connection, whereby the fusing of any link on any floor will sever said balanced connection and simultaneously operate all of the catch devices to release their doors.

6. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the series of doors located on opposite sides of the hatchway on successive floors, of independent catch devices each adapted to hold a door open, a balanced cable extending up on one side of the hatchway and down on the other side and connected with said catch devices, a series of fusible links in said cable disposed at different positions, whereby the fusing of any link on any floor will sever said cable and simultaneously operate all of the catch devices to release their doors.

7. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the door, of a pivoted lever adapted to engage said door and hold it open, and a balanced suspended actuating-cable operatively connected with said

catch device between its balanced ends and containing a fusible link adapted when fused to separate said cable into two unbalanced sections.

5 8. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the door, of a pivoted lever one end of which is adapted to engage said door and hold it open, a swinging
10 block on the outer end of said lever, and a balanced actuating cable connected with said swinging block and having a fusible link, and adapted when parted by the fusing of said link to disengage the lever from its door.

15 9. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the door provided with a catch-plate having the angular jaws f , a lever h having a flange i on one end adapted
20 to engage the angular jaw f and hold the door open, and a balanced cable connected with the other end of said lever and having a fusible link, and adapted when parted by the fusing of said link to rock the lever out of engage-
25 ment with said angular jaw on the door.

10. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the door provided with an angular jaw f , a lever h having a
30 flange i adapted to engage the angular jaw f and hold the door open, the pivoted block s carried by the other end of said lever, and a balanced cable connected with said pivoted

block and having a fusible link, and adapted when parted by the fusing of said link to rock 35 the lever out of engagement with said angular jaw.

11. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the like, the combination with the series of doors 40 located on different floors, of independent catch devices each adapted to hold one of the doors open, and a balanced connection between all of said catch devices having a series of fusible links, whereby on the fusing 45 of any link, said connection will be unbalanced and all of said catch devices will be operated simultaneously to release the doors.

12. In an automatic hatch-door-releasing mechanism for elevator-hatchways and the 50 like, the combination with the series of doors located on different floors, of pivoted catch-levers each adapted to engage and hold open one of the doors, a balanced cable having a series of fusible links, and a pivoted block 55 carried by each of the catch-levers and connected to the balanced cable, whereby the unbalancing of said cable by the fusing of any link will actuate all of said levers and release
60 the doors.

In testimony of which invention I hereunto set my hand.

JOHN STEVENS.

Witnesses:

ERNEST HOWARD HUNTER,
R. M. KELLY.