

(No Model.)

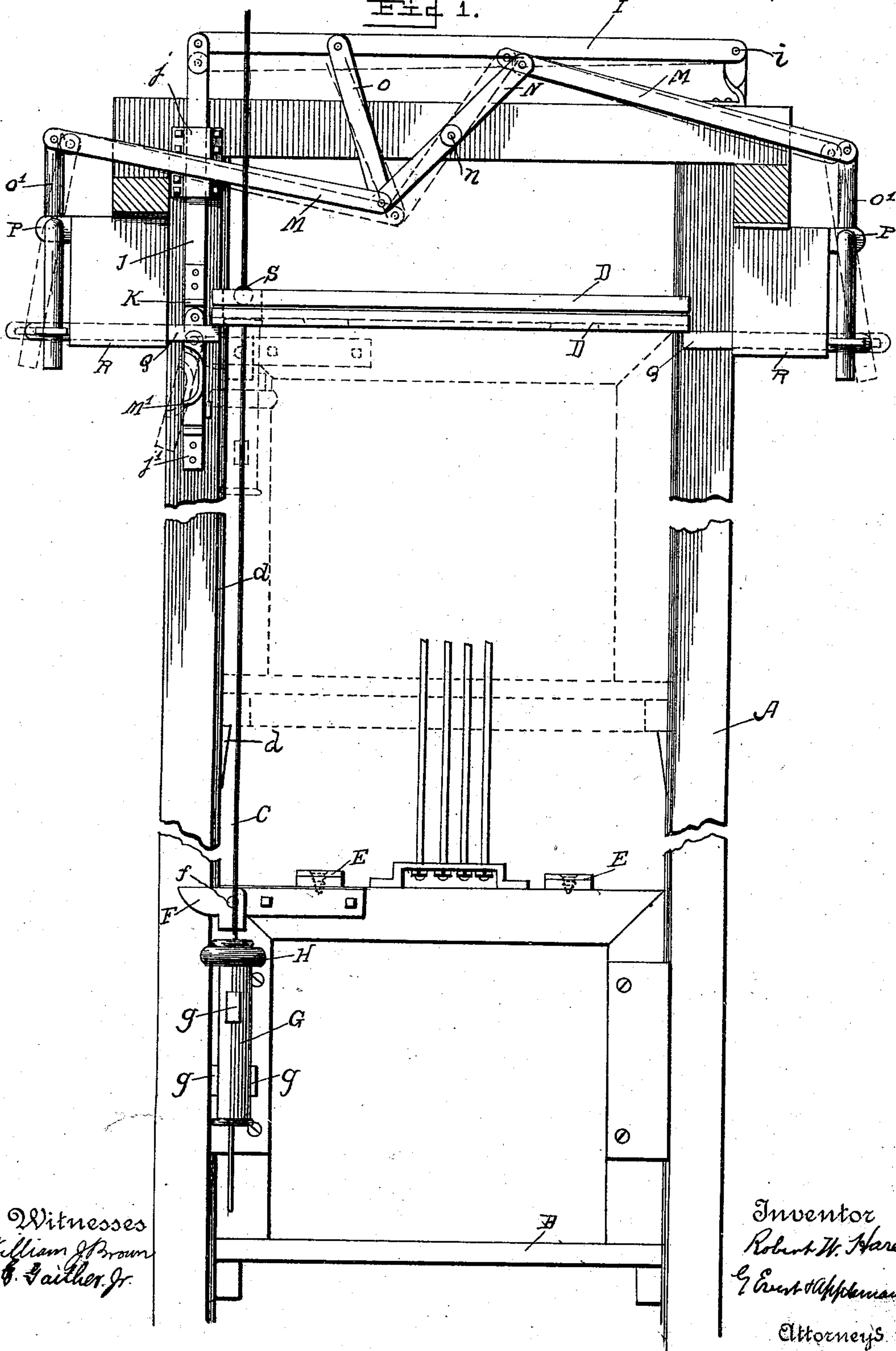
2 Sheets—Sheet 1.

R. W. HARE.  
ELEVATOR FIRE DOOR.

No. 548,872.

Patented Oct. 29, 1895.

Fig 1.



Witnesses  
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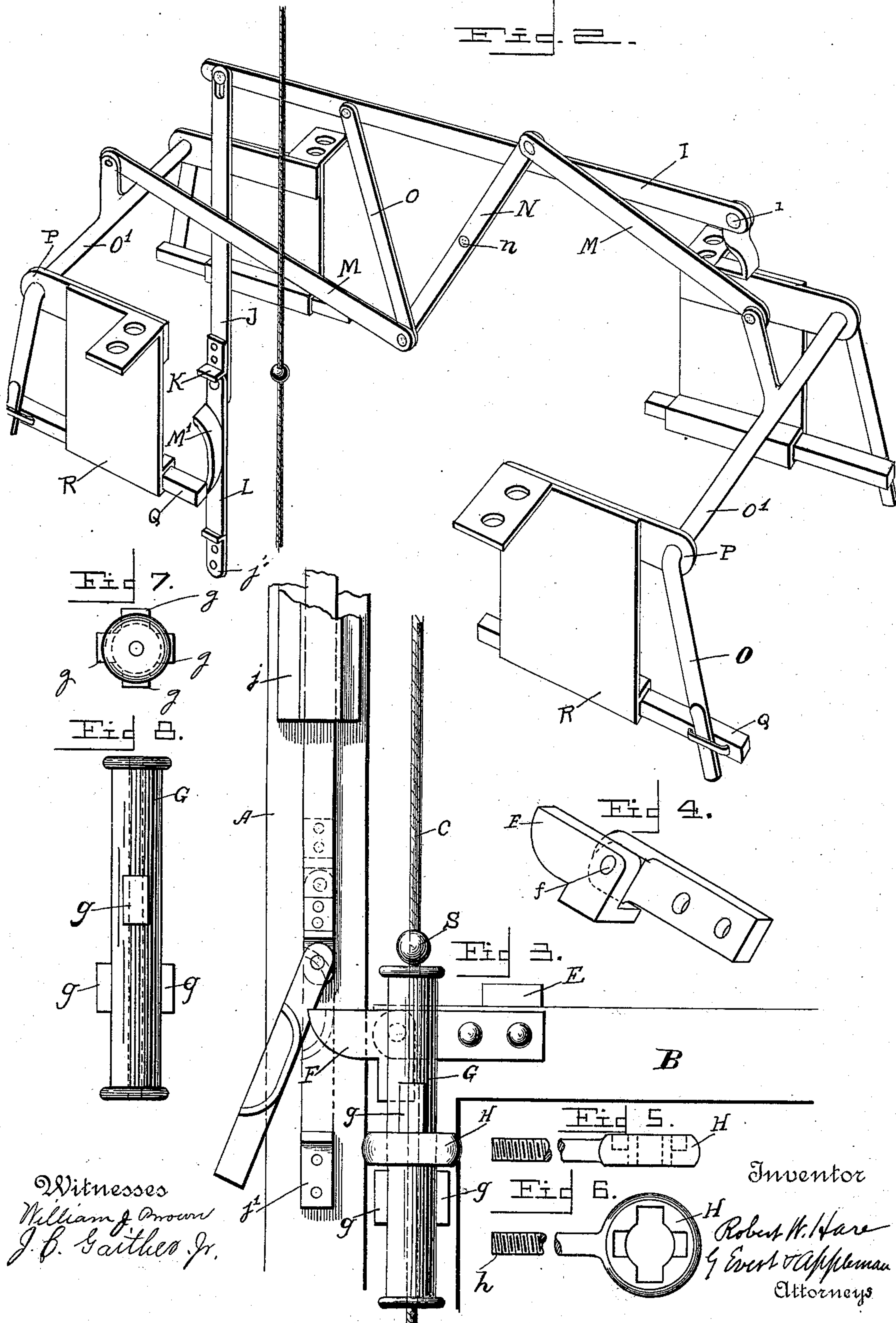
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# UNITED STATES PATENT OFFICE.

ROBERT W. HARE, OF ALLEGHENY, PENNSYLVANIA.

## ELEVATOR FIRE-DOOR.

SPECIFICATION forming part of Letters Patent No. 548,872, dated October 29, 1895.

Application filed April 13, 1894. Serial No. 507,496. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. HARE, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Elevator Fire-Doors, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to certain new and useful improvements in elevators, and more particularly to hatch-covers for closing the elevator-shaft.

The object of the invention is to employ 15 novel and inexpensive means whereby a series of doors or hatch-covers are automatically stored at the top of the elevator-shaft, retained at this point, or released at the will of the operator; furthermore, to design a device of this class that will be simple in its construction, strong, durable, and effectual in its operation.

25 With the above and other objects in view the invention consists in the novel construction, combination, and arrangement of parts to be hereinafter more particularly described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, 30 forming a part of this specification, and wherein like letters of reference indicate similar parts throughout the several views, in which—

Figure 1 is a side elevation of an elevator 35 shaft and car equipped with my improvement. Fig. 2 is a detail perspective view of the overhead locking and releasing mechanism. Fig. 3 is an enlarged side view of the adjusting-sleeve carried by the elevator-car. 40 This view serves to more accurately illustrate the releasing mechanism. Fig. 4 is a perspective view of the dog arranged on the elevator-car. Fig. 5 is a detail side view of the bracket through which the adjusting-sleeve operates and is retained in position. 45 Fig. 6 is a top view of the same. Fig. 7 is a plan view of the adjusting-sleeve, and Fig. 8 is a side view of the same.

In the drawings, A represents an elevator- 50 shaft; B, the car; C, the hand-controlled rope;

D D D, the movable doors; *d*, the stops for the same at the various landings; E E, the rigid door-lifters arranged on the top of the elevator-car; F, the operating-dog pivoted at *f*; G, the movable sleeve provided with lateral projections *g g g* at different points in its 55 length; H, the bracket in which the sleeve is movably mounted, said bracket being provided with screw-threads *h* for the purpose of attaching the same to the elevator-car and 60 interiorly recessed, as shown in Fig. 5 of the drawings, forming seats for the projections *g g g* of the sleeve G.

I represents the lever at the top of the elevator-shaft pivoted at *i* and having pivotally 65 attached on its opposite end a vertically-operating rod J, passing through a guide *j*, attached to the side post of the elevator. Said rod is further provided with a projection or shoulder K and on its free end with a lever 70 L, said lever being further provided with a curved projection M'. Directly in alignment with the vertical rod J is rigidly attached to the side post of the elevator a lug *j'* or projection forming a seat for the lever when the 75 latter is brought to its normal position.

The locking and releasing mechanism at the top of the elevator-shaft further consists in a series of links M M or levers operating 80 in conjunction with each other.

N indicates the lever centrally pivoted at *n* on the sheave-timber of the elevator-shaft, said arm carrying on its free ends links M M. Another link O connects the lower end of lever N and lever I. The links M connect 85 the lever N with arms integral with shafts O O', which are mounted in suitable bearings P P. The outer extremities of the shafts are provided with arms passed through slidingly-operated bolts Q, operating in guides R R. 90

S represents the automatic stop arranged on the hand-controlled rope C.

Operation: We will assume, for the purpose of clearly illustrating the *modus operandi* of this device, that the series of doors D are 95 stored at the top of the elevator-shaft, as shown in Fig. 1 of the drawings, and it is desired to release the doors. The adjusting-sleeve G is then set, as shown in Fig. 3, with the bracket H between the lateral projections 100



g of the sleeve. As the elevator-car ascends in its travel the dog F, arranged on the elevator-car, comes in contact with the curved projection M' of the lever L and thereby releases said lever from its seat, as shown in Fig. 3 of the drawings. In consequence of this operation the vertical lever descends by gravity, thus causing the series of links to operate as indicated by dotted lines in Fig. 1 of the drawings. This operation takes place when the doors are released as the car is brought in contact with the doors, and they are deposited at their respective floors in the well-known manner. When it is desired to again store the doors upon bolts, the adjusting-sleeve G is lowered to its maximum degree in its bracket, the car ascends, collects the doors, and the dog F engages with the stop or shoulder K on the vertical rod or lever J, thus carrying the same upward to a predetermined distance, which will admit the swinging lever to be placed on the lug or seat j, as will be readily understood. At this point the doors are slightly above the supporting-bolts Q, and the mechanism again assumes its original position.

When it is desired to operate the car without in any way interfering with the doors at the top of the elevator-shaft, the adjusting-sleeve G is arranged to its utmost height on the hand-controlled rope, and the elevator is therefore prevented from rising to the point where the dog F engages with the curved projection or incline M'. By this means the elevator car is permitted to operate without interfering with the locking device, furthermore providing a safeguard against the accidental displacement of the doors.

It will be noted that the operating-dog F is pivotally attached to the car and is only permitted to move upwardly and is provided with a shoulder at its inner face. This is so arranged in order to permit the downward movement of the car after the dog has passed the swinging arm. Attention is also directed to the fact that the sleeve encircles the hand-controlled rope and the top of the same comes in contact with the automatic stop arranged on the hand-controlled rope.

In actual practice I have found it advantageous to arrange the mechanism at the top of the elevator-shaft and their operating parts in such a manner that when the sleeve is adjusted to its utmost height the elevator-car will be permitted to rise to the level of the top floor.

The sleeve, as will be noted, has three independent adjustments for the purpose of locking, unlocking, and retaining the door in position.

It will be seen that various changes may be made in the details of construction without departing from the spirit of this invention. I therefore do not wish to limit myself to this specific construction.

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

1. The combination of hatch doors adapted to be carried by the car, means for holding the same at the top of the elevator shaft and means for adjustably and automatically limiting the extent of the rise of the car, whereby, when the car ascends to its full extent, it will engage the doors, and will not engage them when the extent of its rise is lessened, substantially as described.

2. The combination of hatch doors adapted to be carried by the car, means for holding the same at the top of the elevator shaft, a valve rope, and a stop on the car adapted to engage a stop on the rope and to stop the ascent of the car at a position below the doors, said stop on the car being movable, whereby the car may be permitted to ascend to a greater extent and to engage the doors, substantially as described.

3. In an elevator the combination, with the hand-controlled rope and the stop thereon, of the car, the adjustable sleeve encircling said rope and provided with lateral projections at different points in its length, and the bracket secured to the car and adapted to support said projections and provided with notches to allow said projections to pass, substantially as described.

4. In an elevator, the combination, with the car, a series of hatch-doors adapted to be carried by the car, and means at the top of the elevator shaft adapted to hold and release said doors, of the hand controlled rope, an adjustable sleeve on the car encircling said rope, and a stop on said rope, substantially as described.

5. In an elevator, the combination, with the car, a series of hatch-doors adapted to be carried by the car, and means at the top of the elevator shaft to automatically store and release said doors of the hand controlled rope, an adjustable sleeve on the car encircling said rope, and a stop on said rope, substantially as described.

6. In an elevator, the combination with the car, rigid door-lifters on the top of said car, the series of hatch-doors, and means for automatically sustaining and releasing said doors at the top of the elevator shaft, of a hand-controlled rope, an adjustable sleeve on the car encircling said rope, and a stop on said rope, substantially as described.

7. In an elevator, the combination of the car, a series of hatch-doors adapted to be carried on the top of the car, means at the top of the elevator shaft adapted to sustain and release said doors, the hand-controlled rope and stop thereon, the adjustable sleeve carried by the car and encircling said rope, and a dog carried by the car and adapted to actuate said sustaining and releasing means, substantially as described.



8. The combination of hatch doors adapted to be carried by the car, supports for the doors at the top of the shaft, means for automatically releasing the supports, and means  
5 for adjustably and automatically limiting the extent of rise of the car, whereby when the car ascends to its full extent it will engage the doors and will not engage them when the

extent of its rise is lessened, substantially as described.

In testimony whereof I affix my signature  
in presence of two witnesses.

ROBERT W. HARE.

Witnesses:

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J. C. GAITHER, Jr.