

(No Model.)

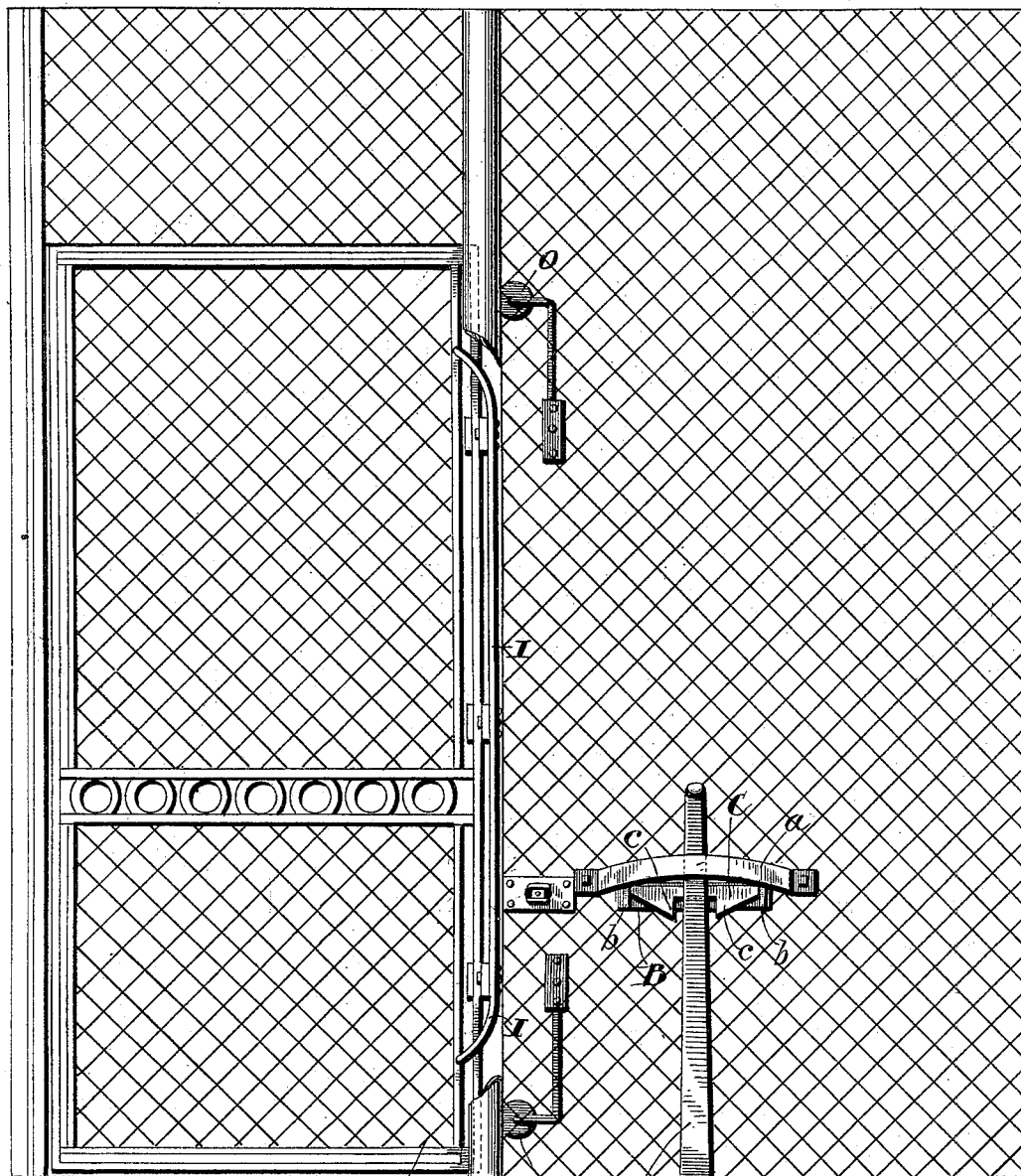
2 Sheets—Sheet 1.

J. R. HERSH.
SAFETY ELEVATOR LOCK.

No. 535,008.

Patented Mar. 5, 1895.

Fig. 1



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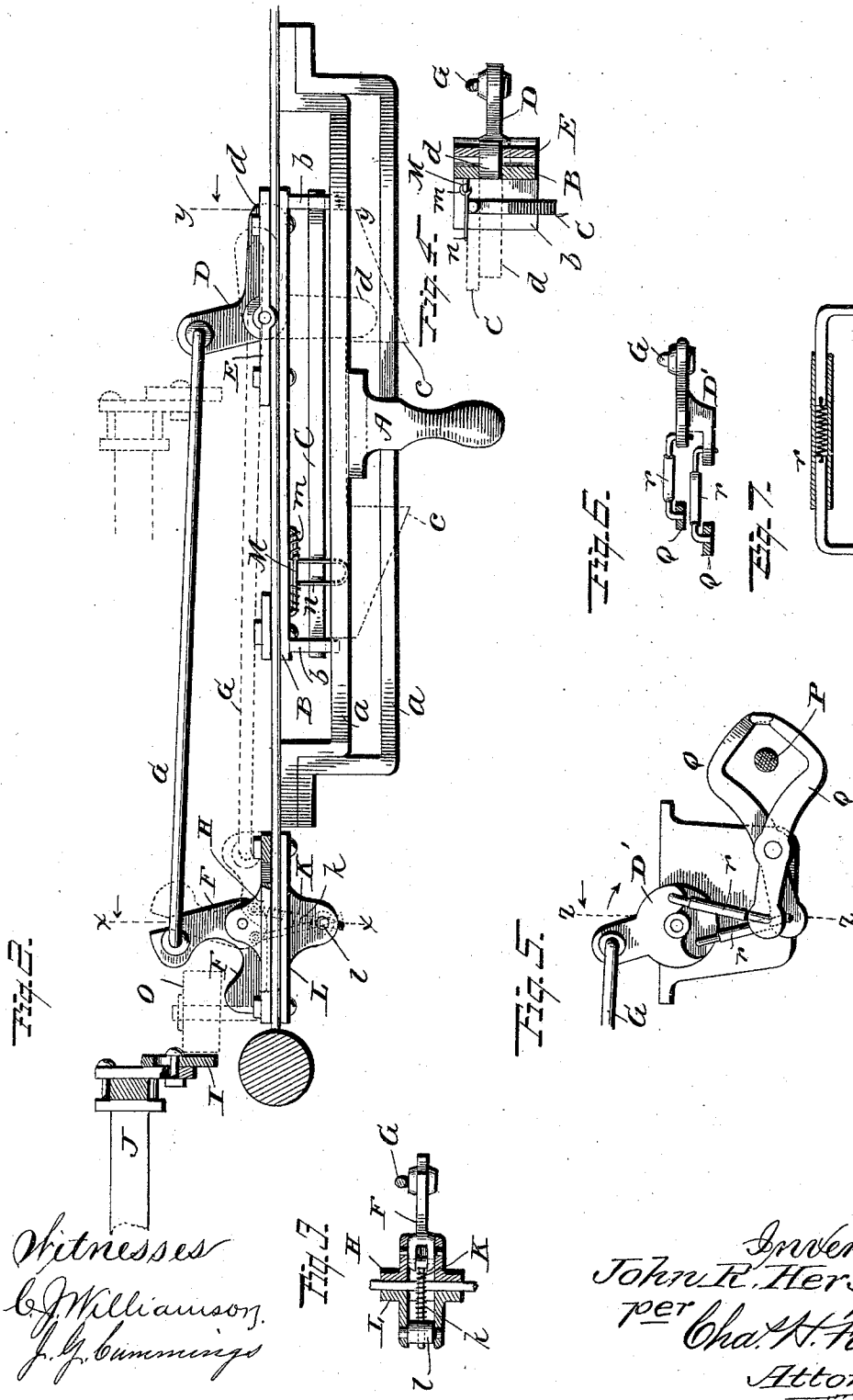
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UNITED STATES PATENT OFFICE.

JOHN R. HERSH, OF DENVER, COLORADO.

SAFETY ELEVATOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 535,008, dated March 5, 1895.

Application filed May 18, 1894. Serial No. 511,665. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. HERSH, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Safety Elevator-Locks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention relates to elevators and has for its object the provision of simple, but thoroughly efficient, automatically operating means, for preventing the lowering or raising of the elevator while a door thereof may be open, and also for preventing the opening of the door before the car is level with the floor; and for insuring the closing of the door when the same has been partially shut; and to these ends the invention consists in the means employed constructed substantially as and for the purpose hereinafter specified.

In the drawings:—Figure 1 is a side elevation from the inside of the car, the door being closed; Fig. 2, a detail plan view of the mechanism carried by the car, and a horizontal section of a portion of that upon the door. Figs. 3 and 4 are sections respectively, upon lines *x—x*, and *y—y*, of Fig. 2; Fig. 5, a plan view of my invention as applied to the rope form of controller; Fig. 6, a section on line *z—z* of Fig. 5; Fig. 7, a detail view of a connecting rod employed in the form shown in Figs. 5 and 6.

In Figs. 1 to 4, I show my invention applied to an elevator in which the starting and stopping mechanism is actuated by means of a hand lever A pivoted within the car, and guided and limited in its movements, as usual, by curved plates *a, a*, near its upper end. Secured to the car side behind the lever A is a plate B that has two inwardly projecting lugs *b, b*, to and between which is pivoted a bar C that has two projections *c, c*, that, in the manner to be described, are adapted to engage said lever upon opposite sides and lock it against movement in either direction from its mid, or stopping position. To place the locking bar C in engagement with the lever said bar is swung from a vertical to a hori-

zontal position, and said movement is effected through a bell-crank lever D that is pivoted to a plate E secured to the outside of the car and the arm *d* of which lever is adapted to strike against said bar as clearly shown in Figs. 2 and 4, when said lever is turned in the right direction. When the lever D is moved away from the bar C the latter, by gravity, drops out of engagement with the lever A. The plates B and E are of course slotted to permit the swinging of the lever D as described.

The motions of the lever D are caused by a second bell crank lever F to which it is connected by a rod G, and which lever F is pivoted to a plate H secured to the outside of the car near the door opening. A plate I secured to and projecting inward from the edge of the sliding door J, is adapted to alternately engage the arms of the lever F, as the door is opened and closed, and operates in the former instance to swing the lever D to throw the locking bar C into engagement with the lever A, and in the latter case to release said lever A, by reversing the movement of the lever D. Owing to the position of the lever F the door J almost immediately after it is started in the direction to open it engages said lever F, and thus locks the lever A, while for the same reason, the latter is not released until the door is almost entirely closed. As the door swings the lever F only through half of its turn the completion of the motion of said lever is effected by means of a spring *k* coiled around a rod K that is pivotally connected to said lever at one of its ends, and at its other end plays through an opening in a pivoted block *l*, that is mounted between ears on a plate L attached to the car side.

A spring *m* coiled around a rod M attached to the plate B, and having a horizontal extension *n*, to engage the bar C acts as a yielding stop to limit the upward swing of said bar.

The plate I is nearly as long as the door and has its ends curved as shown, and secured upon the outside of the car are two rollers O, O that are a distance apart greater than the length of the plate I, and just escape said plate when the door is entirely closed. Unless the car bottom is level with the floor at which a stop is to be made, the door cannot be opened as said plate I will strike one or the other of said rollers, whether the car be

too high or too low; and it will be further seen, that if the door be not wholly closed, upon movement of the car either up or down, one of the curved ends of the plate will strike
5 a roller and the door will thereby be moved into a fully closed position.

To apply my invention to a rope controller P two oppositely moving levers Q, Q, are substituted for the bar C, which are adapted to
10 be swung into and out of engagement with said rope P by the oscillation of a lever D' that corresponds to the lever D, and which is connected by a yielding connection 7, with each lever Q. Such connection is formed of
15 two rods between whose ends is placed a coiled spring, and which spring and portions of the rods are inclosed by a tube, as clearly shown in Fig. 7.

While preferring the construction shown
20 and described I do not wish to be understood as limiting my invention thereto, as changes can be made without departure from the scope of the invention.

By the word controller I mean to cover in
25 the claims any form thereof, whether lever or rope.

What I claim is—

1. In combination with the controller of an elevator, a pivoted locking device for said

controller, a lever, connections between the
30 lever and such device, and a part carried by the elevator door to engage said lever both when the door is opened and when it is closed, as set forth.

2. In combination with the controller of an
35 elevator, a locking device for the controller, a lever, connections between the lever and such device and adapted to be partially moved in opposite directions by the movement of the door in opening and closing, and a spring to
40 complete the motion of said lever, as specified.

3. In combination, with the controller of an elevator, and the sliding elevator door, a lock
45 for said controller, a plate carried upon the door and adapted to actuate said lock, and having its ends curved, and parts, as rollers, carried by the car and adapted to co-operate with said curved ends to slide the door as the
50 elevator moves up or down, substantially as specified.

In testimony that I claim the above I have
hereunto subscribed my name in the presence
of two witnesses.

JOHN R. HERSH.

Witnesses:

H. E. HOYT,
C. A. SCOTT.