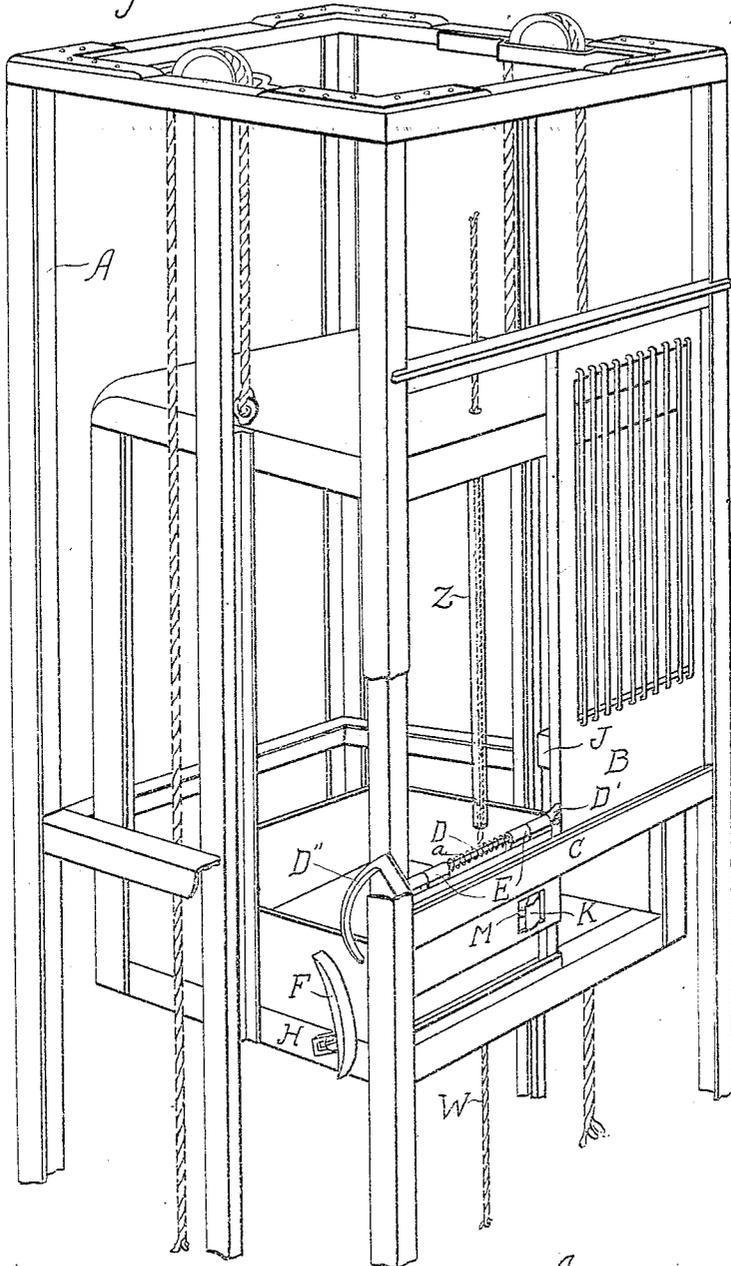


R. J. ROULO,
ELEVATOR LOCK.
APPLICATION FILED OCT. 29, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

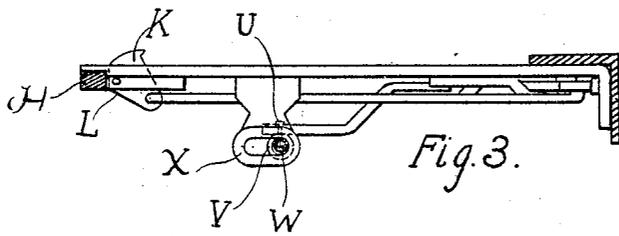
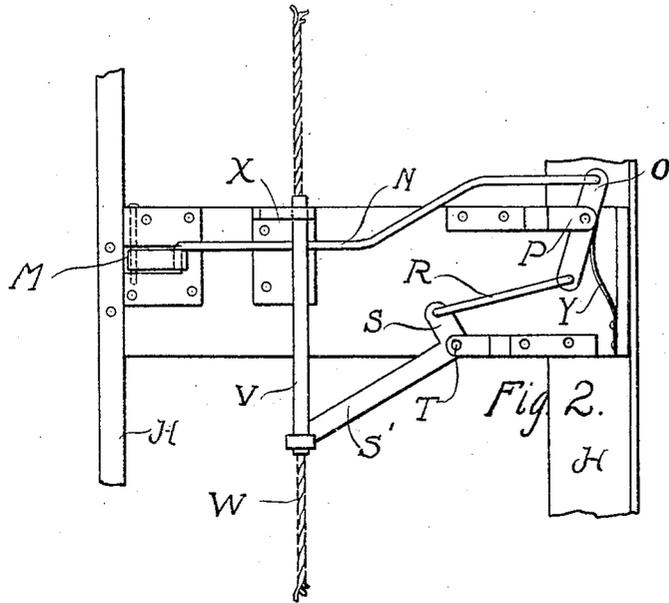


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UNITED STATES PATENT OFFICE.

RICHARD J. ROULO, OF LOS ANGELES, CALIFORNIA.

ELEVATOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 778,550, dated December 27, 1904.

Application filed October 29, 1903. Serial No. 179,072.

To all whom it may concern:

Be it known that I, RICHARD J. ROULO, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Elevator-Locks, of which the following is a specification.

My invention relates to means to lock the doors of elevator-shafts and elevator-cages from being opened except when the elevator-cage is at the proper landing and when the elevator-door is opened to lock the elevator-cage against movement until the door is again closed; and the object thereof is to provide a simple and efficient device for that purpose which will work automatically. I accomplish this object by the mechanism described herein, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the top part of an elevator-shaft, partly broken away, with an elevator-cage therein equipped with my locking devices. Fig. 2 is a side elevation of the cable-lock; and Fig. 3 is an edge view of the lock with fragments of the cage shown in section.

In the drawings I have illustrated the elevator-shaft A as being provided with a sliding door B, at the landing of which C is a sill on the level of the floor of the building. (Not shown.) At the landing is secured a rock-bar D, which is rotatively mounted in bearings E, secured to the frame of the elevator-shaft. One end of this rock-bar is provided with a locking-arm D', and the other end is provided with a rocking arm D'', which is adapted to be engaged by a shoe F, adjustably secured upon the side of the elevator-cage H upon the movement of the cage either up or down the shaft whenever the bottom of the cage is at a landing, and thereby cause the rotation of the rock-shaft to withdraw the locking-arm D' from behind the door, and thereby permit the door to slide in its bearings in the frame to open it. On the inner side of the door is secured the locking-bar J, which when the door is moved to open the exit from the elevator engages with the end of lever K, which is pivoted in bearings L,

affixed to the cage. The outer end of this lever passes through an opening M in the side of the cage. Pivotaly secured to the inner end of this lever is a rod N, having its other end pivotaly secured to the upper end of bar O, which bar is pivoted intermediate its ends in bearings P, affixed to the cage. The lower end of this bar is connected by rod R with bell-crank lever S, which is pivotaly connected to the side of the cage at T. The long arm S' of the bell-crank lever is pivotaly connected at U to a tube V, through which passes the operating rope or cable which controls the mechanism which moves the cage. The upper end of this tube passes through a guide X. This locking mechanism is so located on the side of the cage that the part of the cable grasped by the hand of the operator to control the movement of the cage is situated just above the top of the tube V. Now when the elevator-cage is at a landing in proper position with the door unlocked the movement of the door causes the locking-bar thereon to engage with the projecting end of lever K and carries the same backward and pushes it into the slot M, thereby through connecting mechanism causing the tube V to be thrown upwardly on the operating-cable W and inclosing the same at the spot where the hand usually grasps said cable, thus preventing the operator from moving the cable to start the cage until the door is closed. When the door is closed, spring Y, secured to the cage at the back of the lower end of bar O and bearing against the same, returns the bar to the position shown in Fig. 2, and thereby through connecting mechanism returns the tube V to its normal position, as shown in Fig. 2, so that the cable may be grasped by the hand of the operator. If desired, a tube Z (shown in Fig. 1) may be attached to the top of the cage and extend downwardly therefrom and around the operating-cable W to the point at which the upper end of tube V reaches when the door is open. This would render it impossible for the cable to be moved to start the cage until the door was closed. As soon as the cage leaves the landing spring a on the rock-shaft

causes its rotation to bring the locking-arm behind the edge of the door to prevent its being opened.

It will thus be seen that with an elevator 5 equipped with my locking devices and operated as described it is impossible for an accident to occur by reason of the stoppage or starting of the elevator-cage, as the door is always securely locked while the elevator- 10 cage is in motion, and when the elevator-cage is at rest at the proper landing and the door opened it is impossible to start the cage in motion until the door is closed.

Having described my invention, what I 15 claim as new, and desire to secure by Letters Patent, is—

1. The combination of an elevator-cage; an elevator-shaft having a sliding door at the landing thereof, said door having a locking- 20 bar on the side adjacent to the cage; a lever pivotally secured intermediate its ends to the side of the cage and having the outer end thereof passing through a slot in the side of the cage, said outer end being adapted to lie 25 in the path of the locking-bar of the sliding door when said door is opened and to be pushed back into said slot thereby; a bar pivotally secured intermediate its ends to the said cage; a rod pivotally connected to the 30 upper end of said bar and to said lever; a bell-crank lever pivotally secured to said cage in front of said bar; a rod pivotally connected to the lower end of said bar and to the short arm of said bell-crank lever; an operating-cable 35 passing through said cage adapted to control the mechanism by which said cage is operated; and a tube surrounding said cable and pivotally connected to the long arm of said bell-crank lever.

40 2. The combination of an elevator-cage having a slot in the side thereof; a lever pivotally

secured to the said cage and having the outer end thereof passing through said slot and into the path of the movement of the door which 45 controls admission into said cage; a bar pivotally secured intermediate its ends to said cage; a rod pivotally connected to the upper end of said bar and to said lever; a bell-crank lever pivotally secured to said cage in front of said bar; a rod pivotally connected to the 50 lower end of said bar and to the short arm of said bell-crank lever; an operating-cable passing through said cage adapted to control the mechanism by which said cage is operated; a tube surrounding said cable and pivotally con- 55 nected to the long arm of said bell-crank lever; and an elevator-shaft having a sliding door at the landing thereof, said door having a locking-bar on the side adjacent to the cage.

3. The combination of an elevator-shaft, a 60 door therefor; an elevator-cage having a door-shaped opening adapted to register with the elevator-shaft door and affording ingress thereto and egress therefrom when the door of the shaft is open; an operating-cable pass- 65 ing through said cage, said cable being adapted to control the mechanism by which said cage is operated; a tube surrounding said cable below the point at which the same is grasped by the operator when running the elevator- 70 cage; means to cause said tube to pass upwardly on said cable when the door affording ingress to the elevator-cage is opened; and means carried by said door to operate said tube-raising mechanism.

In witness that I claim the foregoing I have hereunto subscribed my name this 23d day of 75 October, 1903.

RICHARD J. ROULO.

Witnesses:

G. E. HARPHAM,
MARGARETE C. NICKELSON.