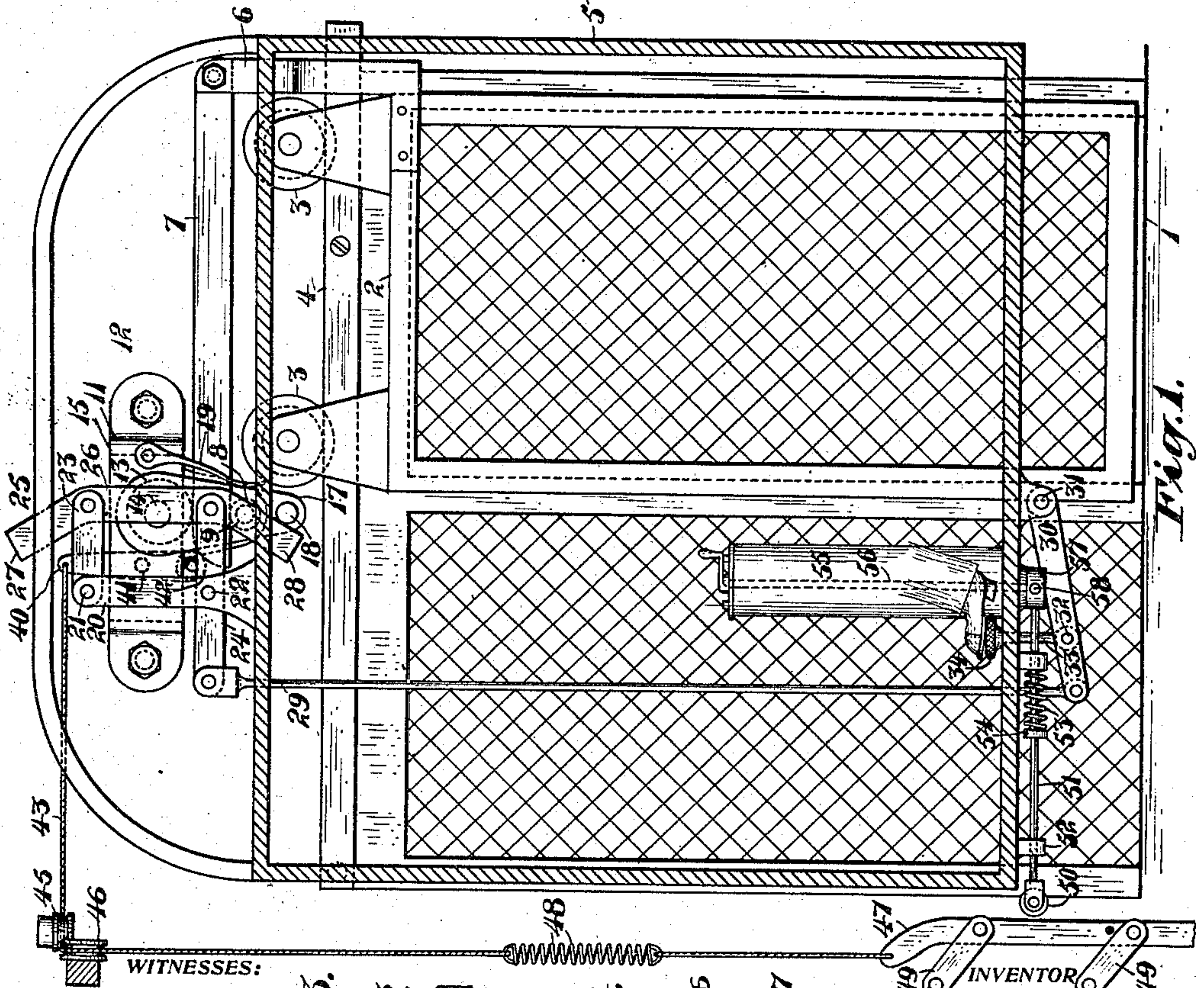
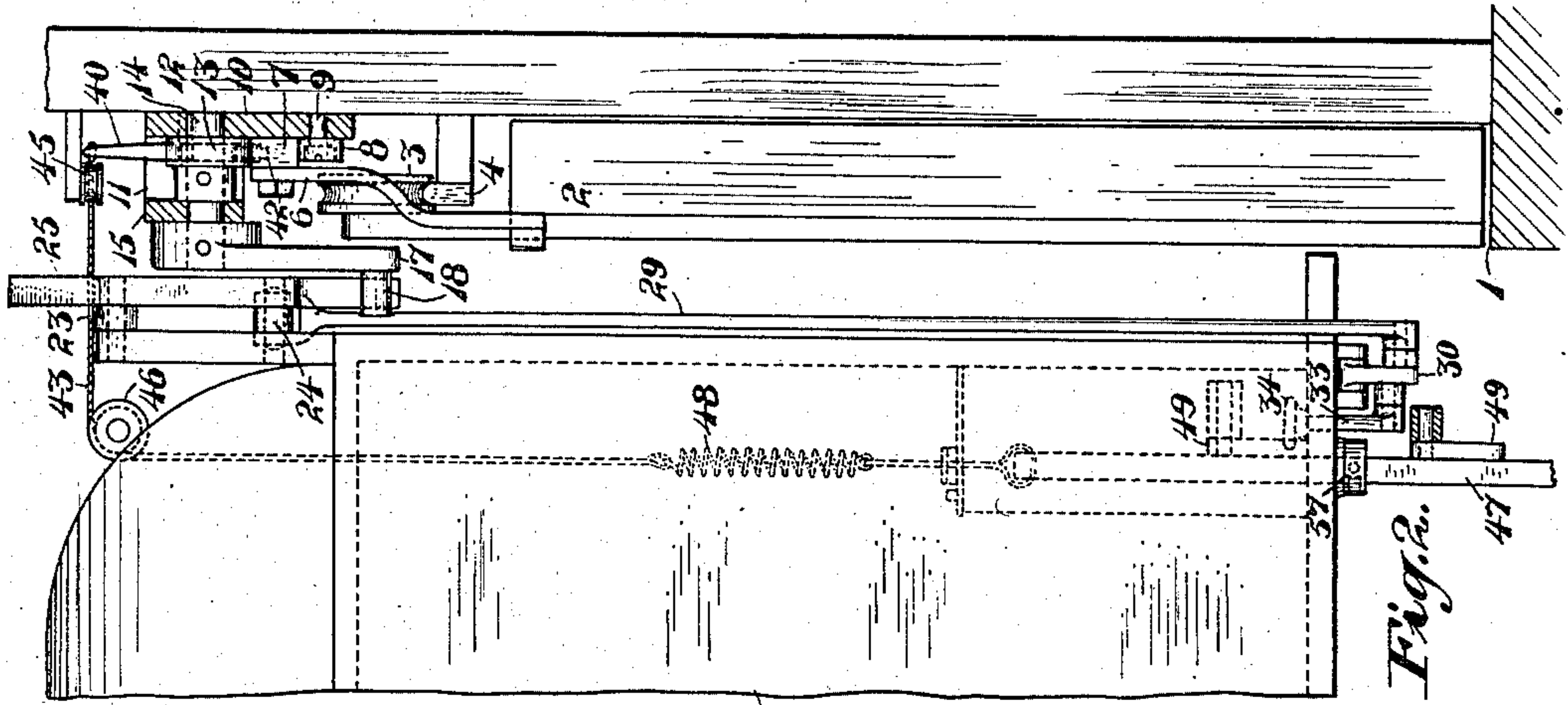


H. C. RANDALL.
CONTROLLING MECHANISM FOR ELEVATOR DOORS.
APPLICATION FILED MAY 12, 1910.

997,848.

Patented July 11, 1911.



WITNESSES:
G. L. Friedner
N. B. Keating.

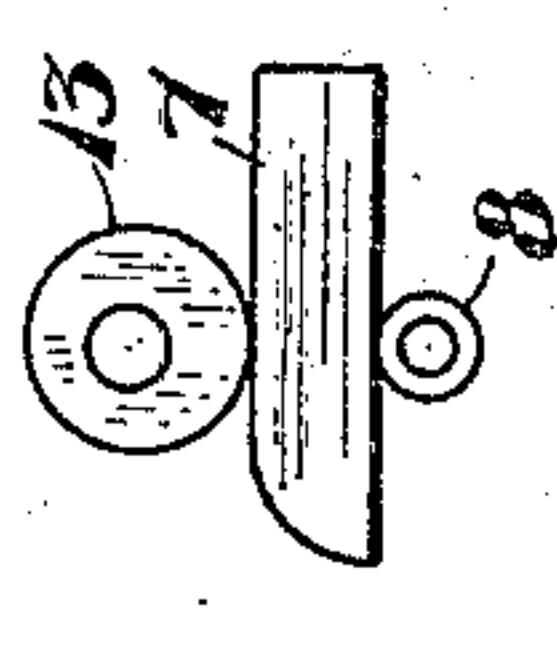
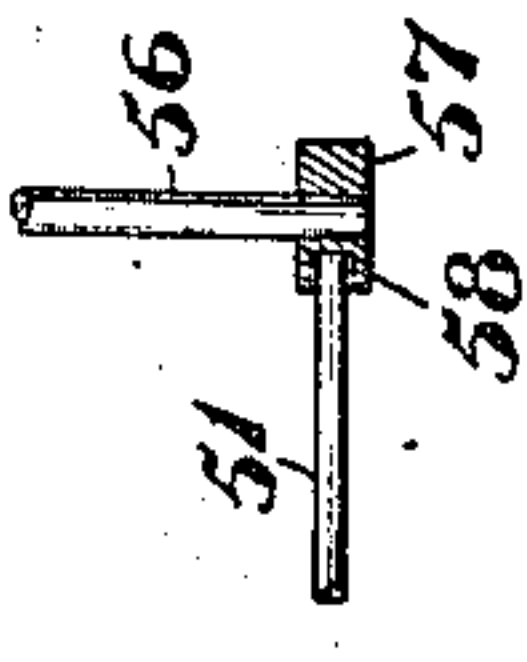


Fig. 4.



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HORATIO C. RANDALL, OF SAN FRANCISCO, CALIFORNIA.

CONTROLLING MECHANISM FOR ELEVATOR-DOORS.

997,848.

Specification of Letters Patent.

Patented July 11, 1911.

Application filed May 12, 1910. Serial No. 560,862.

To all whom it may concern:

Be it known that I, HORATIO C. RANDALL, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Controlling Mechanism for Elevator-Doors, of which the following is a specification.

The present invention relates to improvements in elevator doors, the object of the invention being, first, to provide means for preventing the opening of the door except when the floor of the car is within a certain predetermined distance from a floor of the building.

In the accompanying drawing, Figure 1 is an inside view of an elevator door equipped with my improvement; Fig. 2 is an edge view of said door; Fig. 3 is a detail view of a cam and the adjacent parts; Fig. 4 is a detail view of the locking device.

Referring to the drawing, 1 indicates a floor of a building through which extends an elevator shaft, and 2 indicates a door movable over the edge of the floor adjacent to said shaft and supported by rollers 3 running on a track 4. 5 indicates a car movable vertically in said shaft. Secured to one side of said door is an upwardly extending arm 6 which has a right angled or horizontal extension or slidepiece 7 in the direction of the opening movement of the door. Said slidepiece travels between a roller 8 on its lower side, revoluble upon a pin 9 screwed into the rear plate 10 of a frame 11 attached to a vertical wall 12 of said elevator shaft. It also travels beneath a cam 13 on its upper side, said cam being revoluble on a rock shaft 14 extending between front and rear plates 15 and 10 of the frame 11. Normally said cam extends almost directly downward from the rock shaft 14, and in this position, if, by the opening of the door, the slidepiece begins to move between said cam and roller said movement then causes said cam to bind on the slidepiece so that it thereby acts as a clutch and prevents such movement. Said rock shaft 14 extends forwardly through said front plate 15 and carries upon its extended end a depending arm 17 having an outwardly extended pin 18. A spring 19 pressed against said arm 17 normally maintains it in a depending position.

20 indicates a post secured to the car 5, at two points 21, 22, upon which are pivoted

equal and parallel arms 23, 24, to the ends of which is pivoted a shifter 25, comprising a central portion 26 between said arms, and upper and lower terminal portions 27, 28, outside of said arms, and bent away from the central portion 26. The arm 24 is extended rearwardly beyond its pivot, away from the shifter, and pivoted thereto is a depending rod 29, which extends through the floor of the car, and is connected to a lever 30 having a fulcrum 31 secured to the under side of the floor of the car. To an intermediate point 32 of said lever is pivoted a stem 33 having a head 34 adapted to be depressed by the foot of the operator.

The mode of operation of this portion of the apparatus is as follows: The parts are shown in position in which the car is descending and the car floor is approaching the level of the floor surrounding an elevator shaft. If the operator wishes to open the door at the floor which he is approaching, he depresses the stem 33 with his foot, which action raises the shifter 25 to a position in which the arms 23, 24, extend horizontally. Said shifter is thus brought into a position in which the pin 18 on the rocking arm 17 will impinge upon the lower inclined portion 28 of the shifter as the car descends. The pin will thereby be moved along said inclined portion of the shifter and the arm 17 will rock, thereby rocking the rock shaft 14 and moving the cam slightly upward, to allow the slide piece 7 to slide freely between said cam and roller and the door to open. It will be observed, however, that although the operator may depress the stem 33, it will not on that account be possible to open the elevator door until the car floor approaches a floor of the building within a distance determined by a position of the car at which the pin 18 is operated upon by one of the inclined parts of the shifter to move the cam to release the slidepiece. If the operator does not depress the stem 33, then no movement of the shifter takes place and consequently no movement of the cam to release the slidepiece.

To provide means for preventing the starting of the elevator car unless the door is fully closed, I provide a lever 40 pivoted at 41, between the plates 15, 11, carrying a roller 42 on its lower end, which roller is adapted to be engaged by the end of the slidepiece 7. When the door is opened only slightly the upper end of said lever being

connected to a cable 43 which passes around pulleys 45, 46, and is connected to a lock controller 47, a spring 48 being interposed in said cable.

5 The lock controller 47 is pivoted to two parallel and equal swinging arms 49 so that it has a so-called parallel movement. Said controller is adapted to impinge upon a roller 50 carried at the rear end of a bolt 51, sliding in bearings 52 on the under side of the floor of the car, being normally repressed by a spring 53 abutting against a collar 54 on said bolt. 55 indicates the car controller which has a vertical shaft 56 extended through the floor of the car and carrying thereon a disk 57. Said disk has a recess 58 into which the end of the bolt enters. When it has so entered, it locks the car controller in the position in which there is no power applied to the car to move it in either direction.

The operation of this portion of the device is as follows: When the car has come to rest at the floor of the building, and the door has been opened, the controller 47 is then moved into a position in which the arms 49 extend horizontally, so that said controller presses against the roller 50 and causes the bolt 51 to enter the recess 58, thus locking the car controller, so that the car cannot be started so long as the door is open. Upon the closing of the door, the locking controller 47 drops, and the bolt is released therefrom and is withdrawn from the recess 58 by means of the spring 53.

Since means have been provided for preventing the opening of the door except

when the floor of the car arrives at within a certain predetermined distance of the floor of the building, and said means then permits the door to be opened when the floor of the car arrives within that distance of the floor of the building, the spring is interposed in the cable in order that this may be permitted, for, otherwise, when the motive power was not entirely shut off, the bolt 51 could not enter the recess 58, and therefore the locking controller could not move into operative position, the cable could not be drawn upward by the lever, and the lever would prevent the opening of the door.

I claim:—

In combination with a door of an elevator shaft, a slidepiece connected to the door and movable horizontally therewith, a friction clamp arranged to engage and clamp, against movement in the opening direction of the door, said slidepiece at any point thereof, said clamp being inoperative to clamp the slidepiece against movement in the closing direction of the door, and means carried by the car and adapted to render said clamp inoperative only when the car floor arrives within a predetermined distance from the bottom of said door, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HORATIO C. RANDALL.

Witnesses:

FRANCIS M. WRIGHT,
D. B. RICHARDS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."