

E. R. RENFROW.  
SAFETY DOOR SWITCH.  
APPLICATION FILED NOV. 28, 1902.

NO MODEL.

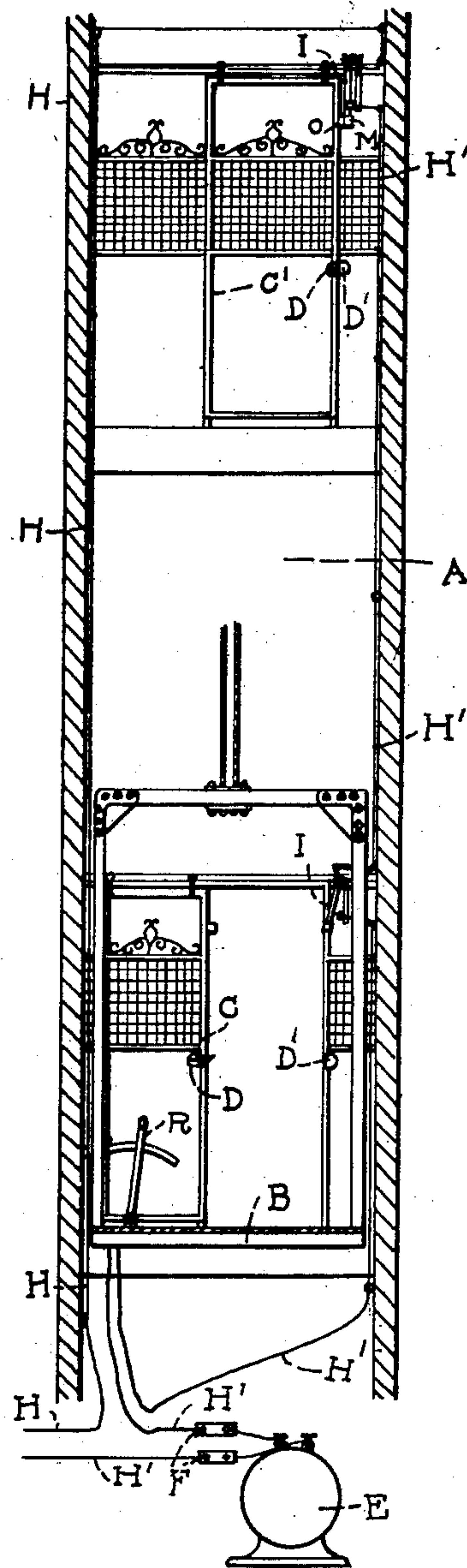


FIG. 1.

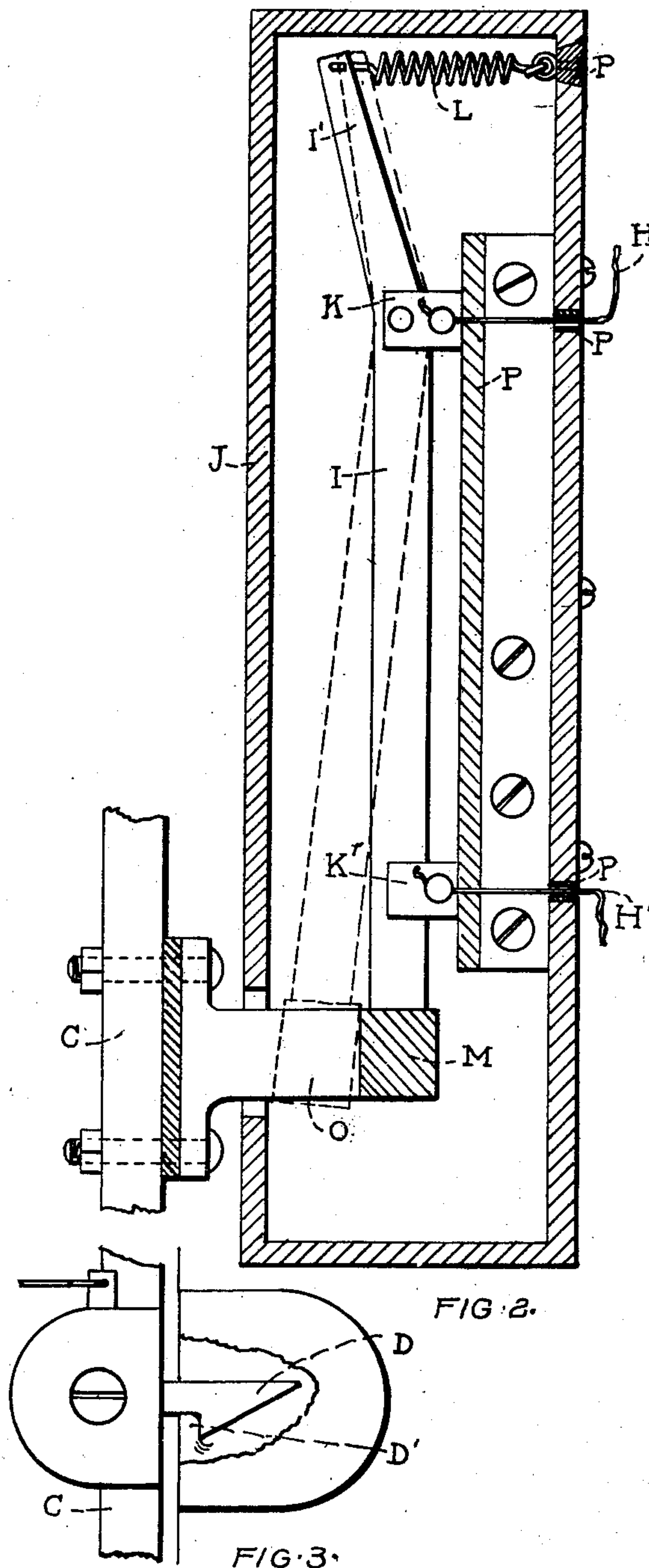


FIG. 2.

FIG. 3.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

ELDEN REA RENFROW, OF ST. JOSEPH, MISSOURI.

## SAFETY DOOR-SWITCH.

SPECIFICATION forming part of Letters Patent No. 733,997, dated July 21, 1903.

Application filed November 28, 1902. Serial No. 133,044. (No model.)

*To all whom it may concern:*

Be it known that I, ELDEN REA RENFROW, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Safety Door-Switches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in opening and closing elevator or other doors; and my object is to provide a connection between the door and an electric switch that will render it impossible for the door to be open and the car or other conveyance to be at the same instant in motion, thus securing absolute safety to the person from injury liable to happen in entering or leaving the vehicle while it is in motion.

In the drawings, Figure 1 is a vertical section of an elevator-shaft, an elevator, the electric switches, a motor, and the connecting-wires, the door entering the elevator at a lower floor shown open and at an upper floor shown closed. Fig. 2 is a detail of the switch-blade and its box, the poles and electrical wire connections, the spring, the insulators in the box, a door partly broken away, and the insulated bumper attached thereto; and Fig. 3 is a detail of a latch fastened to another portion of said door and to the door-frame and closed in the position it must occupy when the elevator is ascending or descending.

Similar letters refer to similar parts throughout the several views.

In the drawings, A represents the elevator-shaft; B, the elevator; C, an open door at the elevator, and C' a closed door.

D is a latch pivoted to the door and adapted when the door is shoved shut to hook automatically into a slot D' or other convenient catch upon the door-frame, as shown at Fig. 3.

E represents a motor suitably placed, and F F are fuse-blocks.

H is the wire by which the electric current enters the building and passes up the elevator-shaft and when the door into the ele-

vator is closed and a circuit established into the switch or switches, and H' is the wire through which the current passes down and out the shaft.

I is a switch-blade provided with a box or casing J, fastened at any suitable position and adapted to prevent any one coming in contact with a live wire or the switch. The switch-blade is pivoted to poles K and when in circuit hangs between poles K'. The upper end I' of the switch-blade is bent at an angle, as shown in Fig. 2, toward the latch edge of the door, and a spring L connects it with the back of the box. The lower end of the switch is provided with an insulated handle M to prevent the current passing otherwise than by the switch.

O is an insulated bumper rigidly attached at the edge of door C and which as the door is closed presses against insulated handle M, and thus carries switch-blade I back into contact with poles K', thereby establishing the circuit.

P P are insulators, and R, Fig. 1, a lever.

The dotted lines in Fig. 2 indicate the position to which switch-blade I will inevitably be drawn by spring L the instant door C is unlatched and shoved open, for as the door is shoved open it withdraws bumper O out of the switch box or casing, and as said bumper releases its pressure against insulated handle M the power of spring L breaks the contact between the switch-blade and poles K' and the elevator cannot be again started either up or down until the door has been closed and circuit thereby reestablished.

It should be understood that in the use of the device on an elevator a switch at each floor of the building is provided. It should also be understood that while I have shown and described the device in combination with an elevator-door where it is especially adapted to prevent injury and loss of lives it can be readily adapted to other doors.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with a door provided with a latch and an insulated bumper, of a switch-blade and the poles to which pivoted, the forwardly-bent upper end of said blade, the poles to receive the blade near its lower end, the insulated handle attached on the



lower end of the switch-blade and the spring at its upper end to carry the blade from between the lower poles as the bumper is withdrawn from the switch-box when the door is  
5 opened, thus breaking the circuit, substantially as described and for the purpose specified.

2. The combination with a door, its latch and insulated bumper, of a switch-casing provided with an insulated base with ends spaced  
10 from the top and bottom of said casing, the duplicate poles near the upper and lower ends of said base, the electric wires connected with said poles, the knife pivoted between  
15 the upper set of poles, the upper forwardly-bent end of said knife, the insulated handle on the lower end of said knife adapted to receive the pressure of the bumper as it carries the knife between the lower set of poles forming  
20 a circuit, and the coiled spring forming connection between the upper end of said

forwardly-bent end of the knife and the switchboard and adapted to throw said knife out of circuit when the bumper is withdrawn, substantially as described and shown. 25

3. In a safety door-switch the combination of a switch-blade pivotally attached at its upper end to the upper poles, a forwardly-bent upper extension of said blade, a spiral spring connected therewith and with the back of the  
30 switch-box, the electric wires and poles and insulators, a door provided with a latch and the insulated bumper adapted to force the switch-blade backward as the door is closed thereby establishing a circuit, substantially  
35 as described and for the purpose specified.

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

ELDEN REA RENFROW.

Witnesses:

ANNIE M. RENFROW,

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