

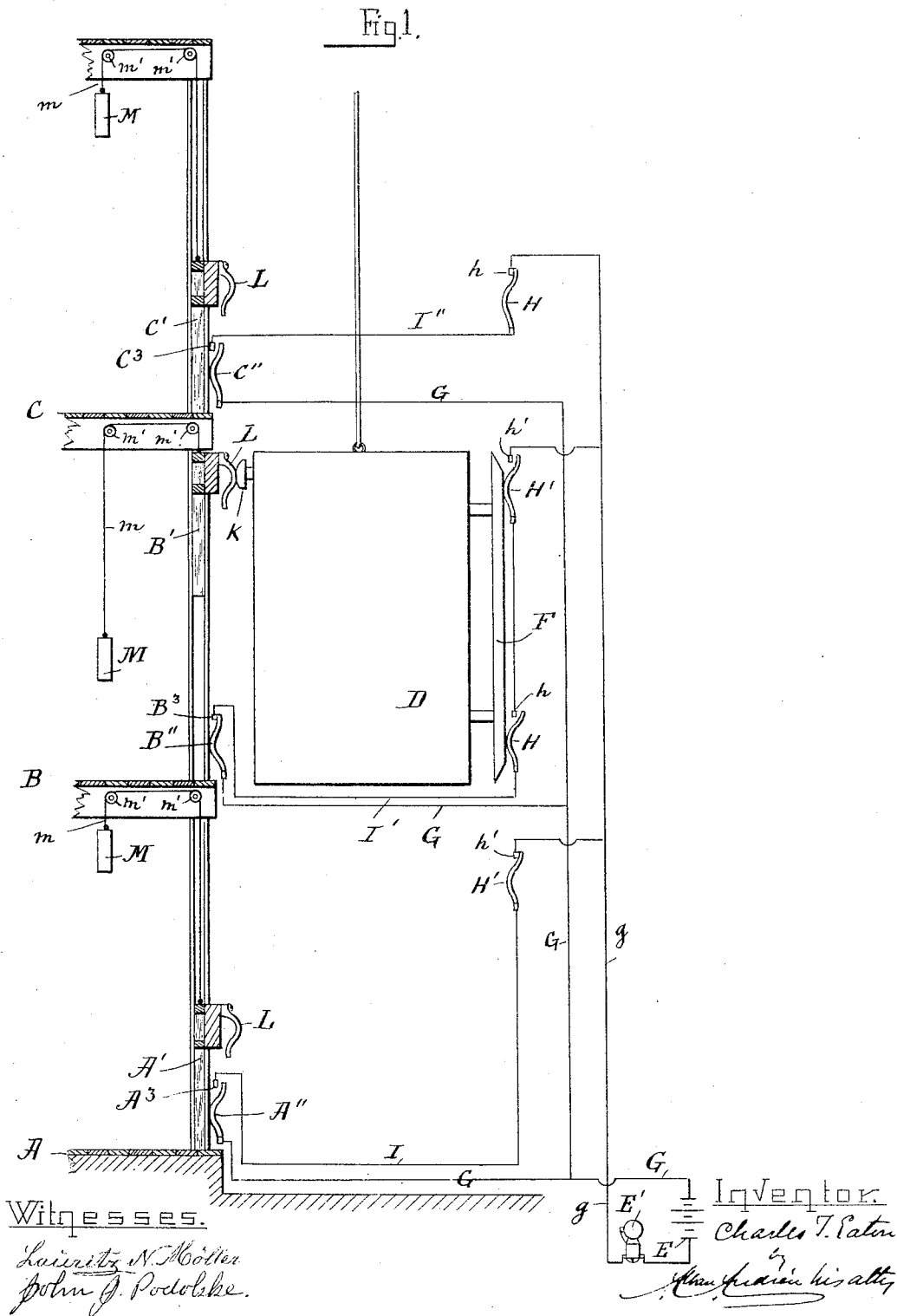
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AUTOMATIC DANGER SIGNAL FOR ELEVATOR GATES.

APPLICATION FILED MAY 18, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



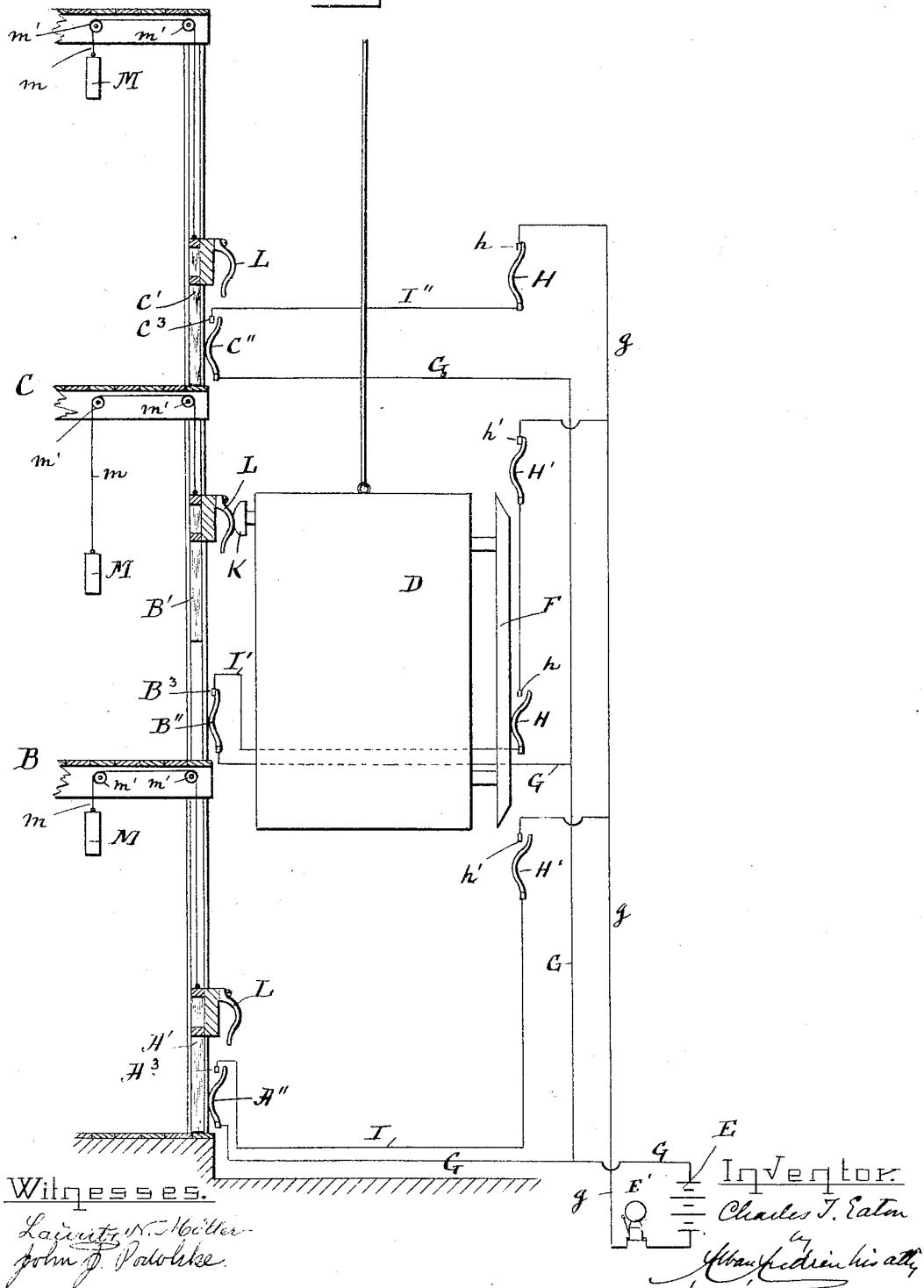
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2 SHEETS—SHEET 2.

Fig. 2.



UNITED STATES PATENT OFFICE.

CHARLES T. EATON, OF EAST SOMERVILLE, MASSACHUSETTS.

AUTOMATIC DANGER-SIGNAL FOR ELEVATOR-GATES.

SPECIFICATION forming part of Letters Patent No. 777,612, dated December 13, 1904.

Application filed May 18, 1904. Serial No. 208,529. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. EATON, a citizen of the United States, and a resident of East Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Automatic Danger-Signals for Elevator-Gates, of which the following is a specification.

This invention relates to an automatic danger-signal for elevator-gates, and comprises in its construction an electrical circuit, a battery or current-generator, an alarm in the circuit, and a pair of landing-switches in series with a gate-switch at each intermediate floor, except the top and bottom floors, where only one landing-switch and a corresponding gate-switch is needed, as the car does not pass beyond such floors, and consequently only one landing-switch is needed at such places. Attached to the car is a contact-breaker extending, if necessary, the whole length of the car, adapted to contact with the landing-switches for holding the circuit open until the car has passed its whole length above or below the floors, when an alarm will be sounded in case a gate should be left open at the floor or landing which the car is leaving or at floors above or below such landing. In case the car should be stationed opposite to the floor used and the gate on the floor above or below it should be open the circuit at the said open gates on such floor or floors will be closed by the gate-switch, causing an alarm to be automatically sounded to indicate "danger." If, however, the gates above or below such floor should be closed, no alarm will be sounded, indicating "safety."

Referring to the drawings, Figure 1 is a diagrammatic view of the automatic electric elevator-alarm device, showing for the alarm system a gate-switch for the upper and lower landings open, an intermediate gate-switch closed, and the two landing-switches for the car opposite to the intermediate floor open, showing no alarm; and Fig. 2 is a diagrammatic view showing the upper and lower gates closed and circuit broken at such parts and showing the car in the act of passing by said intermediate floor.

Similar letters refer to similar parts where

ever they occur on the different parts of the drawings.

In the drawings, A represents the lower or first floor of a building, in which B is the second, and C the top, floor, as usual.

A' B' C' represent the gates, respectively, on the floors A, B, and C.

D is the elevator-car, as usual.

E is the battery or current-generator, and E' is a suitable alarm in the circuit. From one pole of the battery leads a wire G to the respective gate-switches A' B' C', on which A³ B³ C³ are the respective terminals.

To the car D is secured a contact-breaker F, extending, if necessary, the whole length of the car, as shown, adapted to contact with landing-switches H H', secured to the interior of the well, as shown. On the intermediate floor B two of such landing-switches are shown; but at the upper and lower floors only a lower landing-switch H and an upper landing-switch H' are necessary.

h and h' are the terminals of the respective switches H and H', as shown. g is a wire leading from the opposite pole of the battery to the terminals h h' of the landing-switches H H'.

I I' I'' are wires connecting, respectively, the terminals of the gate-switches to the landing-switches.

To the upper portion of the car D is attached a side projection or buffer K, adapted to engage with a friction-spring or yielding cushion L, attached to each of the gates A' B' C', as shown.

M M M are suitable counterweights attached to cords m m m, guided over suitable pulleys m' m' m' and having their other ends attached, respectively, to the gates A' B' C', as shown. Each gate overbalances its counterweight, so as to cause the gate to drop to its normal closed position when released after being raised to its open position, as is common in devices of this kind.

The gate-switches are normally held open by the gates when closed. The landing-switches are held open when actuated by the contact-breaker F, as shown in Fig. 1.

The operation is as follows: If the elevator-car is at the landing B and its gate B' is raised

and held in such raised position by the buffer K engaging the gate-spring L, as shown in Fig. 1, and the landing-switches H H' are held open by the contact-breaker F, no alarm will be sounded if the gates above and below such landing are closed. If one or more such gates should be left open and one or more of the gate-switches closed, the circuit through the battery and bell will be closed, causing an alarm to be sounded. As soon as the car commences to ascend the gate-spring L on the gate B' is liberated from the car-buffer K, allowing the said gate to descend by gravity to its closed position. Should the gate B' remain accidentally open during the downward passage of the car, the latter, after its contact-breaker F has passed by the landing-switches H H' of said floor, will cause the circuit through the gate-switch B' and said landing-switches to be closed, causing an alarm to be sounded. During the descent of the car while at landing B the buffer K, bearing on the gate-spring L of gate B', aids in causing said gate to move downward with the car until such gate reaches its closed position, as shown in Fig. 2.

In Fig. 1 the car D is shown at an intermediate landing. If the car should start upward, the gate B' would be released from the buffer K and move downward by force of gravity; but as it takes some little time for the gate to reach its lowest position while the car is moving upward during this time and as the top landing-switch must be held open until the gate reaches the bottom and opens the gate-switch before said landing-switch is closed it will plainly be seen that in many cases it will take a contact-breaker the full length of the car and two landing-switches, as described, or a false alarm would be given when nothing unusual was occurring. In Fig. 2 the car is shown as descending from an intermediate floor with the gate yieldingly attached by the usual spring. As the gate does not reach bottom to open the circuit until the top of the car is in many cases even with said floor, the bottom landing-switch must be held open in this case until gate has reached bottom or a false alarm will be given when nothing unusual is occurring. It is also necessary in many cases to stop the car considerably above or below the floor-level to unload certain kinds of freight. There are also many cases, which need not here be described, where landing-switch side of circuit must be kept open when

the car is its full length above or below the level of the floor. By adding an extra landing-switch at intermediate landings I can retain the landing-switch line open just twice as long as when only one landing-switch is used. This feature is of great importance with many types of elevator-gates.

What I wish to secure by Letters Patent and claim is—

1. A danger-signal for elevators involving an electric circuit and a battery, and an alarm therein, an elevator-car having a contact-breaker, a plurality of circuit-changers intermediate the floors, adapted to be actuated by the car contact-breaker, circuit-changers operable by the doors or gates, and means carried by the car for engaging the doors or gates to hold the same out of contact with the last-mentioned circuit-changers.

2. The herein-described danger-signal for elevators, consisting of an electric circuit and a battery, and alarm therein, an elevator-car having a contact-breaker attached thereto, a pair of landing-switches at each floor or landing, adapted to be actuated by the car contact-breaker, a gate-switch at each landing adapted to be operated by the doors or gates, and a yielding device attached to each door or gate and a buffer or projection on the car cooperating therewith for holding the gate as set forth.

3. A signal system for elevators including an electric circuit and a generator, and an alarm therein, an elevator-car having a contact-breaker secured thereto, a plurality of spaced switches intermediate the floors adapted to be actuated by the contact-breaker, gate-switches adapted to be operated by gates, and means carried by the said car for holding the gate inoperable on the switches.

4. A signal system for elevators involving an electric circuit and a battery, and an alarm therein, an elevator-car having a contact-breaker, a circuit-changer intermediate the floors adapted to be actuated by the contact-breaker, a movable gate, a switch operable by said gate, and means carried by the said car to hold the gate inoperable on the switches.

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

CHARLES T. EATON.

Witnesses:

ALBAN ANDRÉN,
LAURITZ N. MÖLLER.