No. 741,490. PATENTED OCT. 13, 1903.

A. E. HANDY.

ELECTRICAL SWITCH.

APPLICATION FILED APR. 15, 1903.

NO MODEL.

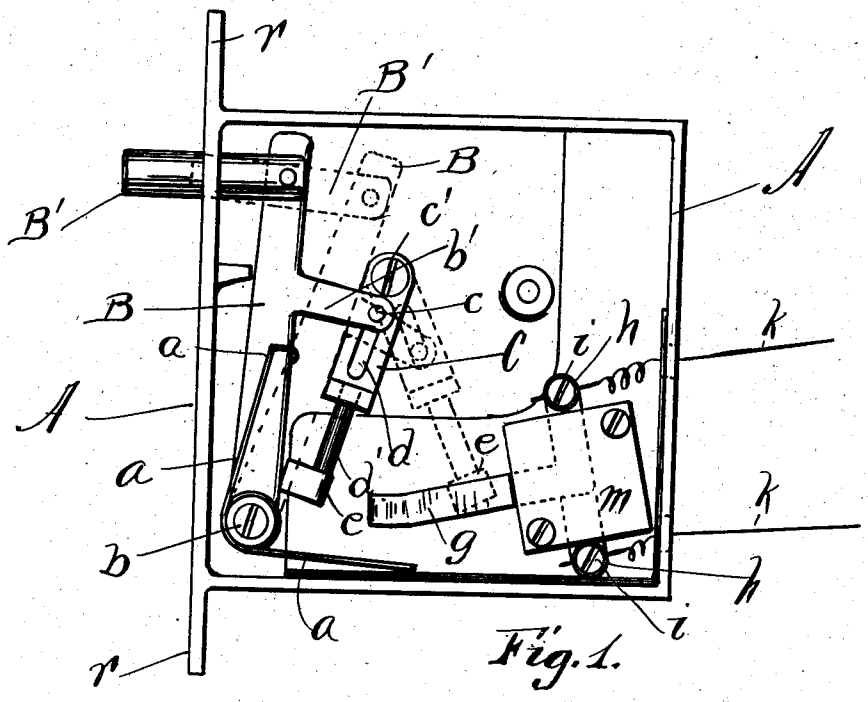

Fig. 1.

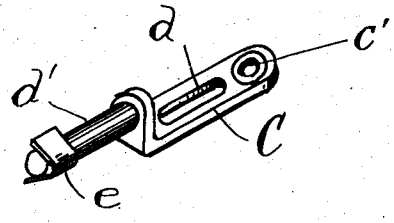

Fig. 2.

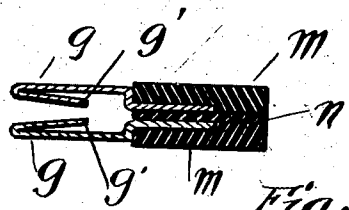

Fig. 3.

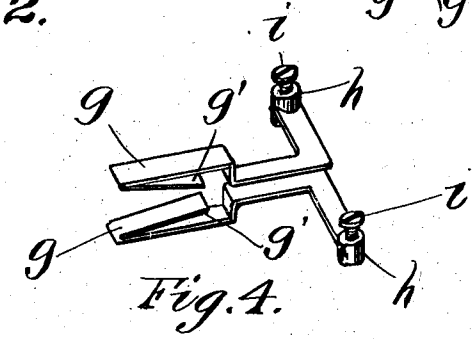

Fig. 4.

Witnesses

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No. 741,490. Patented October 13, 1903.

UNITED STATES PATENT OFFICE.

ARTHUR E. HANDY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE RHODE ISLAND ELEVATOR AND MACHINE COMPANY, OF PROVIDENCE, RHODE ISLAND, A CORPORATION.

ELECTRICAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 741,490, dated October 13, 1903.

Application filed April 15, 1903. Serial No. 152,662. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR E. HANDY, a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Electrical Switches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to electrical switches of the class more particularly designed to be operated by opening and closing the doors in elevator-wells and are for the purpose of making and breaking the current which acts on a device to lock the car when the door is opened.

The object of the invention is to construct a simple and practical device which will work positively to make and break the electric current by a quick action and one that will have a long stroke of the push pin or button to compensate for lost motion and wear of the sliding elevator-doors. It is fully described in the specification and illustrated in the accompanying drawings.

Figure 1 is a side elevation of the device with the cover of the case removed, showing the mechanism within. Fig. 2 is a perspective view of the swinging arm which makes and breaks the current by swinging its outer end in between the contact-pieces. Fig. 3 is a sectional view of the contact-pieces in position between the insulation-blocks. Fig. 4 is a perspective view of the contact-pieces in their relative position to each other, showing the binding-posts secured to their ends.

In the drawings, A is the case which is made to inclose the operating mechanism. The cover of this case is removed in Fig. 1, exposing to view all of the parts. The main lever B is pivoted at *b* and has an outward and slightly downwardly extending arm *b'*, in the end of which arm is fixed a pin *c*.

B' is the button or pin which is connected to the lever B and projects out through the casing A to be operated on and pressed in by closing the elevator-door. The spring *a* is coiled around the hub of lever B and has one end resting against the casing, while the other end engages the lever B at *a'*. The tension of this spring holds said lever normally in the forward position.

C is a swinging arm pivoted at *c'* and slotted at its center portion *d* to receive the end of pin *c*. Extending outward from the lower end of this arm is a pin *d'*, of non-conducting material, and fixed to the end of this pin *d'* is a tip *e*, of conducting material, which tip is forced by the inward movement of this arm in between the spring-lips *g' g'* of the contact-pieces *g g*, forming an electrical connection between them. Fixed to the outer ends of each contact-piece is a binding-post *h h*. The binding-screws *i i* are for securing the ends of the conducting-wires *k k*. These contact-pieces are held in blocks *m m*, of fiber or any suitable non-conducting material, with layers of mica *n* between them.

The operation of the device is as follows: The switch is fastened to the framework of an elevator-well by screws through the ears *r r*. The conducting-wires *k k* lead from the binding-posts *i i* to the mechanism below, which operates to lock the elevator when the door is opened. In closing the well-door it comes in contact with and drives in the pin B', carrying with it the lever B and arm C to the position shown in dotted lines in Fig. 1. By making a connection to this arm C close to its pivoted end the initial movement of this arm is necessarily very quick. Then as the lever B is thrown over, carrying the arm C with it, the pin *c* travels down the slot *d* and both the motion and the speed of the arm are decreased to the minimum. The outer end of this arm C is forced in between the two contact-pieces *g g* with a sharp quick motion and the circuit is completed, releasing the lock below (not shown) and allowing the elevator to move. By my arrangement of levers I get a large amount of extra motion on the head *e* of the arm C and also get a sharp quick throw of the head as it enters and leaves the contact-pieces. This quick throw is absolutely necessary to the successful working of this class of switch. This de-

vice is very simple, practical, and efficient in its construction and operation and is well calculated to withstand and operate under the constant shock of a slamming elevator-door against it and at the same time compensate for the looseness or loss of motion and wear in the sliding doors.

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

1. In a device of the character described, a casing, spring contact-plates connected with the wire-terminals, a spring-actuated lever pivoted at one end in said casing, a push-pin pivoted on the opposite end of said lever, a swinging arm pivoted near its end opposite to that of said lever the swinging end of said arm having a head of conducting material, a slot in said arm, a lever-actuated pin engaging the slot in said arm near its pivoted end so as to give the swinging end an accelerated motion when it enters and leaves the contact-plates, substantially as described.

2. In a device of the character described, a casing, spring contact-plates connected with the wire-terminals, a spring-actuated lever pivoted at one end to the casing, a push-pin connected on the opposite end of said lever, a contact-arm pivoted near its end opposite to that of said lever, a slot in said arm, a lever-actuated pin engaging the slot in said arm nearest its pivoted end when said arm is out of engagement with said contact-plates, said pin gradually receding in said slot from said pivotal point as the arm enters the contact-plates for the purpose of obtaining a quicker action in entering and leaving said plates when said push-pin is operated, substantially as described.

3. In a device of the character described, contact-plates, having spring-lips and connected to the wire-terminals, a slotted arm held to swing from one end and carry a head of conducting material on the end of a non-conducting pin extending out from said arm, a push-pin, a lever pivoted at one end and engaging said push-pin at its opposite end, an arm on said lever, a pin in said arm engaging the slot in said swinging arm, a spring bearing against said lever to draw out the swinging arm and break the connection between said contact-plates when the pressure on the push-pin is relieved, substantially as described.

4. In a device of the character described, wire-terminals, contact-plates each having one end turned back nearly upon itself, forming spring-lips and connected to said wire-terminals, a slotted arm pivoted at one end, an insulated head of conducting material held on the end of said arm, a push-pin, a lever pivoted at one end and engaging said push-pin at its opposite end, an arm on said lever, a pin fixed in said lever-arm engaging the slot in said swinging arm to give said swinging arm an accelerated motion when said lever is moved, a spring acting on said lever to keep it in its outward position, substantially as described.

In testimony whereof I have hereunto set my hand this 11th day of April, A. D. 1903.

ARTHUR E. HANDY.

In presence of—

HOWARD E. BARLOW,

E. I. OGDEN.