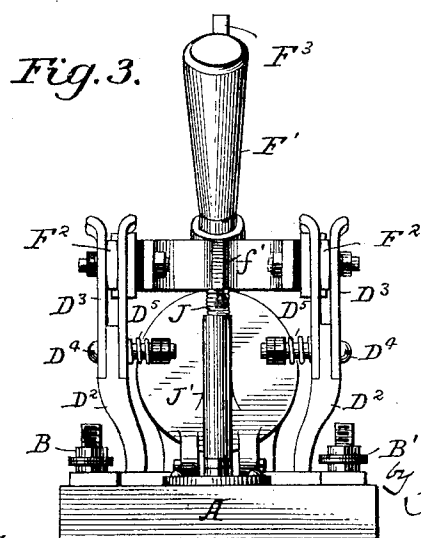
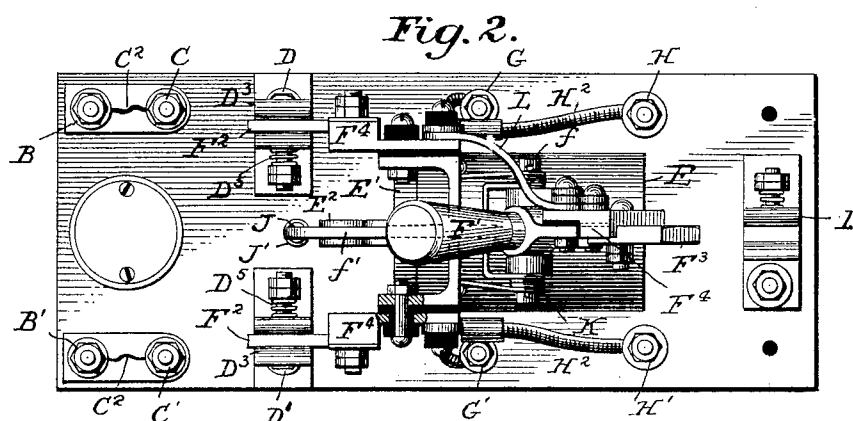
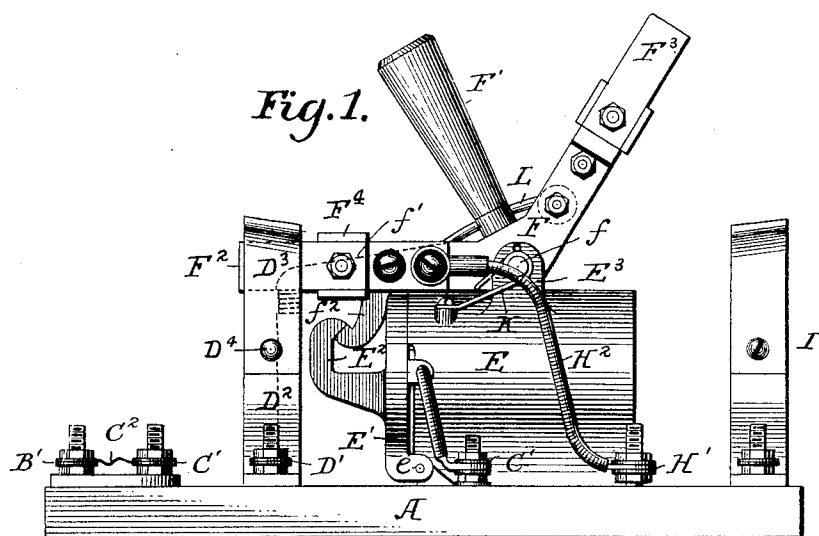


(No Model.)

J. D. IHLDER.
POTENTIAL SWITCH.

No. 594,879.

Patented Dec. 7, 1897.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN D. IHLDER, OF YONKERS, NEW YORK, ASSIGNOR TO THE OTIS BROTHERS & COMPANY, OF NEW YORK, N. Y.

POTENTIAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 594,879, dated December 7, 1897.

Application filed October 15, 1896. Serial No. 609,007. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. IHLDER, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Potential Switches, of which the following is a specification.

My invention relates to electric switches, and more particularly to what may be termed "potential switches," and while the switch may be used for many and various purposes and in many and various connections it is intended more especially for use in connection with electric elevators; and my invention consists of a switch embracing the features of construction substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, Figure 1 is a side view of the switch in its normal position with the main circuit closed. Fig. 2 is a plan view of the same, and Fig. 3 is an end view.

The switch comprises a base A, of any suitable material, preferably slate or other insulating material, which supports the operating parts of the switch. Mounted on one end of the switch are the binding-posts B B', with which the terminals of the feeding-circuit are connected, and extending between these posts and the posts C C' are the fuses C². These posts are respectively electrically connected with the binding-posts D D', which are shown as mounted on or forming part of the standards D³, upon which are mounted the blades D³, held in position by means of the screws D⁴, having spring-bearings D⁵, so that they constitute parallel spring-blades to receive the respective knives or blades of a moving switch-arm, hereinafter described.

Mounted on the base is a housing E, constituting an electromagnet, the terminals of the coils of which are connected to the binding-posts G G', and these binding-posts are connected to the posts H H' of the working circuit, so that the coils of the magnet may be either in the main working circuit or in a branch or shunt therefrom.

Pivotaly connected to the housing, which is preferably in the shape of a cup, as shown, is a cover E', hinged to the housing, as at e,

and mounted on the cover E' is a lug or catch E².

Pivotaly mounted on the housing and supported in the bearings E³ is a pivoted lever F, having an operating-handle F' and carrying the blades or knives F², suitably insulated from the lever and adapted to close the contacts between the blades D³ of the main binding-posts. Also mounted on the lever is the blade F³, and this is adapted to make contact with the spring-blades I, supported on the base and having binding-screws to connect with a separate circuit. The lever F has trunnions f mounted in the bearings E³ and an arm f', provided with a catch f², adapted to engage with catch E² on the cover or armature E' of the magnet E. This arm f' also normally bears on a spring J, supported on a standard J', so that it is normally under stress of the spring when held or locked by the catches or lugs f² E². Also mounted on the lever are the springs K, which tend to throw the switch open when released by the cover or armature.

The blades F² and F³ are preferably made of separate pieces of metal and are secured to the lever F by clamping-arms F⁴, which are insulated from the lever and serve to permit the ready change of the blades or knives if perchance they are worn. These clamping-arms are connected to the main working-circuit terminals H H' by suitable conductors, as H². One of the clamping-arms F⁴, carrying one of the main conductor-blades F², is connected to the blade F³ by a conductor L.

The bearing-faces of the catch f² and the lug E² are made at an angle, as shown in Fig. 1, so that in case of emergency the lever can be operated by the handle, forcing the armature away from the housing, notwithstanding the strength of the current passing through the magnet is sufficient to normally hold the armature in position, so that the switch is not only an automatic switch depending upon the potential of the current, but can be used manually in case of emergency or otherwise.

With this construction when the parts are in their normal positions it will be seen that the main-line-feeding-circuit terminals B B' are electrically connected with the working-

line-circuit terminals H H', and the lever F is held under the stress of the springs J K, one or both, by the catch f^2 engaging the lug E^2 on the cover or armature E' of the housing.

5 It will be understood that while the current passing through the coils of the magnet in the housing through the terminals G G' is of sufficient power to hold the armature or cover E' closed the main line will continue closed

10 and the blades remain in their normal positions; but as soon as the strength of the current passing through the magnet weakens below a predetermined point the armature E' causes the lug E^2 to release the catch f^2 , and

15 the lever F' is instantly thrown into a position so that the blade F³ engages the blades I, breaking the main-line circuit and completing the circuit through the terminals I. If this circuit is an independent circuit—that

20 is, independent of the working circuit—no current will pass through the conductor L; but if it is a branch circuit from the main working circuit the circuit is closed through one of the main working-circuit terminals H,

25 the conductor H², the conductor L, blade F³, and blades I. It will thus be seen that the switch can be used to close either an independent circuit upon the breaking of the main circuit or the falling of potential in the

30 main circuit, or may close a branch from the main working circuit, or can be used in other connections which will suggest themselves to those skilled in the art. I have not deemed it necessary to show the circuits, as these may

35 be differently arranged according to the particular use made of the switch, my invention being more particularly a switch which normally closes one circuit and keeps it closed until the potential of the circuit through the

40 magnet falls below a certain predetermined point, when the switch automatically operates to break the main circuit and close another and to keep it closed until the switch is properly adjusted to restore the main circuit.

What I claim is—

1. A switch having two sets of terminals, a cup-shaped housing, inclosing the magnet, an armature thereon having a lug, a lever mounted on the housing and having a catch engaging the lug on the armature, the lever being under stress of a spring, substantially as described.

2. An electric switch comprising two sets of terminals, a cup-shaped housing having a pivoted armature or cover carrying a lug, a spring-actuated lever having blades engaging the terminals and mounted on the housing, a catch engaging the lug on the armature, and a handle for operating the lever, substantially as described.

3. An electric switch comprising two sets of terminals a pivoted spring-actuated lever, blades insulated from the lever and engaging the main terminals, a blade also insulated from the lever and adapted to engage the other terminals, and a conductor connecting one of the main-circuit blades with the secondary-circuit blade, substantially as described.

4. A switch having a set of main-line terminals and a separate circuit-terminal, a lever carrying a set of blades cooperating with the main-line terminals and a blade insulated from the others cooperating with the separate circuit-terminal to close the same when the main-line circuit is broken, a catch on the lever, a magnet the armature of which controls the catch, and a spring for operating the lever to close the separate circuit when the main-line circuit is broken, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN D. HILDER.

Witnesses:

JAMES S. FITCH,
O. B. WARING.