

W. A. MORSE.
ELECTRIC SWITCH.
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941,266.

Patented Nov. 23, 1909.

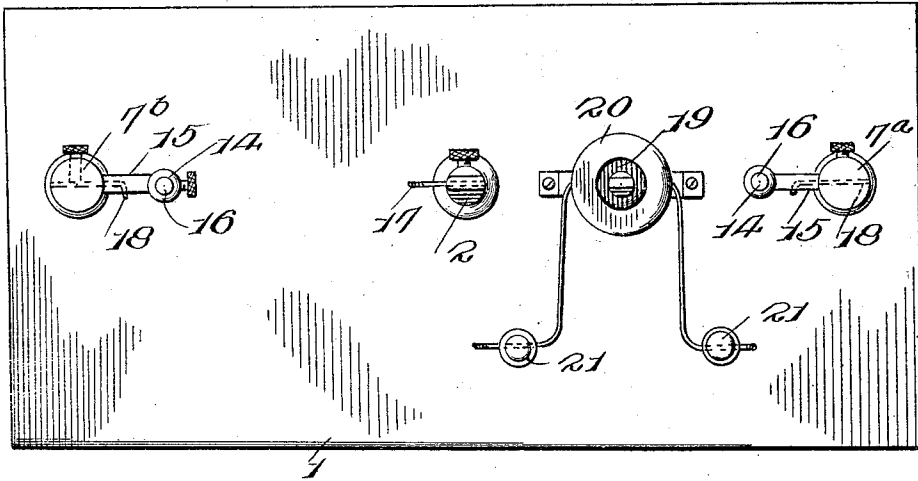
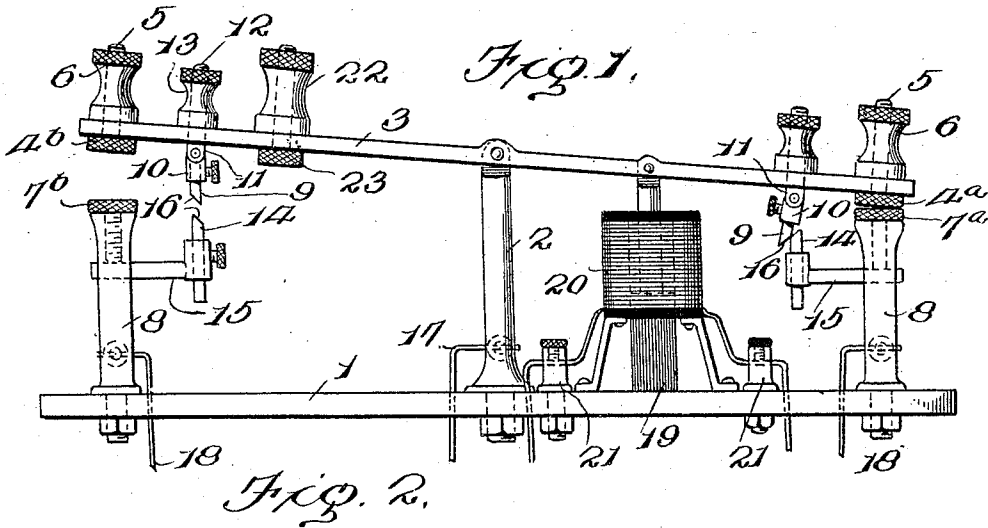
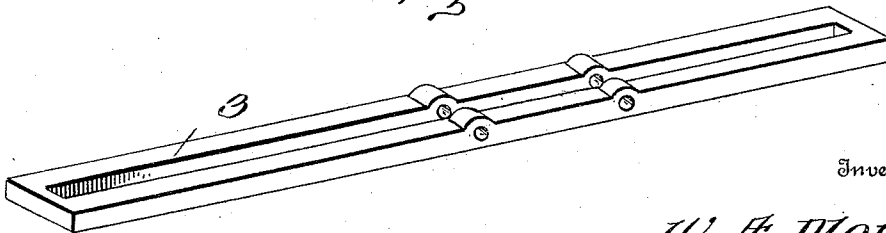


Fig. 3.



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

WATERS A. MORSE, OF WESTPORT, NEW YORK.

ELECTRIC SWITCH.

941,266.

Specification of Letters Patent.

Patented Nov. 23, 1909.

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To all whom it may concern:

Be it known that I, WATERS A. MORSE, citizen of the United States, residing at Westport, in the county of Essex and State of New York, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

The present invention relates to improvements in electric switches and more particularly to a switch which has been designed especially for use in connection with a device for controlling water power plants from a distance.

The object of the invention is the provision of an electric switch which is simple and inexpensive in its construction and embodies novel means whereby it can be readily actuated from a distance.

The invention further contemplates a switch in which two sets of cooperative contacts are introduced into the circuit, one set of the contacts being arranged to remain in engagement with each other for a short period after the other set of contacts have been separated, thereby relieving the last mentioned contacts of the usual arcing.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of an electric switch embodying the invention; Fig. 2 is a top plan view of the switch, the switch lever being removed; and Fig. 3 is a detail perspective view of the switch lever.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Specifically describing the present embodiment of the invention, the numeral 1 designates the switch base and 2 a standard projecting upwardly therefrom. Pivotally mounted at a point between its ends upon this standard is a switch lever 3 which is shown as formed of two spaced bars. The ends of this switch lever are provided with the respective contact members 4^a and 4^b which are similar in construction, each being formed with a stem 5 which passes upwardly between the spaced bars of the switch lever and is capped by a thumb nut 6. These movable contact members 4^a and 4^b

are designed to engage the respective fixed contact members 7^a and 7^b which are threaded in posts 8 projecting upwardly from the base 1. It will thus be obvious that when the lever is swung in one direction the movable contact member 4^a will be brought into engagement with the fixed contact member 7^a while the movable contact member 4^b will be brought into engagement with the fixed contact member 7^b by swinging the lever in the opposite direction. Each end of the switch lever is also provided with a swinging carbon contact 9 which is clamped within a socket 10 hinged to a head 11 formed with a threaded stem 12 passing upwardly between the spaced bars of which the lever is formed and capped by a nut 13. These swinging carbon contact members 9 are designed to engage fixed carbon contact members 14 carried by arms 15 projecting laterally from the posts 8. The meeting ends of these carbon contacts are correspondingly beveled as indicated at 16 and the contacts are so arranged as to come into engagement with each other before the first mentioned primary contact members. However, when the carbon contacts engage each other the beveled ends 16 thereof have a cam action upon each other which swings the movable contact member to one side and permits the switch lever to continue in its movement until the primary contacts are brought into engagement with each other. In a reverse manner it will be obvious that these secondary or carbon contacts are not separated until after the primary contacts have been separated and thereby serve to relieve the primary contacts of all arcing. One of the main circuit wires 17 is connected to the standard 2 while branch circuit wires 18 are connected to the respective posts 8, one of the branch wires being introduced into the circuit when the switch lever is moved in one direction, while the opposite branch wire is introduced into the circuit when the switch lever is moved in the opposite direction.

Pendent from one of the arms of the switch lever and pivotally connected thereto is an armature 19 which is arranged to move within a solenoid 20, the terminals of the solenoid being connected to the binding posts 21. This armature serves as a weight and normally holds the arm of the lever to which it is connected in a lowered position with the contact 4^a in engagement with the contact 7^a.

However, when a current is caused to pass through the solenoid 20 the armature 19 is drawn upwardly and the lever swung about its pivot so that the contact 4^a is separated from the contact 7^a and the contact 4^b swung into engagement with the contact 7^b. A weight 22 is adjustably mounted upon the opposite arm of the switch lever to that carrying the armature 19 and by moving this weight toward or away from the pivot point of the lever, the effective weight of the armature can be regulated and the amount of current necessary to lift the same therein varied. In the present instance this weight is engaged by a screw 23 passing upwardly between the spaced bars of which the lever is formed, and by loosening the screw the weight can be moved upon the lever to any required position.

In the operation of the device the binding posts 21 are designed to be introduced into an electric circuit leading from a distant point so that the switch itself can be controlled from the said distant point.

Having thus described the invention, what is claimed as new is:

1. In an electric switch, the combination of a switch lever formed of spaced bars, a movable primary contact formed with a threaded stem which is passed between the spaced bars and capped by a nut, a head formed with a threaded stem which is passed between the spaced bars of the lever and capped by a nut,

a swinging carbon contact carried by the head, a post, a fixed primary contact carried by the post, and a fixed carbon contact carried by the post, the fixed carbon contact being designed to engage the movable carbon contact before the fixed primary contact engages the movable primary contact, the movable carbon contact swinging laterally to one side so as not to interfere with the action of the lever.

2. A switch as specified comprising a base, a standard centrally mounted on said base, a lever intermediately fulcrumed on said standard, posts carried on the opposite ends of said base, coöperating contacts carried by said posts and the opposite ends of said lever for closing a circuit, arms inwardly extended from said posts adjacent the upper ends thereof, carbon contacts carried by said arms, carbon contacts pivotally mounted on said lever at the opposite ends thereof for coöperation with said first carbon contacts, an armature pivotally disposed at one end of said lever, and a solenoid mounted on said base to receive said armature to operate said lever upon the closing of an independent circuit through the same.

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

WATERS A. MORSE. [L. S.]

Witnesses:

WILFORD SHELDON,
DILLON FORNSWETT.