

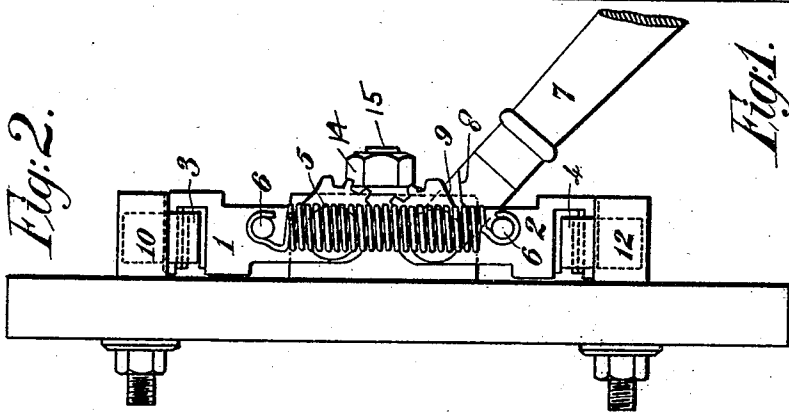
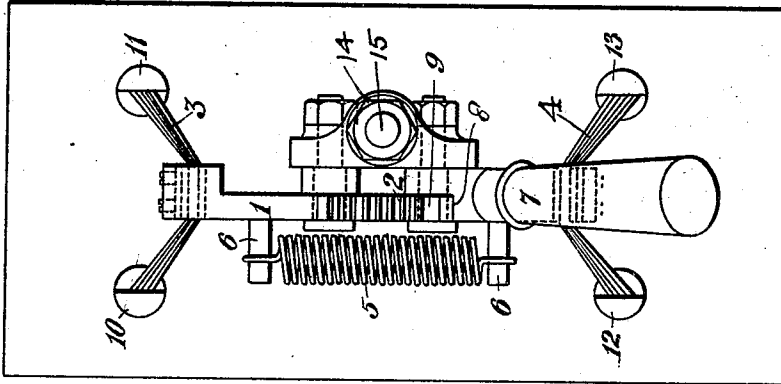
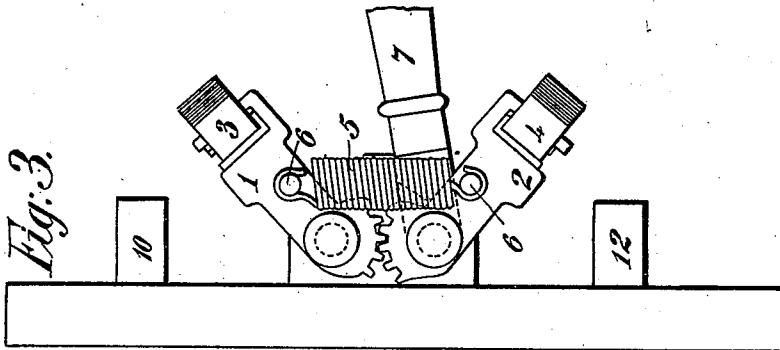
No. 710,270.

Patented Sept. 30, 1902.

F. H. HEADLEY.
ELECTRIC SWITCH.

(Application filed Jan. 21, 1901.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK HAGGER HEADLEY, OF ST. AUSTELL, ENGLAND.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 710,270, dated September 30, 1902.

Application filed January 21, 1901. Serial No. 44,184. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK HAGGER HEADLEY, a subject of the Queen of Great Britain, residing at Elm Cottage, St. Austell, in the county of Cornwall, England, have invented a new and useful Improvement in Electric Switches, of which the following is a specification.

This invention relates to electric switches, and has for its object the provision of a simple and improved quick-break double-pole switch of the construction hereinafter described.

My invention is characterized by simplicity of action and construction, in the ease with which the mechanical parts of the switch can be detached from the switchboard, and in the arrangement that the whole of the working parts of the "switch," in which term is included all parts except the terminal contact-blocks and the connecting bridge-pieces, are insulated from the electric circuit.

In the accompanying drawings, Figure 1 shows a plan of a switch constructed and arranged according to my invention, the switch being in its closed position. Fig. 2 is a side elevation of the same, the switch being in its closed position. Fig. 3 is a side elevation of the switch in its open position.

A switch constructed according to my invention consists of two pivoted levers 1 2, each of which carries a switch-bridge or connecting-piece 3 4, preferably of copper laminae, adapted to make or break one of the leads of an electric circuit. The two levers 1 2 are geared together by suitable means, preferably by means of teeth-cut segments forming the shorter arms of said levers, the longer arms being arranged to carry the connecting bridge-pieces 3 4. Said levers 1 2 are connected together by means of a spring 5 of suitable strength attached at either end to pins 6 6, projecting from the levers 1 2. When the switch is closed, as shown in Figs. 1, 2, the moment of the force exerted by the spring about the pivots of the levers is practically zero on account of the line of action of said forces passing through or in close proximity to the center of the pivots of the levers. Consequently the switch will remain in its closed position until the handle 7 is operated, when the abutments 8 on the lower part of

the handle abutting against the outer tooth 9 of the toothed segment of the lever 2 causes said segment to rotate about its pivot. The rotation of this segment consequently causes the toothed segment of the lever 1 to rotate an equal amount by means of the toothed gearing, and consequently both levers rotate about their pivots and cause their respective bridge-pieces to rise. As the bridge-pieces rise the moments of the forces exerted by the spring continually increase, and finally shortly before the bridge-pieces break contact with the circuit-terminals the spring overcomes the resistance of friction and produces a sudden rotation of the levers about their pivots and a consequent quick break of the circuit at both sets of terminals. The handle 7 is carried loosely by the pivot of the lever 2, and the abutment 8 is of such a size that it is possible for the lever 2 to move forward on the spring, causing the sudden break without the handle being moved simultaneously. Consequently the quick break is independent of the rate at which the handle is moved over.

The method by which the bridge-pieces 3 4 are carried by the levers 1 2 is shown in the drawings, each bridge-piece being separated from its lever, preferably by means of mica.

A switch constructed according to my invention possesses the advantage that the mechanical parts of the switch—that is to say, all parts except the connecting bridge-pieces—are entirely insulated from the electric circuit which the switch controls. Further, it will be noted that the whole of the parts of the switch can be readily detached from the switchboard by unscrewing the nut 14, which, coacting with the bolt 15, normally secures the mechanical parts of the switch on the switchboard.

I may so construct my switch that the mechanical parts and the connecting bridge-pieces carried by them are mounted on a separate switchboard from the board carrying the circuit-terminal blocks. Further, I may employ a hand-wheel instead of a lever-handle, as shown in the drawings.

What I claim is—

1. An electric switch consisting of the combination of a base-board, four circuit-terminals arranged thereon, two pivots mounted

thereon, two levers pivoted on said two pivots, one arm of each lever being in the form of a toothed segment which is adapted to engage with the toothed segment on the other lever, connecting bridge-pieces carried by and insulated from the other arms of the levers, said connecting bridge-pieces being adapted to make and break contact with the four circuit-terminals, a handle loosely mounted on one of the pivots of one of the pivoted levers and provided with abutments which when the handle is operated engage with said pivoted lever, lost motion between the handle and said pivoted lever being able to occur, and a spring attached at its two ends to the two pivoted levers in such a way that when the switch is closed the spring is inoperative, being on a dead-center, but when the switch is being opened by means of the handle the spring actuates the levers and produces quick breaks at the circuit-terminals and finally maintains the pivoted levers in their open position, substantially as described.

2. An electric switch consisting of the combination of a base-board, four circuit-terminals arranged thereon, two pivots mounted thereon, two levers pivoted on said two pivots, one arm of each lever being in the form of a toothed segment which is adapted to engage with the toothed segment on the other

lever, connecting bridge-pieces carried by and insulated from the other arms of the levers, said connecting bridge-pieces being adapted to make and break contact with the four circuit-terminals, a handle loosely mounted on one of the pivots of one of the pivoted levers and provided with abutments which when the handle is operated engage with said pivoted lever, lost motion between the handle and said pivoted lever being able to occur, a spring attached at its two ends to the two pivoted levers in such a way that when the switch is closed the spring is inoperative, being on a dead-center, but when the switch is being opened by means of the handle the spring actuates the levers and produces quick breaks at the circuit-terminals and finally maintains the pivoted levers in their open position, and a releasing-nut and a bolt coacting therewith by the removal of which all the purely mechanical parts can be readily detached from the base-plate, substantially as described.

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

FREDERICK HAGGER HEADLEY.

Witnesses:

CLEMENT LEAN,
HERBERT A. MARSHALL.