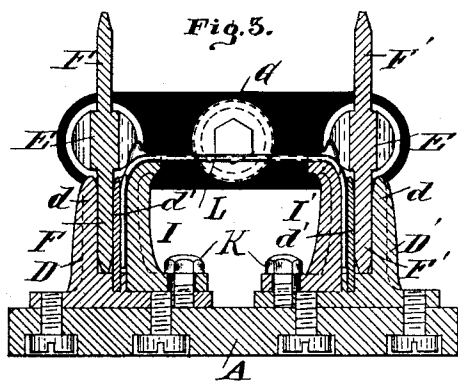
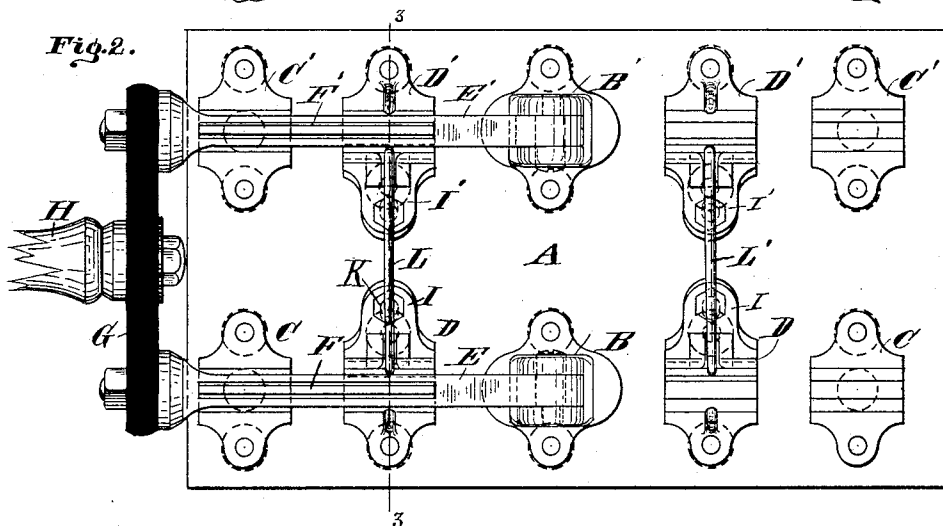
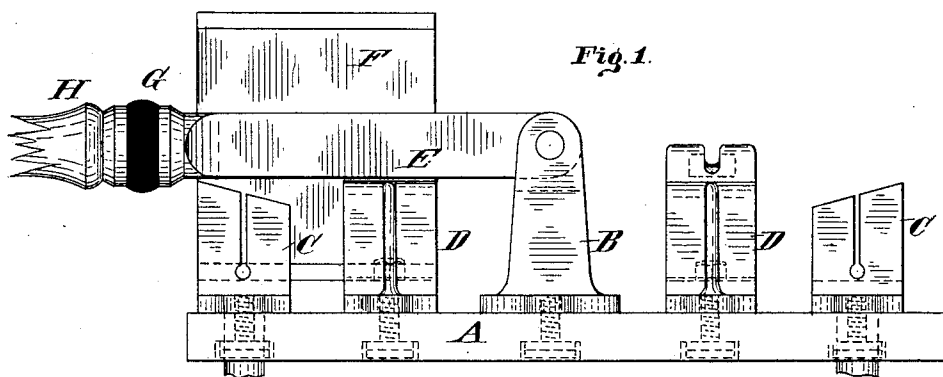


(No Model.)

E. J. BAGNALL.
ELECTRIC SWITCH.

No. 463,311.

Patented Nov. 17, 1891.



Witnesses.

A. Ramel.
J. W. Crookes.

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UNITED STATES PATENT OFFICE.

ERNEST J. BAGNALL, OF ST. LOUIS, MISSOURI.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 463,311, dated November 17, 1891.

Application filed August 3, 1891. Serial No. 401,532. (No model.)

To all whom it may concern.

Be it known that I, ERNEST J. BAGNALL, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have
5 invented certain new and useful Improvements in High-Potential Switches, of which the following is a full, clear, and exact description.

My invention relates to station-feeder
10 switches with fuse-metal cut-outs, and has for its object to facilitate and expedite the replacing of the fuse when burned out and to adapt such a switch so as to make it practically a magazine-fuse switch.

15 It consists in the novel means for securing the fuse in circuit, hereinafter described.

In the accompanying drawings, in which like letters of reference denote like parts in the several figures, I have illustrated my
20 invention as adapted to a bipolar double-throw station-switch, which will serve to illustrate the novel features and principles of operation of my invention.

In the accompanying drawings, Figure 1 is
25 a side elevation of an ordinary bipolar double-throw station-switch with my improved means for securing the fuse in circuit adapted thereto. Fig. 2 is a plan view of the same, and Fig. 3 is a sectional view taken on the line 3
30 3 in Fig. 2.

A is a base-plate of some insulating material, such as slate, to which the pivotal standards B B', terminal spring-clip standards C C', and the fuse spring-clip standards D D' are
35 secured. One end of the switch-levers E E' is pivotally secured in the pivotal standards B B', respectively, about which pivot-bearings the switch-levers may be rotated, so as to make connection on either end of the
40 switch, the spring-clip standards C, C', D, and D' being duplicated on the other end of the switch. To the switch-levers are secured or formed in the same the knife-edge pieces F F', adapted, when the levers are thrown to
45 either side, to enter in between the jaws of the clip-standards C and D and C' and D', respectively, and make electrical contact therewith, electrically connecting the clip-standards C with D and C' with D'. The free ends
50 of the switch-levers E and E' are connected together mechanically by the cross-bar G, of

some insulating material. To the cross-bar G is secured the switch-handle H.

Alongside the spring-clips D and D', respectively, are secured the rigid knee-shaped
55 standards I I', with one of their members resting in close proximity to the inside jaw of the clips.

While the knee-shaped standards, as shown, may be adapted to be used in connection
60 with the two-sided spring-clip standards ordinarily used in such switches, I prefer, as illustrated in Fig. 2, to form a clip-standard with one side or jaw (see *d*, Fig. 2) rigid and the other side only (*d'*, Fig. 2) adapted to be
65 sprung by the knife-edge entering in between them, and to place the fuse-clamping knee-shaped standards, which are in this instance secured to casting which forms the clip-standard itself by a screw-bolt K, which
70 is let through a slot formed in the knee-pieces I I', adapting the distance between the same and the clip-standards to be adjustable. The surface of the knee-shaped standards adjacent to the clips is grooved out vertically to
75 admit part of the body of the material of the fuse-wire L, which is nothing more than a piece of fuse-wire of the proper length bent into a U-shaped form, adapting its ends to be inserted in behind the fuse-clamping knee-
80 shaped standards on either side of the switch, spanning the distance between them.

The desired carrying capacity decides the size of the fuse-wire. With the size of the wire predetermined the knee-shaped stand-
85 ards I and I' are set at such a distance from the spring-pieces *d'* as to freely admit of the ends of the wire L being inserted in between them when the knife-edges F and F' are removed from between the members *d* and *d'* of
90 the clip-standards and to firmly secure the ends of the fuse-wire by pressure between the clip and knee-pieces when the knife-edges are brought down in between the two members of the clip-standard and then secured in this po-
95 sition by the screw-bolts K and K'. The ends of fuse-wire being inserted in behind the knee-pieces I and I', respectively, in between them and the spring members *d'* of the clip-standards D and D', the switch-levers are brought
100 down by the handle H, forcing the knife-edges F and F' in between the two members *d* and

d' of the clip-standards D and D' and in between the spring-jaws of the terminal clips C and C'. The circuit will be as follows: Entering at C, to which the wire from one side of the dynamo is secured, through the knife-edge F to the clip-standard D, from the clip-standard D through the connecting fuse-wire L to the clip-standard D', from the clip D' through the knife-edge F' to the terminal clip-standard C', to which the feeder-wire is attached.

The other end of the switch is a duplicate of that already described, so that when, as in case of trouble—grounding, &c.—the fuse in use is burned out the circuit can be immediately reinstated by throwing the switch to the other side, the dynamo and feeder circuits being similarly connected, respectively, to the terminal clip-standards C and C' on that end of the switch, the circuit being completed through the fuse L'. The fuse L can then be replaced, as described, ready to be used when the fuse L' is burned out.

Among the salient features of advantage of my improved means of securing the fuse-wire are that the device, as described, permits of a very convenient and quick removal or replacement of a fuse without any screwing or unscrewing of binding-posts, screws, &c., and the interposed spring-piece d' permits the wedge-shaped knife-edges being brought down and positive contact made with the fuse-wire without in any way injuring the fuse-wire or tending to reduce it in cross-section.

In many instances the trouble on a wire that is the cause of a fuse being burned out is only temporary, and in such instances it is a great advantage to be able to immediately reinstate the circuit with a new fuse. This is effected by having the duplicate set of fuses, as described.

I claim—

1. The herein-described means for securing a metal fuse in circuit, consisting in a clip-standard composed of three members, two exterior rigid members and an interposed spring member, the intervening space between the spring member and one rigid member being normally such as to admit the end of the metal fuse and the intervening space between the remaining rigid member and the spring member being adapted to receive a removable block, which, when introduced therein, will abnormally press these two members apart, combined and operating substantially as described, and for the purposes specified.

2. The herein-described means for securing

a metal fuse in circuit, consisting in a clip-standard composed of three members, two exterior rigid members and an interposed spring member, the intervening space between one rigid member being adjustably such as to normally admit the end of the metal fuse and the intervening space between the other rigid member and the spring member being adapted to receive a removable block, which, when introduced therein, will abnormally press these two members apart, combined and operating substantially as described, and for the purposes specified.

3. The herein-described means for securing a metal fuse in circuit, consisting in a knife-edge throw-switch, in combination with a rigid standard secured adjacent to one side of the spring-clip standard, between the members of which the knife-edge of the pivoted circuit-closer is adapted to enter, the said standard being secured in such a normal position as to readily admit the end of the metal fuse between it and the adjacent side of the spring-clip standard, combined and operating substantially as described, and for the purposes specified.

4. The herein-described means for securing a metal fuse in circuit, consisting in a knife-edge throw-switch, in combination with a rigid standard secured adjacent to one side of the spring-clip standard, between the members of which the knife-edge of the pivoted circuit-closer is adapted to enter, the said standard being adjustably secured in such a normal position as to readily admit of the end of the metal fuse being inserted in between it and the adjacent side of the spring-clip standard, combined and operating substantially as described, and for the purposes specified.

5. In a knife-edge throw-over switch, a spring-clip standard composed of one rigid member and one spring member, in combination with a rigid standard secured adjacent to the said spring member, a metal fuse, and the knife-edge of the pivoted circuit-closer, combined and operating substantially as described, and for the purposes specified.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 22d day of July, 1891.

ERNEST J. BAGNALL.

Witnesses:

A. RAMEL,

W. M. BYRNE.