No. 755,772. PATENTED MAR. 29, 1904.

E. M. HEWLETT.

SWITCH.

APPLICATION FILED AUG. 14, 1903.

NO MODEL.

Fig. 1.

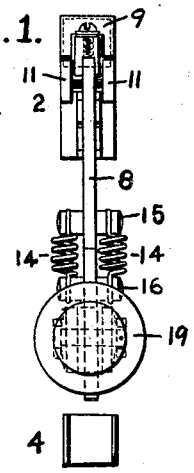


Fig. 2.

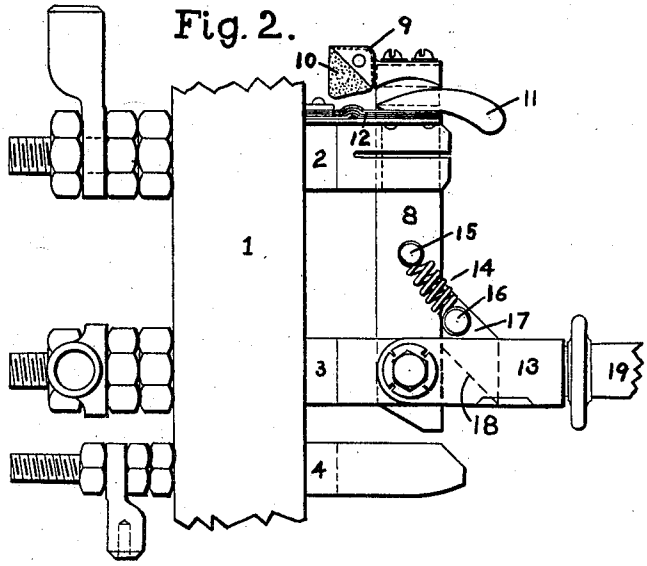


Fig. 3.

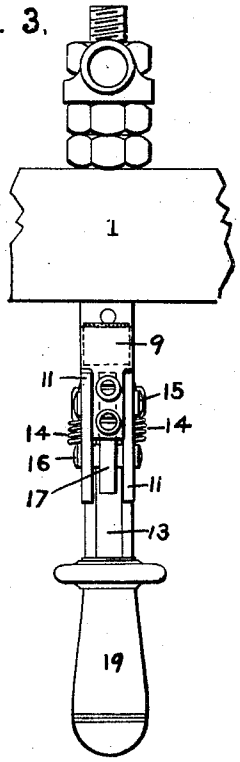


Fig. 4.

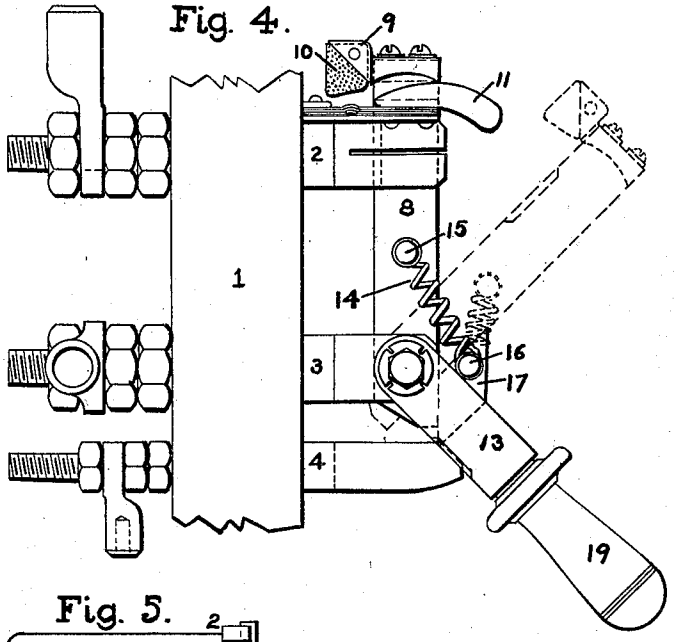
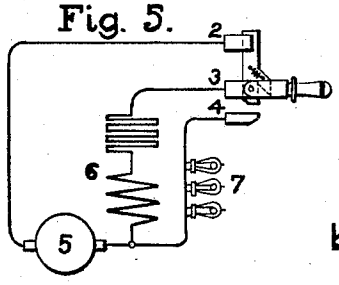


Fig. 5.



Witnesses.

Grant Ford.

Helen Orford

Inventor

Edward M. Hewlett

by Allen H. Davis

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 755,772. Patented March 29, 1904.

UNITED STATES PATENT OFFICE.

EDWARD M. HEWLETT, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SWITCH.

SPECIFICATION forming part of Letters Patent No. 755,772, dated March 29, 1904.

Application filed August 14, 1903. Serial No. 169,442. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. HEWLETT, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Switches, of which the following is a specification.

This invention relates to cut-outs for electric circuits, and especially to the switch used in connection with dynamo-electric generators for short-circuiting the field-coils through a resistance when the main circuit is opened in order to take care of the induced current or "kick." Such switches are arranged to close the short circuit before the main circuit is opened, and it has been customary to use a switch-arm rotating in a plane parallel with the switchboard and coöperating with stationary contacts located in its plane of rotation. This construction occupies considerable surface on the switchboard, and in case an arc accidentally forms it is drawn out parallel with the board and is therefore liable to jump to adjacent instruments.

In order to save space, which is a matter of importance in switchboard work, I have devised a "field-switch," as it is commonly termed, which operates in a plane perpendicular to the switchboard. A further advantage of this construction is that the switch-blade which opens the main circuit can be swung through a large angle in opening, and thus insure the breaking of any arc that may form, while such arc will be drawn out directly away from the switchboard, and thus the danger of its jumping to the other instruments is reduced to a minimum.

My improved field-switch is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a side elevation showing the switch closed. Fig. 3 is a top plan view. Fig. 4 is a side elevation showing the switch open, and Fig. 5 is a diagram of circuits.

On the switchboard 1 are mounted three terminals 2 3 4, preferably all in the same plane perpendicular to the switchboard, terminal 2 being a contact-clip connected with the armature 5 of the generator, terminal 3 a pivot-stud connected with the field-coil 6, and terminal 4 a clip connected with the short circuit containing a resistance 7, which is represented in the drawings as a bank of lamps.

On the pivot-stud 3 is pivoted the main switch-blade, which consists of a flat piece 8 of metal of uniform thickness, preferably having at its upper end a sheet-metal holder 9, in which is secured a carbon block 10, which coöperates with arcing-blocks 11, mounted on springs 12, secured to the contact-clip 2.

On the same pivot as the main blade 8 is pivoted the auxiliary blade 13, which is a thick piece of metal slotted to straddle the blade 8 and adapted to close between the jaws of the auxiliary clip 4. The two blades are connected by one or more springs 14, preferably two, attached to a transverse pin 15 in the blade 8 and a similar pin 16 in a plate 17, secured in the slot of the blade 13 and forming an upwardly-projecting lug or stop to keep the blades in a given normal relation. The under edge 18 of this plate is beveled, so that when the blade 13 is forced down by its handle 19 the springs will stretch until the edge 18 abuts against the edge of the blade 8 below the pivot, whereupon the main blade will be moved outward in its clip until the friction is no longer able to hold it, when the tension of the springs will snap said main blade open, the circuit being broken between the blocks 10 and 11. Just before the main blade opens the auxiliary blade enters the auxiliary clip 4, so that the resistance is cut into shunt with the field-coils before the field-circuit opens. The separation of the main blade from its clip is through a wide angle, thus insuring the breaking of any arc in a plane perpendicular to the switchboard. As soon as the main blade leaves its clip the spring pulls it against the lug into its normal angular relation to the auxiliary blades, as shown in dotted lines in Fig. 4, and the two blades retain this position during the operation of opening the resistance-circuit. The angle between the two blades is much less than that between the main and auxiliary clips. It follows, therefore, that the auxiliary blade will leave its clip and open the resistance-circuit before the main blade closes, so that there

is no danger of short-circuiting the armature through the resistance.

In accordance with the patent statutes I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. Means for closing the field-circuit of a generator through a resistance-shunt, comprising a snap-switch, and an auxiliary shunt-terminal on which said switch closes just before opening the armature-circuit.

2. Means for closing the field-circuit of a generator through a resistance-shunt, comprising a snap-switch blade, a handle therefor forming an auxiliary switch-blade, and an auxiliary shunt-terminal on which said auxiliary blade closes just before the main blade opens.

3. Means for closing the field-circuit of a generator through a resistance-shunt, comprising a main switch-blade, a handle therefor independently pivoted at the same point and serving as an auxiliary switch-blade, a spring connection between the two blades, and an auxiliary shunt-terminal on which the auxiliary blade closes before the main blade opens.

4. In a switch, the combination with two blades both pivoted at the same point, of a spring holding them normally at a given angle, a clip with which one blade engages, and an auxiliary clip with which the other blade can be engaged before the first blade opens.

5. In a switch, the combination with a main blade, of an auxiliary blade pivoted at the same point, a handle on the auxiliary blade, a main clip, an auxiliary clip with which said blades respectively coöperate, and a spring holding said blades normally at an angle less than the angle between said clips, whereby the auxiliary blade can be closed before the main blade opens but the latter cannot be closed until after the auxiliary blade has opened.

In witness whereof I have hereunto set my hand this 12th day of August, 1903.

EDWARD M. HEWLETT.

Witnesses:

BENJAMIN B. HULL,

HELEN ORFORD.