

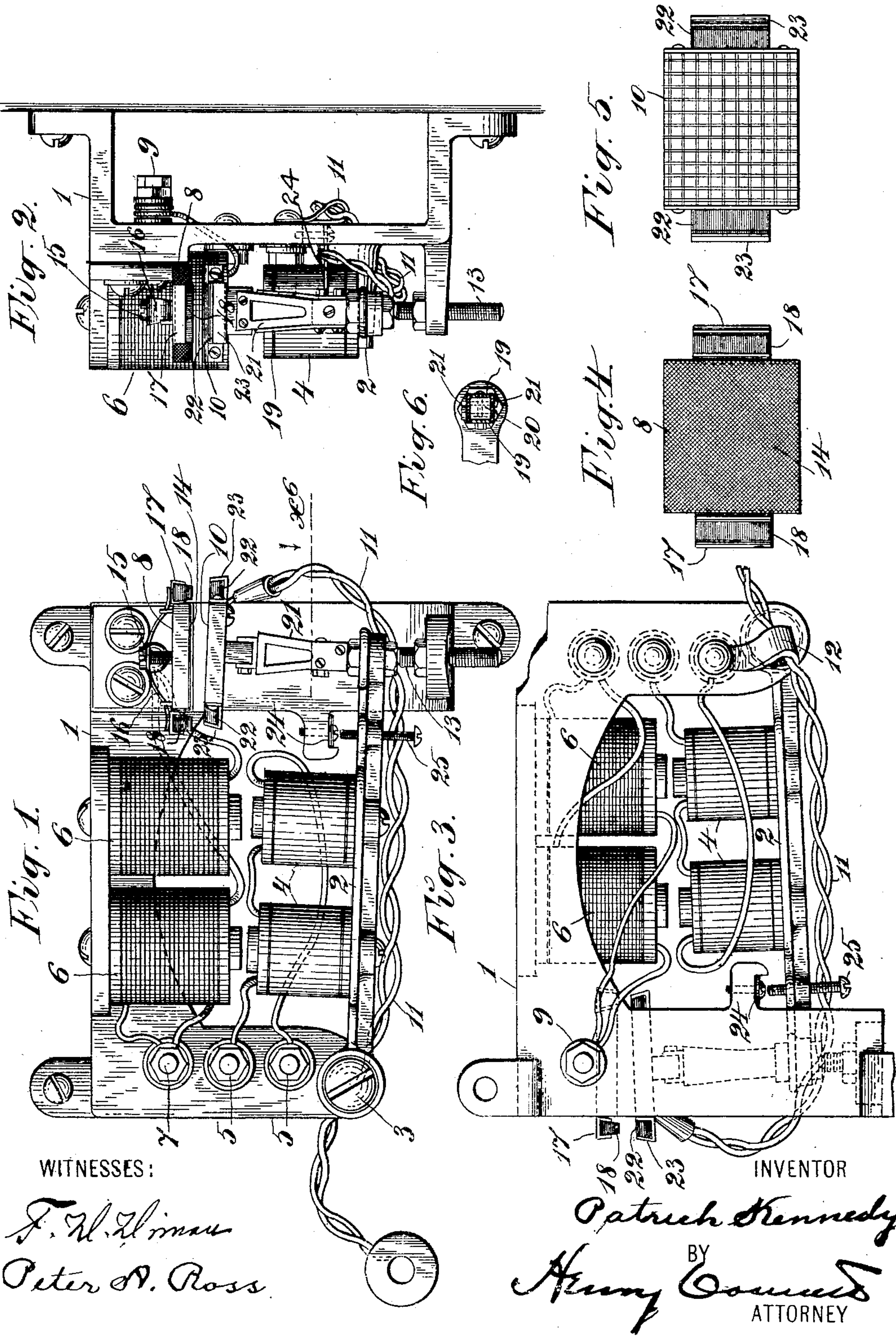
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Patented Aug. 12, 1902.

P. KENNEDY.
ELECTRICAL SWITCH OR CUT-OFF.

(Application filed Dec. 4, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

PATRICK KENNEDY, OF BROOKLYN, NEW YORK.

ELECTRICAL SWITCH OR CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 706,759, dated August 12, 1902.

Application filed December 4, 1901. Serial No. 84,622. (No model.)

To all whom it may concern:

Be it known that I, PATRICK KENNEDY, a citizen of the United States, residing in the city of New York, borough of Brooklyn, and county of Kings, in the State of New York, have invented certain new and useful Improvements in Electrical Switches or Cut-Offs, of which the following is a specification.

This invention relates to electrical circuit-controlling devices, and particularly to automatic electric switches or cut-outs, such as are employed in electric-lighting installations for railway-cars.

The object of the invention is in part to improve the general construction of the switch and in part to insure a proper electric contact between the terminals whenever they are brought together.

In the accompanying drawings, which illustrate an embodiment of the invention, Figure 1 is a front elevation of the switch. Fig. 2 is an end view thereof. Fig. 3 is a rear view of the same. Fig. 4 is a face view of the fixed contact-terminal. Fig. 5 is a face view of the movable contact-terminal. Fig. 6 is a section at $\alpha\alpha$ in Fig. 1.

The invention is herein shown as applied to a switch such as is used in electric-lighting plants for railways.

1 designates a supporting-frame to which is hinged a lever 2 at 3. This lever carries an electromagnet 4, the coil-terminals of which are connected to binding-posts 5 on the frame. These coils are connected in series in the usual way with electromagnets. Opposite to the poles of the electromagnet 4 are the poles of two bobbins or electromagnets 6 6, which are connected in multiple and are mounted on the frame 1. Each of these magnets or bobbins has its coil connected at one side to a binding-post 7 and at the other to the fixed terminal 8 of the switch through the medium of a screw 9. The movable terminal 10 of the switch is connected to a conductor 11, which is supported at 12, Fig. 3, in a loop of insulating material by preference situated at the hinging-point 3 of the lever 2. The adjustable back-stop 13 of the movable terminal limits the distance to which the contact-terminals 8 and 10 may separate.

The fixed terminal 8 is a metal block or

plate, the face of which is covered wholly or in part with fine wire-gauze 14, preferably copper gauze, and in the back of the block is set a screw 15, which passes through an aperture in the crown of an arched spring 16, to the respective ends of which are secured metal holders 17 for contact-carbons 18. Being carried by the spring 16, the carbon may yield to pressure. The movable terminal 10 is also a block of metal with a lug on its lower side or back, whereby the block is secured to two thin open metal supports 19. These supports are secured below to a square seat-piece 20 on the free end of the lever 2. To the other faces of the seat-piece 20 are secured two spring-plates 21, which bear at their upper free ends on the respective opposite edges of the supports 19. Thus the four parts—namely, the thin supports 19 and spring-plates 21—provide a spring-support for the block 10, which permits it to adjust itself laterally in closing up to the fixed terminal 8. At its sides the block 10 has carbons 22 mounted in metal holders 23, and its face may be and preferably will be cross-grooved, as shown in Fig. 5.

The carbons 18 of the upper contact-terminal 8 project normally slightly beyond the metal face of the contact-block 8, so that when the contact is to be broken the faces of the blocks 8 and 10 will separate while the current is still flowing through the carbons, and when these latter separate the spark formed will be between the carbons and not between the metal faces. Thus the corrosion or oxidation of the metal by sparking is avoided. The yielding of the upper carbons, however, allows the metal faces to be brought firmly together in making the contact, and the wire-gauze on the face of the upper terminal insures a perfect contact. It is very important in electrical car-lighting installations that a good and full contact be assured at the switch at all times, and the purpose of the invention is to provide such a contact.

To assure the separation of the contact-terminals when the circuit through the magnet 4 is broken, there is a leaf-spring 24, mounted on the frame, and a screw 25, mounted on the lever 2, impinges on said spring

and puts it under tension when the contact is made. The screw 25 enables the maximum tension on the spring to be nicely adjusted.

This invention is not restricted to the yielding carbons, being on the substantially non-moving contact-terminal, nor, indeed, to two carbons at each terminal.

The purpose of the two bobbins or magnets 6 in the circuit to be closed is to convert the armatures, which are the cores of these magnets 6, into magnets as soon as the terminals 8 and 10 come together, and thus close the circuit through these coils. The wire of the bobbins 6 is relatively coarse, so as to offer little resistance to the current flowing through it.

Having thus described my invention, I claim—

1. An electrical circuit-closing device having a sheet of metallic gauze over the face of one of its terminals.

2. An electric circuit-closing device having a flat-faced metal contact-terminal, and having a spring 16, carrying at its respective ends carbon contact-blocks 18, which are advanced, normally, slightly beyond the face of the metal terminal, in combination with another contact-terminal coöperating with the first and having a metal face and two carbon blocks, substantially as set forth.

3. An electric circuit-closing device having a substantially fixed or non-moving contact-terminal, a lever-arm, and a contact-terminal carried by said arm, said terminal being carried by a stem having its axis perpendicular to the face of the contact and composed of spring-like supporting-plates grouped substantially as set forth.

4. In an electrical circuit-closing device, the combination with the substantially fixed contact-terminal, having a flat face covered with wire-gauze, and provided with a yielding carbon contact which is normally ad-

vanced beyond the face of the metal terminal, of the movable contact-terminal of metal provided with a carbon contact adapted to contact with the yielding carbon of the non-moving terminal when the circuit is closed, substantially as and for the purpose set forth.

5. The combination with the lever-arm, of the moving terminal, and the laterally-yielding support for the latter on said lever-arm, said support comprising the two spring-like supporting-plates 19, and the two spring-plates 21, all arranged and constructed substantially as set forth.

6. An electrical circuit-closing device having a flat-faced metal terminal, the face of which is covered with wire-gauze, and having a spring 16, carrying at its ends carbon contact-blocks 18, which are advanced, normally, slightly beyond the face of the metal terminal, in combination with another contact-terminal having a metal face and two carbon contact-blocks, substantially as set forth.

7. An electric circuit-closing device having two coöperating terminals of metal with relatively extended contact-surfaces, one of said terminals having metallic gauze over its face and the other having its face cross-grooved, substantially as set forth.

8. In an electrical switch, the combination with a terminal contact-piece and the part which carries it, of an intermediate support for said contact-piece, comprising the two spring-plates 21, secured to the carrying part and contact-piece at their respective ends, and the two spring-plates 19, secured to only one of said parts, substantially as set forth.

In witness whereof I have hereunto signed my name, this 3d day of December, 1901, in the presence of two subscribing witnesses.

PATRICK KENNEDY.

Witnesses:

HENRY CONNETT,
PETER A. ROSS.