

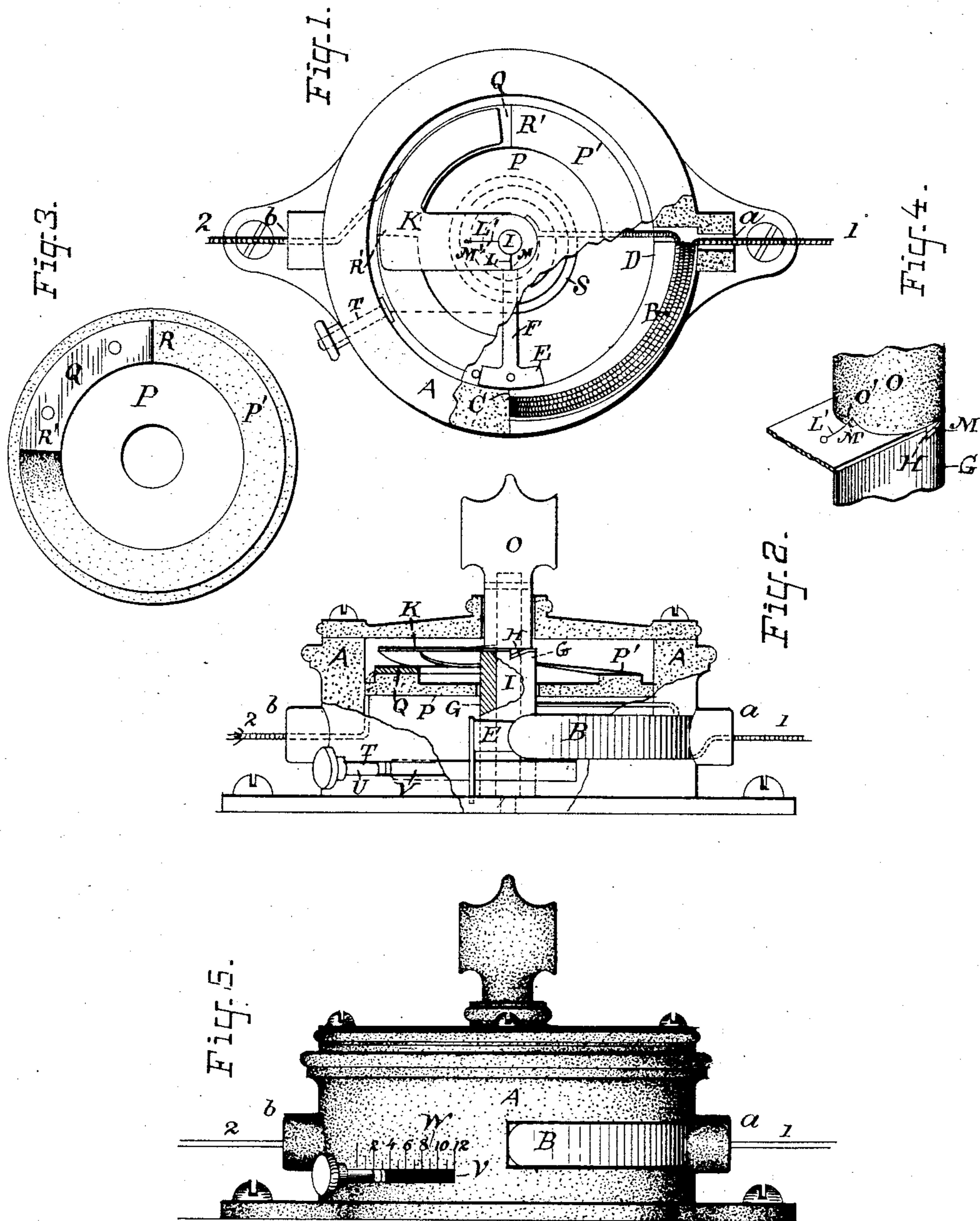
(No Model.)

C. G. PERKINS.

AUTOMATIC SWITCH AND CUT-OUT.

No. 287,321.

Patented Oct. 23, 1883.



ATTEST:

J. A. Murdle
W. J. Ward

INVENTOR:

Chas. G. Perkins

Per J. A. Murdle
att.

UNITED STATES PATENT OFFICE.

CHARLES G. PERKINS, OF NEW YORK, N. Y., ASSIGNOR TO THE IMPERIAL
ELECTRIC LIGHT COMPANY, OF SAME PLACE.

AUTOMATIC SWITCH AND CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 287,321, dated October 23, 1883.

Application filed April 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. PERKINS, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in an Automatic Switch and Cut-Out, of which the following is a specification.

My invention relates to an automatic electric safety-catch and cut-out, which I propose to place in the main electrical circuit between the generator and the lamps, so that if there should be more current generated than could be utilized by the lamps the switch will cut the lamps out. They will then be brought into the circuit again when the attendant shall have turned the switch back into its normal position.

The first part of my invention consists of the arrangement, within the body of the wall of a circular-formed box made of insulating material, of an electro-magnet having the end of its core for operating an armature made in a segmental form, one end of the segment being made thick and the other end comparatively thin, in order to attract the armature which is made fast to an arm attached to a sleeve mounted on a spindle having its bearing in the center of the base of the box. Said sleeve is provided with a switch on the upper end thereof.

The second part of my invention consists of a flat spring, the blade of which forms a segment having a radial extension with an aperture near the end thereof, through which the spindle passes. Said radial extension is provided with two catches formed by slits which begin at the said aperture. One slit extends from the center radially to the circumference of the aperture, while the second slit is made in the center of the radial extension. One side of each slit is turned either up or down, as may be required. Said turned portions in this case will be one turned down, while the second is turned up. The first catch will engage with the notch of the sleeve, while the second catch will engage with a notch made on the bottom of the shank of the switch-handle, which is made fast to the spindle. The switch-spring travels on a circular track made of insulating material, a quadrant of which is

provided with a metallic plate. The track is made higher than the metallic plate at one of its ends, while the other end of the metallic plate is higher than the insulated track. The said track is mounted on or may be integral with a disk placed within the switch-box above the electro-magnet and armature.

The third part of my invention consists of a spiral spring having one of its ends fastened to the sleeve, while the other end is fastened to the shaft of an indicator, which may be adjusted in accordance with the number of lights required. Said shaft moves in an opening made in the wall of the box.

In the drawings, Figure 1 represents a plan of the switch-box with the cover removed and a part broken away, so as to better illustrate the construction. Fig. 2 represents a vertical section with part in elevation. Fig. 3 represents a plan of the disk. Fig. 4 represents a part of the shank of the switch-handle, switch-spring, and sleeve enlarged, in order to show the relation which the catches and notches have to each other. Fig. 5 is an elevation of the switch-box complete.

In the drawings, A is the wall of the switch-box. B is the electro-magnet. C is the thin end of the segmental portion of the core. D is the thicker end of the same. E is the armature. F is the extending arm, rigidly fastened to the sleeve G, which is provided with a notch, H, on the end thereof. I is the spindle, passing through the sleeve G. K is the switch-spring, having a radial extension provided with an aperture near the end thereof, which admits the passage of the spindle I through it. L and L' are the slits in the switch-spring K. M and M' are the turned portions, forming the catches of the said slits. O is the switch-handle, provided with a notch, O', on the end of its shank, said notch engaging with the turned portion M' of the slit L' when said handle is operated. The notch H of the sleeve G engages with the turned portion M of the slit L whenever the sleeve G is operated by the armature E. P is the disk, provided with a track, P', having a portion mounted with a metallic plate, Q. R is that portion of the insulated track P' which is higher than the metallic plate Q. R' is that portion of the said track P' constructed so as to be lower than

the said metallic plate Q. S is the spiral spring, having one of its ends rigidly fastened to the metallic sleeve G, while the other end is fastened to the shaft T of the indicator U, which is adjusted in accordance with the number of lights required by the scale W, which is indicated as being at one side of the opening V, in which the indicator-shaft moves when adjusting the same. 1 is the wire which represents the positive pole of the electrical circuit which enters the switch-box at a, thence forming the helix of the electro-magnet C, from which it passes to the metallic sleeve G, with which it is electrically connected. The metallic plate Q is electrically connected with the wire 2, passing out from the switch-box at b. The said wires 1 and 2 represent the positive and negative poles of the automatic switch.

The electrical circuit enters at a, thence through the magnet B, from which it passes to the metallic sleeve G to the switch-spring K, thence to the metallic plate Q, from which it passes to wire 2, which completes the circuit through the switch mechanism. Whenever more current than can be utilized by the lamps in circuit attempts to pass through the switch, it will cause the electro-magnet B to attract the armature E, which in its movement turns the sleeve G and causes the notch H to engage with the turned portion M of the switch-spring K, thus causing the spring to snap off from the metallic plate Q down onto the insulated track P', thus breaking the circuit. At the same time the spring S pulls the armature back to its normal position, which prevents any damage being done to the lamps. The attendant then turns the switch-handle, which brings the notch O' in contact with the turned portion M' of the switch K, and carries the spring back to R', from which it snaps to the metallic plate Q, the result of which again closes the circuit.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic switch and cut-out, a circular spring having a radial extension provided with slits L L' and turned portions M M', engaging with suitable mechanism for operating the same, substantially as shown and described. 45 50

2. In an automatic electric switch and cut-out, the electro-magnet B, having a segmental-shaped end on its core, one end of the segment made thick, the other comparatively thin, in combination with the armature E, arm F, sleeve G, notch H, spindle I, and switch-spring K, substantially as shown and described. 55

3. In an automatic electrical switch and cut-out, the combination, substantially as shown and described, of the spring S, indicator-shaft T, sleeve G, arm F, armature E, and electro-magnet B. 60

4. In an automatic electric switch and cut-out, the disk P, track P', steps R and R', and metallic plate Q, in combination with the spring K, handle O, and notch O', substantially as shown and described. 65

5. In an automatic electric switch and cut-out, the combination, substantially as shown and described, of the switch-box B, electro-magnet C, armature E, arm F, sleeve G, notch H, spindle I, switch-spring K, slits L and L', catches M and M', switch-handle O, notch O', disk P, track P', metallic plate Q, projection R, depression R', spiral spring S, indicator-shaft T, indicator U, scale W, and opening, substantially as shown and described. 70 75

Signed at New York, in the county of New York and State of New York, this 6th day of April, A. D. 1883.

CHARLES G. PERKINS.

Witnesses:

J. A. HURDLE,
W. T. WARD.