

(No Model.)

R. J. SHEEHY.

CUT-OUT FOR ELECTRIC CIRCUITS.

No. 264,777.

Patented Sept. 19, 1882.

Fig. 1.

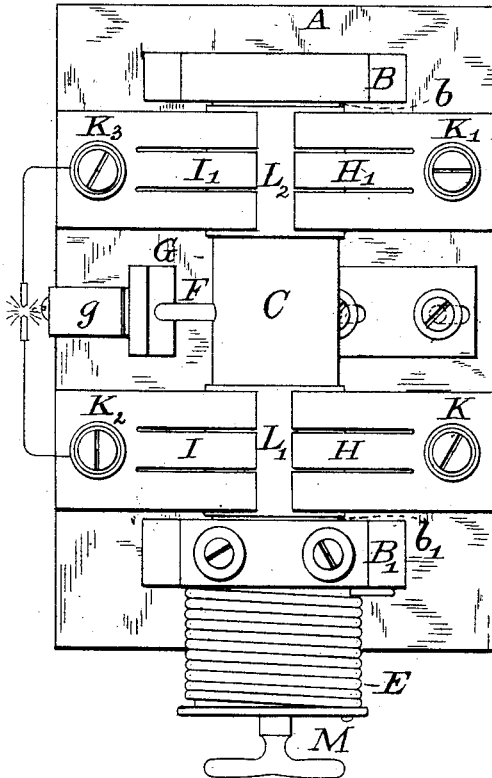


Fig. 2.

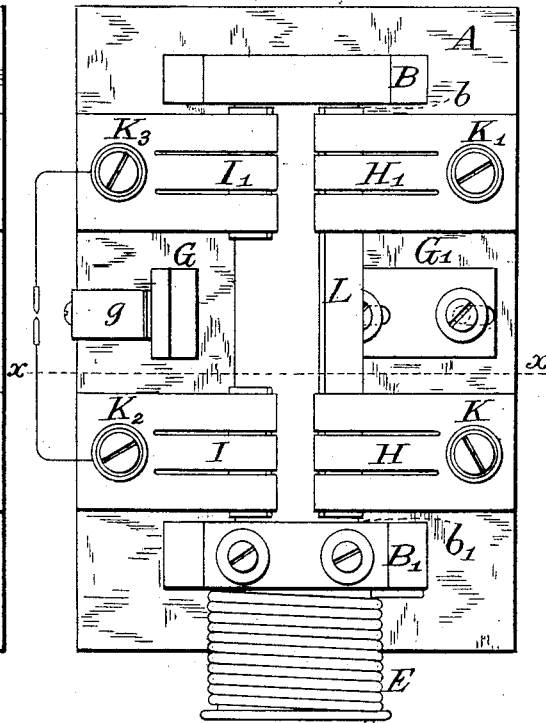


Fig. 4.

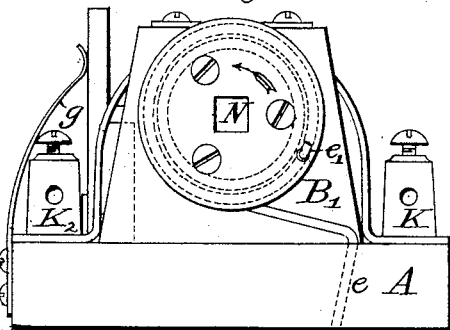
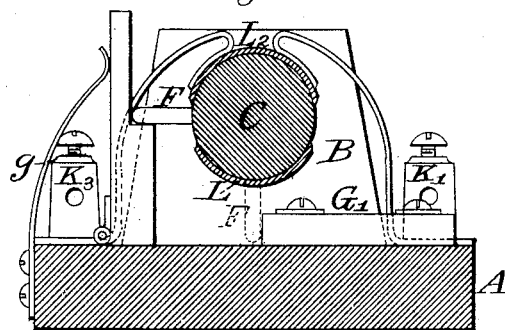


Fig. 3.



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CUT-OUT FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 264,777, dated September 19, 1882.

Application filed April 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. SHEEHY, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented a new and useful Improvement in Cut-Outs for Electric Circuits, of which the following is a specification.

My invention relates to certain improvements in switches or cut-outs for electrical apparatus, and is especially designed to be employed in connection with electric-light wires and other highly-charged conductors.

In establishing electric lights within dwellings, warehouses, factories, and other structures for illuminating purposes it has been found impracticable to so arrange and connect the conductors as to absolutely preclude the possibility of a person within the building accidentally coming into contact with both wires simultaneously, or with one of the wires and a conductor connected with the earth, and thereby receiving a severe electric shock. Secondary or false arcs are also liable to be established by the accidental contact of the conductors with each other or with some more or less perfectly conducting medium. Especially are firemen, while engaged in extinguishing conflagrations in buildings in which electric lights are employed, exposed to danger, for the reason that the insulating material with which the wires are protected becomes melted by the heat and the wires are liable to become severed. In such case an accidental contact with the heavily-charged conductors or with a detached end of one of the conductors exposes the fireman to the liability of receiving through his body a fatal electric shock. The firemen are thus greatly impeded in their work by exposure to this additional danger.

The object of my invention is to provide a simple device whereby the electric light or other conductors may be instantly acted upon at any convenient point in such a manner as to leave the main-line connections complete, at the same time entirely disconnecting and insulating the wires leading into and through the building.

My invention consists generally in providing a switch or cut-out having a series of four or more rubbing contact-springs and means for normally electrically connecting the same in pairs or couples with an automatic device,

which, when brought into action, will instantly substitute for the normal connections an electrical connection between one contact-spring of one couple and the corresponding contact-spring of the remaining couple, whereby the cut-out may be so organized that an electric light or other apparatus normally included in the main-line circuit may be instantly cut out or removed therefrom by the release of automatic mechanism impelled by a spring or weight.

In the accompanying drawings, Figure 1 is a plan view of a switch embodying my invention, showing the device in a position for including the electrical apparatus in the main-line circuit; and Fig. 2 is a plan view of the same, showing the switch in its second position—namely, for cutting out the electrical apparatus. Fig. 3 is a cross-section through the line *x x*, and Fig. 4 shows certain details of construction.

Referring to these drawings, A represents a suitable base for supporting the various parts of the device.

B and B' are standards upon which is carried a cylinder, C, of non-conducting material—such as wood or hard rubber—and which is mounted upon an axis turning in bearings *b* and *b'*. Upon one end of the cylinder C is fixed a coil-spring, E, one extremity of which, *e*, is secured to the base A and the other, *e'*, to the cylinder C. The spring is wound in a proper manner, and with sufficient tension to tend to cause the cylinder C to revolve in the direction indicated by the arrow. A pin, F, projects from one side of the cylinder C, which pin, when the cylinder is in the position shown in Fig. 1, is engaged by a movable stop, G, which is held in its forward position by a yielding spring, *g*. A fixed stop, G', is mounted upon the base A in a proper position to engage the pin F when the same is released from the stop G and retain the cylinder C in the position shown in Fig. 2. Four metallic contact-springs, H, H', I, and I', are also mounted upon the base A, and their free ends are adjusted to bear against the surface of the cylinder C. An equal number of binding-posts, K, K', K², and K³, are provided for making electrical connections with the contact-springs H, H', I, and I', respectively.

Mounted upon the cylinder C are three longi-

tudinal contact-plates, L, L', and L², of brass or suitable conducting material. One of these plates, L, is of sufficient length and is so mounted upon the cylinder C as to electrically connect the two contact-springs H and H' when the device is in the position shown in Fig. 2, but is carried out of contact therewith when the switch is in the position shown in Fig. 1. The two remaining contact-plates, L' and L², are shorter, but of sufficient length to connect the contact-springs H and I and H' and I', respectively, when the switch is in the position shown in Fig. 1. The relative positions of the contact-plates and the contact-springs are preferably such that when the cylinder C is turned in the direction of the arrow the circuit will be closed between the contact-springs H and H' immediately before the circuits between the contact-springs H and I and H' and I' are broken, and vice versa, both for the purpose of preventing sparks and that the current upon the main line may not at any time be interrupted. This construction is especially desirable when a number of lights are connected in series in one main line. The rubbing of the contact-plates against the contact-springs keeps the surfaces bright and insures good electrical connection.

For convenience in turning the cylinder C against the tension of the spring E, in order to set the same in a position to include the electric lights within the building in circuit, I provide a key, M, which is preferably removable, and which fits into a suitable key-socket, N, at the end of the block C.

The operation of a switch constructed in the above-described manner is as follows: The main wire is connected with the posts K and K' and an electric lamp or lamps included in a loop-conductor, the ends of which are attached to binding-posts K² and K³. When it is desired to include the lamp in the main circuit the cylinder C is turned by means of the key M in opposition to the tension of the spring E until the pin F is engaged by the stop G. The circuit may now be traced from the binding-post K, through the contact-spring H, plate L', spring I, binding-post K², and through the electric-light circuit to the binding-post K³, spring I', plate L², spring H', and binding-post K', to the main line. When for any reason it is desired to cut the electric light out of circuit it is necessary only to throw back the detent G, thus releasing the pin F. The cylinder will then be turned by the spring E in the direction indicated by the arrow, and the plates L' and L² will be automatically carried out of contact with the springs H and H' and the plate L brought into contact therewith. The circuit of the main line will thus be completed between the springs H and H' by means of the plate L, and the light-circuit will instantly be automatically disconnected therefrom. The wires within the building may then be han-

dled, as required, and no danger of receiving an electric shock will be incurred.

The stop G' is preferably made adjustable with reference to the pin F for the purpose of employing the device as a shunt-switch when desired. This is accomplished by releasing the stop G' from the screws g', and moving it forward a sufficient distance to engage the pin F when the plate L is brought into contact with the springs H and H', and before the plates L' and L² have been carried out of contact therewith, thus closing both circuits.

It will generally be found preferable to place the switches or cut-outs in convenient boxes outside the buildings, and in such positions that easy access may be had thereto for operating them, as above described, whenever occasion may require.

I do not intend to confine myself to the precise form of cut-out hereinbefore described, as it is evident that numerous modifications may be made in the form and general construction of the device without departing from the spirit of my invention.

What I claim as my invention is—

1. The combination, substantially as hereinbefore set forth, with a main line and a loop-conductor including an electric light or lights or other electrical apparatus, of a switch or cut-out, comprising, first, contact-springs connected respectively with the terminals of the main line and the loop-conductor; second, contact-plates for normally uniting the respective terminals of the main line with the corresponding terminals of the loop-conductor; third, a detent for retaining said contact-plates in their normal position; fourth, a spring for automatically moving said contact-plates to sever said connections when released from said detent, and, fifth, a contact-plate for completing a circuit between the respective terminals of the main line when its connection with the loop-circuit is severed.

2. A switch or cut-out consisting in the combination, substantially as hereinbefore set forth, of the non-conducting cylinder, the contact-springs, the contact-plates mounted upon said cylinder for normally electrically connecting said contact-springs in pairs or couples, the pin projecting from said cylinder, and the stop for normally retaining said cylinder in the position for completing said connections, a spring for automatically moving said cylinder to sever said connections when released from said stop, and a contact-plate for establishing an electrical connection between a contact-spring of one of said couples and the corresponding contact-spring of the other couple immediately before the normal connections are severed.

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