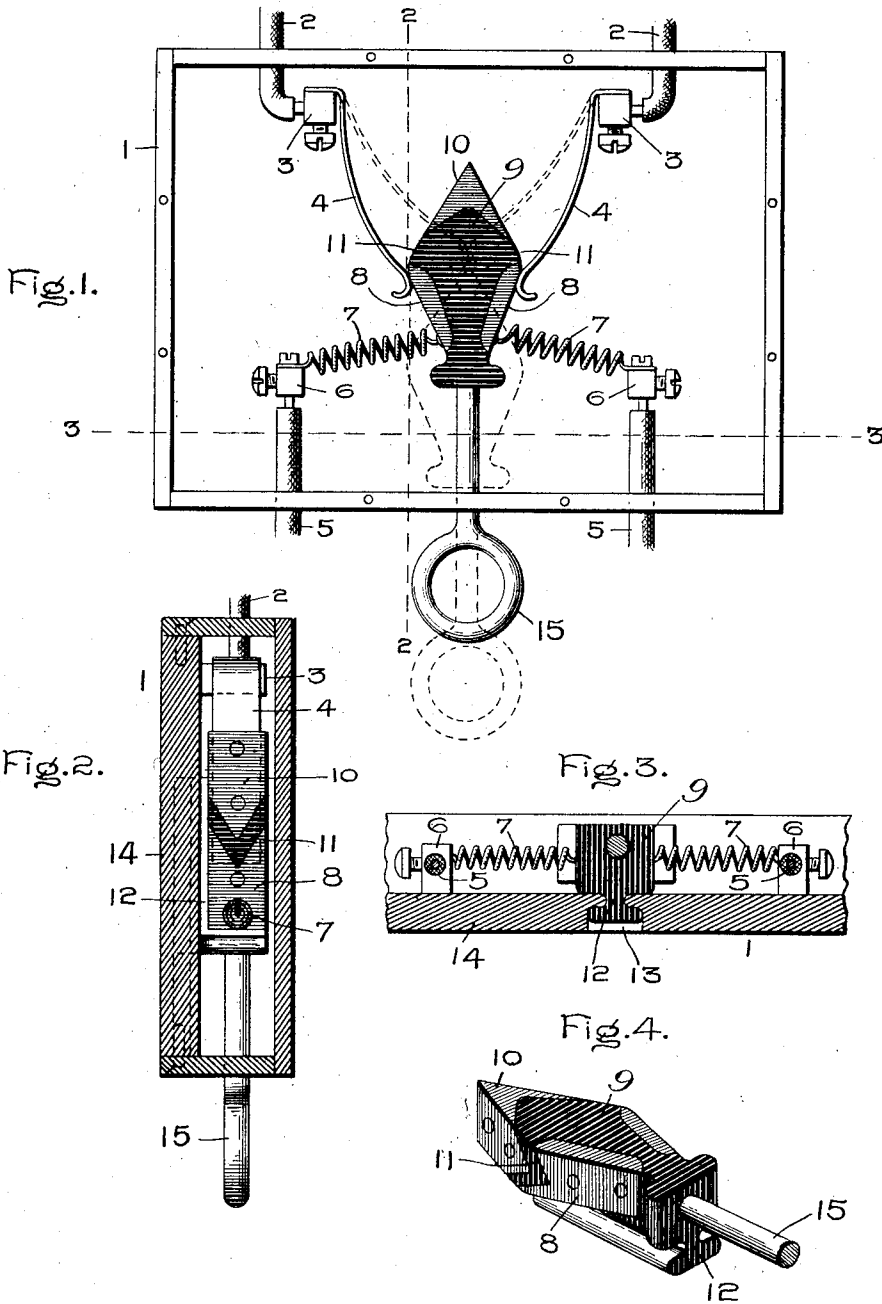


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C. D. HASKINS.
SWITCH FOR SERIES ARC CIRCUITS.
APPLICATION FILED AUG. 22, 1902.

NO MODEL.



Witnesses:

Magruss & Byng
Benjamin B. Hull

Inventor:
Caryl D. Haskins,

by *Albert S. Davis*
Att'y.

UNITED STATES PATENT OFFICE.

CARYL D. HASKINS, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SWITCH FOR SERIES ARC-CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 750,971, dated February 2, 1904.

Application filed August 22, 1902. Serial No. 120,675. (No model.)

To all whom it may concern:

Be it known that I, CARYL D. HASKINS, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Switches for Series Arc-Circuits, of which the following is a specification.

This invention relates to switches for controlling electric circuits and especially circuits for lighting by means of arc-lamps connected in series. In cutting a group of series arc-lamps into circuit it is desirable to make the lamp connections before breaking the circuit connections and in cutting out the lamps to make the circuit connections before breaking the lamp connections. Moreover, it is desirable to have the switch go through from its "on" to its "off" position positively with the least possibility of its sticking and remaining half opened or closed. My invention effects these results by means of a movable diamond-shaped contact device coöperating with separable spring-contacts, as herewith set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation. Fig. 2 is a vertical cross-section of the same on the line 2 2, Fig. 1. Fig. 3 is a horizontal section on the line 3 3, Fig. 1. Fig. 4 is a perspective view of the movable contact-piece.

The several parts of the switch are contained in a casing 1, into which are led the terminals of the main conductors 2, which are secured to binding-posts 3. Secured to each binding-post is a main contact, preferably a spring 4, of phosphor-bronze or other highly-conductive material, of such a length, temper, and shape that the two remain normally in firm contact with each other, as shown in dotted lines in Fig. 1. The terminals of the branch or lamp circuit conductors 5 are also brought into the casing 1 and secured to binding-posts 6. Flexible non-resilient conductors 7 connect said binding-posts with metallic contact-plates 8, secured to the opposite sides of a diamond-shaped contact-piece 9, of porcelain or other insulating material. When the pointed end of this diamond-shaped piece

is thrust between the springs 4, the ends of said springs will ride down the opposite sides of the diamond until they come in contact with the contact-plates 8 and establish an electrical connection between the conductors 2 and the conductors 5. In order to prevent the main circuit of the conductors 2 from being broken when the springs are separated by the pointed end of the diamond-shaped contact-piece, said piece is provided with a wedge-shaped metallic tip 10, which serves as a bridging contact. So long as the springs are in contact with this metallic tip the electrical continuity of the main circuit is not broken. The lower ends of this tip 10 extend down on each side of the upper portion of the diamond-shaped contact-piece and lap past the upper ends of the contact-plates 8, but without coming in direct metallic contact therewith, a narrow strip of insulating material 11 being interposed between the adjacent edges of the tip 10 and the plates 8. The arrangement is such, however, that as the contact-piece is moved upward the springs 4 will make contact with the upper ends of the plates 8 before they leave the lower ends of the tip 10. In this way the connection between the conductors 2 and 5 is made before the main circuit is broken.

An important feature of my invention lies in the fact that no springs or similar devices are depended upon to carry the contact-piece past the center. The operator must exercise considerable pressure to overcome the resistance of the springs in thrusting the tip between the springs and in separating them. This resistance reaches a maximum when the springs are at the widest point of the diamond. As the springs pass this point the resistance to the forward movement of the contact-piece suddenly disappears, and since the operator is at this moment exerting the greatest effort to move the contact-piece the result is that it receives a sudden acceleration of speed which urges it forward to the final position, leaving the switch firmly in the on position. When the contact-piece is withdrawn to open the lamp-circuit, the same effect takes place as the springs pass the widest point of the diamond.

The contact-piece is preferably provided with means for guiding it in a straight line in its reciprocating movement. A convenient construction for this purpose is shown in the drawings, where the contact-piece is provided with a flanged rib 12, engaging in an undercut groove 13 in the back 14 of the inclosing casing. The contact-piece is provided with a suitable handle 15, by which it can be operated.

It will be seen that this switch forms a convenient and simple mode of cutting a series are-lamp circuit into and out of circuit with the main line without at any time breaking the continuity of the circuit, and, furthermore, that its operation is such that there is no danger of the switch failing to completely open or close the circuit, as the case may be.

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

1. In a switch, the combination with main-circuit terminals and branch-circuit terminals to be connected in series therewith, of normally closed main contacts connected with said main terminals, and a movable diamond-shaped piece carrying contacts connected with the branch terminals and adapted to enter between and separate said main contacts.

2. In a switch, the combination with normally closed spring-contacts, of a diamond-

shaped piece carrying separate contacts on two adjacent sides, and a single contact covering the other two sides and intermediate point.

3. In a switch, the combination with normally closed spring-contacts, of a diamond-shaped piece carrying separate contacts on two adjacent sides, and a single contact covering the other two sides and intermediate point, the adjacent edges of said contacts being lapped past each other but not in contact.

4. In a switch, the combination with a diamond-shaped piece of insulation, of a metallic bridging contact covering one end and two sides of said piece and extending slightly beyond the widest part of the diamond, a separate contact on each of the two other sides of the diamond, said contacts extending up to the widest part of the diamond but not making connection with the bridging contact, and two spring-contacts, normally closed on each other but adapted to be separated and connected by the bridging contact, and to pass therefrom unto the separate contacts without breaking the circuit.

In witness whereof I have hereunto set my hand this 20th day of August, 1902.

CARYL D. HASKINS.

Witnesses:

BENJAMIN B. HULL,

JOSEPH A. L. ENDRES.