

(No Model.)

2 Sheets—Sheet 1.

A. EKSTRÖM.
ELECTRIC SWITCH.

No. 483,712.

Patented Oct. 4, 1892.

Fig. 1.

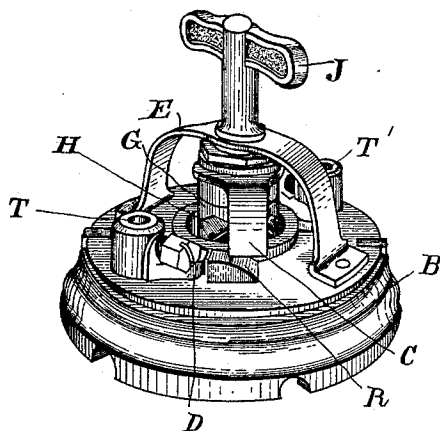
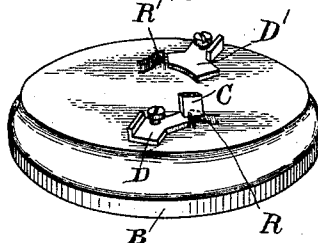


Fig. 2.



Witnesses.

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Inventor.

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by Bentley Knight

Att'y

(No Model.)

2 Sheets—Sheet 2.

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ELECTRIC SWITCH.

No. 483,712.

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FIG. 3.

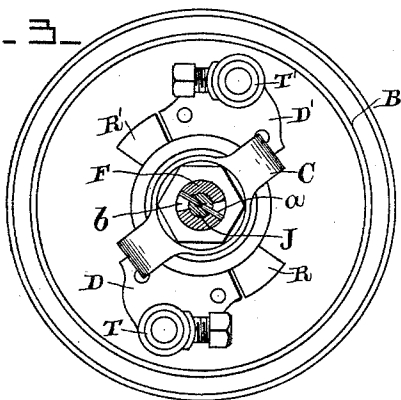


FIG. 4.

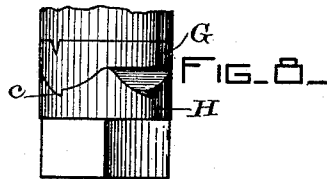
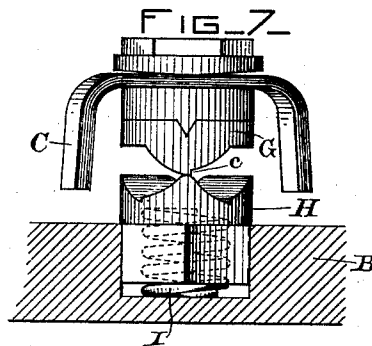
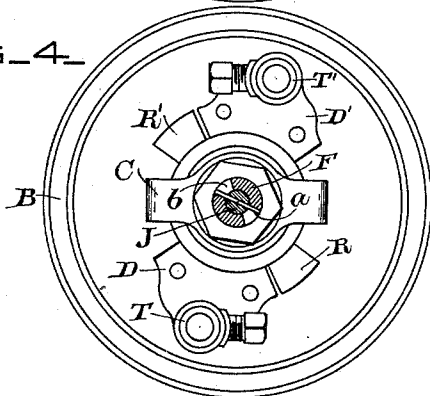


FIG. 5.

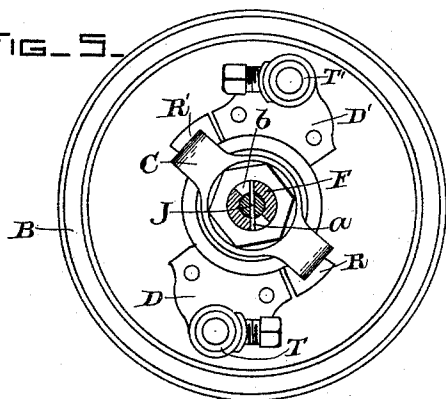
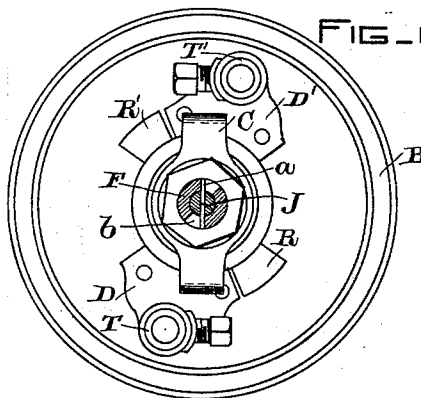


FIG. 6.



WITNESSES.

A. F. Macdonald.
John W. Gibney

INVENTOR.

Abel Ekström
by Bentley Knight
Atty.

UNITED STATES PATENT OFFICE.

AXEL EKSTRÖM, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE THOMSON-HOUSTON ELECTRIC COMPANY, OF CONNECTICUT.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 483,712, dated October 4, 1892.

Application filed November 10, 1890. Serial No. 370,856. (No model.)

To all whom it may concern:

Be it known that I, AXEL EKSTRÖM, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented a certain new and useful Improvement in Electric Switches, of which the following is a specification.

My present invention relates to an electric switch such as is used in connection with electric-lighting apparatus.

In designing the improvements described herein my object has been to secure the making of a quick and good contact when the switch is thrown to close the circuit; and to this end I have provided upon the base-plate cam surfaces or projections, which are engaged by a rotating contact-maker, so that the latter is lifted up and put under slight tension, thereby allowing it to spring quickly down upon the circuit-terminals. The handle of the switch is connected with the contact-maker in such a way as to allow a certain amount of lost movement, and a spring-actuated cam upon the spindle completes the throw of the switch when opening or closing the circuit with a snap, the purpose being to avoid the formation of arcs and consequent injury to the contacts.

My switch is seen in the accompanying drawings, wherein—

Figure 1 is a perspective view. Fig. 2 is a detail view of the base-plate and circuit-terminals, showing a slight modification. Figs. 3, 4, 5, and 6 are plan views with parts removed, showing the contact-maker in different positions, as hereinafter described; and Figs. 7 and 8 are enlarged detail views of the operating-cams.

In the views, B represents the base-plate, which usually is made of glass, porcelain, or other hard insulating material, and at opposite points upon the base are the circuit-terminals T T', from which project contact-surfaces D D', raised slightly above the level of the base, with which the rotating contact-maker is adapted to engage. Pivoted in a bracket E is the main spindle F of the switch, upon which is carried a two-armed spring contact-maker C, made up of a number of thin strips of copper superimposed one upon

the other to yield a maximum degree of elasticity. Also fixed upon the spindle is a cam G, the working face of which bears against a reversely-shaped non-rotating cam H, surrounding the spindle and pressed into engagement with the upper cam by a spring I.

The switch-handle J is connected to the spindle F by a cross-pin a, the projecting ends of which play in slots b, cut in the spindle, and thereby a certain amount of lost movement is gained, as will be seen by inspection of Figs. 3 to 6, which allows snapping of the contact-maker without movement of the handle.

Upon the base are cam-surfaces R R', situated in the path of travel of the contact-maker, which are preferably insulating and cast or molded with the base, but may be of metal. The contact-maker, being slightly above the disk, travels freely over its surface; but upon reaching the cams R R' its two ends are raised up and put under slight tension, so that upon passing the cams they spring quickly and firmly into place upon the contacts, insuring a good electrical connection.

The manner in which the switch operates is illustrated in detail by the second sheet of drawings.

In Fig. 5 the contact-maker is shown as just ready to close the circuit. The cams G and H will then be in the position seen in Fig. 7, and when the two teeth pass one another the lower cam will complete the throw of the switch, as in Fig. 6, with a snap action, which prevents the formation of any arc. The cams then assume the positions seen in Fig. 8, and a locking-lug c, engaging a corresponding notch on the lower cam, will prevent turning of the spindle backward. When the contact-maker is in the position seen in Fig. 3, the cams will be in a position corresponding to that in Fig. 5, the only difference being that the upper one rests upon a second tooth of the lower cam. The contact-maker will then be suddenly thrown into the position shown in Fig. 4, when the circuit is broken. Thus it is seen that the circuit is both opened and closed with a quick action, and the contact-maker during the latter por-

tion of its throw passes from the control of the operator by reason of the pin-and-slot connection before described.

5 In Fig. 1 the cams R R', which form one of the principal features of my construction, are represented as lugs, while the general surface of the base is plane.

10 In Fig. 2 the base itself is curved and grooved to form the desired jumping-off places for the contact-maker. Other like modifications may be used for the same purpose.

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

15 1. In an electric switch, the combination, with a suitable base, of a bracket secured thereto, a spindle held between and having a bearing in said base and bracket, a handle engaging with said spindle by a lost-motion
20 connection, a cam fixed upon and rotating with the spindle, a non-rotating cam movable axially upon the spindle, a spring seated under said movable cam to press said cams

against each other, and a contact-maker carried by the spindle, substantially as described. 25

2. The combination, in an electric switch, of a contact-maker and spindle with the fixed cam thereon and the reversely-shaped non-rotating cam spring-pressed into engagement with the fixed cam, said cams being provided
30 with locking-lugs to prevent turning the spindle backward, as described.

3. In an electric switch, the combination, with a base having contacts secured thereto, of cams adjacent to said contacts, a rotative
35 spindle, and a contact-maker consisting of a resilient cross-bar rigidly secured to said spindle at its center, its ends being adapted to ride up said cams and spring quickly upon the contacts, substantially as set forth. 40

In witness whereof I have hereto set my hand this 7th day of November, 1890.

AXEL EKSTRÖM.

Witnesses:

JOHN W. GIBBONEY,
ELIHU THOMSON.