

UNITED STATES PATENT OFFICE.

ETHAN I. DODDS, OF AVALON, PENNSYLVANIA, ASSIGNOR TO GEORGE WESTINGHOUSE, OF PITTSBURG, PENNSYLVANIA.

KNIFE SWITCH FOR ELECTRIC-LAMP CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 652,600, dated June 26, 1900.

Application filed September 9, 1899. Serial No. 729,892. (No model.)

To all whom it may concern:

Be it known that I, ETHAN I. DODDS, a citizen of the United States, and a resident of Avalon, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Knife Switches for Electric-Lamp Circuits, of which the following is a specification.

In attempting to meet the needs and requirements of those lamps in which an incandescing body formed from material which is a non-conductor when cold is brought to a state of conductivity by being heated by an electric heater I have been led to adapt switch forms already known in the art to the purposes of lamps of this class, and my present invention relates to the utilization of a knife switch for such purposes. The manner in which I make use of a switch of this class for the purposes designated is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation and partial section of a switch adapted to the purpose, and Fig. 2 is a plan view showing also a diagram of the electrical circuits.

The switch is mounted upon a suitable base A, of insulating material, and is pivoted to a standard B, attached thereto. The switch-arm is in the form of a lever or knife C, having an insulating-handle D. I prefer to mount upon the said switch-arm C springs E and F, which are by virtue of their being springs better adapted to make spring contact with corresponding springs G and H on the one hand and I and J on the other. The said springs G and H are the terminals of a circuit which includes a glower K, and the said springs I and J are the terminals of a circuit which includes a heater L near the glower. The heater and the glower may be in branches of the same circuit or they may be, as shown, in the circuits of the secondaries of two converters M and N, supplied with current by a suitable generator O. The springs E and F may be bent sheets of spring metal held to the knife or lever C by means of pins or rivets *ee* and *ff*, respectively. They are mounted in such a manner that the open or free ends of the springs have some play upon the rivets, whereby the virtue of the springs is utilized. The said springs E and F may or may not be

insulated from the knife or lever C. Between the spring pairs H G and I J, I locate a button P, pressed upward by a spring Q, bearing on the said button and on the base A. The spring is heavy enough to push the lever C upward out of engagement with the spring pair I J should the hand release the said lever after pressing it down into contact with the said spring.

It will be seen that the button P is provided with a flange or enlargement *p*, which engages with the plate *o*, through which the said button passes, and that this plate constitutes a stop or detent limiting the upward or outward motion of the button.

The action is simple and obvious. The operator first presses the knife or lever C toward the base A until contact is made with both the spring pairs H G and I J. The heater and the glower circuits are thus completed and the heater begins to develop heat. The operator holds the switch in the described position until he is able to tell by the appearance of the glower K that it has reached a suitable temperature for conducting the current by virtue of its own conductivity, and he then releases the knife or lever, simply withdrawing his hand and leaving it to the spring Q to push the lever into the position illustrated in Fig. 1. Here the heater-circuit is broken and the glower-circuit closed. This condition prevails until it is desired to break the lamp-circuit altogether. The operator then simply pushes the lever D upward, so as to remove the spring E from contact with the spring pair H G. The lamp-circuit is then completely ruptured and the lamp is extinguished.

The invention claimed is—

1. A knife switch for electric circuits comprising a suitable base and a contact-arm pivoted thereto, two pairs of contact-terminals coöperating with the said arm on the same side of the pivot, the arrangement being such that the arm strikes one terminal pair before it strikes the other terminal pair, in combination with a spring tending to throw the arm out of contact with the terminal pairs and having a strength surpassing the frictional resistance of the said pairs, and a stop limiting the motion of the said spring before the

said arm leaves contact with the terminal pair first struck by the said arm.

2. The combination with two electric circuits, one containing a glower and the other
5 containing an electric heater therefor, of a knife switch comprising a pivoted contact-arm and coöperating terminals for the said electric circuits supported upon a suitable base, the ends of the said terminals being in
10 different angular planes to the said arm, a spring tending to throw the contact-arm out

of contact with the terminal pairs, and a stop or detent limiting the movement of the said spring as set forth.

Signed at New York, in the county of New York and State of New York, this 11th day of
August, A. D. 1899.

ETHAN I. DODDS.

Witnesses:

WM. H. CAPEL,

GEORGE H. STOCKBRIDGE.