No. 743,970. PATENTED NOV. 10, 1903.

C. F. ZIEGLER.

ELECTRIC SWITCH.

APPLICATION FILED APR. 9, 1902. RENEWED SEPT. 17, 1903.

NO MODEL.

Fig. 1

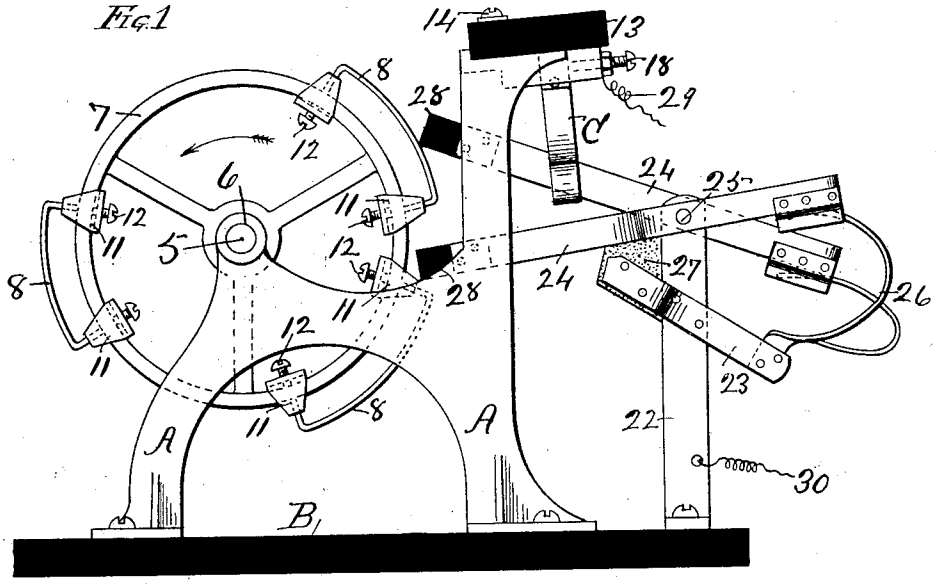


Fig. 2

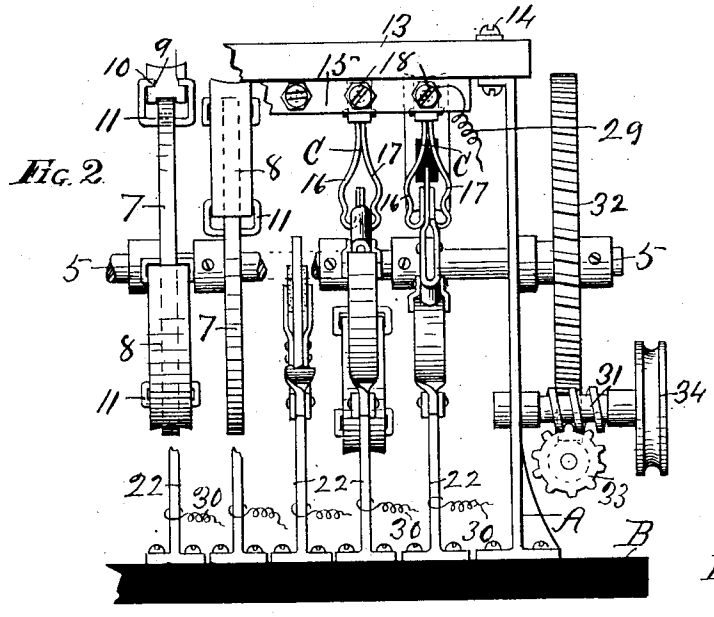


Fig. 3

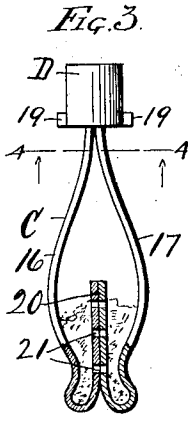


Fig. 4

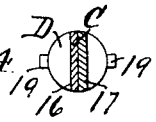
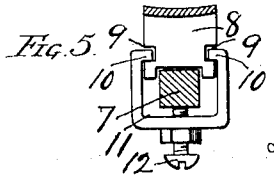


Fig. 5



WITNESSES:

F. B. Townsend

L. M. Freeman

INVENTOR

C. F. Ziegler

BY

L. B. Coupland & Co

ATTORNEYS.

THE NORRIS PETERS CO. PHOTO-LITHO. WASHINGTON, D. C.

No. 743,970. Patented November 10, 1903.

UNITED STATES PATENT OFFICE.

CHRISTIAN F. ZIEGLER, OF CHICAGO, ILLINOIS, ASSIGNOR TO REYNOLDS ELECTRIC FLASHER MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 743,970, dated November 10, 1903.

Application filed April 9, 1902. Renewed September 17, 1903. Serial No. 173,622. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN F. ZIEGLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to automatic electric switches of the class set forth in United States Letters Patent issued to me September 3, 1901, and has for its object to provide a device of the same character embodying certain improved features, as will be hereinafter set forth.

In the drawings, Figure 1 is an end elevation of a machine embodying the improved features. Fig. 2 is a front elevation with certain parts broken away. Fig. 3 is a detached elevation and part section of one of a series of contact-forks. Fig. 4 is a transverse section on line 4, Fig. 3, looking in the direction indicated by the arrow; and Fig. 5 is a transverse section through one of the revolving wheels and contact-segments, one of the clamps being shown in elevation.

A represents one of the supporting ends of the main frame, the companion end not being shown, and B an insulated base.

The respective ends of a rotatable shaft 5 are journaled in the corresponding parts of the frame ends, as at 6. A number of wheels or disks 7 are rigidly mounted on shaft 5 and are disposed at intervals and form, substantially, a revolving drum.

A number of segments 8 are adjustably mounted on the rims of the wheels 7, as shown in Fig. 1. The respective ends of these segments are bent around at right angles and are provided with notches 9, with which the inner ends 10 of the clamps or holders 11 engage in retaining these parts in their proper relative position, as shown in Fig. 5. The clamps 11 are movably secured in position by set-screws 12, bearing against the inner edge of the wheel-rims, which arrangement provides for the circumferential adjustment of the segments in obtaining the desired effect. Any number of segments may be used on the rim of each wheel or disk in accordance with the number of circuit-closing contacts wanted in each revolution. The segments are of different lengths to provide for a short or long contact as required in producing different and varied effects. The segments are concave on the upper side, so that the contacting ends of the circuit-closing blades are prevented from having a lateral movement and are retained in a central position to always insure a positive contact.

The respective ends of a bridge 13 are supported on the ends of the frame and secured thereto by screws 14. This bridge is composed of any suitable non-conductive material and has an electrically-charged bar 15 secured to the under side thereof, as shown in Fig. 2.

The contact-forks C in the electric circuit consist of two companion parts 16 and 17. The upper ends D of these forks are inserted in the under side of the bar 15 and are removably secured therein by set-screws 18. The lugs 19 on the heads D guard against a turning movement and always hold the forks C in their proper engaging position. From the heads downwardly the two fork members are extended wide apart and then contract somewhat toward the lower end, the two ends proper being turned inwardly in the direction of each other and upwardly to form the vertical part 20, leaving an open space on the respective sides in which a lubricant may be retained. The lubricant should be of such a consistency as not to flow and at the same time work through the apertures 21 and over the edges in continuously lubricating a contacting object. These forks are electrically charged from the bar 15 and are in line with and form a flexible contact for the circuit-closing levers or blades.

A number of standards 22 are mounted on the insulated base, and each has a bar 23 rigidly secured thereto. A circuit-closing lever 24 is pivoted to each of the standards 22, as at 25, and is located above the bars 23, as shown in Fig. 1.

The outer ends of the bars 23 and the levers 24 are connected by springs 26, which

serve to assist in returning the levers to their normal out-of-contact position in breaking the circuit. The inner ends of the bars 23 are provided with a cushion 27, with which the levers 24 have a normal contact and which relieves the same from concussion.

The inner ends of the levers 24 are provided with insulating-tips 28, which are adapted to have an intermittent contact with the segments mounted on the different rotating wheels and prevent the same from being electrically charged.

As the levers 24 are raised upwardly in the operation of closing the circuit they pass between the lower ends of the contact-forks C, that are turned up to form the vertical part 20, and are lightly clasped in this position to insure a positive contact and a constant lubrication of the engaging surfaces, which is a very essential feature in this class of devices.

The circuit-wire 29, attached to the electric bar 15 under the bridge 13, and the individual circuit-wires 30, attached to the standards 22, form the usual means for conducting the electric current from the source of supply and provide an independent connection for each letter, lamp, cluster of lamps, or other object in the series of circuits.

A rotary motion is transmitted to the drum through the medium of a worm-shaft 31, engaging a worm-gear 32, mounted on the drum-shaft. The pinion 33 is to assist in supporting and steadying the motion of the worm-shaft. A band-pulley 34 is mounted on the worm-shaft 31, from which a belt may be run connecting with the motive power.

In operation the revoluble drum, composed of the series of wheels on which the segments are mounted, rotates in the direction indicated by the arrow and brings the segments in contact with the under side of the circuit-closing levers and raises the same up into engagement with the electric forks and closes the circuit. When the segments pass out of contact, the levers are returned to their normal position by gravity and the action of the springs attached to the outer ends thereof, thus breaking the circuit. In Fig. 1 one of the levers is shown in its normal open position and the next lever thereto in its closed position. By this arrangement the force of gravity is utilized in connection with the power stored up in the springs in returning the levers to their normal open-circuit position, thus insuring a more direct and positive action than is possible when the contact is made on the levers from the upper side. The circuit-closing levers have a rocking movement on their pivots similar to that of the lever devices set forth in the patent herein referred to. The combined action of gravity and the springs serve to make a quick break of the circuit, so that the effect is instantaneous.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an electric switch, the combination with a revoluble drum, of a number of segments adjustably mounted on the periphery thereof, the circuit-closing contact-forks having bow-shaped sides and the lower joining ends turned upwardly between said sides and forming a space for holding a lubricant in maintaining a constant lubrication, the circuit-closing levers having an intermittent engagement with said forks, and means for returning said levers to their normal position, substantially as set forth.

2. In an electric switch, the combination with the rotating wheels, the series of segments movably mounted thereon and having their respective ends turned at right angles and provided with notches, a clamping-holder adapted to engage the notched ends and means for securing said holder in place, substantially as described.

3. In an electric switch, a circuit-closing contact-fork, consisting of companion members having bow-shaped sides and the lower joining ends turned upwardly and inwardly and providing space for holding a lubricant in lubricating a contacting object, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTIAN F. ZIEGLER.

Witnesses:
O. D. ZIEGLER,
L. B. COUPLAND.