

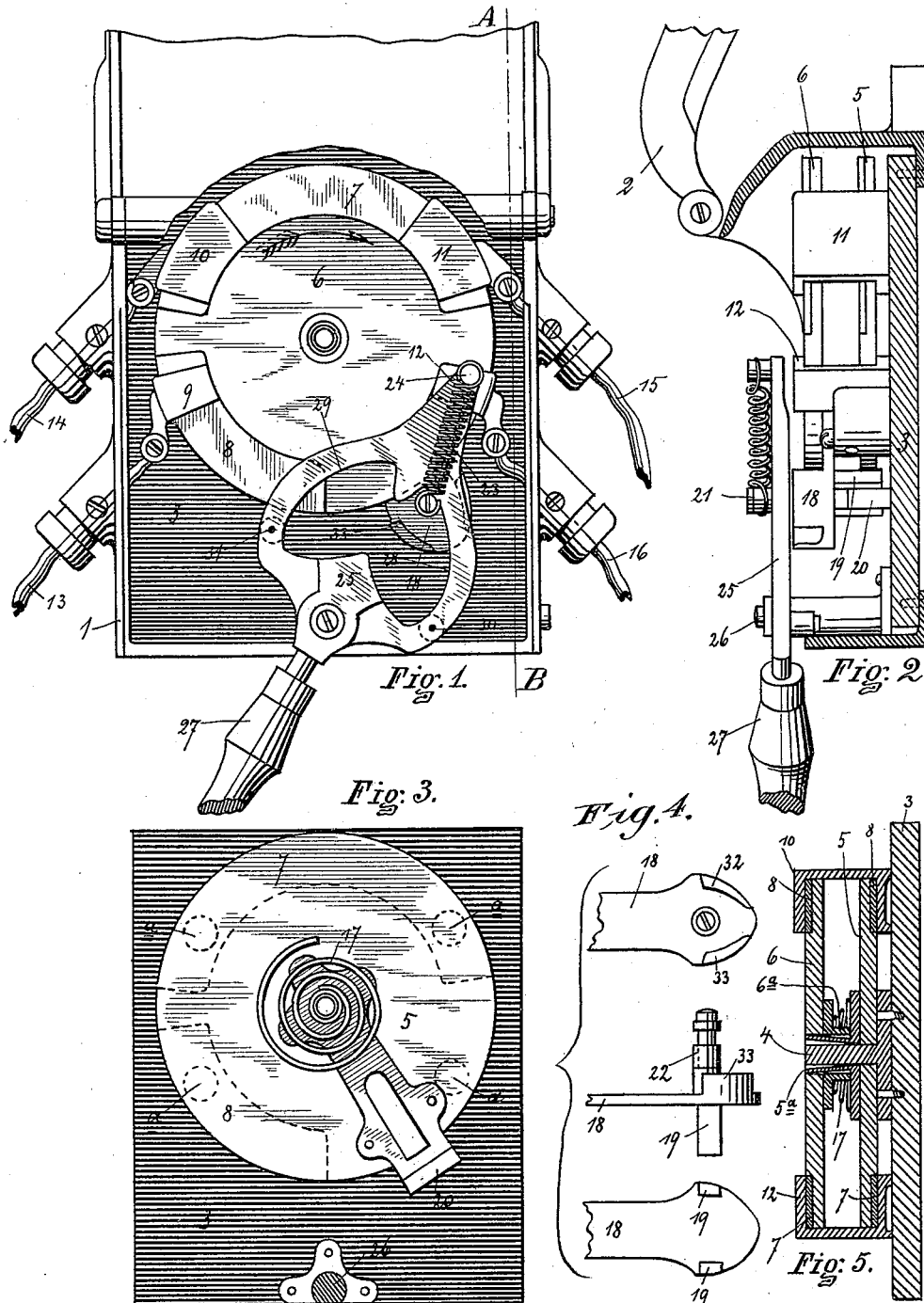
(No Model.)

2 Sheets—Sheet 1.

W. F. BOSSERT.
ELECTRIC SWITCH.

No. 493,243.

Patented Mar. 14, 1893.



WITNESSES.
Rich. A. George.
M. E. Robinson

INVENTOR.
William F. Bossert
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Atty

(No Model.)

2 Sheets—Sheet 2.

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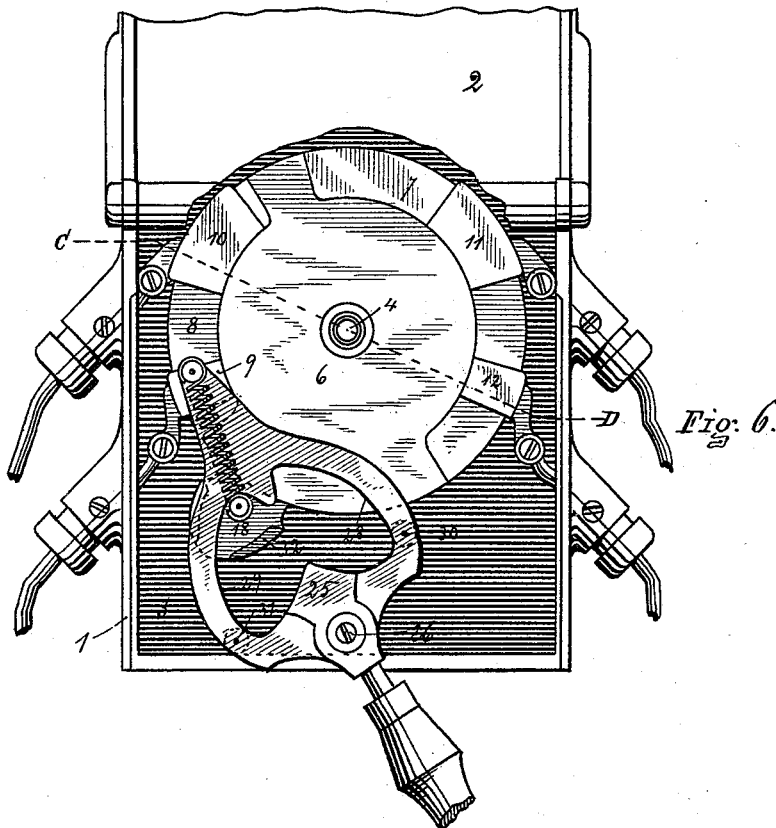


Fig. 6.

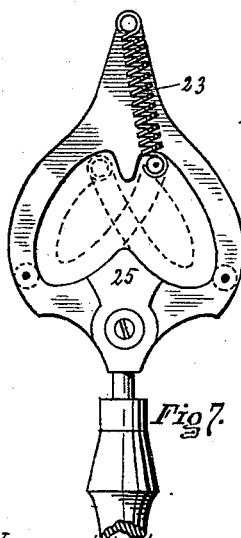


Fig. 7.

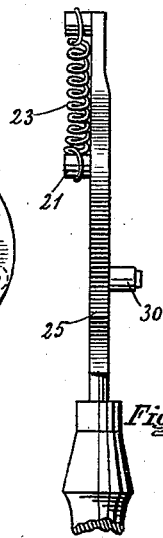


Fig. 8.

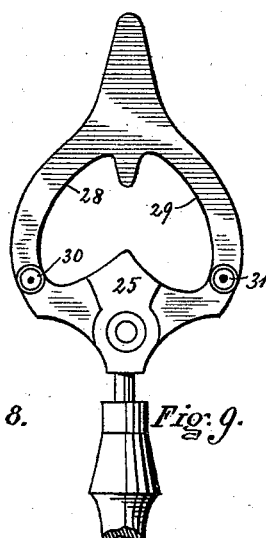


Fig. 9.

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UNITED STATES PATENT OFFICE.

WILLIAM FR. BOSSERT, OF UTICA, NEW YORK, ASSIGNOR TO THE
UTICA ELECTRICAL MANUFACTURING AND SUPPLY COMPANY,
OF SAME PLACE.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 493,243, dated March 14, 1893.

Application filed February 17, 1892. Serial No. 421,828. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FR. BOSSERT, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Electric Switches; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to improvements in electric switches.

In the drawings which accompany and form part of this specification and in which similar letters and figures of reference refer to corresponding parts in the several figures, Figure 1 shows a plan view of the switch including the case with cover open, a portion of the case being broken out to expose the working parts. Fig. 2 shows an edge view of the working parts of the switch, the case being shown in section, taken on a line A—B of Fig. 1. Fig. 3 shows the lower switch disk, and the base on which the working parts are mounted. Fig. 4 shows a top, edge and bottom view of the end of the arm mounted upon the upper disk, and through which both disks are operated. Fig. 5 shows a section of the working parts and base taken on line C—D of Fig. 6. Fig. 6 shows the same parts shown in Fig. 1, the parts being in the position at the extreme limit of movement from which they are shown in Fig. 1. Fig. 7 shows a top view of the operating lever and spring including a diagram of the movements of the operating pin on the arm of the disks, which movement is shown in dotted lines. Fig. 8 shows an edge view of the operating lever and spring. Fig. 9 shows a bottom view of the lever.

Referring more particularly to the reference numerals marked on the drawings, in a more specific description of the device, 1 indicates the casing, which is of suitable form for the purpose and preferably provided with a cover 2 hinged or otherwise secured. The case is provided with an insulated back 3 which is

preferably formed of a piece of slate, stone, or other good insulating material, and on which the operating parts of the switch are mounted as follows:

4 is a pivotal pin secured to the backing 3 and on which is first mounted under-disk 5, formed of slate or other insulating material, by means of a sleeve-bearing 5^a, which preferably is made to fit closely to the pivotal pin 4 at the lower side only, which allows the disk to have a wabbling movement on the pin. Telescoping on the sleeve 5^a is a sleeve 6^a, which is preferably constructed as 5^a—that is, engaging at the upper end of the sleeve only, leaving the upper disk 6, which is mounted thereon, free to have a wabbling movement with reference to the pin 4. Disk 6 is also formed of slate or insulating material. Around the peripheries of the upper and under disks and preferably let into the edges of each from the under side of the under disk and the upper side of the upper disk, are coinciding movable current conductors 7 and 8, embracing both edges of the switch disks and located at suitable intervals around the periphery are contact plates or stationary conductors 9, 10, 11, and 12, having faces adapted to engage the under face of the under disk and the outer face of the upper disk, and from which contactors 9, 10, 11 and 12 extend conductor wires 13, 14, 15 and 16, respectively. Between the disks 5 and 6 is introduced a spiral spring 17, which operates to hold the disks apart, which brings them into close and perfect contact with the four conducting plates 9, 10, 11 and 12 and the disks being mounted with a trifle play in their bearing sleeves, as before described, they are allowed to find a perfect bearing on the faces of the contact plates. Projecting from one side of the upper disks 6 is provided an arm 18 which is provided with a pair of projecting ears 19 on the under side thereof, adapted to engage with the sides of projecting arm 20 of the under disk and cause the two disks to be rocked on their common pivotal point simultaneously. From the upper side of the arm 18 is a pin 21, provided with an anti-friction roller 22 running freely thereon and adapted to have attached to its upper end, spring 23, the opposite end of which is

attached at 24 to the swinging end of operating lever 25, which lever is pivoted at 26 to a pivot projecting from the base 3, and the lever is provided with an operating handle 27 projecting to the outside of case 21. The lever is also provided with two similar but opposed cam faces 28 and 29, located on a heart-shaped opening in the lever. These cam faces are adapted to engage on anti-friction roller 22 mounted on pin 21. On the under side of the lever, and adjacent to the ends of the cam faces 28 and 29 are provided anti-friction rollers 30 and 31 adapted to engage respectively with projecting lips 32 and 33 on the end of arm 18.

This switch is more particularly designed to break or switch comparatively heavy currents and currents which are liable to arc when the conductor is broken, between the adjacent ends of the break, and thus burn the conductors. To obviate the arcing, or reduce to the minimum the damage done to the switch by arcing, it is found desirable to break and re-establish the circuits in a switch of this kind, as near instantaneously as it is possible to be done, and to this end the operation of this device is substantially as follows: the currents are conducted it will be understood, by the device in the position shown in Fig. 1, through current wire 15, contact plate 11, conductor 7, contact plate 12 and out through conductor wire 16. The other circuit is made through wire 14, contact plate 10 movable conductor 8, contact plate 9 and wire 13. In breaking these circuits and establishing the circuit shown in Fig. 6, the handle 27 is operated from the position shown in Fig. 1 to that shown in Fig. 6. In this operation, as the swinging end of the operating lever is moved toward the pivotal pin 4 of the switch disks, the spring 23 becomes elongated and more highly tensioned, and, as the swinging end approaches the pivotal point of the disks the disks are slightly rotated in contact with the several contact plates, in the direction indicated by the arrow in Fig. 1. About the time, or before the swinging end of the lever 25 has come opposite the pivotal point of the disks, the anti-friction roller 30 passes through the opening between the ends of the lips 32 and 33 on the end of arm 18 and prevents the rotation of the disks upon their pivot except perhaps to a very limited degree, until the end of the lever 24 has nearly reached the position shown in Fig. 6, the spring 23 becoming more highly tensioned as the end of the lever passes from the pivotal

point of the disk toward the position shown in Fig. 6. And as the end of the lever so passes the anti-friction roller 30 is moved along lip 32 so that when the lever is about to complete its movement the roller 33 passes by the end of lip 32 adjacent to the disk and thereby releases the disk, which is quickly carried by the action of spring 23 from the point where it was released to the position shown in Fig. 6. The length and arrangement of the movable conductors 7 and 8 upon the switch disks is such that the circuits are broken and re-established by the movement of the disks which takes place between the time that the disk is released by the roller 30 and the time that its movement is checked by the pin 21 coming in contact with the heart-shaped opening in the operating lever. In operating the disks from the position shown in Fig. 6 to that shown in Fig. 1, the device operates the same as just described, except that the anti-friction roller 31 and the lip 33 are brought into operation instead of the roller 30 and lip 32 as described, hence a description of this movement will be unnecessary.

As a modified form of construction, I use several short coil springs either with or without the central spring 17 which springs may be located around the periphery of the disks as shown in dotted lines at *a, a, a, a*, in Fig. 3.

It is evident that the parts of the device may be interchanged, and that other modifications in and from the construction described may be made without departing from the equivalents of this construction.

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

1. The combination of a switch disk, an operating lever having cam faces within an opening in the lever, a pin from the disk, projecting into opening of the lever and a spring connecting the lever and disk, substantially as set forth.

2. The combination of a pair of movable disks, carrying conductors, a spring independent of the conductor between the disks operating to separate them, and a stationary conductor having opposing stationary faces between which the movable conductors are held, substantially as set forth.

In witness whereof I have affixed my signature in presence of two witnesses.

WILLIAM FR. BOSSERT.

Witnesses:

JAMES M. COX,

MILTON E. ROBINSON.