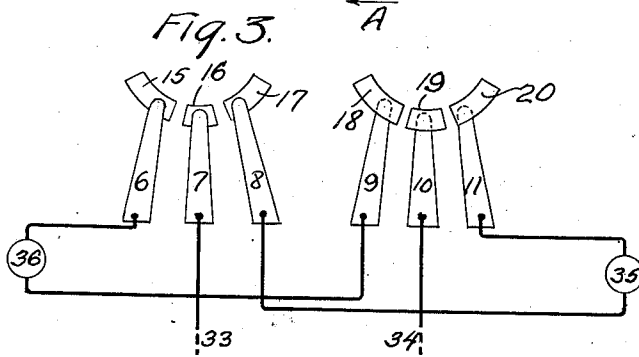
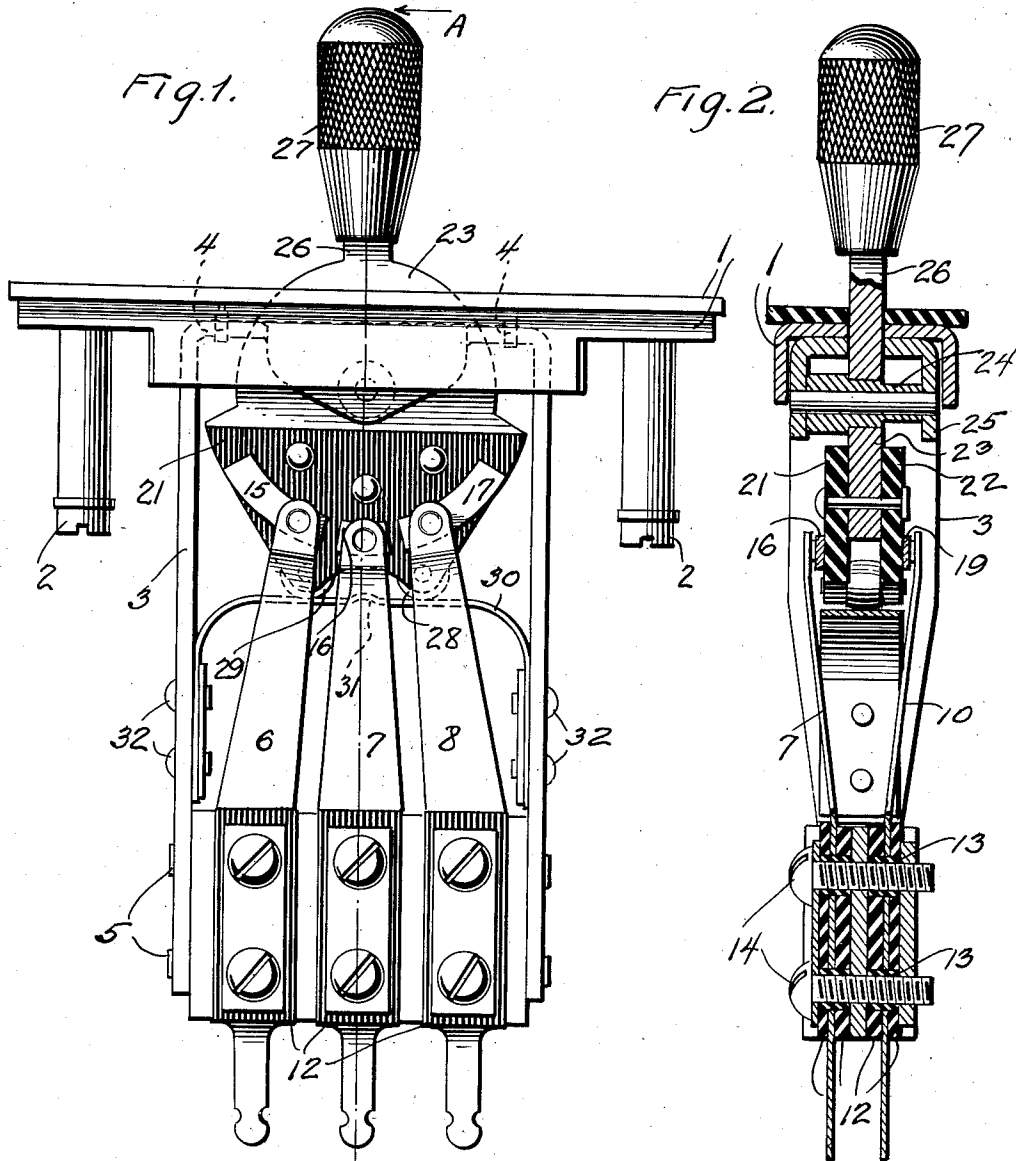


LE ROY W. KELSAY,
SWITCHING KEY.
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1,422,447.

Patented July 11, 1922.



Inventor:
Leroy W. Kelsay,
by *Jul C. R. Palmer* ATT'Y.

UNITED STATES PATENT OFFICE.

LE ROY WILSON KELSAY, OF NEW YORK, N. Y., ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SWITCHING KEY.

1,422,447.

Specification of Letters Patent.

Patented July 11, 1922.

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To all whom it may concern:

Be it known that I, LE ROY WILSON KELSAY, a citizen of the United States, residing at New York, in the county of Bronx, State of New York, have invented certain new and useful Improvements in Switching Keys, of which the following is a full, clear, concise, and exact description.

This invention relates to switching keys and particularly to that class of switching keys employing oscillating connector blocks, cooperable with contact springs, as the circuit completing means.

The object of this invention is to provide a means for switching circuits, that is compact, that secures sliding contact in making or breaking a circuit, that secures the various circuit combinations possible with a minimum movement of the operating parts, that may be stabilized in any actuated position, and that may be mounted with other switching units with similar mounting frames to secure economy and uniformity in switch unit arrangement.

This invention provides a switching means, which in its mounting and manual operation corresponds to a telephone switching key and is so arranged as to be stabilized or locked against any ordinary accidental mishandling when desired circuit relations have been established. However, the present invention differs from the usual form of telephone key switch in that the various circuits contemplated are secured by bridging two or more contact springs by connector blocks, cooperable with said springs by sliding contact. The stabilizing means mentioned is extremely simple and effective and may be arranged to accommodate any reasonable number of circuit positions.

A more complete understanding of the novel features of this invention may be had by reference to the detailed description and illustrative drawings where a switching key giving the circuit equivalents of a double pole, double throw switch is disclosed, though obviously with more springs and connector blocks more extensive switching combinations may be effected.

Referring to the drawings:—

Figure 1 discloses a side view of the key of this invention with the circuit closing parts in neutral or open circuit position. It

is to be noted that the mounting plate and rectangular key frame are of the usual telephone key type, arranged to be mounted with concealed retaining screws.

Figure 2 is a front sectional view of the key illustrating particularly the arrangement of contact springs in two groups, electrically distinct, and securing a very compact structure for mounting on close centers if desired.

Figure 3 discloses a possible circuit connection, wherein the key connections shown are the equivalent of a double pole, double throw switch. The diagram is arranged to show both groups of springs and their connector bars in the same plane, thereby somewhat clarifying Figures 1 and 2 where the said groups are disclosed as mounted on the two faces of the rectangular frame. When mounted as in Figure 1, springs 9, 10 and 11 are respectively behind springs 6, 7 and 8.

In detail referring to Figures 1 and 2 there is disclosed a mounting plate 1, arranged for attachment to a shelf or other support by concealed retaining screws 2. A rectangular frame 3 is attached at one end, hereinafter designated as the upper end, to the mounting plate by riveted stirrups 4. On the opposite end of the frame is a mounting plate 5 properly drilled for the reception of contact springs 6, 7, 8 and 9, 10, 11. The contact springs are arranged on the mounting plate in two groups; one group on either side of said plate and insulated therefrom by sheets of proper insulating material 12 and insulating bushings 13. The springs are rigidly retained in position by screws 14. Connector blocks 15, 16, 17 and 18, 19, 20 are respectively mounted on insulating members 21, and 22 which in turn are rigidly attached to an oscillatory metallic body 23 which is journaled on bushing 24, pin supported in ears 25 of the upper end of said rectangular frame 3. The bearing mentioned is so located relative to the top of said frame and mounting plate that the metallic body of the oscillatory member projects through an opening in the top of the frame and mounting plate and the metallic body is provided with an extension or shank 26, upon which is fastened operating handle 27; parts 26 and 27 being at all times above the mounting plate. A set of rollers 28 and

29 is provided at the lower extremity of the insulated portions 21 and 22 of said oscillatory member, the rollers being individually pin connected in extensions or ears on said insulated members 21—22 and cooperable with bowed spring 30 which is attached to the frame 3 by means of rivets 32. Spring 30 is crimped a little at a point intermediate the rollers 28 and 29 in normal position so that, upon movement of the oscillatory member, a roller may in passing the crimping 31 lodge against the far side of said crimping and secure stability in position of said oscillatory member. These rollers are so spaced that upon operation of the oscillatory member accurate centering of connector blocks with the appropriate spring contacts may be secured.

Referring to Figure 3, the two groups of contact springs and connector blocks are disclosed as in the same plane and circuits equivalent to those of a double pole, double throw switch are disclosed as follows:

Assuming wires 33 and 34 to be the supply wires of a source of current and the connector block sets to be moved in a clockwise direction so that block 15 is out of contact with contact spring 6, connector block 16 is moved into contact with spring 6 and connector block 17 is moved into contact with both springs 7 and 8; and connector block 18 is moved out of contact with spring 9, connector block 19 is moved into contact with spring 9 and connector block 20 is moved into contact with springs 10 and 11. A circuit may be traced from wire 33 through spring 7, connector block 17, spring 8 through an electrical load 35, spring 11, connector block 20, spring 10 and return through wire 34. Moving both connector block sets in a counter clock-wise direction from the position indicated in Figure 3, a circuit may be traced from wire 33 through spring 7, connector block 15, spring 6, electrical load 36, spring 9, connector block 18, spring 10 and return through wire 34. In other words, either electrical loads 35 or 36 may be thrown into circuit depending on the direction in which the switching

handle is moved, but in any case only one of said electrical loads is put in circuit.

What is claimed is:

1. A switching key comprising a mounting plate, a rectangular frame attached thereto, contact springs insulatedly mounted on both sides of one end and in planes parallel to the plane of said rectangular frame, an oscillatory member carrying connector blocks insulated therefrom but cooperable with said contact springs by sliding contact to complete circuits through predetermined groups of said springs, and a contact centering means comprising a bowed spring attached to said frame and cooperable with rollers mounted on said oscillatory member to stabilize said member in certain predetermined positions.

2. A switching key comprising a mounting plate with attached rectangular frame, two groups of contact springs insulatedly mounted respectively on the two sides of one end of said frame with active contact surfaces facing, an oscillatory connector block carrying member journaled in the opposite end of said frame and projecting inward between said groups of contact springs so as to cooperate with both groups simultaneously and a contact centering means comprising a bowed spring attached to said frame and projecting intermediate said contact spring groups to engage with rollers mounted on said oscillatory member.

3. A switching key comprising a rectangular frame, contact springs attached to one end of said frame and parallel thereto, an oscillatory member pivotally supported at the opposite end of said frame and operable in a plane parallel thereto, connecting blocks on said oscillatory member cooperating with said springs, and contact centering means cooperable with said oscillatory member and supported on said frame intermediate the ends thereof.

In witness whereof, I hereunto subscribe my name this 4th day of February, A. D. 1921.

LE ROY WILSON KELSAY.