

F. W. ANDREW.
ELECTRIC LAMP AND SERIES CIRCUIT CUT-OUT.
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Patented Oct. 10, 1911.

2 SHEETS—SHEET 1.

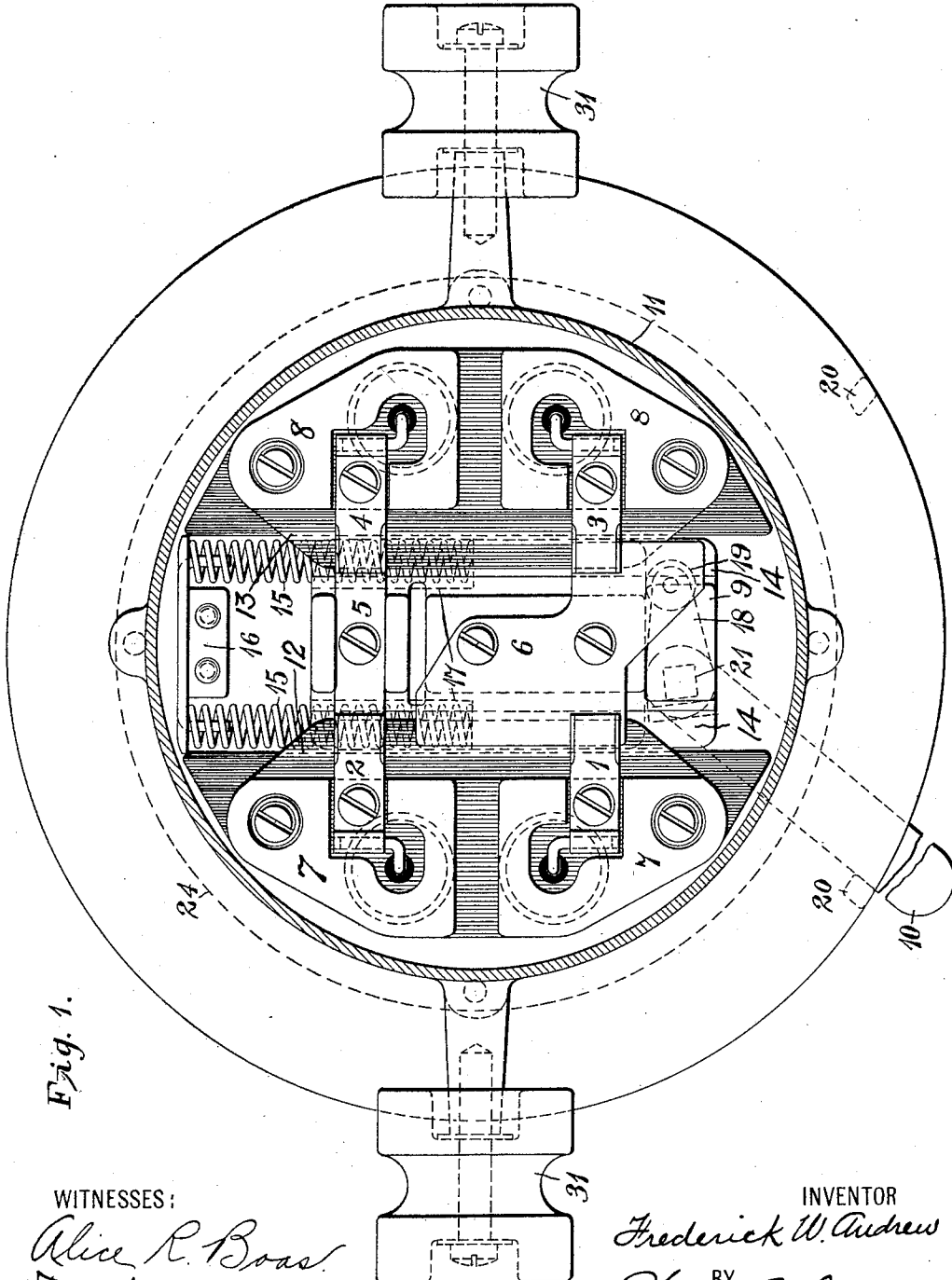


Fig. 1.

WITNESSES:

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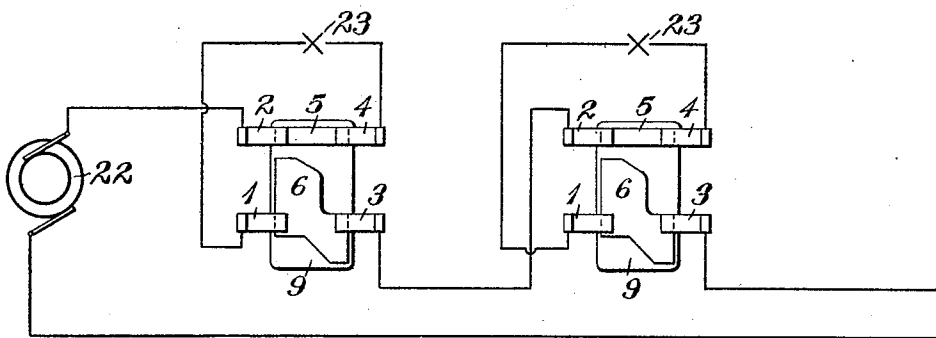
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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ELECTRIC-LAMP AND SERIES-CIRCUIT CUT-OUT.

1,005,129.

Specification of Letters Patent.

Patented Oct. 10, 1911.

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To all whom it may concern:

Be it known that I, FREDERICK W. ANDREW, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electric-Lamp and Series-Circuit Cut-Outs, of which the following is a specification.

My invention relates to switching devices for electric circuits and particularly to cut-out devices for electric lamps.

The object of my invention is to provide a device of the character above indicated that shall be simple and durable in construction, relatively inexpensive to manufacture and specially adapted for relatively high voltages.

In series circuit and electric lamp cut-outs as heretofore constructed, the insulation distances were relatively short and the switching device usually comprised segmental stationary contact members and rotatably mounted movable contact members which coöperated therewith.

According to my present invention I provide a switching device which positively and effectually accomplishes the functions for which it is intended and in which the insulation distances are relatively great so that the danger of injuring an inspector or attendant is practically obviated.

Figure 1 of the accompanying drawings is a plan view, with the cover broken away to disclose the operating mechanism, of a switching device which is specially adapted for use with series arc lamps and which is constructed in accordance with my invention. Fig. 2 is a view, partially in elevation and partially in section, of the device shown in Fig. 1, and Fig. 3 is a diagrammatic view showing the circuit connections for a plurality of switching devices employed in connection with translating devices.

Referring to the drawings, the switching device here illustrated comprises a plurality of stationary contact terminals 1, 2, 3 and 4, movable contact members 5 and 6, stationary insulating blocks 7 and 8, a movable insulating block 9, an operating handle 10, and an inclosing casing 11. The stationary contact terminals 1 and 2 are attached to the insulating block 7 and may have the form of resilient forked switching members. The stationary contact terminals 3 and 4 are attached to the insulating block 8 and are

similar to the stationary terminals 1 and 2.

The insulating blocks 7 and 8 are respectively provided with similar lateral projections 12 and 13 and are so mounted that the sides of the blocks from which the projections extend are parallel and adjacent to each other. The movable insulating block 9 is adjustably mounted between the blocks 7 and 8 and is provided with lateral projections 14 which are adapted to engage projections 12 and 13 with which the stationary blocks are provided.

The stationary terminal members 1, 2, 3 and 4 are disposed substantially at the corners of a square and extend inwardly so that they may be engaged by the coöperating contact members 5 and 6 which are attached to the movable insulating block 9 and which extend across the block. The movable block 9 normally occupies a position such that the contact member 5 connects the stationary contact members 2 and 4 while the contact member 6 connects the stationary contact members 1 and 3 by reason of the action of a pair of helical springs 15 which are attached to a stationary spring support 16 and which engage notches 17 in the insulating block 9.

The movable member of the switch is adapted to occupy a second position to which it may be moved by the action of the operating handle 10. The operating handle 10 is fulcrumed on a shaft 21 and is provided with a projecting arm 18 which may have a roller 19 to engage one end of the movable block 9. The rotation of the handle lever 10 about the shaft 21 is confined to a predetermined angle by projections 20 on the inclosing casing 11 and its movement from left to right to effect disengagement of contact members 5, 2 and 4 and members 6, 1 and 3 and engagement of members 6, 2 and 3 is opposed by the springs 15. As the handle lever is rotated from left to right, the block 9 is actuated by the arm 18 in opposition to the springs 15 to first move the contact member 6 into engagement with the stationary contact member 2, at which time it is still in engagement with contact members 1 and 3, and contact member 5 is still in engagement with contact members 2 and 4. Further movement of the handle into engagement with the right hand stop 20 will effect disengagement of the contact member 5 from the contact members 4 and 2, the contact member 6 from the contact member 1, and

will cause the contact member 6 to engage the contact members 2 and 3.

The stationary blocks 7 and 8 are attached to a plate 24 which may be punched from
5 sheet metal and is attached to the hood or casing 11 by means of screws 25. A dust and moisture proof washer 24^a of felt or similar substance may preferably be inserted in the joint between the plate and the
10 hood. The blocks 7 and 8 are further provided with projections 26 which extend through the plate 24 for a considerable distance, and through which holes are provided which terminates near the stationary contact members 1, 2, 3 and 4, so that suitable
15 conducting leads may project through the holes and be electrically connected to the stationary members. In this manner, the leads are thoroughly insulated from the supporting plate 24 and are separated from
20 each other by a material distance. The top of the cap 11 is provided with projections 27 which support a cylindrical insulator 30, in the usual manner, and a pair of similar
25 insulators 31 are attached to the sides of the hood so that the device may be suspended from the insulator 30 and a line conductor tied to the insulators 31. A hook 32 extends downwardly from the center of the
30 plate 24 from which an electric lamp or other apparatus to be controlled may be suspended.

Referring to Fig. 3, it will be observed that when the switching device is used in
35 connection with a series arc lamp and occupies one position, the lamp is connected in series with the circuit which is completed from a source of supply 22 through contact members 4 and 2 which are connected by
40 the movable contact member 5, arc lamp 23 and contact terminals 3 and 1 that are connected by movable contact member 6. When the switching device occupies the other position, the circuit is completed, excluding the
45 arc lamp, from the source 22 through contact terminals 2 and 3 that are connected by movable contact member 6.

Although I have illustrated a specific device, I desire that variations in size and
50 arrangement of details which do not depart from the spirit of my invention shall be included within its scope, as defined in the appended claims.

I claim as my invention:

55 1. A switching device for electric circuits comprising two pairs of stationary contact terminals, two insulating blocks each of which supports one of the terminals of each pair, and an intermediate movable insulating block, two contact members mounted
60 upon said movable block one of which is adapted to cooperate with one pair of the

stationary terminals and the other of which is adapted to cooperate with the second pair of terminals and with one of the first pair,
65 springs tending to hold said movable member in one of its extreme positions, an arm adapted to engage one end of the movable member, and an operating handle lever for said arm which acts in opposition to the
70 springs.

2. In a switching device for electric circuits, the combination with four stationary contact terminals disposed substantially at the corners of a square, a supply line connected to two of the terminals located at diagonally opposite corners of the square, and a translating device connected between the other two terminals, of an insulating block mounted for rectilinear reciprocatory
80 movement between the terminals, and contact members mounted thereon and adapted to connect the supply line to the translating device and to also shunt the translating device and interrupt the shunted circuit as
85 the block is moved from one of its extreme positions to the other.

3. In a switching device, the combination with two pairs of stationary contact terminals, a supply circuit connected to one
90 terminal of each of said pairs, and a translating device connected to the other terminals, of an insulating block mounted for rectilinear reciprocatory movement between the terminals of said pairs, two contact
95 members mounted on the movable block one of which cooperates with one pair of the stationary contact terminals and the other of which cooperates with the other pair and also with two terminals pertaining to both
100 pairs, an operating lever having an arm to engage said movable block, and springs which hold said block in engagement with said arm.

4. The combination with a pair of insulating blocks and a pair of contact terminals supported by each block, of a longitudinally movable block provided with two contact members which respectively connect side-by-side contact terminals when the block is in
110 one extreme position and one of which connects two diagonally opposite contact terminals when the block is in its other extreme position, means for moving the block to the last-named position, and a yielding
115 means which tends to hold said block in the first-named position.

In testimony whereof, I have hereunto subscribed my name this 14th day of September, 1906.

FREDERICK W. ANDREW.

Witnesses:

WM. L. GARRETT,
BIRNEY HINES.