G. E. PALMER.

SWITCH.

APPLICATION FILED JUNE 25, 1910.

984,238. Patented Feb. 14, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

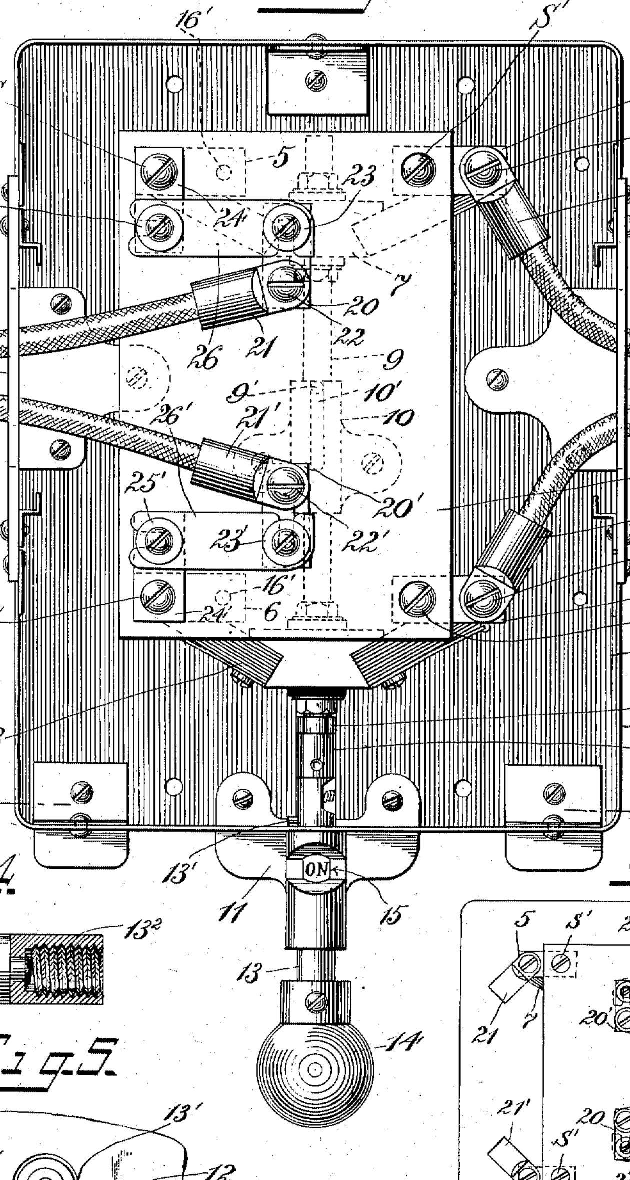


Fig. 4.

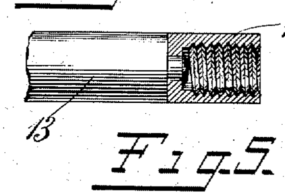


Fig. 5.

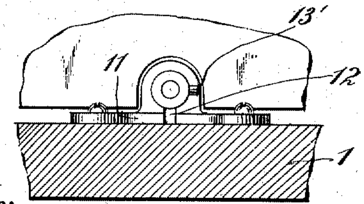
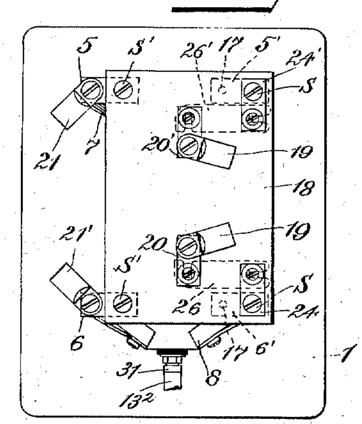


Fig. 6.



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[illegible]

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2 SHEETS—SHEET 2.

Fig. 2.

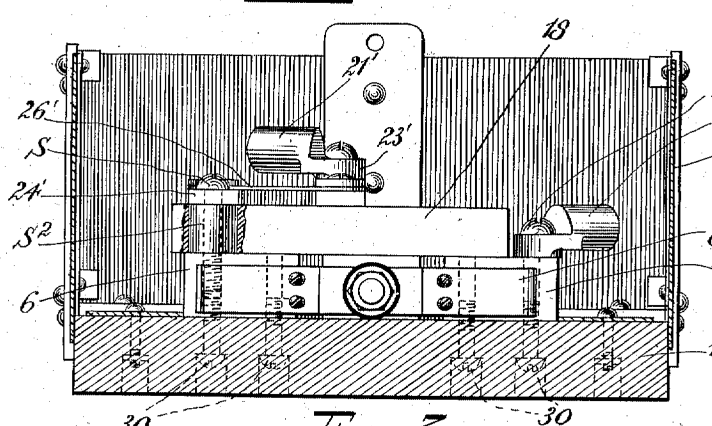
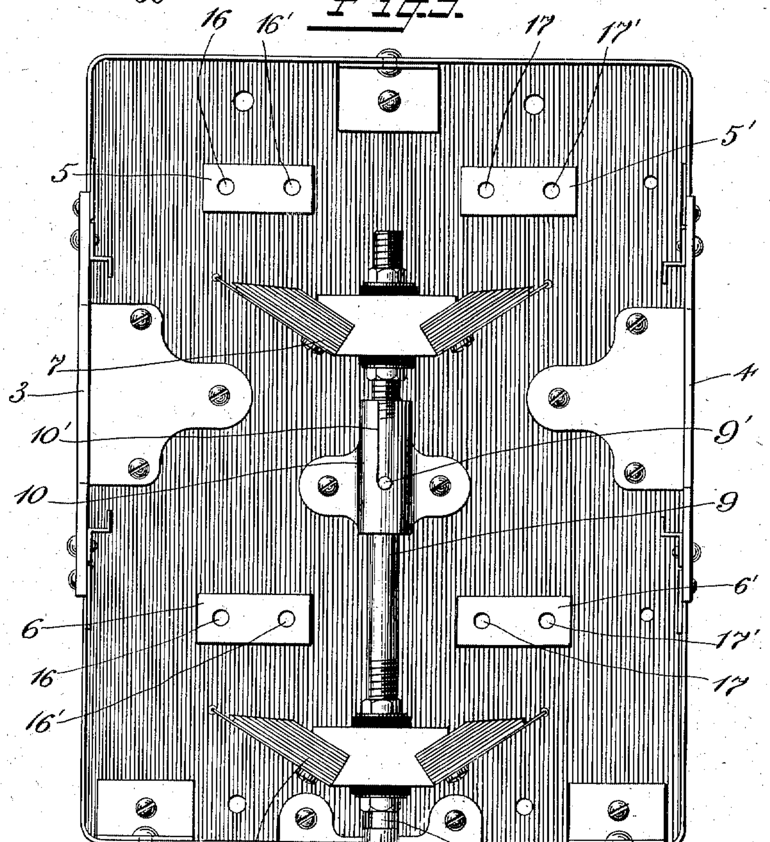


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SWITCH.

984,238. Specification of Letters Patent. Patented Feb. 14, 1911.

Application filed June 25, 1910. Serial No. 568,785.

To all whom it may concern:

Be it known that I, GRANVILLE E. PALMER, a citizen of the United States, residing at Winchester, county of Middlesex, Massachusetts, have invented certain new and useful Improvements in Switches, of which the following is a full, clear, and exact description.

My invention relates to improvements in fuse switches, and has for its object to provide a new and improved switch device fused on one side only, which can be adjusted so that line wires can be led in from either side to the switch proper, and the service wires can be led off from the other side without crossing of wires, the fuses of the device being interposed between the line wires and the switch proper.

The following is a description of an embodiment of my invention, reference being had to the accompanying drawings, in which—

Figure 1 shows a front elevation of the device without the usual cover. Fig. 2 shows a view of the same, looking upward, the base and casing being in section on the line *x*—*x* Fig. 1, without the handle and supplemental guide. Fig. 3 shows a front elevation of the device with the face plate removed and the switch arms being in off position. Figs. 4 and 5 show details. Fig. 6 shows diagrammatically the parts of Fig. 1, with the face plate reversed.

Referring more particularly to the drawings, 1 represents a base block, of slate or other suitable insulating material, within a casing 2 having port plates 3 and 4 for the line and service conductors 3′—4′.

5—5′ represent switch contacts securely mounted on the base block 1 for controlling one side of the circuit, and 6—6′ are contacts securely mounted on the base block 1 for controlling the other side of the circuit.

7—8 are switch arms having ends made up of leaf springs and adapted to engage with the contacts 5—5′ and 6—6′ respectively. The switch arms 7—8 are carried by a rod 9 having a pin 9′, the arms being mounted thereon so as to be insulated therefrom. This rod 9 is supported by the guide 10 having a slot 10′ for the pin 9′, which acts to keep the rod from turning. The rod 9 passes through a supplemental guide 11 secured to the base 1 at the bottom of the case 2. This supplemental guide 11 has a longitudinal slot 12 (Fig. 5) therein, adapted to receive a pin 13′ carried by a revoluble supplemental extension 13 of the rod 9 mounted by means of a connector 13^2 so as to turn axially upon said rod.

14 is a handle attached to the extension 13.

When the rod is forced upward by the handle 14 so that arms 7—8 engage their contacts 5—5′ and 6—6′, the pin 13′ is out of the slot 12, and upon turning the extension 13 the pin 13′ is turned away from the slot 12 so as to engage the upper surface of the guide 11 and hold the arms 7—8 in engagement with their contacts.

The extension 13 is provided with two angularly displaced faces, one of which bears the word "On" and the other bears the word "Off," the former appearing before an opening 15 in the supplemental guide 11 when the pin 13′ is turned so as to lock the switch arms in engagement with the contacts, as shown in Fig. 1, the word "Off" appearing before said opening when the pin 13 is in said slot 12 and the rod is lowered so as to bring said switch arms 7 and 8 out of engagement with their contacts, as in Fig. 3.

The contacts 5—5′ and 6—6′ are each provided with two equally spaced screw holes 16—16′ and 17—17′. Resting upon the contacts is a slate face-plate 18 containing four holes. The holes through the face-plate 18 are so located that the screws S—S—S′—S′ may be passed into the holes 16—16 and 17—17 when the face-plate is in one position, and into the holes 16′—16′—17′—17′ when the face-plate is in the other position. The holes 16—16 and 17′—17′ and the screws S—S are preferably larger than the holes 16′—16′ and 17—17 and screws S′—S′ so as not to be interchangeable.

19—19 are two circuit terminals having securing screws 19′ therefor, which terminals, when the face-plate 18 is in the first position, are screwed to the blocks 5′—6′ by having their screws engage the holes 17′—17′, and when it is in the second position are screwed to the contacts 5 and 6 by having their screws enter the screw holes 16—16 in the terminals 5 and 6.

The face-plate 18 also carries two plates or fuse terminals 20—20′, to which circuit terminals 21—21′ are secured by screws 22—22′. These plates or fuse terminals 20—20′ have binding posts 23—23′. The plate 18 also carries plates or fuse terminals 24—24′, through which the screws S—S pass

so as to electrically connect the plates 24—24′ to the blocks 5 and 6 or the blocks 5′ and 6′, according to whether the plate 18 is in reversed or unreversed position. The screws S—S are surrounded by brass bushings S^2 for providing a better electrical connection between the plates 24—24′ and the switch contacts to which they are connected. These plates or fuse terminals have binding screws 25—25′. Between the screws 23—25 and 23′—25′, fuses 26—26′ are secured.

If the line terminals are located to the left of the fuse, the face-plate 18 is mounted in the left hand position, as shown in Fig. 1, the line-wires being secured to the fuse terminals 20 and 20′ by the screws 22—22′. The service terminals 19—19 are secured to the terminals 5′ and 6′ by the screws 19′—19′. In this position the current in one lead passes first to the fuse terminal 20, then through the fuse 26, plate 24, contact 5, switch arm 7, contact 5′ to the service line terminal 19. The circuit through the other main passes to the fuse terminal 20′, the fuse 26′, plate 24′, contact 6, switch arm 8, contact 6′, to the service terminal 19′, in this way passing through the fuses 26—26′ before passing through the switch arms 7 and 8.

When the service mains are on the right, the face-plate 18 is removed and turned through an angle of 180° and secured by passing its screws into the holes 16′—17′—16′—17′, the line terminals being connected as before to the fuse terminals 20 and 20′ and the service terminals being connected to the contacts 5—6 by the holes 16—16, as shown in Fig. 6. For clearness the fuses 26—26′ are here shown in dots. In this case the circuit through one conductor is through the plate 20′, fuse 26′, plate 24, contact 5′, switch arm 7, contact 5 to the service circuit. The other circuit is through the other main to the plate 20, fuse 26, plate 24, contact 6′, switch arm 8, contact 6 to the other service main. This adjustment permits of leading the circuit through the fuse switch without crossing any conductors and admits of the placing of the fuses so that the current passes through the fuses before passing through the switch.

The providing of two holes in each switch terminal, one of which is always idle, the idle one being covered by the top plate, makes it impossible to connect the switch in circuit without having the circuit fused either before or after the switch, and yet enables the fuse plate to be turned so as to place the fuses before the switch.

The contacts 6—6′ are secured to the base 1 by screws 30—30 passing upward through the base into the bottoms of the holes 16—16′—17—17′, and the contacts 5—5′ are secured in a similar manner.

The connector 13^2 is fixed in position on the end of the rod 9 by a lock nut 31, and affords a means of adjusting the distance between the switch arms and the pin 13 whereby the pressure of the switch arms against the switch contacts when in closed position can be adjusted.

The device is simple in construction and attains an end much to be desired, making the switch universal for mains entering and leaving in either direction, and making it difficult to make wrong connections.

What I claim is:

1. The combination of a supporting base, a set of switch terminals mounted thereon, a switch arm therefor, a reversible face plate above said switch terminals and supported thereby, a pair of fuse terminals on said plate, one of which fuse terminals is connected to a corresponding switch terminal and adapted to be connected to the other switch terminal upon reversal of said plate, a circuit terminal, detachably connected to the other of said fuse terminals and adapted to be connected to said first switch terminal, a circuit terminal detachably connected to said other switch terminal and adapted to be connected to said other fuse terminal upon such reversal, and a fuse between said fuse terminals.

2. The combination of a supporting base, two sets of switch terminals thereon, switch arms therefor, a reversible face plate above said switch terminals and supported thereby, two pairs of fuse terminals on said plate, two of which fuse terminals, one of each pair, are connected to corresponding members of said pairs of switch terminals and adapted to be connected to the other members upon reversal of said plate, circuit terminals detachably connected to the other two of each pair of fuse terminals respectively and adapted to be connected to said corresponding members respectively, circuit terminals detachably connected to the other switch terminals respectively and adapted to be connected to said other two fuse terminals respectively upon such reversal, and fuses between each pair of fuse terminals.

3. The combination of a supporting base, two sets of switch terminals thereon, switch arms therefor, a reversible face plate above said switch terminals and supported thereby, two pairs of fuse terminals on said plate, two of which fuse terminals, one of each pair, are connected to corresponding members of said pairs of switch terminals and adapted to be connected to the other members upon reversal of said plate, circuit terminals detachably connected to the other two of each pair of fuse terminals respectively and adapted to be connected to said corresponding members respectively, circuit terminals detachably connected to the other switch terminals respectively and adapted to be connected to said other two fuse termi-

nals respectively upon such reversal, fuses between each pair of fuse terminals, and means for securing said face plate to said other switch terminals.

4. The combination of a supporting base, two sets of switch terminals thereon, switch arms therefor, a reversible face plate above said switch terminals and supported thereby, two pairs of fuse terminals on said plate, two of which fuse terminals, one of each pair, are connected to corresponding members of said pairs of switch terminals and adapted to be connected to the other members upon reversal of said plate, circuit terminals detachably connected to the other two of each pair of fuse terminals respectively and adapted to be connected to said corresponding members respectively, circuit terminals detachably connected to the other switch terminals respectively and adapted to be connected to said other two fuse terminals respectively upon such reversal, fuses between each pair of fuse terminals, and a common means for actuating said switch arms.

5. The combination of a supporting base, two sets of switch terminals thereon, switch arms therefor, a reversible face plate above said switch terminals and supported thereby, two pairs of fuse terminals on said plate, two of which fuse terminals, one of each pair, are connected to corresponding members of said pairs of switch terminals and adapted to be connected to the other members upon reversal of said plate, circuit terminals detachably connected to the other two of each pair of fuse terminals respectively and adapted to be connected to said corresponding members respectively, circuit terminals detachably connected to the other switch terminals respectively and adapted to be connected to said other two fuse terminals respectively upon such reversal, fuses between each pair of fuse terminals, a common means for actuating said switch arms, and means for locking said switch arms in engagement with said switch terminals.

6. The combination of a supporting base, two sets of switch terminals thereon, switch arms therefor, a reversible face plate above said switch terminals and supported thereby, two pairs of fuse terminals on said plate, two of which fuse terminals, one of each pair, are connected to corresponding members of said pairs of switch terminals and adapted to be connected to the other members upon reversal of said plate, circuit terminals detachably connected to the other two of each pair of fuse terminals respectively and adapted to be connected to said corresponding members respectively, circuit terminals detachably connected to the other switch terminals respectively and adapted to be connected to said other two fuse terminals respectively upon such reversal, fuses between each pair of fuse terminals, a rod for actuating both of said switch arms, a revoluble extension from said rod, means on said extension for locking said rod so as to hold said arms in engagement with said switch terminals, and indicating means on said revoluble extension.

7. The combination of a base, switch contacts secured thereto, a switch arm engaging therewith, a longitudinally movable bar carrying said switch arm for moving it into and out of engagement with said contacts, an extension upon said bar having indicating faces, a member having an opening for showing one of said faces when the switch is open and the other face when said switch is closed, and means for holding the switch arm in closed position.

8. The combination of a base, switch contacts secured thereto, a switch arm engaging therewith, a longitudinally movable bar carrying said switch arm for moving it into and out of engagement with said contacts, a revoluble extension upon said bar having angularly displaced indicating faces, a member having an opening for showing one of said faces when the switch is open and the other face when said switch is closed, and a pin upon said revoluble member engaging an abutment on said member when said extension is turned after said arm has engaged said contacts.

GRANVILLE E. PALMER.

Witnesses:
L. S. JAMES,
H. B. BROWNELL.