

F. W. SMITH.
ELECTRIC SWITCH.

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Patented Nov. 30, 1909.

941,660.

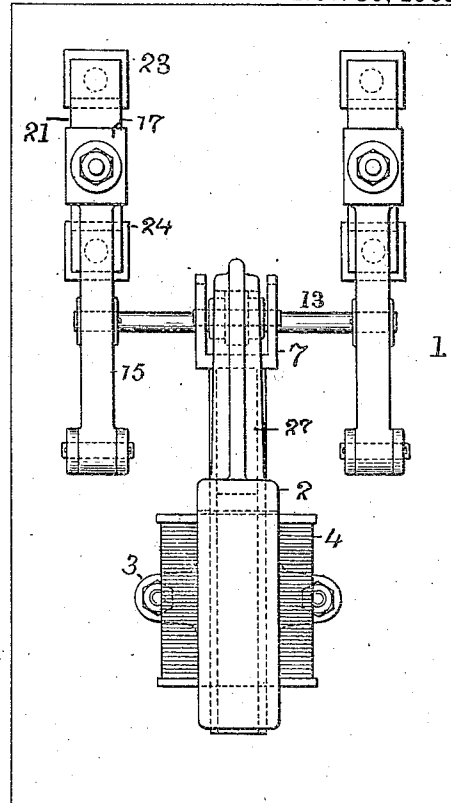
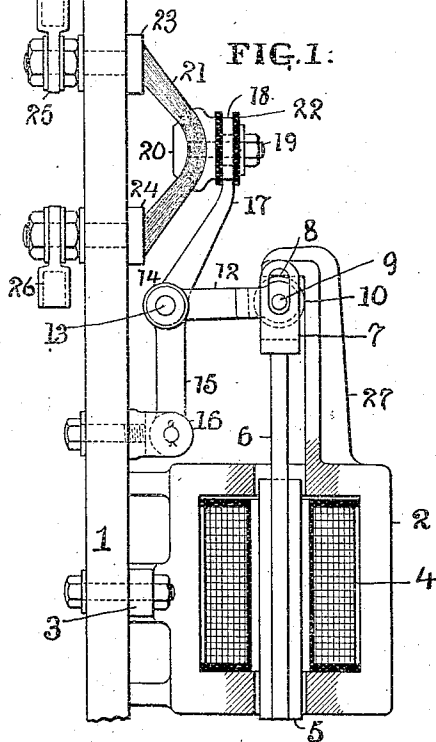
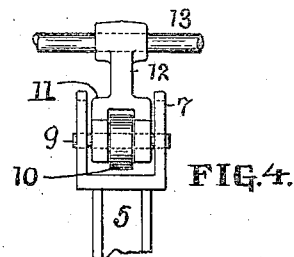
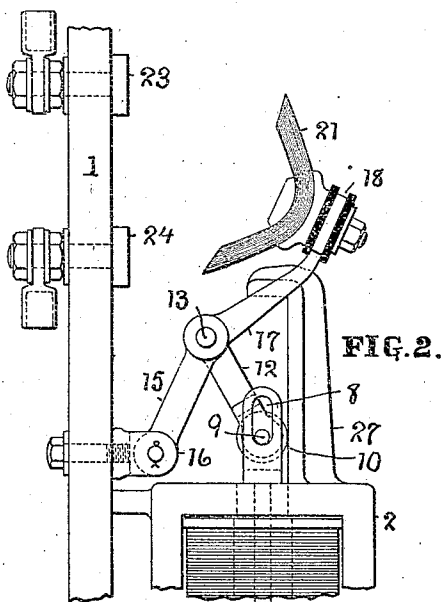


FIG. 3.



WITNESSES:

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ELECTRIC SWITCH.

941,660.

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To all whom it may concern:

Be it known that I, FRANK W. SMITH, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Electric Switches, of which the following is a specification.

The invention relates to electric switches and has for its object to simplify and cheapen the same.

The invention consists in the various combinations of parts more particularly recited in the claims.

In the accompanying drawings—Figure 1 is a vertical section through the longitudinal axis of the coil, of Fig. 3, showing the switch closed. Fig. 2 is a similar section of the upper part of the device only, showing the switch open. Fig. 3 is a front elevation, and Fig. 4 is a detailed elevation showing the connection between the core and the switch arm.

Similar numbers of reference indicate like parts.

1 is the base or back plate. 2 is a frame of magnetic material secured to said base by bolts passing through side lugs 3. Within the frame is the solenoid 4 through which and through openings in the frame passes the core 5. Extending upwardly from the core is a rod 6 carrying at its upper extremity the bifurcated head 7, in the side members of which are vertical slots 8. Received in slots 8 is the pin 9 of a roller 10, which pin also receives the bifurcated arms 11 of a link 12 which is fast on the transverse pivot shaft 13.

Carried on shaft 13 are the switch arms 14. The lower portion 15 of each arm 14 is pivoted to a lug 16 on the base. The upper portion 17 of each arm 14 carries a perforated plate 18, to which, by means of the bolt 19, is secured a block 20 which carries the two armed spring contact 21. The plate 19 is insulated from block 20 by washers 22.

23 and 24 are fixed contact plates carried by metal rods which extend through the base and are provided with suitable nuts to serve as binding posts for the circuit terminals 25 and 26.

On the upper part of the frame and integral therewith is a fixed guide bar 27, against the vertical edge of which the roller 10 bears. The upper end of said bar is

turned at right angles to form a limiting stop for said roller.

The operation is as follows: The parts being in the position shown in Fig. 2, the magnet being energized raises its core. The lower end of the slot meeting the pin 9 raises the outer end of link 12, the roller 10 then traveling along the vertical edge of guide bar 27. The switch arms 14 are thus swung inwardly until the spring contacts 21 meet the fixed disks 23, 24, and so close the circuit. The link 12 finally assumes a substantially horizontal position, as shown in Fig. 1, the thrust due to the compression of the spring contacts 21 then coming on the guide bar 27 and the link thus acting as a strut to hold the switch arms 14 in upright position and the circuit closed. When the solenoid is deenergized, the core drops through the length of the slots 8 before the upper ends of said slots meet the pin 9. As a consequence, the pin is struck a hammer blow which forces it downwardly thus withdrawing the strut support of link 12 from the switch arms 14, so that said arms may fall back by gravity to their original position, shown in Fig. 2.

I claim:

1. In an electric switch, a pivoted circuit closing switch arm, a fixed guide bar, a link pivoted at one end to said arm and bearing at its other end on said bar, and means for moving said link along said bar.

2. In an electric switch, a pivoted circuit closing switch arm, a fixed guide bar, a link pivoted at one end to said arm and bearing at its other end on said bar, means for moving said link along said bar, and means for limiting the movement of said link.

3. In an electric switch, a pivoted circuit closing switch arm, a fixed guide bar, a link pivoted at one end to said arm and bearing at its other end on said bar, and electromagnetic means for moving said link along said bar.

4. In an electric switch, a pivoted circuit closing switch arm, a fixed guide bar, a link pivoted at one end to said arm and bearing at its other end on said bar, means for moving said link along said bar, and electromagnetic means connected to the last named end of said link for moving said end along said bar.

5. In an electric switch, a pivoted circuit closing switch arm, a link pivoted to said

arm, a vertical bar for guiding said link and receiving the thrust thereof, a solenoid, and a vertically moving core for said solenoid connected at its end to said link.

5 6. In an electric switch, a pivoted circuit closing switch arm, a link pivoted to said arm, a vertical bar for guiding said link and receiving the thrust thereof, a solenoid, a vertically moving core for said solenoid
10 connected at its end to said link, and means on said bar for limiting the movement of the said link.

7. In an electric switch, a pivoted circuit closing switch arm, a link pivoted to said
15 arm, a roller at the end of said link, a vertical guide bar receiving said roller, a solenoid, and a vertically moving core for said solenoid connected to said link.

8. In an electric switch, a pivoted switch
20 arm, a resilient spring contact carried by said switch arm, fixed circuit terminals in the path of movement of said arm, a link pivoted at one end to said arm, a vertical bar for guiding the other end of said link
25 and receiving the resilient thrust thereof,

and a vertically moving core for said solenoid connected to said link.

9. In an electric switch, a pivoted circuit closing switch arm, a link pivoted at one end to said arm, a vertical bar for guiding
30 the other end of said link and receiving the thrust thereof, a solenoid, a vertically moving core therefor having a slot at one end, and a pivot pin on said link entering said slot.

10. In an electric switch, a pivoted circuit closing switch arm, a link pivoted at one end to said arm and bifurcated at its opposite end, a pin extending through said
35 bifurcations, a roller between said bifurcations and carried by said pin, a vertical guide bar receiving said roller, a solenoid, and a vertically moving core having a vertical slot receiving said pin.

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

FRANK W. SMITH.

Witnesses:

MAY T. MCGARRY,
GERTRUDE T. PORTER.