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ELECTRIC SWITCH

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ELECTRIC SWITCH.

Application filed August 30, 1922. Serial No. 585,168.

To all whom it may concern:

Be it known that I, JOHN F. LINDBERG, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Switches, of which the following is a full, clear, concise, and exact description.

My invention relates to circuit systems and is of particular service when included in a telephone receiving station, though the invention is not to be thus limited, the present invention being an improvement upon the construction shown in my co-pending application Serial No. 569,347 filed June 19, 1922.

The switch of my prior application included two engaging complemental contacts and a telephone receiver or other translating device having two terminals engageable with the aforesaid contacts, one of these contacts being operable by the terminal engaging it to separate this contact from the contact complemental thereto. In order that a number of telephone receivers might be included in a wireless receiving station there were provided as many such switches as there were telephones through which the telephone receiving circuit was to be closed. The contacts of the switches were in series in the receiving circuit and served to establish the circuit whether one or any number of telephones were plugged in. It was possible, with the prior switch, to open the telephone receiving circuit in the process of looping in a telephone receiver, it being the object of my present invention to avoid this possibility.

In carrying out my present invention each switch has two sets of engaging complemental contacts, one contact of each set being operable by the terminal of the telephone or other translating device engaging it to separate this contact from its complement. The movable contact of each set is in circuit making and breaking relation with the movable contact of the other set, to which end the complement of each movable contact is in permanent electrical connection with the other movable contact, being preferably formed of the same piece of metal therewith.

I will explain my invention more fully by reference to the accompanying drawing in which Fig. 1 is a plan view of a casing and

switching mechanism therein contained with a portion of the casing broken away, the mechanism illustrated being constructed in accordance with the preferred embodiment of the invention; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a sectional view on line 3—3 of Fig. 1, on a larger scale; Fig. 4 is a perspective view showing a part of the series of switches that are illustrated in Fig. 2; and Fig. 5 is a diagrammatic view showing a telephone receiving circuit having switching mechanism of my invention and showing the manner in which two telephones may be looped into circuit. Like parts are indicated by similar characters of reference throughout the different figures.

The telephone receiving circuit, such as the complete circuit of a radio outfit, has its sides 1 and 2 respectively terminating in terminals 3 and 4. U-shaped spring members 5, 6, 7 and 8 are interposed between these two terminals. The sides or arms 9, 10, 11, 12, 13, 14, 15 and 16 constitute movable or operable switch contacts. The terminals 3 and 4 have extensions 17 and 18 which are similar in construction to the sides of the U-shaped spring members and also constitute operable or movable contacts. These contacts respectively have as their complemental contacts the bars 19, 20, 21, 22, 23, 24, 25, 26, 27 and 28. The complemental contacts 17 and 27 constitute one set and the complemental contacts 9 and 19 constitute another set, both of these sets comprising one switch. The movable contact 17 of the set 17, 27, is in circuit making and breaking relation with the movable contact 9 of the other set, the contacts 9 and 27 being preferably stamped out of the same piece of sheet metal. Similarly, the movable contact 9 of the set 9, 17, is in circuit making and breaking relation with the movable contact 17 of the first set, the contacts 19 and 17 being stamped out of another piece of sheet metal.

The movable contacts 10 and 11 and their stationary complements 20 and 21 form another switch similar to the switch composed of the contacts 9 and 17 and their stationary complements. Such being also true of the contacts 12 and 13 and their complements; the contacts 14, 15 and their complements; and the contacts 16 and 18 and their complements.

The terminal 3 and the contacts 17 and 19 may be formed out of one piece of metal whereby the contacts 17 and 19 are in permanent electrical connection. The same is also true of the terminal 4 and the contacts 18 and 26. The adjacent movable contacts 9 and 10 are electrically connected, constituting, as stated, sides of U-shaped spring members, the same being true of the movable contacts 11, 12; 13, 14; and 15, 16. The stationary contacts 21 and 27 are formed in the same piece of metal with the movable contacts 9 and 10 so as to be electrically connected therewith. So also are the stationary contacts 20 and 23 formed in the same piece of metal with the contacts 11 and 12, stationary contacts 22 and 25 with the movable contacts 13 and 14, and the stationary contacts 24 and 28 with the movable contacts 15 and 16, for the same purpose. I have illustrated two head telephones 29 and 30 respectively having terminal tags or small plugs 31, 32 and 33, 34.

When the telephones are out of circuit the various switches, being in series, co-operate to maintain the circuit closed. When one telephone, or any number of telephones, are included in circuit they perform the circuit maintaining function that was effected by the movable contacts that are shifted by the terminals of the telephones. Any one movable contact may be shifted by a telephone plug without breaking the circuit even though the complement of such plug is not in circuit. This is due to the fact that the movable contact of each of the two sets of contacts that comprise a switch is in circuit making and breaking relation with the movable contact of the other set of such switch by placing the complement of each such movable contact in permanent electrical connection with the other movable contact, as described. Thus the contact 17 is in circuit making and breaking relation with the

contact 9 because the complement 27 of the contact 17 is formed in the same piece of metal with the contact 9 and the contact 9 is in circuit making and breaking relation with the contact 17 because the complement 19 of the contact 9 is formed in the same piece of metal with the contact 17.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A circuit closing switch including two sets of engaging contacts each set including an operable contact and a contact complementary thereto, the complement of the operable contact of each set being electrically connected with the operable contact of the other set, each operable contact and the complement to the other operable contact being formed and relatively positioned to receive a connecting plug therebetween for operating the operable contact.

2. A plurality of switches connected in series, each switch including two sets of engaging contacts each set including an operable contact and a contact complementary thereto, the complement of the operable contact of each set of contacts of each switch being electrically connected with the operable contact of the other set of such switch, each operable contact and the complement to the other operable contact being formed and relatively positioned to receive a connecting plug therebetween for operating the operable contact.

In witness whereof, I hereunto subscribe my name this 6th day of July A. D., 1922.

JOHN F. LINDBERG.