

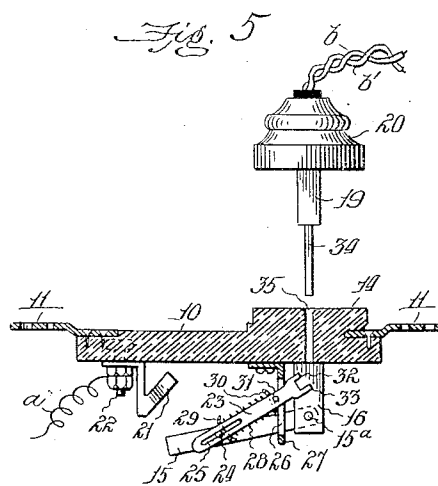
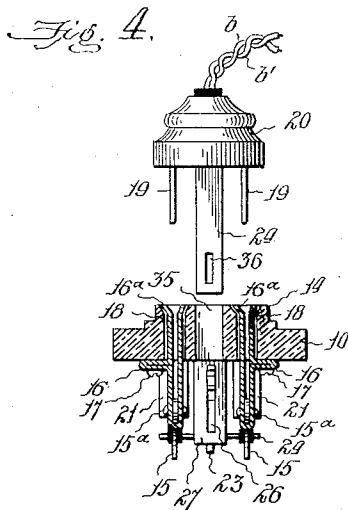
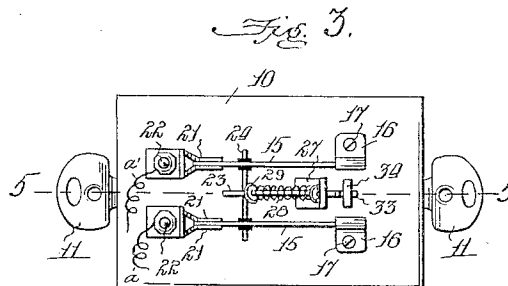
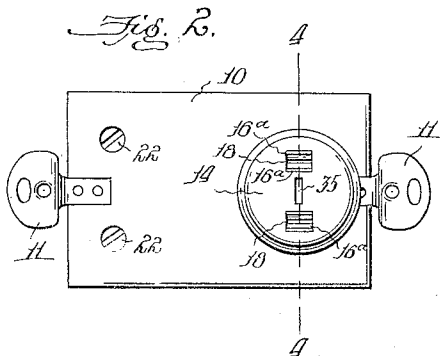
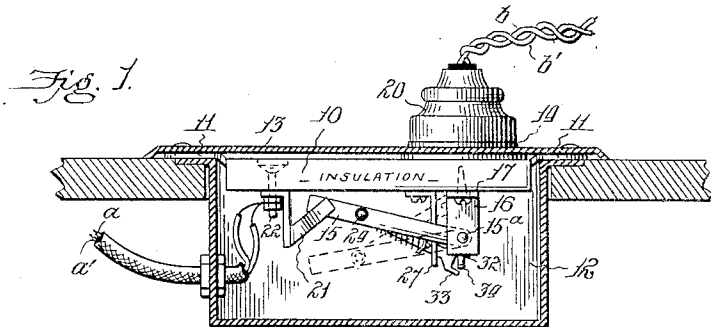
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C. FISCHER

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ELECTRIC CONNECTER

Filed July 11, 1927



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ELECTRIC CONNECTER

Application filed July 11, 1927. Serial No. 204,946.

My invention is an improvement in connectors for electric current conductors of that particular type commonly known as a plug connection comprising plug and socket members fitting one within the other for the purpose of carrying the current through the connector, this invention being a modification of the form of electric connector shown and described in my companion application for patent filed June 5th, 1927, Serial No. 195,571.

The electric connector shown and described in the application referred to is especially adapted for carrying high amperage currents, while in the present instance there is provided a somewhat similar arrangement for low amperage currents, as for household lighting and appliances, in this instance also the plug operating in conjunction with the socket so that the electric connection is not completed for the passage of the current until the plug member is seated in the socket member, and the circuit broken before the plug is withdrawn, to thereby obviate any danger of shock to the operator by accidental contact or passage of the current through the connector prematurely, as well as to remove danger of short-circuiting when the plug is removed.

The principal object of this invention is to provide a connector for household currents that is simple in construction, safe in operation, positive in action, and durable in use.

Other objects and advantages of my present invention will be obvious from the following description of the construction and operation of the electric connector, and what I claim as new and desire to protect by Letters-Patent is more particularly set forth in the appended claims.

In the accompanying drawings:

Figure 1 is a side elevation illustrating the application of my invention to a box such as usually employed in connection with an ordinary type of floor plug.

Fig. 2 is a plan view of the electric connector, the plug being removed.

Fig. 3 is an inverted plan view of the socket member of the connector, the switch being closed by the plug.

Fig. 4 is a sectional view on the line 4—4 of

Fig. 2, with the plug in position to be inserted, and

Fig. 5 is a similar view on the line 5—5 of Fig. 3 with the plug removed from the socket.

The make and break device or switch of the socket member of my improved electric connector is preferably mounted on the underside of an insulator-plate 10 such as ordinarily used in this general type of plug and socket connection, and therefore said plate is provided with metal pieces 11 at its ends for attachment to the box 12 between said box and face-plate 13, the insulator-plate being provided with a raised portion 14 projecting through the face-plate to seat the plug used in connection with the socket.

In carrying out my invention the circuit make and break device of the socket member is in the form of a knife-switch comprising a pair of blades 15 15 pivoted at 15^a in metal brackets 16 16 secured by screws 17 to the underside of the plate 10, and in the present instance the metal or copper strips forming these brackets are extended upward through openings 18 in said plate and raised portion 14 thereof to provide the terminals which cooperate with the terminals on the plug hereinafter described, each terminal of the socket being in the form of spaced apart plates or contact-pieces 16^a 16^a between which the terminals 19 19 of the plug 20 engage in making the electric connection between the plug and socket. The pivoted blades of the switch swing into and out of engagement with contact-plates 21 21 secured to binding-posts 22 22 to which the wires *a* and *a'* to and from the source of electric current are connected, the blades being operated by a lever 23 connected to a cross-bar 24 extending between said blades and passing through a slot 25 in the lever. The outer or free end of the lever passes through and beyond a slot 26 in a bracket 27 secured to and depending from the plate 10, and to provide for actuating the blades by manipulation of the lever, in inserting and withdrawing the plug, as hereinafter explained, there is a helical spring 28 on said lever interposed between the cross-bar 24 and bracket 27 with washers 29 and 30 against which the ends of the spring bear and

a pin 31 through the lever working against the inner side of the bracket between said bracket and adjoining washer, whereby when the lever is moved in either direction slightly beyond the longitudinal plane of the blades the spring will actuate said blades to open and closed position, respectively, the pin 31 serving as a fulcrum for the lever during the initial movement of the same in opening and closing the switch, and for the purpose of its operation this lever is bifurcated at its outer end presenting spaced apart members or short projections 32 and 33 with which a member of the plug engages.

The body portion of the plug 20 is of a conventional design to receive the lead wires *b* and *b'* connected in the usual manner (not shown) to the terminals 19 19, but in the present instance this plug member is provided centrally between said terminals with a depending flat rod 34 adapted to pass through a correspondingly-shaped opening 35 in the plate 10 of the socket member to operate lever 23 by engaging the aforementioned spaced projections 32 and 33 of the bifurcated outer end thereof, and in order that the said rod may engage these projections alternately for depressing and raising the lever it is provided near its lower end with a slot 36 into which the projection 32 passes as the lower end of the rod engages the projection 33, so that the portion of the rod at the lower end of the slot may engage the projection 32 for operating the lever in the other direction or raise the same as the plug is withdrawn from the socket.

The operation of the electric connector will be understood from the foregoing description, for with the movable elements of the switch in the open position shown in Fig. 5 of the drawings, as when the plug is removed from the socket, the blades are down out of contact with the plates 21 and the rear end of the spring-actuated lever is in its uppermost position, so that when the plug is inserted the end of the rod carried thereby will engage the projection 32 and depress the lever to swing the blades 15 into engagement with the contact-plate 21 thus closing the switch to carry the current through the connector, as shown in Fig. 1 of the drawings. It will be noted that in this operation the switch is not closed until the terminals 19 and 16^a are in contact, that is the terminals 19 are pushed far into or between the contact-plates or terminals 16^a before the rod operates the lever sufficiently to close the switch, and consequently the plug is practically seated on the socket before the switch is closed or current passes through the connector, thus protecting the operator against shock by accidentally touching "live" terminals. In withdrawing the plug, to break the connection, the end portion of the rod 34 at the lower end of the slot 36 engages projection 33 to pull the lever

23 upward so that it will operate to swing the blades downward to open position of the switch away from the contact-plates 21. As heretofore explained the spring acts to complete the throw of the switch-blades, and of course also serves to maintain them in closed position as well as open position, in the latter position said blades being separated from the contact-plates to prevent a short circuit within the socket-member as well as leave the terminals 16^a 16^a "dead."

In the co-pending application herein referred to my invention is applied to that form of electric connector comprising a tubular plug carrying terminals engaging terminals in a cylindrical socket, and in that instance I provide a slidable rod in the socket member operated by a projection on the plug member, said rod being connected to spring-actuated levers operating the switch-blades, while in the present instance the construction is modified for adapting my invention to a plug and socket connection of that general type employed for low voltage currents or household circuits, at the same time retaining the advantages of safe operation, &c.

I claim:—

1. In combination with an electric connector of the plug and socket type having cooperating terminals for carrying the current through said connector, of a circuit make and break device on the socket comprising pivoted blades and cooperating contact-plates, a spring-actuated lever connected to the blades for opening and closing the circuit, said lever having a bifurcated outer end, a slotted bracket through and beyond which the bifurcated end of the lever passes, and a rod on the plug having means at its outer end for engaging the bifurcated end of the lever to impart initial movement to the latter when the plug is inserted into and withdrawn from the socket.

2. In combination with an electric connector of the plug and socket type having cooperating terminals carrying the current through said connector, of a circuit make and break device on the socket comprising pivoted blades and cooperating contact-plates, a spring-actuated lever connected to the blades for opening and closing the circuit, said lever having a bifurcated outer end, and a slotted bracket through and beyond which the bifurcated end of the lever passes; together with a rod on the plug having a slotted lower end engaging the bifurcated end of the lever to impart initial movement to the latter when the plug is inserted into and withdrawn from the socket.

3. In combination with an electric connector of the plug and socket type having cooperating terminals carrying the current through said connector, of a circuit make and break device on the socket comprising pivoted blades and cooperating contact-plates,

a spring-actuated lever connected to the blades for opening and closing the circuit, said lever being bifurcated at its outer end, a slotted bracket through which the outer end of the lever passes, a spring interposed
5 between a cross-bar connecting the blades and said slotted bracket; together with a slotted rod on the plug engaging the bifurcated end of the lever for operating the same.
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