A. W. CAPS.

ELECTRIC CONDUCTOR CONNECTOR.

APPLICATION FILED JUNE 7, 1920.

1,410,651.

Patented Mar. 28, 1922.

Fig. I.

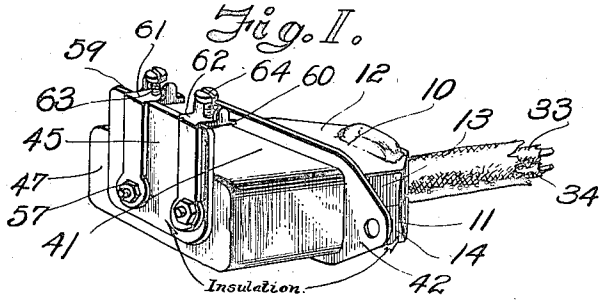


Fig. III.

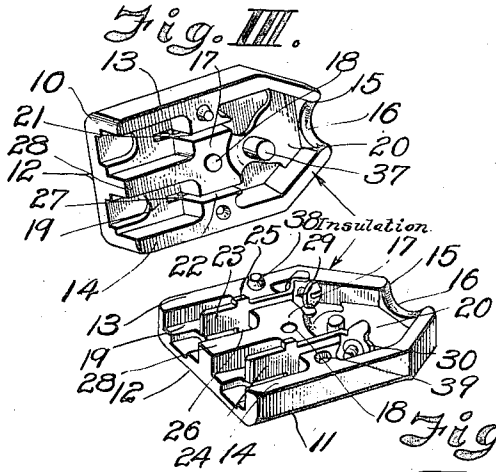


Fig. II.

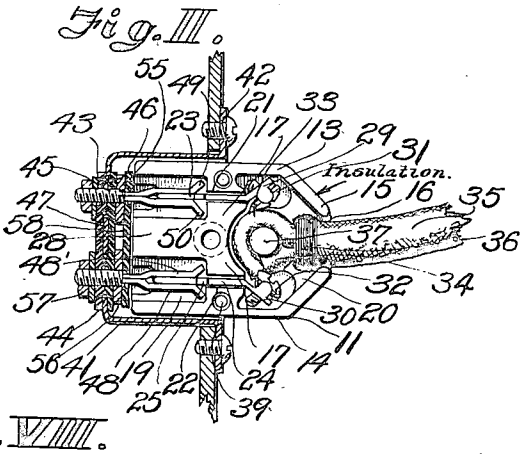


Fig. VIII.

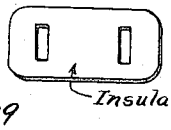


Fig. IV.

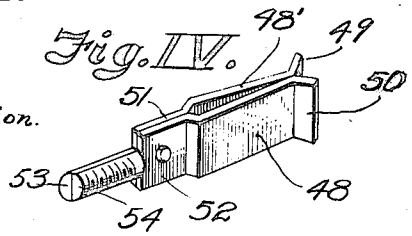


Fig. VI.

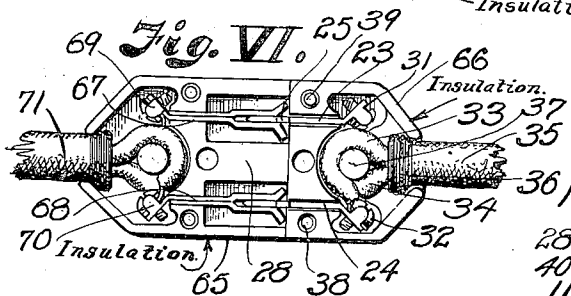


Fig. V.

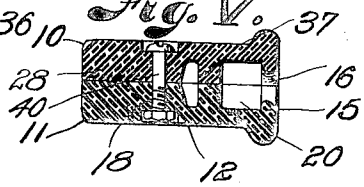
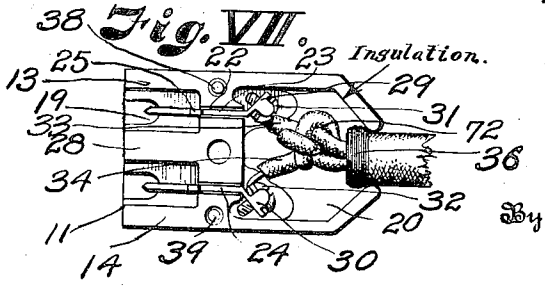


Fig. VII.



Inventor

Arthur W. Caps.

By Arthur E. Brown.

Attorney

UNITED STATES PATENT OFFICE.

ARTHUR W. CAPS, OF TOPEKA, KANSAS.

ELECTRIC-CONDUCTOR CONNECTOR.

1,410,651. Specification of Letters Patent. Patented Mar. 28, 1922.

Application filed June 7, 1920. Serial No. 386,930.

To all whom it may concern:

Be it known that I, ARTHUR W. CAPS, a citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented certain new and useful Improvements in Electric-Conductor Connectors; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to electric conductor connectors in which two complementary terminal-carrying members co-operate to complete a circuit.

The invention is particularly applicable for use in connection with conductor connectors employed for making and breaking low tension lines and they are generally applicable for use in connection with devices used for industrial purposes.

Broadly the invention consists of a plug member and a socket member, and one of the objects thereof is to provide an improved form of connector which may be manufactured at relatively small cost and constructed in such manner that the parts may be readily assembled and whereby, in certain instances, double parts co-operate to provide a finished member. For example, the plug member is preferably constructed in two halves, each of which is a duplicate of the other, and the members of the two halves are so arranged that they co-operate to provide a shell or casing for the finished plug. This reduces the cost of manufacture and expedites the method of assemblage since there are no rights and lefts to be soldered, any two members fitting together in a convenient manner.

The socket member also has certain novel features of construction, which will be apparent by reference to the accompanying drawings, in which

Fig. I is a perspective view of a complete conductor connector constructed in accordance with my invention.

Fig. II is a view showing the socket member in section and one-half of the plug member in elevation.

Fig. III is a perspective view of the two separated halves of the plug member.

Fig. IV is a detail view of one of the socket terminals.

Fig. V is a sectional view through the plug member shell or casing.

Fig. VI is an elevational view showing one-half of a modified form of connector.

Fig. VII is a view of one-half of a modified form of plug member, and

Fig. VIII is an elevational view of an insulation plate for the socket member shown in Figs. I and II.

The plug member is shown as consisting of two halves 10 and 11, one of which is a counterpart of the other so that the two members may be brought together to complete the housing or shell for the plug. Since they are of like construction, assemblage will be facilitated as well as the cost of manufacture reduced because it will not be necessary to provide different dies or molds for the respective members constituting the shell.

Each member consists of a plate 12 having side flanges 13 and 14 and an end flange 15, provided with a notch 16 to co-operate with a corresponding notch on the complementary member to form a conductor cord opening. The radius on which the notch 16 is formed is such that the diameter of the opening formed by bringing the members 10 and 11 together will be less than the diameter of the end of the cord so that the edges of the flanges 15 will resist accidental disassociation of the cord with the plug, as will be explained hereinafter.

Each flange 13 and 14 is provided with an intermediate transverse partition or bridge bar 17 provided with a central, bolt-receiving opening 18, and each bridge bar or partition divides the member into a forward compartment 19 and a rear compartment 20.

There are longitudinal slots 21 and 22 in the partition bar 17 to receive the knives or terminals 23 and 24 of the plug. These knives extend through the slots and into both the forward chamber 19 and the rearward chamber 20 and they are held against relative longitudinal movement by means of oppositely disposed lugs or projections 25 and 26, which engage the recesses 27 in the floor of the slots 21 and 22, the slots 21 and 22 being of sufficient width to allow lost motion of the knives whereby the forward ends thereof may have sufficient movement

to automatically find their seats in mating sockets previously described. The forward ends of the knives 23 and 24 extend into the recess 19, sub-divided by the longitudinally extending wall or flange 28, integral with the partition bar 17. The rearward ends of the knives 23 and 24 extend into the rear recess 20 and are bent at obtuse angles to provide heads 29 and 30, which carry binding posts 31 and 32 to receive the ends of the conductors 33 and 34 of the conductor cord 35, which is of usual construction.

The diameter of the conductor cord 35 is substantially that of the diameter of the opening formed by the notches 16 when the parts 10 and 11 are brought together, and as it is customary to wrap the end of the conductor cord 35 with a binding thread 36, it will be apparent by reference to Fig. II that the edges of the flanges 15 will resist the tendency of the cord to pull out of the plug because the wrapping will be too large to be pulled through the opening formed by the notches 16.

In order to further efficiently connect the cord to the plug, the conductors 33 and 34 are looped about anchor posts 37 in the floors of the chambers 20, as clearly shown in Fig. II.

On the abutting faces of the members 10 and 11 are upstanding centering pins or lugs 38, which are receivable in recesses 39 on opposite sides of the plug, that is, a recess in member 10 will receive a pin or lug on member 11 and vice versa, this insuring easy assemblage and proper alignment of the parts so that the two members 10 and 11 may be easily fastened together by a single bolt or fastening device 40 (see Fig. V).

The members 10 and 11 will preferably consist of molded insulation, hard rubber or compressed fiber serving admirably for such a purpose, and the plug member is adapted to be received within the socket member 41, shown in Figs. I and II as consisting of a metal shell having a securing flange 42 on its front face whereby the socket member may be secured to the element into which the plug is to be inserted.

The rear wall of the socket member is provided with openings 43 and 44, bounded on opposite sides by insulation plates 45 and 46, which clamp the rear wall 47 of the socket member between them. The openings 43 and 44 are sufficiently large to enable the yielding blade terminals of the socket member to project therethrough without contacting therewith, this being particularly shown in Fig. II.

The terminals for the socket member are shown in Fig. IV as consisting of yielding or spring blades 48 and 48′ having outwardly bent guide lips 49 and 50 to receive the knives 23 and 24 of the plug member. The rearward ends of the blades 48 and 48′ are offset, as at 51 and 52, and terminate in half round, threaded bolt members 53 and 54 to provide a bolt or threaded end adapted to pass through the insulation plates 45 and 46 and be secured thereto by the washers 55 and 56 and the jam nuts 57. There is also an insulation plate 58 on the threaded portions 53 and 54 and bearing against the offset portions 51 and 52, as shown in Fig. II, to provide an abutting face and stop to limit the extent of movement of the plug into the socket.

In Fig. I, I have shown the insulation plate 45 as extending above the top of the socket member 41 and as provided with notches 59 and 60, the washers 43 and 44 in this instance extending up parallel with the washer 45 and having right angular projections 61 and 62 receivable in the notches 59 and 60 so that they will be prevented from turning on the bolts formed by the members 53 and 54. The washers, which are shown as in the form of terminals, carry binding posts 63 and 64 whereby the conductors for the member carried by the socket 41 may be connected. It is obvious, however, that the conductors may be connected to the washers 43 and 44 by introducing them beneath the nuts 45 and 46 if desired.

By reference to Figs. I, II, III and IV it will be apparent that the socket terminals are so constructed that the blades 48 and 48′ will have an inherent tendency to move one toward the other so that they will be in intimate contact but when the plug is introduced into the socket, the knives will be guided between the lips 49 and 50 so as to pass between the blades 48 and 48′ and thereby complete the circuit.

It will also be apparent that the devices are so constructed that they may be readily manufactured and assembled at relatively small cost.

In Fig. VI I have shown a slightly modified form of socket member and plug in which both the socket member and the plug 65 and 66 respectively, are formed of insulating, sectional blocks, each consisting of two halves, one a duplicate of the other and that instead of extending the ends 53 and 54 in the form of threaded portions, they are flat, as indicated at 67 and 68, and are provided with terminals 69 and 70 to receive the conductors of the cord 71, as will be readily understood. In the construction shown in Fig. VI the plug member does not actually enter into the socket member but abuts against its end. The knives 23 and 24, however, enter between the yielding blades 48 and 48′ in substantially the same manner as in the construction shown in Figs. I, II and III.

In Fig. VII the anchor posts 37 are not employed but in lieu thereof a knot 72 may be formed by tying the two conductors 33

and 34 together so that in the event that the end of the cord pulls through the opening in the plug, further movement will be resisted by the knots thus formed. In other respects, however, the construction shown in Fig. VII approximates that shown in Figs. I, II and III.

Attention is called to the fact that one set of terminals, in the present instance the set carried by the socket, consists of forked members, these members being formed in duplicate and brought together to provide a fork having co-operating blades to receive the knife on the opposite member, in the present instance the plug. The manner of forming the receiving forks enables the same to be constructed inexpensively and assembled readily. When they are connected in the socket member, the shanks, for all intents and purposes, will be as one piece with the receiving blades lying in close proximity but adapted to be sprung apart when the knife is inserted therebetween.

What I claim and desire to secure by Letters-Patent is:

In an electric conductor connector, a plug comprising paired recessed members of non-conductive material, each comprising a transverse bridge dividing its interior into terminal and contact chambers, the bridge having slots therein of less depth than the contact chamber, and contact knives set edgewise in the slots and having lugs at their contact ends engaging the bridge to prevent longitudinal movement of the knives.

In testimony whereof I affix my signature.

ARTHUR W. CAPS.