March 27, 1934. N. H. WATTS 1,952,188

ELECTRIC CONNECTER

Filed Aug. 26, 1933

Fig. 1.

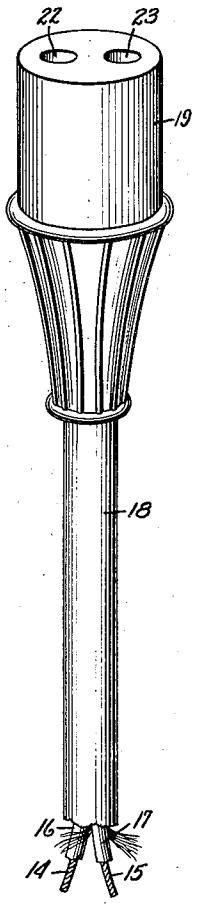


Fig. 2.

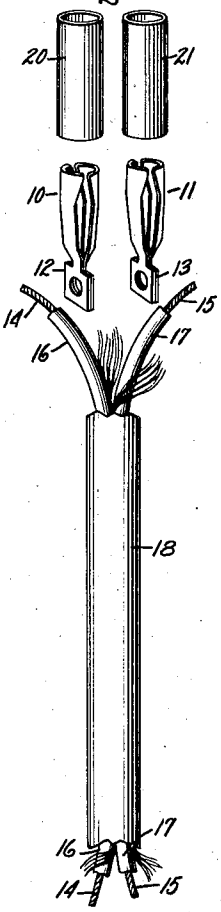


Fig. 3.

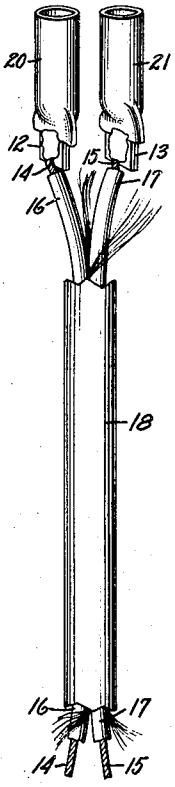


Fig. 4.

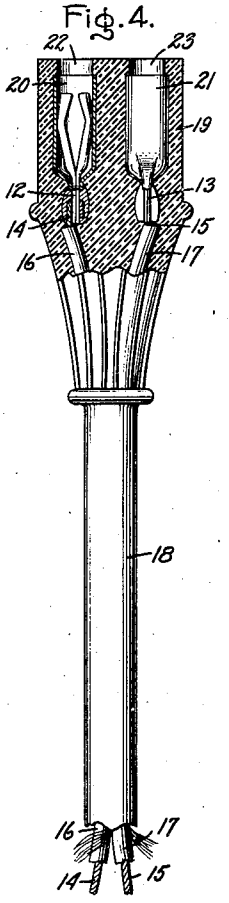
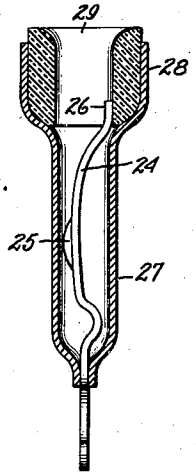


Fig. 5.



Inventor:
Noble H. Watts,
by Harry E. Dunham
His Attorney.

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1,952,188

ELECTRIC CONNECTER

Noble H. Watts, Bridgeport, Conn., assignor to General Electric Company, a corporation of New York

Application August 26, 1933, Serial No. 686,933

4 Claims. (Cl. 173—332)

My invention relates to an electric connecter and more particularly to a connecter provided with a housing of resilient material.

In the provision of connecters for outdoor use, it is necessary to protect the terminals by a material which is resistant to atmospheric conditions and which will withstand hard usage. Rubber is an excellent material for housing the terminals from the point of view of its resistance to atmospheric conditions and also because of its ability to withstand hard usage. However, difficulty is encountered because of the fact that rubber is very rapidly deteriorated on contact with an electric arc.

The object of my invention is to provide an electric connecter for outdoor use which is provided with a housing of resilient material with means for protecting the housing from the arc.

Another object of my invention is to provide an electric connecter which is of low cost of manufacture and which is easy to assemble.

What I consider to be novel and my invention will be better understood by reference to the following specification and appended claims when considered in connection with the accompanying drawing.

In the drawing, Fig. 1 is a perspective view of my improved connecter; Fig. 2 is an exploded view of the parts of the connecter with the housing removed; Fig. 3 is a view similar to Fig. 2 with the parts of the connecter assembled together; Fig. 4 is a view of the connecter partly in section; and Fig. 5 is a view in section of a modified form of the connecter.

Referring to the drawing, in which like parts of the several figures are indicated by the same numerals, numerals 10 and 11 indicate resilient terminal members formed of two metal strips of arcuate shape and placed side by side to receive contact pins. At the lower ends 12 and 13 of terminals 10 and 11 respectively, the two metal strips are pressed together and apertures provided for the reception of electric conductors. Connected to terminal members 10 and 11 are conductors 14 and 15 respectively which are provided with individual covers of rubber insulation 16 and 17 and an overall rubber covering 18. Housing 19 of molded rubber material is provided for the terminal members 10 and 11 and the portions of conductors 14 and 15 from which the overall rubber jacket 18 is removed to make the connection to terminals 10 and 11. Housing 19 serves to protect terminal members 10 and 11 and the bared ends of conductors 14 and 15 from the effects of atmospheric conditions and also provides a resilient cushion for the terminal members to protect them from the hard usage to which a connecter for outdoor use is frequently subjected.

To protect the rubber or other resilient material, of which housing 19 is formed, from the effects of the arc which may be drawn on the making or breaking of a circuit through terminal members 10 and 11, metal tubes 20 and 21 are provided and arranged to form a chamber about terminal members 10 and 11 closed at the end adjacent the lower portions 12 and 13. The tubes 20 and 21 extend beyond the upper ends of terminal members 10 and 11 to provide sufficient protection for the housing 19 from any arc which may extend to the contact pins as they move out of engagement with terminals 10 and 11. Tubes 20 and 21 are pressed into engagement with the lower portions 12 and 13 of terminal members 10 and 11 to hold the tubes in engagement with the terminal members and also to prevent the material of housing 19 entering between tubes 20 and 21 and terminal members 10 and 11 during the molding of the housing 19. When the housing 19 is being molded pins are placed in the open ends of tubes 20 and 21 to prevent the entrance of the material in the open ends of the tubes and also to form openings 22 and 23 in housing 19 communicating with tubes 20 and 21 for the access of pins to terminal members 10 and 11. Tubes 20 and 21 serve to thoroughly protect the material of housing 19 from the effects of any arc which may be drawn on the making or breaking of a circuit with terminal members 10 and 11. In addition, tubes 20 and 21 provide arcing surfaces removed from the normal contact surfaces of terminal members 10 and 11 which prevent pitting of these contact surfaces. The terminal members 10 and 11 are protected mechanically by tubes 20 and 21 which are floating in housing 19 of resilient material and provide a connecter that will withstand considerable hard usage without any liability of damage to the parts of the connecter. Tubes 20 and 21 also provide a wall with which the terminal members 10 and 11 make contact when the metal strips of which they are formed are forced outwardly by engagement with contact pins and assist in producing a force of resistance which increases the contact pressure which may be obtained between the terminal members 10 and 11 and pins inserted therein. Another important function of tubes 20 and 21 is to prevent the entrance of the material of housing 19 around terminal members 10 and 11 during its molding

which would interfere with the use of the connecter by preventing free access of contact pins to terminal members 10 and 11.

In Fig. 5 a modified form of connecter is shown which is adapted to receive the usual flat blade of an attachment cap plug. A terminal member 24 is formed from a flat strip of metal and is provided with a projection 25 which is adapted to engage the hole usually provided in the end of an attachment cap blade to retain the blade in position. Terminal member 24 is provided with a projection 26 which is spaced from the contact surface adjacent projection 25 which provides an arcing surface removed from the contact surface to protect the contact surface from pitting by arcs drawn on the removal of a contact blade from engagement with the terminal member. A tube housing 27 for the terminal member is provided which is of oval shape and closely engages the terminal member 24 at one end and is provided with an enlarged open end 28. The enlarged end 28 is adapted to receive a bushing 29 of insulating material which protects housing 27 from the effects of the arcs drawn on removal of the contact blade. Bushing 29 is made of some high arc resisting insulating material such as porcelain or the like. Housing 27 protects terminal member 24 in the same manner that tubes 20 and 21 protect terminals 10 and 11 as shown in Figs. 2 and 3. The projection 25 of terminal member 24 in addition to securing a contact blade in position when the cennecter is in use also serves to hold a plug in position during the molding of housing of resilient material about the parts of the connecter to prevent the entrance of the molded material in the open end of the housing 27. The bushing 29 prolongs the life of the connecter by protecting the metal housing 27 from the effects of the arcs drawn on the removal of the contact blade in engagement with the contact 24 at the only point at which such an arc would be likely to strike to the housing 27.

From the foregoing, it will be seen that a connecter is provided of simple construction, of relatively low cost of manufacture, highly resistant to the effects of atmospheric conditions, and capable of withstanding hard usage.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An electric connecter comprising resilient terminal members, metal tubes surrounding said terminal members and forming chambers closed at one end and extending beyond the terminal members at the other end, conductors connected to said terminal members, and a body of insulating material housing said terminal members and tubes and having openings communicating with the open ends of said tubes.

2. An electric connecter comprising resilient terminal members, metal tubes surrounding said terminal members and forming chambers closed at one end and extending beyond the terminal members at the other end, conductors connected to the terminal members adjacent the closed ends of the tubes, and a body of resilient insulating material housing said terminal members and tubes and having openings communicating with the open ends of said tubes.

3. An electric connecter comprising resilient terminal members, metal tubes surrounding said terminal members with one end of the tubes closely engaging the terminal members to form chambers about the terminal members closed at one end, the metal tubes extending at the open ends beyond the ends of the terminal members, conductors connected to said terminal members adjacent the closed ends of the tubes, and a body of molded rubber housing said terminal members and tubes and having openings communicating with the open ends of the tubes.

4. An electric connecter comprising resilient terminal members, metal tubes surrounding said terminal members with an enlarged open end and the other end closely engaging the terminal members to form chambers about the terminal members closed at one end, a bushing of insulating material located in the enlarged open end of the metal tubes, conductors connected to said terminal members adjacent the closed ends of the tubes, and a body of molded rubber housing said terminal members and tubes and having openings communicating with the open ends of the tubes.

NOBLE H. WATTS.