Jan. 21, 1930. J. A. KULIER 1,744,230

ELECTRICAL CONNECTER

Filed Aug. 20, 1923

Fig. 1.

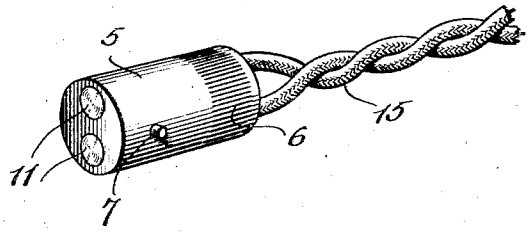


Fig. 2.

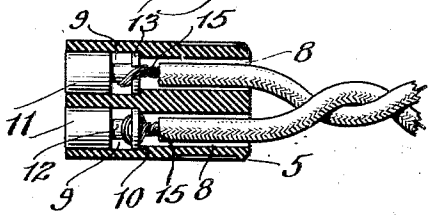
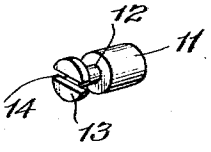


Fig. 3.



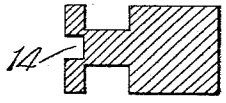


Fig. 5.

Fig. 6.

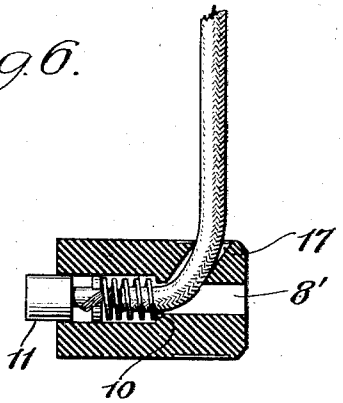
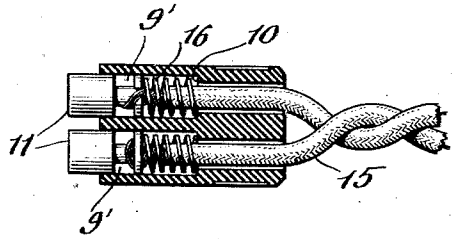


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE

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ELECTRICAL CONNECTER

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This invention relates to electrical connecters and has for one of its objects to provide a connecter of either the single or double contact type having simple and efficient means for connecting the current carrying wire or wires with the contact members whereby the use of binding screws which may possibly cut the wire is obviated.

It is another object of the invention to provide the insulating plug or body of the connecter with means through which the insulated wire may be disposed so that said wire will extend in either one of two directions from the plug as may be desired.

It is a further general object of the invention to provide a device of this character having the above noted advantages, which, however, is quite simple in its construction and may be produced and sold at comparatively small cost.

With the above and other objects in view, the invention consists in the improved electrical connecter and in the form, construction and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawing and subsequently incorporated in the subjoined claims.

In the drawing wherein I have illustrated several simple and practical embodiments of the invention and in which similar reference characters designate corresponding parts throughout the several views:

Figure 1 is a perspective view of an electrical connecter having flush stationary contact members;

Figure 2 is a longitudinal section thereof;

Figure 3 is a detail perspective view of one of the contact members;

Figure 4 is a view similar to Figure 2 showing a connecter having yieldingly projected contact members;

Figure 5 is a similar section illustrating a slightly modified form of the insulating plug or body; and

Figure 6 is a view illustrating more fully the parts shown in Figure 3.

In electrical connecters such as are commonly used for connecting lamps or other accessories in the electrical circuit of a motor vehicle, the insulating plug or body is usually formed in two parts, the knurled cap or terminal piece having a threaded connection with the body member of the plug. The latter is provided on opposite sides with pins for engagement in the bayonet slots of the socket casing. Frequently, it is difficult to turn the body of the connecter to detach the same from the socket, as the cap piece unthreads from the body member. It is the purpose of my present invention to eliminate this difficulty and provide a one-piece plug or body 5 of a suitable insulating material which may be externally roughened or knurled at one end as at 6 to afford a firm grasp for the fingers. This plug is formed from suitable insulating material and adjacent to its other end and on opposite sides thereof, is provided with the usual pins or studs one of which is indicated at 7 for engagement in bayonet slots in opposite sides of the wall of the socket (not shown) into which the plug extends.

The plug 5 is provided with parallel longitudinally extending bores 8 enlarged at one of their ends as at 9 to provide the annular shoulders 10. The copper contact members 11 are positioned in the enlarged ends 9 of these bores, each of said members being preferably of cylindrical form and having a diametrically reduced extension 12 at one of its ends terminating in a flange 13 adapted to seat against one of the shoulders 10 in the insulating plug. The flange 13 and the end of the extension 12 has a diametrically extending groove or slot 14 cut therein. As shown in Figure 6, the slot may be deep enough to extend into the reduced portion 12 and the extremities of the slot will then constitute longitudinally extending recesses through which the end of the wire, that is, the extremities of the ends of the different strands making up the wire, may be passed to be wrapped around the reduced neck 12. The current carrying wire 15 is sheathed in the usual insulating material, each wire of which extends into the bore 8, the extremity of the wire being bared and turned around the neck portion 12 of the contact member and then engaged in the groove or slot 14 thereof.

Thus each wire is securely held in connection with the contact member 11 by the flange 13 so that a pull upon the insulating wire will not separate or disconnect the same from the contact member.

In Figures 1 and 2 of the drawings I have shown a form of the device wherein the contact members 11 at their outer ends are flush with the end face of the plug 5. In such case, the complementary contact members within the socket which receive the plug 5 are spring projected so that as the pins 7 are forced longitudinally into the open ends of the bayonet slots in the socket wall, the said spring pressed contacts are engaged with the contact members 11 and placed under tension which is maintained by turning the plug 5 to lock the pin 7 in the bayonet slots.

In Figure 4 of the drawings, however, I have shown another type wherein the contacts carried by the plug 5 are projected from the ends of the plug bores by the coil springs 16 seated at one of their ends against the shoulders 10 and bearing at their other ends against the flanges 13 of the contact members. In this case, it will be understood that the enlarged end portions 9′ of the bores in the plug are of somewhat greater length than in the construction first described.

In Figure 5 of the drawings I illustrate a modified form of the connecter plug, in which, in addition to the longitudinally extending bore 8′, said plug is provided with an obliquely inclined opening 17 communicating at its inner end with the medial portion of the bore 8′ adjacent to the shoulder 10, and opening at its other end upon the side face of the plug. Thus when it is desired to have the insulated current carrying wire extend at right angles to the longitudinal dimension of the plug instead of parallel therewith, said wire may be inserted through the inclined side opening 17. This will be found of convenience in many cases where it is desired to have the wire extend in a certain direction from the connecter and will also facilitate making the proper connection without unduly twisting the wire. It will, of course, be apparent that, as indicated in Figure 5, the present improvements are designed for use in connection with the single contact type of connecter as well as the double contact type illustrated in Figures 2 and 4.

From the foregoing description considered in connection with the accompanying drawing it will be seen that my improved electrical connecter is very simple and durable in its construction, and may be produced at small manufacturing cost. By the provision of the means above described for connecting the wire to the contact member, I am enabled to dispense with the use of adjustable binding screws, which frequently cut through the wire so that the connection is broken. While I have found my present improvements as herein illustrated and described to give highly satisfactory results in service, it is nevertheless to be understood that the novel features herein referred to might be embodied in several alternative constructions and I accordingly reserve the privilege of resorting to all such legitimate changes in the form, construction and relative arrangement of the other elements as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. An electrical connecter comprising a one-piece insulating plug having a bore extending longitudinally through it, a circuit closing contact member engaged in one end of said bore having a diametrically reduced portion at its inner end terminating in a flange, said flange and the reduced end of said member being slotted and the other end of said bore adapted to receive an insulated current carrying wire having a bared end portion turned around said reduced end portion of the contact member at the inner side of said flange and engaged in the slot thereof.

2. An electrical connecter compising a unitary insulating plug having a bore extending longitudinally through it with an annular shoulder therein intermediate of its ends, a circuit closing contact member engaged in one end of said bore and having a reduced portion at its inner end terminating in a flange provided with a diametrically extending slot therein affording a conductor connector means, said bore at its other end adatped to receive an insulated current carrying wire, the bared end portion of the wire being engaged around the reduced end of the contact member and inserted in said slot, and a spring interposed between the shoulder in the bore and the flange of the contact member to project the contact from the end of the bore.

3. An electrical connector consisting of an insulating plug having a bore extending longitudinally therethrough, and having an annular shoulder therein intermediate its ends, a circuit closing contact member in one end of said bore, and having an annular reduced portion adjacent one end forming an annular flange at said end of the same diameter as the contact member, and said flange having an opening therein adapted to receive the ends of the wire and allow the same to be wound around said reduced portion of the contact member, whereby the flange prevents the wire from slipping from the contact member, and serves as means for limiting the inward movement thereof by engagement thereof with the shoulder.

4. An electrical connector consisting of an insulating plug having a bore extending longitudinally therethrough and having a

shoulder therein intermediate its ends, a circuit closing contacting means in one end of said bore, and having a reduced portion around its periphery adjacent one end forming a flange at its inner end of the same size and contour as the bore of the plug, said flange having an opening adapted to receive the ends of a wire and allow the same to be wound around within said reduced portion of the contacting member, whereby the flange forms a guide for the contacting member in the bore of the plug and serves as means for limiting the inward movement thereof by engagement thereof with the shoulder.

5. An electric connecter consisting of an insulating plug having a cylindrical bore extending longitudinally therethrough and having a reduced portion having an annular shoulder, a circuit closing contacting means in one end of said bore, and having an annular reduced portion adjacent one end forming an annular flange of the same diameter as the contacting member thus fitting closely the bore of the plug and forming a guide therefor and serving as the stop to limit the inward movement thereof, said flange having a kerf extending across its ends connected with longitudinal recesses communicating with the annular reduced portion, whereby the ends of the wire may be wound around the reduced portion and pass out through the recesses and the kerf.

6. An electric connecter consisting of an insulating plug having a bore extending longitudinally therethrough and having a reduced portion forming an annular shoulder intermediate its ends, a circuit closing contacting member in one end of said bore and having an annular reduced portion adjacent its inner end forming an annular flange of the same diameter as the contacting member and the bore of the plug, a spring interposed in the bore of the plug and engaging said flange, said flange having a kerf extending across the inner end forming recesses which communicate with the annular shoulder, whereby the ends of the wire are wound around the annular reduced portion and pass out through the recesses and kerf.

In testimony, that I claim the foregoing as my invention, I have signed my name hereunder.

JOHN A. KULIER.