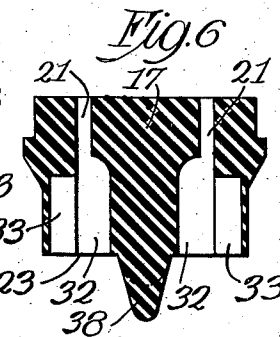
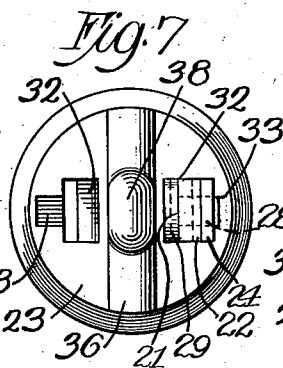
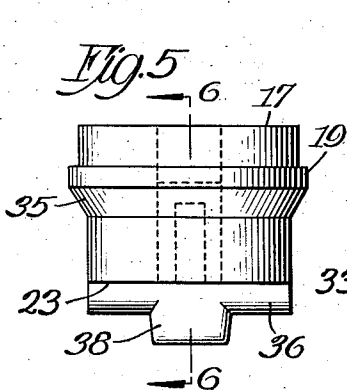
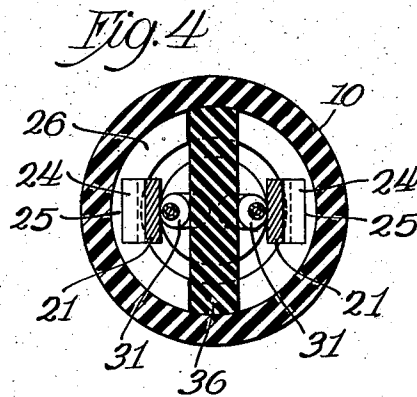
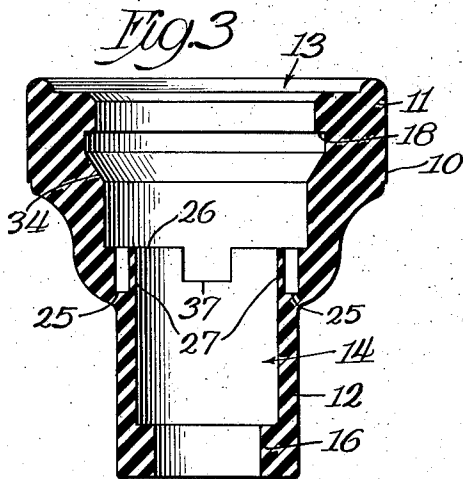
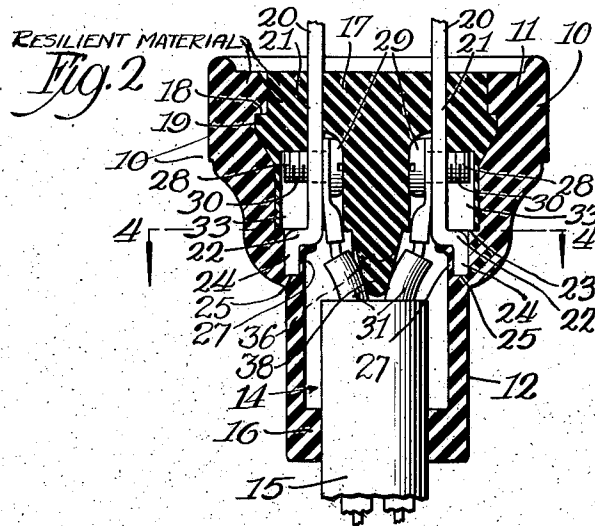
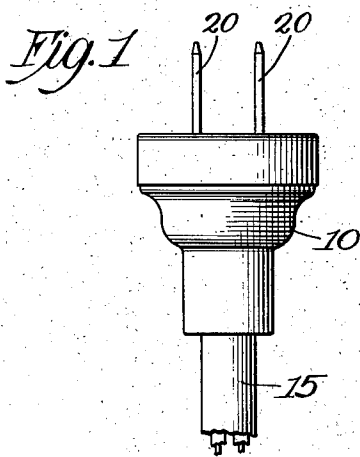


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ELECTRIC PLUG CONNECTER

2,015,418

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ELECTRIC PLUG CONNECTER

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5 Claims. (Cl. 173—361)

This invention relates to an improvement in electric plug connectors and particularly to connectors of the male type.

The principal objects of the invention are to provide a practically indestructible connector plug in which the parts are maintained in assembled relation by means of a resilient element; to provide such a connector in which the component parts are of simple formation and such as to be easily manufactured in quantity production; to provide a plug of the class described in which the parts are effectively held in proper assembled relation and in which the parts may be assembled with comparative ease; and in general, it is the object of my invention to provide an improved connector plug of the class described.

Other objects and advantages of my invention will be understood by reference to the following specification and accompanying drawing in which I have illustrated a male type connector plug embodying a selected form of my invention.

In the drawing:

Fig. 1 is a side elevation.

Fig. 2 is a section through the axis of the connector illustrated in Fig. 1.

Fig. 3 is a section corresponding to the section of Fig. 2 but showing only the outer body part or shell of the connector and its interior formation.

Fig. 4 is a section on the line 4—4 of Fig. 2.

Fig. 5 is a side elevation of an inner or plug part of my improved connector.

Fig. 6 is a section on the line 6—6 of Fig. 5, and

Fig. 7 is a bottom plan of the plug part shown in Figs. 5 and 6, one contact prong being shown in place in the plug part.

Referring now to the drawing, my improved connector includes an outer or main body part 10 having an enlarged front end 11 and a reduced rear end or shank portion 12. The front end of the body part 10 is provided with a chamber 13 and the rear part 12 is hollowed out as indicated at 14 to receive a conductor 15. The extreme rear end of the body part is provided with an inwardly extending annular flange part 16 which fits tightly around the conductor 15 as clearly shown in Fig. 2.

An inner or plug part 17 fits in the chamber 13 and is interlocked therewith so as to maintain said parts in assembled relation. Interlocking of the parts is effected by means of an undercut shoulder 18 formed integral with the body part 10 at the front end of the chamber 13 and an annular outwardly projecting shoulder 19 formed on the plug part 17 intermediate its length so as

to fit under the shoulder 18 of the body part as clearly shown in Fig. 2.

To permit the parts to be assembled in the above described interlocking relation, either one or both of the parts may be formed of resilient material, for instance rubber, and in the present instance, both parts are formed of such material. Hence, the distortable capacity of either body part may serve to permit the parts to be assembled in interlocking relation.

In this instance, I have shown a connector plug for a two wire circuit wherefore the connector embodies a pair of contact prongs 20—20. Each contact prong 20 is formed of suitable metal, for instance brass, and each extends through the plug part 17. The plug part 17 is provided with suitable openings 21—21 which extend therethrough for removably receiving the respective contact prongs so that the contact prongs are renewable if such renewal should become necessary or desirable for any reason. Near the inner end of each contact prong, there is a laterally outwardly offset portion 22 which engages the inner end 23 of the plug part 17 to prevent outward displacement of the prong. The extreme inner end portion 24 of each prong extends in parallel relation to the main part of the prong and is removably embedded in suitable recesses or sockets 25 formed in the body part 10. It will be seen that because of the different diameters of the chambers 13 and the interior of the shank part 12 of the body part, that a shoulder 26 is formed in the body part, which shoulder constitutes the bottom of the chamber 13. The sockets 25 are formed in the shoulder or bottom 26 and are spaced outwardly from the interior 14 of the shank by webs 27—27 as clearly shown in Figs. 2 and 3.

Intermediate their ends, and at such a point as to be located within the length of the plug part 17, each contact prong is provided with means for connecting an electric conductor to the prong. This means, in the present instance, consists of a binding post screw 28 which includes an enlarged head 29 and a threaded shank or stem part 30 which engages a suitably tapped aperture in the contact prong. The length of the threaded stem 30 is preferably such that it projects materially from the face of the contact prong as clearly shown in Fig. 2. Conductors 31, which may conveniently constitute the conductors of a duplex conductor enclosed in a single insulating covering, may be connected to the respective contact prongs by having their end portions (either bare or provided with clips) clamped between the head 29 of

each binding post screw and the adjacent side of the contact prong.

The plug part 17, is provided on opposite sides of the openings 21 with auxiliary recesses 32 and 33 for receiving the heads and projecting stem portions respectively of the binding post screws. These auxiliary recesses 32 and 33 are preferably of such size and shape that they snugly receive the respective binding post parts and the depths thereof are such that either one or both serve to limit outward displacement of the contact prong by engaging the recessed portion of the binding post. In Fig. 2, I have shown the recesses 33 as being of such depth as to limit outward displacement of the contact prong by engaging the stems 30—30 of the respective binding post screws.

The length of the plug part 17 is preferably such that when the parts are in assembled relation, the inner end 23 of the plug will be seated on the shoulder or chamber bottom 26. For further supporting the plug part 17, I provide the body part 10 with an inclined seat 34 for receiving an inclined portion 35 of the plug. The inclined portion 35 of the plug may, under some conditions, serve to facilitate insertion of the plug into the chamber 13 inasmuch as it serves more or less in the nature of a wedge for spreading the outer, front end portion of the body part 10.

For preventing relative rotation between the body 10 and the plug 17, I provide interfitting means formed integral with the parts. In this instance, such interfitting means consists of a rib 36 formed integral with and depending from the bottom of the plug 17 and extending thereacross as clearly shown in Figs. 5 and 7. The end portions of the rib 36 are received in notches or recesses 37 formed in the shoulder 26 of the body part. Centrally of the rib 36—36, I provide a depending extension 38 which serves as a separator or spreader for the inner end portions of the conductors as clearly shown in Fig. 2.

The above described structure may be assembled, first by connecting the contact prongs to the respective conductors and thereafter mounting the contact prongs in either the body part 10 or in the plug part 17. In the first instance, the end portions 24 of the contacts are seated in the respective sockets 25 whereupon the plug 17 is slid over the contact prongs and into place in the body 10. If the other method is pursued, the contact prongs are inserted into the plug part 17 and properly seated therein, after which the assembled unit is inserted into the body part 10. Of course, it will be obvious that my improved structure may also be assembled by a combination of both of the above methods, i. e. by first positioning the plug part 17 on the outer front ends of the contact prongs so as to position the latter relative to each other, whereupon the partly or incompletely assembled parts may be inserted into the chamber portion of the body part so as to seat the ends 24—24 of the contact prongs in the respective sockets 25, whereupon the plug part 17 may be further moved along the contact prongs and into completely assembled and interlocked relation with the body part. It will be noted that the connection between the conductors and respective contact prongs is practically wholly enclosed within the plug part 17. The only opening to the connection receiving recess being at the inner end of the plug part.

I am aware that changes may be made in the above described construction without departing from the spirit of my invention, the scope of which should be determined by reference to the

following claims, the same being construed as broadly as possible consistent with the state of the art.

I claim as my invention:

1. In a plug connector, the combination of a body part having a chamber in one end, a plug part insertable into said chamber and having interlocking engagement with said body part to maintain said parts in assembled relation, one of said parts being formed of resilient material capable of being distorted to permit assembly of said parts in said interlocking relation, a contact prong mounted in and extending through said plug so as to be thereby maintained in operative relation with said plug part and so as to be removable as a unit with said plug from said body, said prong having a laterally outwardly offset portion intermediate its ends, said intermediate offset portion abutting the inner end of the plug, and the portion of said prong inwardly of said offset portion extending in parallel relation to the outer portion of said prong and being embedded in said body part whereby the prong is supported against lateral displacement.

2. In a plug connector, the combination of a body part having a chamber in one end, a plug part insertable into said chamber in interfitting relation with said body part, said parts having interlocking means for maintaining the parts in assembled relation and one of said parts being formed of resilient material so as to permit the parts to be repeatedly assembled and disassembled, a contact prong extending through and removably mounted in said plug, an inner end portion of said contact prong being bent laterally to engage the inner end of said plug to prevent outward displacement of said prong, and interfitting means formed integral with said plug and body for locking said parts against relative rotation.

3. In a plug connector, the combination of a body part having a chamber in one end, a plug part insertable into said chamber in interfitting relation with said body part, said parts having interlocking means for maintaining the parts in assembled relation and one of said parts being formed of resilient material so as to permit the parts to be repeatedly assembled and disassembled, a contact prong extending through and removably mounted in said plug, an inner end portion of said contact prong being bent laterally to engage the inner end of said plug to prevent outward displacement of said prong, said plug having a depending rib extending across the bottom of said plug and formed integral therewith, and said chamber having a recess in its bottom for receiving said depending rib to lock said plug and body against relative rotation.

4. In a plug connector, the combination of a body part having a chamber in one end and a conductor receiving opening in its other end, a plug part insertable into said chamber and having interlocking engagement with said body part to maintain said parts in assembled relation, one of said parts being formed of resilient material capable of being distorted to permit assembly of said parts into said interlocking relationship, a pair of relatively spaced contact prongs extending through and removably mounted in said plug, an inner end portion of each of said contact prongs being bent laterally to engage the inner end of said plug to prevent outward displacement of said prongs, means for connecting electric conductors to said contact prongs within said body, a depending rib extending across the bottom of said plug and formed integral therewith, said cham-

ber having a recess in its bottom for receiving said depending rib, and an extension on said rib, centrally thereof, constituting a separator for the conductors adapted to be connected to the respective contact prongs.

5 5. In an electric connector of the class described, the combination of a body part having a chamber in its front end and a conductor-receiving aperture in its other end communicating with
10 said chamber, a plug part fitting in said chamber, said plug part having an opening extending therethrough in outwardly spaced relation to but parallel with the axis of the plug and body parts, means for locking said plug part in said chamber
15 of the body part, an elongated, wide but thin contact prong extending through and having a portion seated in the opening in said plug part, and having an outer end portion projecting for-

wardly from said plug part, said contact prong having its inner end portion laterally offset in the direction of the thickness of the prong, but having its length extending in the same general direction as said outer end portion, and there
5 being a laterally extending prong portion connecting said relatively offset inner and outer end portions, said body part having a socket spaced radially from said conductor-receiving aperture and of a size to fit the offset inner end portion of
10 the contact prong, the latter having its offset inner end portion seated in said socket and the prong being held in normally fixed position laterally of the plug and body parts by its said seating in the parts adjacent its outer and inner ends
15 respectively.

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