June 26, 1934. R. A. KLINGBERG 1,964,471

ELECTRICAL PLUG CONNECTION

Filed Sept. 30, 1932

Fig. 1.

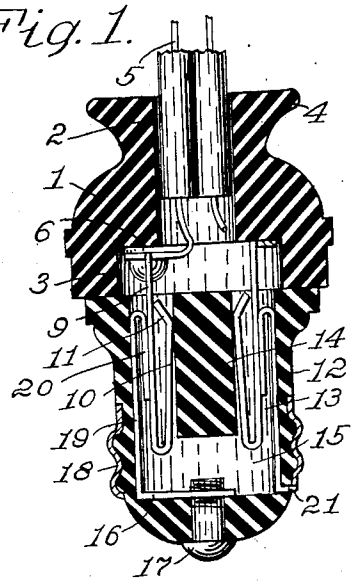
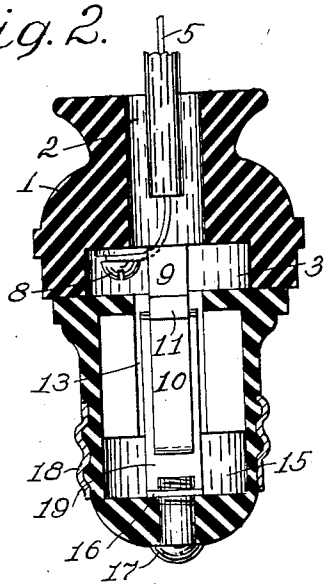


Fig. 2.



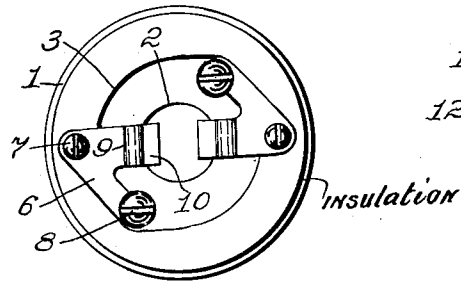


Fig. 3.

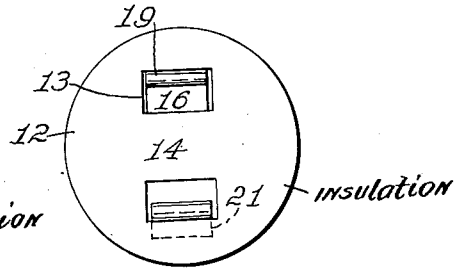


Fig. 4.

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ELECTRICAL PLUG CONNECTION

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2 Claims. (Cl. 173—343)

My invention relates to improvements in electrical plug connections, and the object of my improvement is to supply a device of this type which shall be inexpensive, of simple construction, very easy to manipulate, and positive in its coupling and maintenance of electrically conducting contacts between terminals.

This object I have successfully achieved in actual reduction to practice by the means which are hereinafter described and claimed, and which are illustrated in the accompanying drawing, in which Fig. 1 is a vertical central section taken longitudinally of my device when its housing members are coupled together as electrical plug connectors. Fig. 2 is a similar section of the coupled device, taken in a position ninety degrees circumferentially around as compared to said Fig. 1. Fig. 3 is a plan of the coupling face of one of said housing members which has the projecting pair of engaging terminals, and Fig. 4 is a plan view of the comating coupling face of the other housing member in which is housed the other and comating pair of engaging terminals.

In the ordinary kind of coupled electrical plug connectors the pairs of contacting terminals in the housing members of insulation are rigid, and by reason of continuous coupling and disengagements develop wear which renders them inefficient, hence uneconomical for use.

It is my purpose to render these coupling members resilient for constant effective coaction notwithstanding wear, and to shape their parts and to operate against suitable abutments for most serviceable use.

In the drawing, Fig. 1 shows the comating apertured housing members 1 and 12, both constructed of insulating material bodily with flattened faces for joint contact when coupled together. The cap or housing member 1 has an integral annular flange around its outer end for greater convenience in grasping it by the user at 4. This member has a central longitudinal bore 2 to receive the end parts of received and insulated wrapped electrical conductors as usual.

The central bore 2 is widened into a hollow 3 at the lower part of the member 1, by an offset shoulder diametrically across it. As shown in Figs. 1 and 3 a like pair of terminally hooked conducting bars are mounted diametrically opposite each other in reverse positions of their outbent bases with angular parts 6 and which are at their angles secured to said shoulder by means of screws 7 or other suitable means. The outer extremities of the parts 6 carry binding-screws 8 whereby the bared ends of the first-mentioned conductors 5 are received and fastened. The hooked conducting bars have parallel stems 9, are made of resilient material and have their contact terminations 10 bent reversely over inwardly toward each other in spaced relation with their stems 9 with their tips 11 bent at an angle toward said stems but spaced therefrom to serve as stops at times. The said conducting bars have the greater part of their stems 9 projecting beyond the adjacent end of the member 1.

The other insulating housing member 12 is closed at its lower or rather outer end except for a small bore to receive centrally therethrough the threaded stem of a headed contact screw 17, which however may be a rivet instead. The facing end of the member 12 has a pair of opposite slotted apertures 13 at either side of a diametrical integral insulating part or abutment 14, and this abutment extends down a suitable distance within said member to a centrally cupped hollow 15 whose inner wall is in communication directly with the outer wall parts of the apertures 13, although not necessarily in direct alinement but may be slightly offset outwardly therefrom. The lower part of the outer wall of the housing member 12 is slightly reduced in diameter at a shoulder to receive thereon fixedly a threaded sleeve 18 of conducting material, the lower edge of this sleeve being spaced above the head of the conducting screw 17.

A generally similar pair of resilient conducting contact bars are mounted within the hollow 15 to extend within the apertures 13, and have like reversely bent and spaced terminals 20 which contact electrically with the stems 9 when the latter are introduced into the hollow in coupled relation of the members 1 and 12.

When in such coupled relation, the terminal hooks 10 of the contact bars 9 engage the adjacent or abutting walls of the abutment 14 under bending tension, causing the resilient outer faces of the stems 9 to contact therealong with the hooks 20 of the other pair of conducting bars 19. This also tensions the hooks 20 similarly, so that these contacting faces are surely kept in good electrical contact notwithstanding any frictional wear of such surfaces due to the frequent couplings or disengagements thereof. The bent over stop ends 11 of the hooks 10 of the bars 9 serve to keep these hooks from narrowing their interspaces at the rounded angles of connection thereof with their stems 9. It will be seen that the contacts are always good, while the coupling of the contact bars is easy.

As shown in Fig. 1, the contact bars 19 have

angular feet as at 16 extending in the same direction but of different lengths, one foot 16 being apertured to receive the stem of the screw (or rivet 17), while the other and shorter foot of the other contact bar 19 traverses a slot 21 in the lower part of the housing member 12 and is in terminal contact with the lower edge of the sleeve 18, this screw 17 and threaded sleeve 18 being the same as in the usual plug connectors to effect contacts in a socket connection for ends of other electrical conductor parts 5.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In combination, comating apertured insulating housing members, a separated pair of resilient conductors mounted in one housing to project therefrom, the other housing having spaced openings separated by a transverse abutment integral with it, a spaced pair of resilient conductors in said other housing and extending toward the first pair of conductors to couple slidingly therewith, the first pair having stems ending in inwardly inverted terminations to engage the opposite walls of said abutment, and under resilient compression, and the second pair of conductors having stems ending in inwardly inverted terminations to engage the adjacent stem parts of the first pair under compression resiliently while the stem parts of the second pair are engaged against the outwardly disposed walls of the said spaced openings of the said other housing member, the second pair of terminals traversing said second member in insulated relation to each other.

2. In combination, hollowed insulating housing members, one having an integral diametrical abutment, one member having fixed therein a spaced projecting pair of terminals whose stems terminate in hooked resilient conductor bars with their hooks engaging opposite faces of said abutment under elastic compression when the housing members are coupled together, and the other housing member having fixed therein a spaced inclosed pair of terminally hooked resilient conductor bars with their hooks engaging adjacent faces of the stems of the first bars under elastic compression while the said members are so coupled, for equalized longitudinal contact of both sets of bars when coupled.

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