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M. W. BERGER ET AL

2,137,258

ATTACHMENT PLUG

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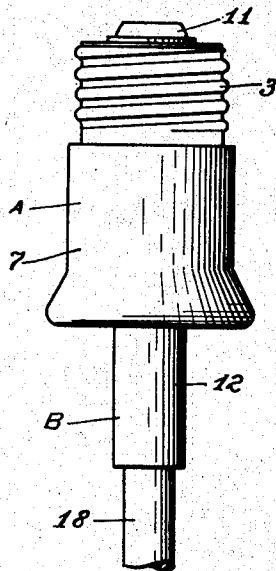


Fig. 1.

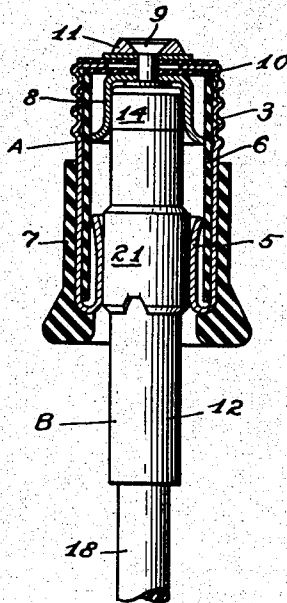


Fig. 2.

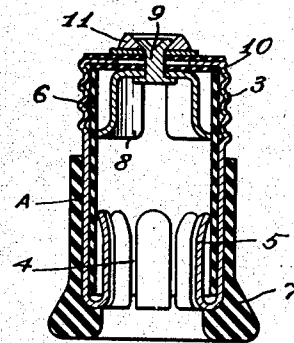


Fig. 3.

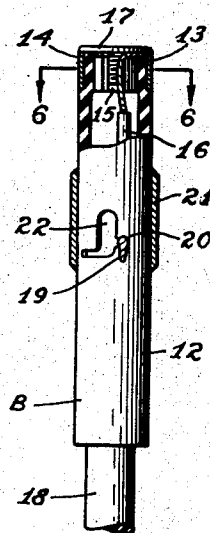


Fig. 4.

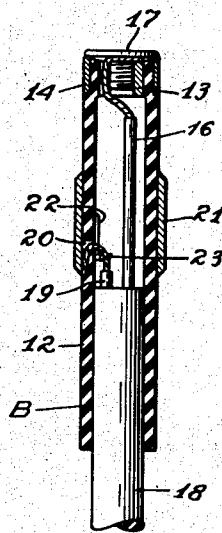


Fig. 5.

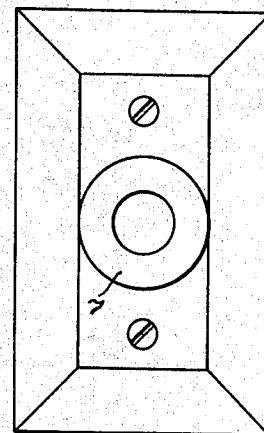


Fig. 7.

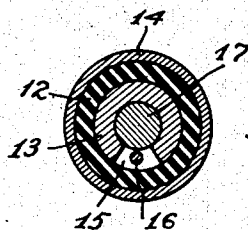


Fig. 6.

INVENTORS
MORRIS W. BERGER
PETER WEINBERG
BY *Frederick Johnson*
ATTORNEY

UNITED STATES PATENT OFFICE

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ATTACHMENT PLUG

Morris W. Berger and Peter Weinberg, San
Francisco, Calif.

Application September 5, 1934, Serial No. 742,721

1 Claim. (Cl. 173-343)

This invention relates particularly to a new and improved attachment plug for electrical connections.

An object of the invention is to provide a separable electrical connector wherein both the plug member and base member are cylindrical in cross section, and the contacts or terminals on the respective members are arranged in spaced axial alignment, thus enabling the parts to be engaged or disengaged more quickly, and with greater facility than in the conventional type of attachment plug which has a pair of tongue-like terminals projecting therefrom in parallel relation.

A further object of the invention is the provision of an attachment of the character described wherein the fixed part of the plug is so constructed that the contact terminals of the movable part are guided naturally, merely by contact with the contacts in the fixed part of the plug, and wherein the connection may be made without the aid of sight, and without the necessity of rotating or moving a pair of terminals into engagement with a pair of sockets, as is the case with the conventional type of attachment plug.

Other objects and advantages are to provide an attachment plug for electrical connections that will be superior in point of simplicity, inexpensiveness of construction, positiveness of operation, and facility and convenience in use and general efficiency.

In this specification and the annexed drawing, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms; and it is also to be understood that in and by the claim following the description, it is desired to cover the invention in whatsoever form it may be embodied.

In the accompanying drawing:

Fig. 1 represents a side elevation of a separable attachment plug constructed in accordance with my invention.

Fig. 2 is a section taken through Fig. 1, showing the base member in section and the plug member in elevation.

Fig. 3 is a cross section through the base member and showing the axially aligned contacts therein.

Fig. 4 is a view of the plug member partly in section, to show the construction thereof.

Fig. 5 is a cross sectional view through the plug member.

Fig. 6 is an enlarged cross section taken through Fig. 4, on the line 6-6.

Fig. 7 is a plan view of a modified form of base member.

In detail the construction illustrated in the drawing consists of a two part electrical connector comprised of the base or fixed member generally designated by the numeral A, and the plug or movable member generally designated by the numeral B. The base member A consists of a pressed metal shell having a thread 3 of conventional pitch rolled thereon, to enable said base to be screwed into a conventional electric socket. The opposite end of the shell 3 is split circumferentially as at 4, and the split parts are bent inwardly into the shell as at 5 to form an annular spring contact. A lining of insulation 6 is provided within the shell, and a collar of insulation 7 is provided around the base, adjacent the open end thereof.

A flexible cup-like contact member 8 is attached to the inner end of the base A, and is entirely insulated from said shell, said contact 8 having a rivet 9 thereon which extends through layers of insulation 10 on the end of the base member, into engagement with a button 11. The contact 8 is circumferentially divided to form in effect, an annular spring finger socket, and the inner diameter of said contact 8 is less than the inner diameter of that of the contact 5, at the outer end of said base. Both of the annular contacts 5 and 8 are adapted to expand or dilate when the plug member B is engaged therewith, and thereby frictionally engage the said plug member B to firmly resist disengagement.

The plug member B consists of a tube of insulating material 12 having an internally threaded ring 13 of contacting material at one end thereof, and a collar 14 of like material, around the outside thereof. One side of the ring 13 is cut away as at 15, to permit the end of a wire 16 to be inserted therethrough and to be clamped against the outer end of the ring 13 by a threaded screw 17. The wire 16 is preferably carried in an insulated mounting 18, and connects to a source of electrical energy. The other wire 19, which is carried in the mounting 18 extends through an opening 20 in the side of the insulated shell 12. The end of the wire is projected through the opening 20 and laid against the outside of the shell, and thereafter, a terminal or ring 21 of conducting material, is moved axially on the shell 12 to clamp the end of the wire 19 tightly against the shell, to establish an electrical contact with said ring 21. A bayonet joint

opening 22 is provided in the shell 12 adjacent the opening 20, and the ring 21 is provided with a finger 23 thereon, which moves in said bayonet slot 22 to guide the said ring on the shell 12 when engaging and disengaging it from the exposed end of the wire 19. The outer diameter of the ring 21 is greater than that of the ring 14 at the extreme end of the plug B, and likewise is slightly greater than the internal diameter of the spring contacts 5. The external diameter of the ring 14 on the plug B is likewise slightly greater than that of the socket contact 8, altho it is appreciably less than the internal diameter of the spring fingers 5. The width of the terminal ring 14 is likewise less than the distance or space between the contacts 5 and 8 to prevent the possibility of said ring 14 short-circuiting between the contacts 5 and 8. With our type of plug, the operator need only insert the same completely into the base member, and an electrical connection is made which will resist disconnection to a greater extent than the ordinary separable plug.

The ordinary separable plug which is conventionally used, consists of a base member formed of insulating material, and from a face of which a pair of terminal prongs extend, each prong being connected by a wire to an element to be energized by electricity. The base member into which the prongs on the plug are adapted to be positioned, is provided with a pair of holes therein, and a pair of contact members are positioned in the holes to receive the plug prongs. The contacts in the base are suitably connected to external means on the base to make contact with a source of electrical energy.

In the conventional plug, if abused, or dragged around on the floor, or stepped upon, the prongs thereof become loose or break so that either a short-circuit is formed, or the plug becomes useless. Once the prongs on the plug become loose, they will not hold their position in the base, and will not hold an appreciable length of extension cord in connection with a source of electrical energy. The conventional plug is further to be criticized in that it is extremely difficult to enter the prongs into the sockets of the base, if lighting conditions are bad, or if the base is not in an accessible position.

With our assembly, there is but one hole in the base into which the plug may be inserted, and the user of the plug can make the connection in much quicker time and with greater facility, even where the lighting conditions may be bad, or where the base of the plug may be in a slightly inaccessible position. Our plug is made of unbreakable material and can be dropped, abused, or stepped upon to a great extent, without rendering it inoperative. The tension of the spring contacts in our base when engaged with the plug, requires a pulling force to disengage the same many times greater than the force necessary to pull the conventional plug

out of the base. Furthermore, with our device, the plug can be pulled from the socket by pressure exerted on the cord attached to the plug, and no damage will be caused any part of the cord connection. The plug is likewise of a diameter which is very small and compact, and it is not clumsy or objectionable in size.

The base member shown in Figs. 1, 2 and 3, is provided with a screw thread thereon, for attachment to a conventional type of screw threaded socket.

In Fig. 7 I have shown a modified form of base member, which is conventionally referred to as a floor or wall plug. In this type of device, the base member is permanently secured in the wall or floor, and it is always in position to receive the plug.

In either the preferred or modified form of the device, the plug and base member are so constructed that only one electrical connection can be made at a time. Where the type of base shown in the modified form in Fig. 7, would be provided with two plug receiving receptacles, then of course, two electrical connections could be established. It is one of the objects of our invention that the plug and base be so constructed that only one connection can be made, and to eliminate the possibility of a multiple outlet plug being connected into the base, preventing the overloading of electrical energy being taken from the single outlet as is often the case with the conventional type of plug and base.

Having thus described this invention, what we claim and desire to secure by Letters Patent is:

A base for an electrical connector, comprising a metal shell, said shell being of substantially cup-like form but having its closed end formed to provide an aperture therethrough, the open end of said shell being slotted longitudinally to provide a plurality of spaced longitudinally extending prongs extending circumferentially around said open end, a sleeve of insulation material around the interior of, and an insulation disc at the interior bottom of said shell, a disc of insulating material overlying the bottom of said shell on the outside thereof, a yieldable cup-like contact in the bottom of said shell on said insulation disc, a contact on the outside of said insulating disc, a connection between said contact and said cup-like contact, said connection extending through the interior and exterior insulating discs and the aperture in the closed end of said shell and spaced from the side edges of the latter, said connection comprising means for uniting said contact, discs, and shell, said prongs being bent inwardly over the upper edges of said insulation sleeve in substantial parallelism with the sides thereof to provide an annular spring contact spaced from said cup-like contact, and a cylindrical insulating member surrounding the upper portion of said shell.

MORRIS W. BERGER.
PETER WEINBERG.