Sept. 24, 1935. R. ECKSTEIN ET AL 2,015,421

ATTACHMENT PLUG

Filed Dec. 2, 1931

Fig. 1.

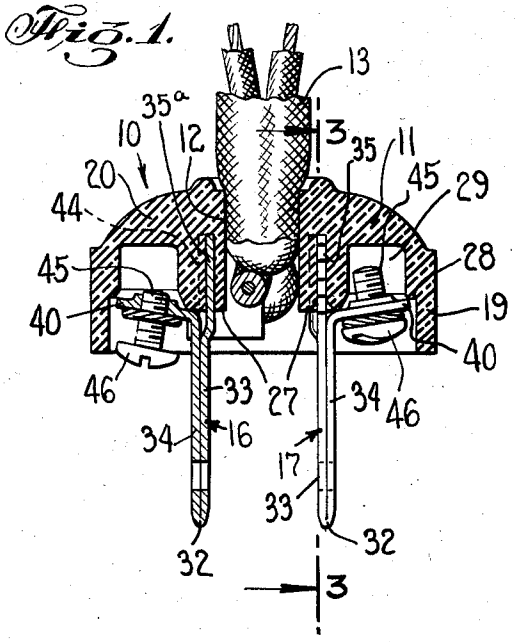


Fig. 2.

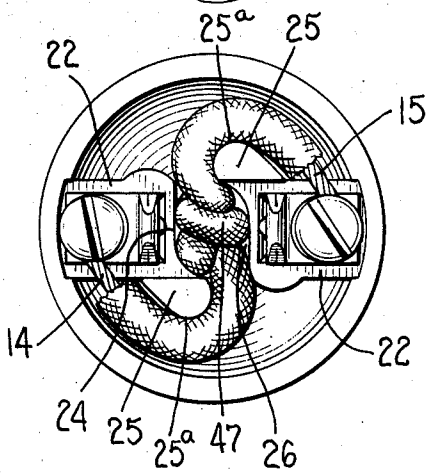


Fig. 4.

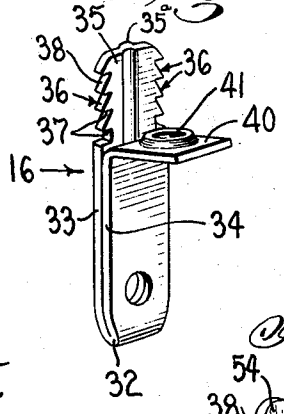


Fig. 3.

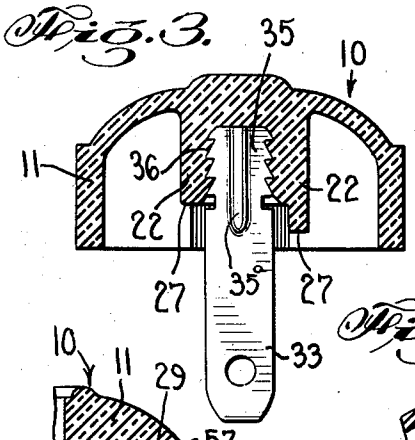


Fig. 5.

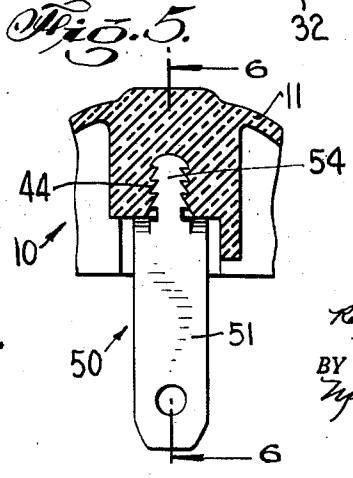


Fig. 7.

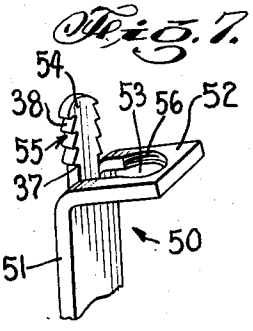
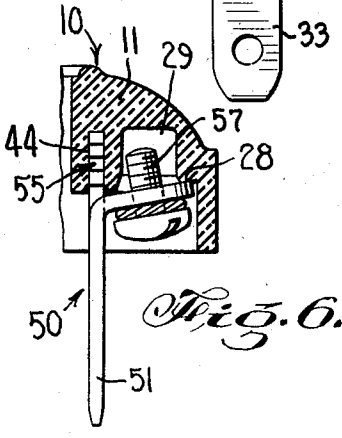


Fig. 6.



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ATTACHMENT PLUG

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Application December 2, 1931, Serial No. 578,428

7 Claims. (Cl. 173—361)

This invention relates to electric attachment plugs.

An object of this invention is to provide an attachment plug of the character described having improved guide and strain relief means for the conductors entering the attachment plug and thereby substantially eliminating strain on the plug blades or terminal connections.

A further object of this invention is to provide an attachment plug of the character described which may be made with a saving of insulating material as well as metal, and wholly by machine thus eliminating hand labor with a substantial saving of expense.

A still further object of this invention is to provide an attachment plug having plug blades attached to the insulating body portion without the use of screws, rivets or the like fastening devices, and which shall nevertheless be rigidly and firmly secured within the insulating body to prevent looseness of the plug blades.

Another object of this invention is to provide a neat, compact and rugged device of the character described, which shall be comparatively cheap to manufacture, comprise few and simple parts, easy to assemble, and provided with means for facilitating the attachment of the wire ends to the terminals of the plug, and which shall yet be practical and efficient to a high degree.

Other objects will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible embodiments of this invention,

Fig. 1 is an elevational cross-sectional view of an attachment electric plug embodying the invention;

Fig. 2 is a front end view of the plug;

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a perspective view of one of our improved plug blades;

Fig. 5 is a cross-sectional view of a plug embodying the invention but illustrating a modified form of plug blade;

Fig. 6 is a cross-sectional view taken on line 6—6 of Fig. 5; and

Fig. 7 is a fragmentary perspective view of the plug blade shown in Figs. 5 and 6.

Referring now in detail to the drawing, 10 designates an electric attachment fitting embodying the invention, here shown in the form of a plug connector comprising an insulating body 11 provided with a central opening 12 for receiving a duplex conductor cable 13 having wire ends 14 and 15 connected to the terminal portions of a pair of plug blades 16 and 17 mounted on said body in the manner hereinafter stated.

The body 11 is formed with an annular side wall portion 19 and a rear wall portion 20, and with a pair of integral symmetrical diametrically disposed projections 22 extending inwardly toward one another from the annular wall 19. The projections 22 are formed with inner end surfaces 24 flush with the inner surface of the opening 12 in the rear wall 20 of the body. Each projection 22 is further provided with an integral lug or extension 25 having an outer curved surface 25a, and extending from one side of said projection toward the opposite projection and thus making narrow passages or slots 26. The projections 22 are formed with top surfaces 27, and the lugs or extensions 25 preferably extend above said top surfaces. Said projections are also formed with inwardly and rearwardly inclined top surfaces 28 and with recesses or holes 29 in said inclined surfaces.

The plug blades 16, as illustrated in Figs. 1 and 4, are similar in construction and each is preferably made of a single piece or strip of metal bent and folded as at 32, to provide a portion 33 and a second portion 34 lying thereagainst. The free portion 35 of the portion 33 is formed with serrations or teeth 36 on opposite edges thereof. Preferably the teeth have the shape of buttress screw threads in section, and are formed with parallel edges 37 transverse to the longitudinal axis of the blade and with rearwardly inclined edges 38. The portion 34 of the plug blade 16 extends short of the portion 35, and extending from said portion 34 at an angle thereto is a portion 40 formed with a screw threaded opening 41. As shown in Fig. 1, the plug blades are mounted on the body by forcing the rear portions 35 into narrow slots 44 formed in the top surfaces 27 of the projections 22. The slots 44 are preferably parallel to each other and transverse to the longitudinal axis of said projections 22. Said slots may be of somewhat less width than the portions 35 of the blades 16 so that the teeth 36 will become embedded within the insulating material and by reason of the shape of the teeth as described above, will serve as barbs to prevent removal of the blades.

It will now be understood that all screw threaded connections between the plug blades and the insulating body or the use of other fastening means, such as rivets, is eliminated. The plug blade 16 may be made and attached to the insulating body 11 by machine thus eliminating necessity for hand labor. The portion 35 of the blades may be formed with a longitudinal rib 35a to strengthen the same, and the slot 44 may be shaped to receive said ribbed portion 35.

The portions 40 of the plug blades are preferably inclined to and form an obtuse angle with the portions 33 and 34 thereof for contacting the inclined surfaces 28 of the body 11. Screwed to the openings 41 are binding screws 45 around which are wound the wire ends 14 and 15, in the usual manner. Due to the inclination of the portions 40 of the plug blades, the unscrewing movement of the binding screws 45 will bring the heads 46 of said screws away from the adjacent surfaces of portions 34 of said blades, to facilitate the winding of the wire ends 14 and 15 about the shanks of the screws. Upon tightening the screws the heads come closer to said surfaces to aid in retaining the wound wire ends in attached condition. The conductors in the duplex cable 13 may be knotted as at 47, between the inner surfaces 24 of projections 22 and the conductors are then passed thru slots 26 and wound about the lugs or extensions 25 before connecting the wire ends to the binding screws. The lugs or extensions 25 thus serve as guide and strain relief means, since a rearward pull on the conductor cable 13 will be taken up by friction or binding between the conductors and the lugs or extensions 25.

In Figs. 5, 6, and 7, is shown a modified form of a plug blade. In said figures the blade 50 is likewise formed of a single flat strip or piece of metal and comprises a portion 51 and a portion 52 bent at right angles to and extending from said portion 51. The portion 52 is provided with a cut out or opening 53 formed by cutting a tongue 54 extending in the plane of the portion 51. Thus the outline of the tongue is cut and the portion 52 is then bent away from the plane of the portion 51, the tongues 54 remaining in the same plane as the portion 51. The tongue 54 may be formed with teeth 55 similar to teeth 36 and forced into the opening or slot 44 of the body 11 for tightly and firmly attaching the plug blade 50 to said housing 11. The inner end of the cut out portion 53 may be formed with screw threads 56 for receiving a binding or terminal screw 57 to which one of the wire ends is attached. The portion 52 of said blade 50 is preferably likewise inclined with respect to the portion 51 and contacts the inclined surface 28 of the housing, the shank of the screw entering the recess 29 of said housing, the same as in the structure shown in Figs. 1, 2, 3, and 4 in the drawing.

It will now be understood that the plug blades may be readily stamped and shaped and attached to the insulating housing by machine, thus saving material and labor, and that by reason of the teeth or serrated portions of the blades, a strong attachment is effected, thus making for a highly practical, efficient and economical device.

Although the drawing shows a plug having blades for attachment to a suitable socket or receptacle, our invention may be embodied in various electric attachment fittings having current carrying parts fixed thereto in the manner described above.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:—

1. An attachment plug comprising an insulating body having a central opening for receiving conductor cables, and a pair of plug blades each having integral extensions embedded within said housing on opposite sides of said opening, said blades having portions extending away from said body and portions inclined to said first portions, and forming obtuse angles therewith, and provided with screw threaded openings, and binding screws engaging the threads of said screw threaded openings receiving the wire ends from said conductor cables, the heads of said screws being disposed on the sides of said second portions adjacent said first portions.

2. An attachment plug comprising an insulating housing formed with an annular wall and a rear wall, said rear wall having a central opening, said housing being further provided with a pair of diametrically disposed projections extending inwardly toward each other from opposite points of the annular wall, said projections having parallel slots, and a pair of plug blades having tongues disposed within said slots, said projections having outer surfaces inclined rearwardly and outwardly, said plug blades having integral portions contacting said inclined surfaces and formed with screw-threaded openings receiving binding screws.

3. An attachment plug comprising an insulating housing formed with an annular wall and a rear wall, said rear wall having a central opening, said housing being further provided with a pair of diametrically disposed projections extending inwardly toward each other from opposite points of the annular wall, said projections having parallel slots, and a pair of plug blades having tongues disposed within said slots, said projections having outer surfaces inclined rearwardly and outwardly, said plug blades having integral portions contacting said inclined surfaces and screw threaded openings receiving binding screws, said projections being each provided with a lug on one side thereof extending toward the opposite projection and forming a narrow passage, and conductor cables extending through said central opening and through said passages and around said lugs, the wire ends of said cables being connected to said binding screws.

4. A plug blade made of a single strip of metal having portions folded over into contact with one another, one of said portions having a tongue formed with teeth on the opposite edges thereof, said other portion having an end portion bent away from said first portion and formed with a screw threaded opening.

5. A plug blade made of a single strip of flat metal having a portion adapted to be received within an electric socket, a tongue extending from said first portion and provided with teeth on opposite sides thereof, and an integral portion bent away from the plane of said first por-

tion and having a cut out portion formed by cutting said tongue, said cut out portion being formed with screw threads and a binding screw screwed thereto.

6. A plug blade made of a single strip of metal having portions folded over into contact with one another, one of said portions having a tongue formed with teeth in the edges thereof and a longitudinal rib and being adapted to be attached to a plug body, said other portion having an end portion bent away from said first portion and formed with a screw threaded opening and a binding screw for receiving a wire screwed to said opening.

7. An attachment plug comprising an insulating body and a pair of plug blades attached to said body, each having a flat elongated portion extending away from said body and adapted to be received in a socket opening, and a flat portion inclined to said first portion and making an obtuse angle therewith, said second portion having a screw threaded opening, and a binding screw screwed to said opening, the head of said screw being disposed on the side of said second portion adjacent the first portion and being movable away from said first portion as the screw is unscrewed.

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