

May 21, 1940.

A. C. GROHSGAL

2,201,578

ATTACHMENT PLUG

Filed Dec. 24, 1937

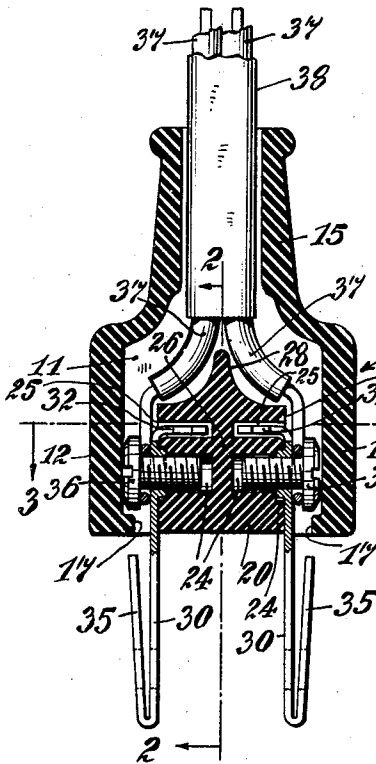


Fig. 1.

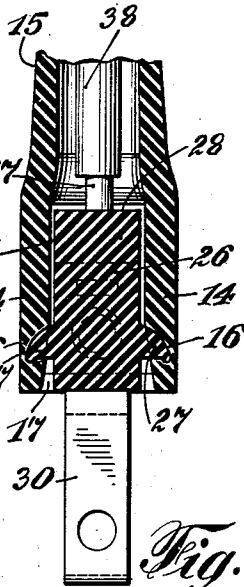


Fig. 2.

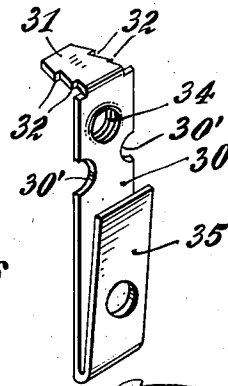


Fig. 4.

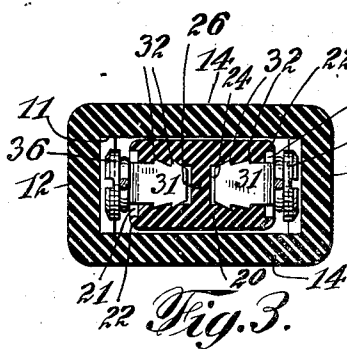


Fig. 3.

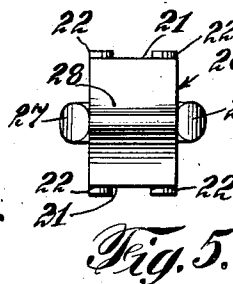


Fig. 5.

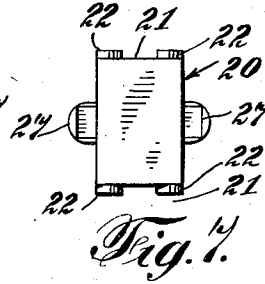


Fig. 7.

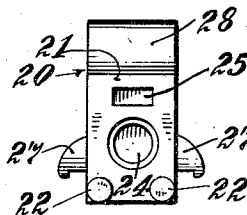


Fig. 6.

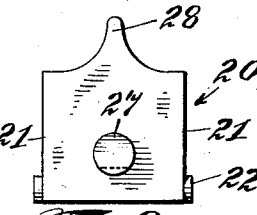


Fig. 8.

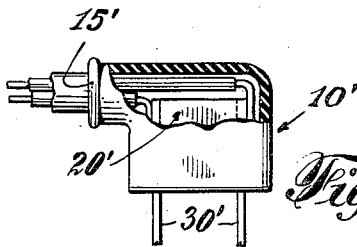


Fig. 9.

INVENTOR.
Alexis C. Grohsgal
BY Ramsey, Kent, Chisholm & Lutz
his ATTORNEYS

UNITED STATES PATENT OFFICE

2,201,578

ATTACHMENT PLUG

Alexis C. Grohsgal, New York, N. Y., assignor to
Marks Products Co., Inc., Brooklyn, N. Y., a
corporation of New York

Application December 24, 1937, Serial No. 181,627

3 Claims. (Cl. 173—361)

This invention relates to improvements in electrical attachment plugs.

An object of the invention is to provide an attachment plug wherein the component parts are held together by cooperating integral formations.

Another object of the invention is to provide an attachment plug made up of a resilient housing and an insert of insulating material having contact prongs secured thereto, the insert being held in the housing by cooperating formations on the two parts.

A further object of the invention is to provide a device of the foregoing character in which the contact prongs are permanently and frictionally secured to the insert.

A still further object of the invention is to provide an attachment plug of the type described in which the housing of resilient material is provided with recesses in the walls thereof for the reception of retaining members and of terminal screws fastening conductors to the contact prongs.

In carrying out the foregoing and other objects of the invention the plug thereof is made up of a housing of resilient material, such as rubber, which housing is shaped to provide a chamber for the reception of an insert and which has a hollow neck portion in communication with the chamber for the passage of conductors thereinto. Another element of the plug comprises an insert formed of some suitable insulating material shaped to fit within the chamber of the housing and shaped to have contact prongs permanently secured thereto in a frictional manner. The contact prongs have threaded orifices formed therein for the reception of terminal screws and the insert has recesses therein to receive the shanks of these screws. In addition, the insert has oppositely disposed lug members adapted to intrude into recesses formed in opposite walls of the housing whereby the insert can be retained within the chamber of this housing. In one form of the invention, the neck portion through which the conductors pass is arranged as a longitudinal continuation of the insert chamber of the housing. In another form of the invention, the neck portion is arranged to extend at right angles to this chamber so that the conductors enter the chamber at such angle.

Other objects, features and advantages of the invention will become apparent by references to the following detailed description of the accompanying drawing illustrating the same, wherein:

Fig. 1 is a side elevation partially in section of a device embodying the invention;

Fig. 2 is a section taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a section taken substantially on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of one of the contact prongs used in this assembly;

Fig. 5 is a top or plan view of the insert used therein;

Fig. 6 is an end view of the device shown in Fig. 5;

Fig. 7 is a bottom view thereof;

Fig. 8 is a side view of the same member; and

Fig. 9 is a side view partially in section of a modified form of the invention.

Referring now to the drawing and particularly to Figs. 1 to 8 inclusive, 10 indicates generally an open-ended housing made up of some suitable flexible resilient material such as rubber. This housing is so shaped as to provide a chamber 11 formed by opposite pairs of walls 12 and 14 and a neck portion 15 of reduced diameter hollowed out and in communication with the chamber 11. The opposite walls 14 are provided with recesses 16 which may be shaped as shown or which may constitute round openings extending completely through the wall. The opposite walls 12 have integral beads 17, the purpose of which will be explained later.

The insert, indicated generally at 20, comprises a plug of insulating material, which material may be a phenol condensation product, fibre or any other desired material having the proper qualities. Each end wall of the insert 20 is provided with a shallow longitudinal channel 21 defined in part, by lugs 22. The bottom flat surface of each channel 21 has a recess 24 formed therein of circular cross-section and a second recess 25 therein of rectangular cross-section. As will be seen in Fig. 1, these opposite recesses 24 and 25 in the two end walls are separated by a thin strip of material 26. The opposite side walls of the insert 20 are provided with integral lugs 27 preferably shaped substantially as shown. The top of insert 20 is provided with a tapered portion 28 of the shape shown in the drawing which portion 28 is adapted to serve as a conductor spreader or separator.

The terminal prongs used in this device are preferably substantially of the shape shown in Fig. 4, wherein it will be seen that the terminal prong is made from a flat strip of material 30 preferably brass or some other good conductor material, one end of which is bent substantially

at right angles as shown at 31 and which has the edges thereof provided with teeth 32. A threaded orifice 34 is provided in the strip 30 a slight distance below the angular end part 31.

5 The other end of the strip 30 is bent back upon itself as shown at 35 into a substantially V-shape. The opposite edges of strip 30 are provided with recesses 30' to receive lugs 22.

The terminal prongs are secured to insert 20 by forcing the angular part 31 of a prong into the recess 25 of the insert. These parts are so properly dimensioned that some pressure is required to force the part 31 into the recess with the result that the teeth 32 become more or less wedged

10 into the material of the insert so that withdrawal thereof is rendered exceedingly difficult. When the terminal prongs are so secured to the insert, it will be found that the parts 30 lie in channels 21 and that the threaded orifice 34 is in register

20 with the opening 24 in the insert, so that terminal screw 36 can pass through the aperture 34 into the aperture 24.

When the terminal prongs have been secured to the insert, the insert can be assembled with

25 the housing 10 in conjunction with two conductors 37. These conductors in a cable 38 are passed through the neck 15 of the housing and beyond the open end of chamber 11 thereof. The conductors 37 can then be secured to the two terminal screws 36, after which the insert can be introduced into the chamber 11. Inasmuch as the housing 10 is made of resilient material, the walls of the housing yield sufficiently to permit this insert to be forced thereinto. When the insert

35 has been properly introduced into the chamber, the integral lugs 27 of the insert intrude into the openings 16 in the walls 14 of the housing. When these walls assume their normal shape under their own resiliency, engagement of

40 the lugs 27 in the openings 16 serves to prevent adventitious withdrawal of the insert from the housing. At the same time the beads 17 on the lower end of walls 12 serve to partially enclose the terminal screws 36.

45 If it is desired to withdraw the insert from the housing, such operation can be accomplished by spreading the walls 14 apart to disengage the same from the lugs 27. The insert can then be pulled from the housing. While the insert is in place within the housing, the tapered part 28

50 serves as a separator for the conductors 37 in the manner shown in Fig. 1.

In Fig. 9 a modification of the invention has been shown. In this figure the housing indicated

55 generally at 10' has a chamber therein for the reception of an insert 20', but this housing, instead of being provided with a neck similar to that shown in Fig. 1 is provided with a neck 15' extending at right angles to the longitudinal axes

60 of the housing 10' and being hollowed out to communicate with the insert chamber of the housing. The insert 20' is similar in all respects to insert 20 with the exception that the tapered top portion 28 is not provided. The remainder

65 of the construction utilized in this embodiment of the invention is similar in all details to that previously described. It should be noted that contact prongs 30' have been shown in this form

70 as constituting blade-like members but it is to be understood that contact prongs similar to those previously described can be used in this

modification and also prongs similar to those shown at 30' can be used in the Fig. 1 embodiment.

From the foregoing it will be seen that the present invention provides a plug construction of such character that the component parts thereof are held together by cooperating integral formations; thereby reducing the cost of manufacture and the cost and labor involved in assembling the parts together with electric conductors. It is to be understood that modifications beyond those shown in the illustrated embodiments can be made; in view of which any limitations imposed upon this invention are to be only those set forth in the following claims.

What is claimed is:

1. A device of the character described comprising a housing of resilient material having an open-ended chamber therein, an insert member of hard insulating material having longitudinal channels in the end walls thereof and terminal prongs frictionally secured thereto with parts of the prongs lying in said channels, said housing having recesses in opposite walls thereof, and integral lugs on said insert for introduction into said recesses to resiliently retain said insert in said housing, said lugs having tapered upper edge portions to facilitate introduction of said insert member into said housing and having depending hook members at the outer ends of the lugs to resist removal of the insert member from the housing.

2. A device of the character described comprising a housing of resilient material having an open-ended chamber therein, said chamber being provided with side walls which are substantially flat over the major portions thereof, an insert member of hard insulating material having terminal prongs secured thereto, said insert member having side walls which are substantially flat over the major portions thereof, the engagement of side walls of said insert member with side walls of said chamber preventing relative rotation of the housing and the insert member, said housing having recesses in said side walls, and integral lugs on said insert member for introduction into said recesses to retain said insert member in said housing, said lugs being shaped to facilitate introduction of said insert member into said housing and to resist removal of the insert member from the housing.

3. A device of the character described comprising a housing of resilient material, said housing having an open-ended chamber therein, said chamber having end walls and oppositely disposed substantially parallel side walls longer than the end walls, an insert member of hard insulating material having contact prongs secured thereto, said insert member having oppositely disposed substantially parallel side walls, said housing having recesses in said substantially parallel side walls, and integral lugs on the substantially parallel side walls of said insert member, said lugs being brought into engagement with said recesses automatically upon insertion of the insert member into the housing, said lugs being shaped to facilitate introduction of the insert member into the housing and to resist removal of the insert member from the housing.

ALEXIS C. GROHSGAL.