May 21, 1940. A. C. GROHSGAL 2,201,579

ELECTRIC ATTACHMENT DEVICE

Filed Dec. 24, 1937

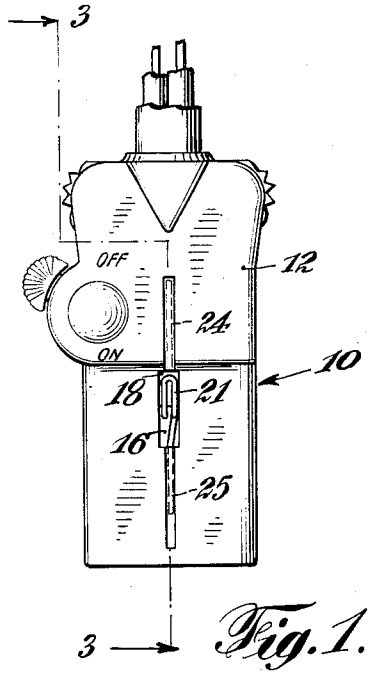


Fig. 1.

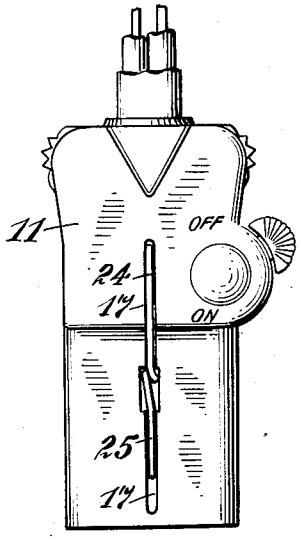


Fig. 2.

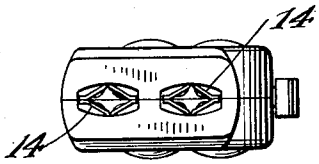


Fig. 4.

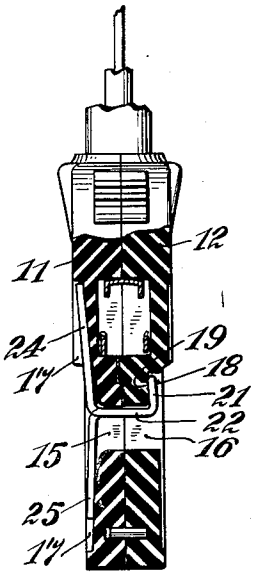


Fig. 3.

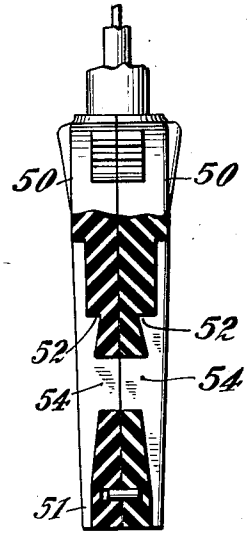


Fig. 6.

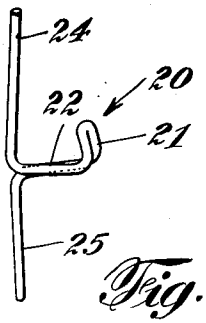


Fig. 5.

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ELECTRIC ATTACHMENT DEVICE

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4 Claims. (Cl. 173—332)

This invention relates to improvements in attachment plugs, and more particularly to improvements in attachment plugs of the type utilized for connecting various electrical appliances to a source of supply of electric current.

An object of the invention is to provide an attachment plug of such simplified character that the component parts thereof are held together by a single resilient member.

Another object of the invention is to provide an attachment plug made up of similarly shaped members held together by a single resilient connecting device having a part passing through the two members and having parts engaging opposite external portions of such members.

Another object of the invention is to provide an attachment plug of such character that the component parts of the housing thereof are capable of limited separation under the control of a resilient member utilized for securing the parts together.

In carrying out the foregoing and other objects of the invention attachment plugs of various types can be made in accordance with this invention. A single form of plug is illustrated herein, but it is to be understood that other types of plugs can be utilized in the practice of this invention without departing from the scope thereof. The plug illustrated herein is of the type having a pair of sockets therein for the reception of contact prongs usually found on electrical appliances of various types. The plug is made of two complemental parts forming a housing thereof, which parts are usually made of some molded insulating material. These parts have suitable recesses therein for the reception of contact prong sockets, switch members for controlling the energization of such sockets, and conductors leading to terminals therein. Heretofore various types of arrangements have been utilized for holding the two component parts of the housing together, but all of such types of locking arrangements have possessed some inherent faults.

In the practice of this invention the parts of the housing are molded in the usual fashion, but one part thereof is provided with a longitudinal narrow groove on one side thereof, while the other part is provided with a relatively short longitudinal groove, the bottom of which groove is slightly inclined away from an opening extending through that part and aligned with a similar opening in the other part. To lock the two parts of the housing together use is made of a resilient locking member preferably formed of some suitable wire possessing the necessary qualities. This wire is shaped in such fashion as to provide a hook member formed by bending the wire intermediate its length until two expanses thereof are in side-by-side relation. Extending angularly from this hook part is an expanse formed by two reaches of the wire in side-by-side relation, which reaches separate angularly into longitudinal expanses extending in opposite directions. The longitudinal expanses thus are arranged in planes at angles to the connecting portion so that in practice these expanses can lie against the outer surface of one of the housing parts while the hook member can lie against the outer surface of the other housing part with the side-by-side connecting parts passing through openings in these two housing parts. Since the wire used in forming this attaching member possesses resiliency it will be apparent that the member can be of such dimensions as to lock the two parts of the housing together in a slightly yielding fashion, or in other words the parts of the housing can be separated a slight amount within the limit prescribed by the resiliency of the attaching member. The advantages of this arrangement will be pointed out hereinafter.

Other features, objects and advantages of the invention will be apparent by reference to the following detailed description of the accompanying drawing wherein:

Fig. 1 is a view of one side of an attachment plug embodying the invention;

Fig. 2 is a similar view of the other side thereof;

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

Fig. 4 is an end view of the plug showing the disposition of contact sockets therein;

Fig. 5 is a view of the locking member utilized for holding the parts of the housing together, and

Fig. 6 is a view similar to Fig. 3 of a modification.

Referring now to the drawing, 10 indicates generally a housing made up of two complemental parts 11 and 12 preferably made of some suitable molded insulating material such as a phenol condensation product. These two housing members may be of any suitable configuration, and preferably have formed therein recesses for the reception of contact prong sockets indicated at 14, suitable switch mechanism, and terminals for the attachment of electric conductors, all in accordance with conventional practice. Inasmuch as these elements form no part

of the present invention detailed description and illustration of the same have been omitted.

In order that the parts 11 and 12 can be locked together, these parts are provided with through openings 15 and 16 respectively. The outer surface of the part 11 is provided with a longitudinal groove 17 crossing opening 15. The outer surface of the part 12 is provided with a short longitudinal groove 18 lying substantially in the same longitudinal plane as the groove 17. The bottom of this groove 18 slopes inwardly upwardly as indicated at 19.

The locking member used in this invention is indicated generally at 20 and is formed of some suitable wire having the proper qualities of resiliency and the like. This wire is bent intermediate its length until the reaches thereof are in side-by-side relation to form a hook portion 21. The reaches are then bent substantially at right angles to the hook portion 21 to form an intermediate attaching portion indicated at 22 in which the reaches are in side-by-side relation. The two reaches are then bent substantially at right angles to the intermediate portion to provide legs 24 and 25 extending in opposite directions from the intermediate portion 22. While these legs have been described as being substantially at right angles to the intermediate portion, in actuality they are bent so that the ends of the respective legs extend toward the plane of the hook portion 21 and at the same time this hook portion 21 is also bent inwardly a slight amount.

In assembling a plug incorporating the present invention the two housing parts with their contained elements are brought together in matching relation so that the openings 15 and 16 are in alignment. In this condition the hook portion 21 is passed through the openings 15 and 16 in succession until the legs 24 and 25 become seated in the groove 17. Some slight force will be necessary to cause the end of the hook portion 21 to clear the end of the slot 18, but such force can readily be applied, and after the application of such force the hook portion 21 can be caused to engage the bottom 19 of groove 18 by sliding the entire member 20 toward the conductor end of the plug. When such sliding movement has been completed the locking member 21 will be located in the position shown in Fig. 3 wherein it will be seen that the legs 24 and 25 are located in the groove 17 while the hook portion 21 is located in the groove 18. Under these conditions the two members 11 and 12 are firmly but yieldably held together.

The advantage inherent in such yieldability resides in the fact that under operating conditions contact prong sockets sometimes lose their resiliency so that contact prongs are not held therein with desirable friction. Accordingly with a plug made in accordance with this disclosure the contact prong sockets can be held firmly between walls of recesses in the housing so that even though an oversized prong be inserted in a socket the socket can yield along with the wall of the recess until the prong is firmly held therein. Such yielding of the recess wall necessarily causes slight separation of the component parts 11 and 12, which separation is controlled by the resiliency of the attaching member, thereby always insuring that the sockets will firmly grip contact prongs. The device can be disassembled by a reversal of the steps employed in assembling the same for the removal of any elements contained therein or for the attachment of conductors to terminals therein.

This invention also makes possible the use of a device comprising a casing formed from two similarly shaped sections, which sections are similarly shaped at least as far as the arrangement of surface slots for engagement with the attaching member is concerned. By reference to Fig. 6 it will be seen that the attachment device is made up of two sections 50, each of which is provided with an external longitudinal slot 51, the bottom of which has indentation 52 for the reception of the hook portion 21 of member 20 (Fig. 5). Each section 50 is also provided with a through aperture 54, which apertures are in alignment for the passage of the portion 22 of the member 20. With this arrangement it will be evident that the attaching member 20 can be assembled with the device with the hook portion 21 in engagement with either indentation 52. The advantages of this arrangement are obvious.

From the foregoing it will be seen that the present invention provides an attachment plug of simplified character wherein the component parts of the housing are held together by a single locking member, which locking member is inexpensive to manufacture and which can be assembled with the housing parts with a minimum of labor and expense. It is to be understood that the attaching means illustrated herein can be utilized in conjunction with other plugs or receptacles or in conjunction with any electrical fitment wherein it is necessary that component parts of a housing be held together. Accordingly, any limitations imposed upon the invention are to be only those defined in the following claims.

I claim:

1. A device of the character described comprising a housing made up of complemental parts each having an opening therein, said openings being in register to provide a single through opening, one of said parts having a longitudinal slot in a surface thereof crossing said opening therein, the other of said complemental parts having a slot in a surface thereof extending from one edge only of the opening therein, and a locking member having an intermediate portion disposed in said through opening; having a relatively short hook portion adapted to engage in the slot in one of said members and having relatively long oppositely directed end portions adapted to lie in said longitudinal slot, said intermediate portion joining said hook portion to said oppositely directed end portions.

2. A device of the character described comprising, a pair of complemental housing members, each having a through opening therein aligned one opening with the other, each member having a longitudinal external groove crossing said opening and having a short indentation in the bottom thereof adjacent said opening, which grooves are similarly shaped, and a resilient member having a part thereof passing through said opening and having parts engaged in the respective external grooves to hold said housing members resiliently together, one of said parts being short to fit in one of said indentations and the other parts being of considerable length to fit in a groove at each side of said opening.

3. A device of the character described comprising a pair of complemental housing members, each having a through opening therein aligned one opening with the other, each member having a longitudinal external groove in communication with its opening, and a resilient locking member having a hook portion of length to pass through said opening, having an intermediate portion

thereof extending through said opening and having oppositely directed long end portions extending from said intermediate portion, said intermediate portion joining said hook portion to said end portions, said locking member being slidable relative to said housing members to cause the hook and end portions of the locking member to engage in said grooves to lock said housing members together.

4. A device of the character described comprising a pair of complemental housing members, each having a through opening therein aligned one opening with the other, each member having a longitudinal external groove having a short indentation in the bottom thereof adjacent said opening, which grooves are similarly shaped and cross said opening, and a resilient locking member having a hook portion of length to pass through said opening, having an intermediate portion thereof extending through said opening and having oppositely directed long end portions extending from said intermediate portion, said intermediate portion joining said hook portion to said end portions, said locking member being slidable relative to said housing members to cause the hook portion of the locking member to engage in one of said short indentations and the end portions of the locking member to engage in the other of said grooves to lock said housing members together.

ALEXIS C. GROHSGAL.