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J. M. ROGIE
CONNECTING PLUG
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2,482,214

FIG. 1.

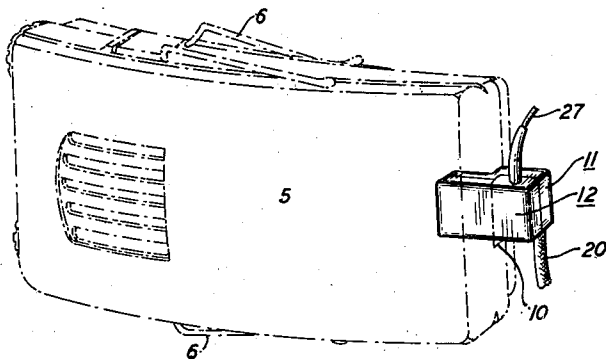


FIG. 3.

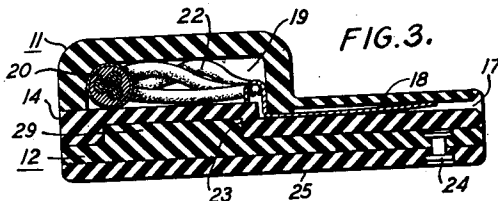


FIG. 2.

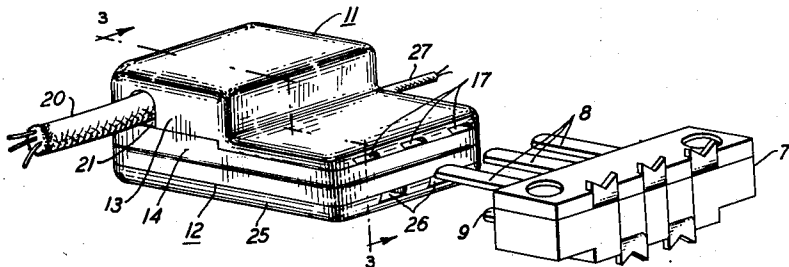
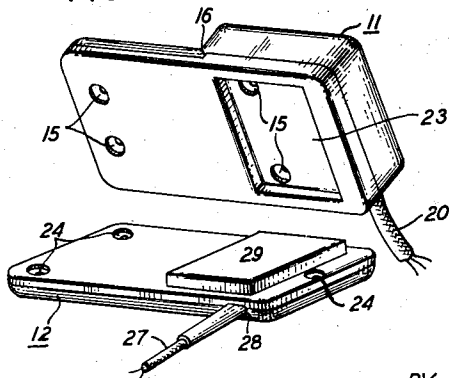


FIG. 4.



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CONNECTING PLUG

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2 Claims. (Cl. 173—332)

1

This invention relates in general to connecting plugs and more particularly to such a plug particularly adapted for use with hearing aid sets or similar devices.

In hearing aid sets it is highly desirable to make the apparatus as small as is compatible with satisfactory operation in service. This is particularly true with the cord which connects the amplifier set with the receiver positioned in the ear of the user. To make this cord as inconspicuous as possible, its size is decreased to such an extent that its useful life is considerably less than that of the cord which connects the amplifier set with the operating batteries. It is therefore desirable that the receiver cord be so arranged that it may be easily replaced by the user without requiring replacement of the battery cord. It is further desirable that both battery and receiver cords be connected to the amplifier set at the same time and by a single operation, rather than by the individual operation of independent plugs for the respective cords.

It is therefore an object of the invention to provide a connecting plug particularly adapted for hearing aid sets which is extremely small in size, which at the same time provides satisfactory operation under service conditions.

Another object of the invention is to provide such a plug which permits easy replacement by the user of either cord when it becomes worn or otherwise faulty.

To accomplish these objects there is provided in accordance with the features of the invention a composite plug so arranged that the cords may be connected to separate plug members which nest together in such a way that they may be operated as a single unit to make the desired connections. In accordance with another feature of the invention the two cords enter their respective plug members at opposite sides and in a direction perpendicular to the line of travel of the plug as it is inserted in the amplifier set.

The invention may be more clearly understood by reference to the accompanying drawing, in which:

Fig. 1 is a perspective view in partial outline showing the connecting plug of the invention inserted in an amplifier set;

Fig. 2 is a perspective view on an enlarged scale of the connecting plug in operative position with the cooperating contact members which are mounted within the set;

Fig. 3 is a cross-sectional view taken along the plane 3—3 of Fig. 2 looking in the direction of the arrows; and

2

Fig. 4 is a perspective view on an enlarged scale with the respective plug members separated and positioned at an angle to show the manner in which they are mounted together to form a composite plug capable of being inserted or withdrawn as a single unit.

Referring to the drawing, the casing 5 of the amplifier set is arranged to house the various elements of the amplifier and is provided with spring clips 6—6 to facilitate securing it in a desired position. Mounted within the casing at its lower end is a contact block as shown in Fig. 2, comprising an insulating support 7 in which three contact members 8—8 are mounted in one plane and a pair of contact members 9—9 is mounted in a parallel plane. These contact members are adapted to be engaged by corresponding contact members of the connecting plug which in the lower end of the casing.

The composite connecting plug comprises a battery plug member 11 and a receiver plug member 12 which are arranged to interlock or nest together. The battery plug member comprises an outer member 13 and an inner member 14 which are fixedly secured together by means of rivets 15—15. These members are accurately molded of a suitable insulating material and are provided with offset portions as shown at 16 to insure accurate alignment of the parts before riveting. The upper member 13 is provided with suitable slots 17—17, in each of which is mounted a curved or arched contact spring 18 adapted to engage one of the fixed contact members 8. These slots which have a depth somewhat greater than the combined thickness of contacts 8 and 18 open into a chamber 19 as shown in Fig. 3 into which the battery cord 20 extends through a suitable opening 21 in the side wall. The bared ends of conductors 22 are looped around the ends of the springs 18 and securely soldered thereto, thus insuring a permanent low resistance connection. As shown in Fig. 4 a rectangular depression or chamber 23 is provided in the member 14 for purposes to be explained hereinafter.

The receiver plug member 12 likewise comprises a pair of accurately molded parts of insulating material which are fixedly secured together by means of rivets 24—24. The outer member 25 is provided with a pair of slots 26—26 adapted to receive arched contact springs similar to springs 18 and to which are soldered the respective conductors of receiver cord 27. A suitable slot 28 also is provided to receive the inner end of the cord 27. A rectangular projection 29 is accurately molded to nest in the chamber 23

3

of the battery plug member but to be easily separable therefrom.

When the receiver plug member and battery plug member are nested together they may be operated as a single plug member and are so operated in service. However, when it becomes necessary to replace either cord it can be done without interfering with the other cord or entailing the expense of supplying both cords and their respective plug members. Since the conductors are permanently soldered to the plug contact springs, all contact trouble that might otherwise be experienced from the plug connections is eliminated. Also, by soldering the wires directly to the contact springs, it is possible to decrease the size of the plug members to a marked extent over that which would be possible if the conductors were not so secured. Furthermore, due to the curved or arched shape of the contact springs within their respective slots, sliding contacts having a desired contact pressure are obtained when the plug is connected to the set. Due to the fact that the respective cords are brought into the plug members through suitable openings in the sides of the plugs, there is no tendency for the user to withdraw the plug by pulling on the cords with a resulting possible damage to the cord connections. Also with the cords extending out of the sides of the plug they are dressed in the right direction to lead directly to the receiver and battery elements respectively, thus preventing twisting or kinking of the cords where they extend outside the plug.

What is claimed is:

1. A connecting plug comprising a pair of easily separable plug members arranged side by side to cooperate with each other to form a unit plug assembly, each of said plug members comprising a pair of insulating members secured together to form a casing and each having a plurality of parallel slots therein, a contact spring consisting of a single arched member positioned in each of said slots, the depth of said slots being such that the ends of each of said springs bear

4

against one side wall of the slot and the mid-portion of said spring bears against the opposite side wall of the slot, and flexible cords extending into said casings and having their conductors connected to said contact springs, one of said plug members having a projection on a side wall thereof and the other having a corresponding chamber into which said projection nests, said contact springs being held in operative position by the securing together of the insulating members.

2. A connecting plug comprising a pair of easily separable plug members arranged to cooperate with each other to form a unit plug assembly, contact springs each consisting of a single arched member enclosed in each of said plug members and connecting cords having their conductors soldered thereto, each of said plug members comprising a pair of molded parts of insulating material riveted together to form an integral member and having slots molded therein to receive said contact springs and cords, the contact springs being held in operative position by the riveting of the molded parts, one of said plug members having a projection on a side wall thereof and the other having a corresponding chamber into which said projection nests.

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