Sept. 1, 1925. 1,552,227

L. G. PACENT

CONNECTING PLUG

Filed May 4, 1923

Fig. 1,

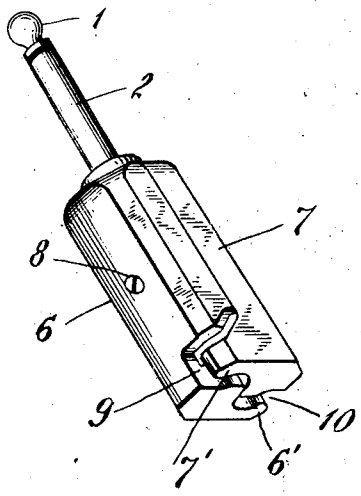


Fig. 2,

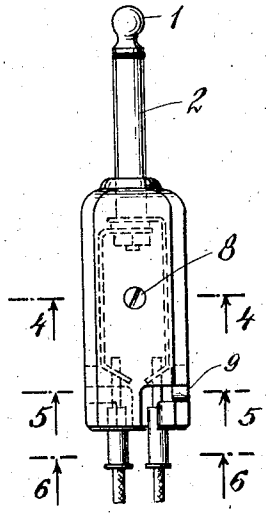


Fig. 3,

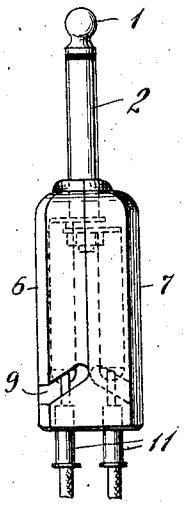


Fig. 4,

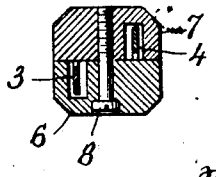


Fig. 5,

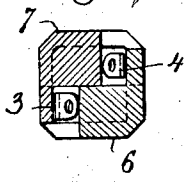


Fig. 6,

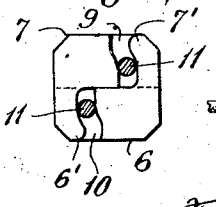


Fig. 7,

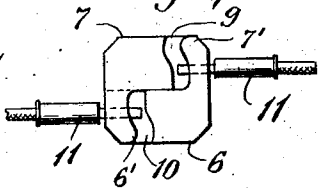


Fig. 8,

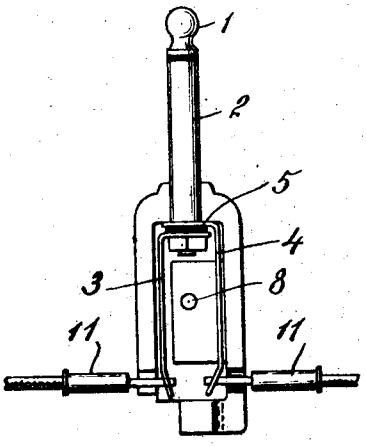


Fig. 9,

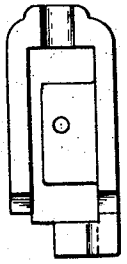
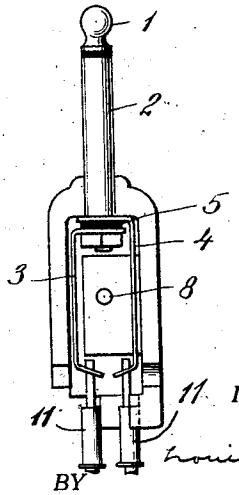


Fig. 10,



INVENTOR

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BY

Pennie, Davis, Marvin & Edmonds

ATTORNEYS

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UNITED STATES PATENT OFFICE.

LOUIS G. PACENT, OF WINFIELD, NEW YORK, ASSIGNOR TO PACENT ELECTRIC COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CONNECTING PLUG.

Application filed May 4, 1923. Serial No. 636,712.

To all whom it may concern:

Be it known that I, LOUIS G. PACENT, a citizen of the United States, residing at Winfield, in the county of Queens, State of New York, have invented certain new and useful Improvements in Connecting Plugs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has to do with devices for making electrical connections, and, more particularly, devices of the spring connecter type. Specifically, the invention is directed to improvements in connecting plugs of the telephone type especially adapted for easy connection and disconnection to and from the terminals of a telephone cord or the like.

At the present time the invention finds its most important embodiment in telephone plugs for use in conjunction with radio apparatus. Radio telephone headsets are ordinarily provided with conductor cords having so-called pin type cord tips, which, of course, are not adapted for making connections with spring jacks but are well adapted for making connections with certain types of binding posts and spring clips such as the well-known Fahnestock clips. Because of the fact that it is frequently desirable to connect a telephone headset with binding posts and the like, especially for experimental and testing purposes, it is undesirable, in many cases, to have the headset permanently connected to the plug. The structure of the present invention is designed to meet this situation in that it provides a plug to which a cord provided with the usual pin type cord tips can be quickly and easily connected and disconnected and in which the entire mechanism for effecting such connections is mounted inside the handle of the plug.

In my copending applications Serial No. 626,285, filed March 20, 1923 and Serial No. 618,887, filed February 14, 1923, telephone plugs adapted for connection with telephone cords provided with pin type cord tips are disclosed. The present invention is in certain respects, an improvement on the plugs described in the aforementioned copending applications.

The improvement effected by the present invention resides in the provision of a plug combining extreme simplicity and correspondingly low cost of production with the convenience of being able to readily connect the tips of the telephone cords or the like to the plug without the necessity of opening the handle or otherwise disassembling the device.

The plug shown and described in the aforementioned copending application Serial No. 626,285 is very simple and economical to manufacture, but it is necessary to disassemble the handle in order to connect or disconnect the telephone cord to and from the plug; and the plug shown and described in the aforementioned copending application Serial No. 618,887 is very convenient to operate in that the telephone cord can be very easily connected without any disassembly of the handle, but it is somewhat more expensive to manufacture than the former.

Plugs in accordance with the present invention combine the advantages of both the aforementioned plugs in that they are little, if at all, more expensive to manufacture than the first and are substantially as convenient as the latter from the standpoint of ease in connecting and disconnecting the cords.

The plug constituting the preferred embodiment of the present invention comprises the usual coaxial tip and sleeve conductors to each of which is connected a conducting member in the form of a leaf spring having its free end portion apertured to receive a pin type cord tip of the standard size. A two-piece hollow handle of insulating material is provided inside of which the conducting members are disposed. Each of the two parts of the handle is provided with a slot of such shape as to define a hook-shaped projection or shoulder integral with the handle. These slots are respectively disposed adjacent the free end of one of the conducting members, and each is so proportioned as to permit the insertion therethrough of a pin type cord tip into the aperture in the associated conducting member and to further permit manipulation of the cord tip into a position inside the hook of the shoulder wherein the cord tip is gripped by the conducting member and shoulder conjointly. When thus inserted the cord tips are firmly held and cannot be withdrawn by a direct pull on the cord. They can, however, be readily disconnected by a reverse manipu-

tion which is equally as simple as the operation of inserting them.

The invention will now be described in detail in connection with the accompanying drawing, in which

Fig. 1 is a perspective view of a connecting plug according to the preferred embodiment of the invention;

Fig. 2 is an elevational view of the same plug;

Fig. 3 is a right elevational view of the plug shown in Fig. 2;

Figs. 4 and 5 are cross sectional views taken along the lines 4—4 and 5—5 respectively of Fig. 2;

Fig. 6 is an end view of the plug handle taken along the line 6—6 of Fig. 2 showing, in cross section, a pair of pin type cord tips connected to the plug;

Fig. 7 is an end view similar to Fig. 6, but showing the cord tips in the initial inserted position for the purpose of illustrating the manner in which the cord tips are manipulated in the operation of inserting them in the plug;

Fig. 8 is an elevational view similar to Fig. 2 except that one-half of the handle has been removed in order to more clearly illustrate the interior construction. This view also shows a pair of pin type cord tips in the initial position;

Fig. 9 is an inside elevational view of one-half of the plug handle, being that part of the handle which has been removed in Fig. 8; and

Fig. 10 is an elevational view exactly the same as Fig. 8 except that the cord tips are shown in their final inserted positions.

The contacting portion of the plug comprises a tip 1 and sleeve 2 of the usual form. The tip 1 has a shank portion which extends through the sleeve 2 and is insulated therefrom by a bushing of suitable insulating material. To the lower end of the plug portion there are connected a pair of resilient conducting members 3 and 4 having the form of leaf springs. These conducting members are insulated from each other by means of an insulating washer 5, and are connected respectively to the tip and sleeve. The free end portions of the conducting members 3 and 4 are slightly bent, as is best illustrated in Fig. 8, and are each provided with an aperture of suitable size to permit the insertion of a pin type cord tip 11, 11 which is likewise clearly illustrated in Fig. 8. The plug is provided with a hollow handle of molded insulating material comprising the two identical portions 6 and 7 which are held together by a screw 8. As is clearly shown, the resilient conducting members 3 and 4 are disposed inside the handle. Each handle part 6 and 7 is so formed that the assembled handle is provided with two slots 9 and 10, which define a pair of hook-like projections or shoulders 6′ and 7′. The form of the slots 9, 10 and the projections 6′, 7′ is clearly shown in the perspective view, Fig. 1.

Figs. 7 and 8 illustrate very clearly the first step in connecting a pair of pin type cord tips 11, 11 to the plug. After the cord tips are inserted in the apertures in the free end portions of the resilient conducting members 3, 4, they are manipulated through the slot 9 into the position shown in Figs. 2, 3, 6 and 10. In the final position as shown in these figures the cord tips are held within the hooks of shoulders 6′, 7′ and are firmly held against these shoulders by the tension of the resilient conducting members 3, 4. It should be noted that the apertures in the free ends of the resilient conducting members are of such size that when the cord tips are in their final positions as illustrated, they are gripped by the conducting members. Any direct pull on the cord tips serves only to increase the gripping action thereon of the resilient conducting members. The cord tips can be easily released from the plug by a reverse manipulation through the slots 9, 10 to the position shown in Figs. 7 and 8, in which position they may be easily withdrawn.

I claim:

1. A connecter plug of the telephone type comprising an insulating handle, a conducting plug portion retained by said handle, a flexible conductor electrically associated with said plug portion and disposed within said insulating handle, said conductor being adapted to engage a cord tip, said insulating handle being provided with a slot and a shoulder projecting into said slot, said slot being proportioned to permit the insertion therethrough of a cord tip into engagement with said conductor and to permit the cord tip being manpulated into a position with respect to said shoulder wherein said conductor and said shoulder cooperate to secure the cord tip in engagement with said conductor.

2. A releasable electrical connecter comprising a hollow member, a resilient conductor disposed within said member, said conductor having an aperture adapted to receive a cord tip, said member being provided with a slot defining a shoulder integral with said member, said slot being proportioned to permit the insertion therethrough of a cord tip into said aperture and to permit the cord tip being manipulated into a position with respect to said shoulder wherein said conductor and said shoulder cooperate to secure the cord tip in engagement with said conductor.

3. A releasable electrical connecter comprising a hollow member, a leaf spring conductor disposed within said member and secured at one end portion, said conductor be-

ing apertured at its end portion to receive a cord tip, said member being provided with a slot defining a shoulder integral with said member, said slot being proportioned to permit the insertion therethrough of a cord tip into said aperture and to permit the cord tip being manipulated into a position with respect to said shoulder wherein said conductor and said shoulder cooperate to secure the cord tip in engagement with said conductor.

4. In a connecter plug of the telephone type, a contact portion adapted to be inserted in a jack, said contact portion comprising tip and sleeve conductors, a handle enclosing said contact portion, resilient conductors within said handle, said resilient conductors being connected respectively to said tip and sleeve conductors, said handle being provided with two slots through each of which a pin type cord tip may be inserted into engagement with one of said resilient conductors, said slots each having a shoulder therein behind which the cord tip may be manipulated after being inserted into the slot, said shoulder serving to hold said tip from disengagement with said resilient conductor and said resilient conductor serving to hold said cord tip behind said shoulder.

5. In a connecter plug of the telephone type, a plug portion comprising tip and sleeve conductors adapted to be inserted in a spring jack, a two-part hollow handle for said plug, a pair of resilient conducting members disposed within said handle and connected respectively with said tip and sleeve conductors, each of said conducting members being apertured to receive a pin type cord tip, each of the two parts of said handle being provided with a slot defining a shoulder, each of said shoulders being located adjacent one of said conducting members, said slots being similarly proportioned to permit the insertion therethrough of a pin type cord tip into the aperture in the respectively associated conducting member, and to permit the manipulation of the cord tip into a position with respect to the shoulder wherein the cord tip is held by the conducting member and shoulder conjointly whereby the cord tip is firmly secured in contact with the conducting member.

6. In a connecter plug of the telephone type, a plug portion comprising tip and sleeve conductors adapted to be inserted in a spring jack, a two-part hollow handle for said plug, a pair of resilient conducting members disposed within said handle and connected respectively with said tip and sleeve conductors, each of said conducting members being apertured to receive a pin type cord tip, each of the two parts of said handle being provided with a slot defining a hook-shaped shoulder, each of said shoulders being located adjacent one of said conducting members, said slots being suitably proportioned to permit the insertion therethrough of a pin type cord tip into the respectively associated conducting member and to permit the manipulation of the cord tip after such insertion to a position inside the hook of the shoulder whereby the cord tip is firmly secured by the coaction of the conducting member and shoulder.

7. In a connecter plug of the telephone type, a contact portion adapted to be inserted in a spring jack, said contact portion comprising tip and sleeve conductors, a handle to which said contact portion is secured, resilient conductors within said handle, said resilient conductors being connected respectively to said tip and sleeve conductors, said handle having slots therein adapted to receive pin type cord tips, each slot having therein a shoulder behind which a cord tip may be manipulated after it is inserted into the slot, each of said resilient conductors cooperating with a corresponding shoulder to hold a pin type cord tip in engagement with said resilient conductor.

In testimony whereof I affix my signature.

LOUIS G. PACENT