June 2, 1925. 1,540,496

L. G. PACENT

CONNECTING PLUG

Filed June 9, 1923

Fig. 1,

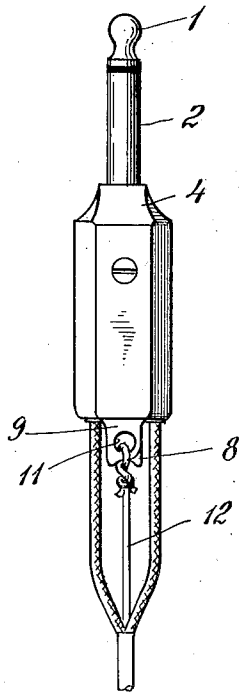


Fig. 2,

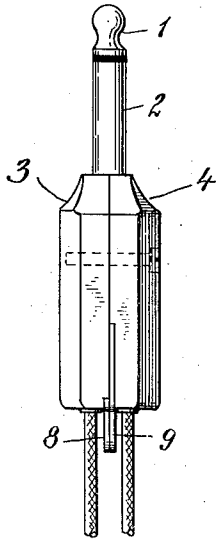


Fig. 3,

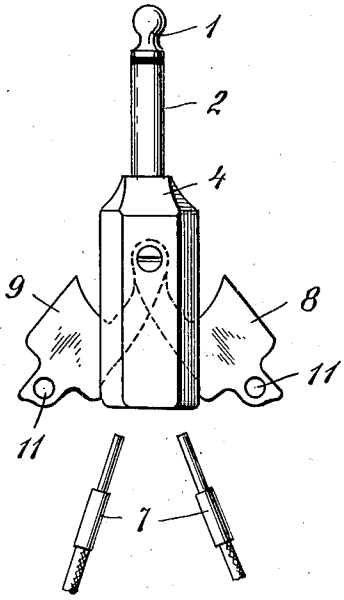


Fig. 4,

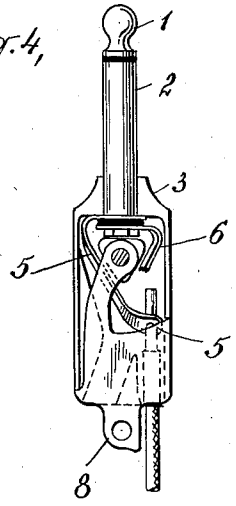


Fig. 5,

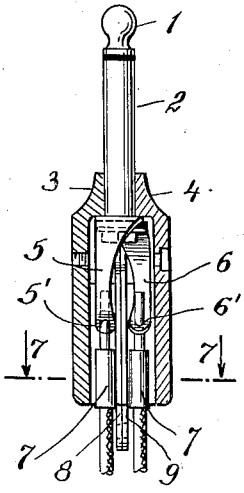


Fig. 6,

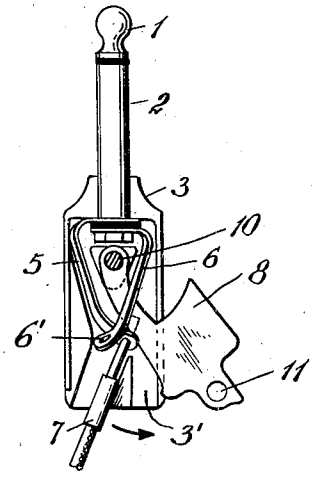
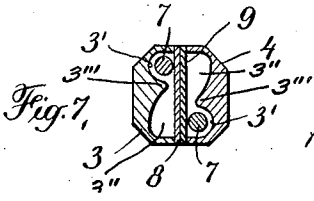


Fig. 7,



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UNITED STATES PATENT OFFICE.

LOUIS G. PACENT, OF WINFIELD, NEW YORK.

CONNECTING PLUG.

Application filed June 9, 1923. Serial No. 644,298.

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 connector 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 clip. 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 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 is 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 disassembling 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 approximately as inexpensive to manufacture as 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 resilient conductor in the form of a leaf spring having its free end portion apertured to receive a wirelike conductor such as a pin type cord tip of the standard size. These resilient conductors are operable in response to being flexed into an off-normal position to grippingly engage the wirelike conductors or cord tips and thereby prevent their disengagement from the plug. A two-piece hollow handle of molded insulating material is provided inside of which the resilient conductors are disposed. Each of the two parts of the handle is provided with an internal recess of suitable size to receive one of the wirelike conductors or cord tips and to assist in holding it in a position wherein it continues to be gripped. As a further means for holding the wirelike conductors in place so that they continue to be gripped by the resilient conductors, a pair of pivoted plates are provided each of which is operable in one position to lock one of the conductors in its individual recess and in another position to permit withdrawal of the conductors.

A clearer understanding of the invention will be had from the following detailed de-

scription in conjunction with the accompanying drawing, in which—

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

Fig. 2 is a right hand elevational view of the plug shown in Fig. 1;

Fig. 3 is an elevational view similar to Fig. 1 except that the pivoted plates which operate to retain the cord tips are shown in their unlocked positions wherein the cord tips may be inserted or withdrawn from the plug structure;

Fig. 4 is an elevational view corresponding to Fig. 1 except that one part of the handle has been removed in order to show the internal construction;

Fig. 5 is an elevational view including a cross section through the handle;

Fig. 6 is an elevational view similar to Fig. 4 with one part of the handle removed for illustrating the mode of connecting a pin type cord tip or other wirelike conductor to the plug; and

Fig. 7 is a cross sectional view taken along the line 7—7 of Fig. 5.

In so far as external appearances are concerned, the plug of the present invention does not differ greatly from an ordinary telephone plug. It consists of a plug portion adapted to be inserted in a spring jack, comprising a tip 1 and a sleeve 2. The plug portion per se is embraced between the two parts 3 and 4 of a handle, these parts being preferably molded of a suitable insulating material such as hard rubber or bakelite. To one end of the plug portion per se is secured a pair of resilient sheet metal conductors 5, 6 of suitable form, as shown, having their free ends provided with apertures 5′, 6′, preferably of a size suitable for receiving a standard pin type cord tip 7, or other wirelike conductor.

As is shown most clearly in Figs. 6 and 7, each of the handle parts 3, 4 is formed to provide recesses 3′ and 3″ between which is a raised portion 3‴. The purpose of recesses 3″ is to facilitate the insertion of the cord tips 7 into the apertures 5′, 6′ of the resilient conductors as illustrated in Fig. 6. With the cord tips thus engaged with the resilient conductors, they are manipulated over the raised portion 3‴ and seated in the recesses 3′ as shown in Figs. 4 and 7. With the cord tips seated in recesses 3′ and, at the same time, inserted in the apertures 5′, 6′, the resilient conductors are necessarily each flexed into an off-normal position, so that the cord tips are grippingly engaged by the edges of the apertures 5′, 6′, and thereby prevented from being withdrawn by any tension which may be applied to the cords. The recesses 3′ and raised 3‴ are not in themselves capable of retaining the cord tips 7 in the position shown in Figs. 4 and 7, and for this reason a pair of plates 8, 9, pivoted on the pin 10, are provided. It is only when these pivoted plates are withdrawn from the handle and positioned as shown in Figs. 3 and 6, that the cord tips 7 can be inserted and withdrawn from the apertures 5′, 6′. The function of plates 8 and 9 is perhaps best illustrated in Fig. 7, from which it will be readily observed that when these plates are in their normal position as therein shown, the cord tips 7 are retained within their respective recesses 3′. Any pull on the cords when the cord tips are engaged with the resilient conductors and locked in their respective recesses 3′ by means of the plates 8 and 9 serves only to tighten the grip of the latter on the cord tips so that the engagement is, for all practical purposes, positive in character. The free ends of the pivoted plates 8, 9 are provided with apertures 11, to which the tie cord 12 may be secured, as shown in Fig. 1. In this case the tie cord serves the double purpose, first in performing its usual function of taking the strain off the conductor cord, and second that of holding the plates 8, 9 in their locked positions. In the present instance the pivot pin 10 is a machine screw which serves to hold the two handle parts 3, 4 together.

It will be recognized that many modifications may be made in the plug structure described without departing from the spirit and scope of the invention, and it is therefore to be understood that the invention is not in any way limited except by the scope of the appended claims.

I claim:

1. A releasable electrical connector comprising a resilient conductor having a free end portion adapted to engage a wirelike conductor, said resilient conductor being operable in response to being flexed into an off-normal position to grip said wirelike conductor, a member having means for engaging and assisting in the retention of the wirelike conductor in a position wherein it is gripped by said resilient conductor, and a second member movable relatively to said first-mentioned member, said members being operable conjointly to retain the wirelike conductor in a position wherein it continues to be gripped by said resilient conductor.

2. A releasable connector comprising a resilient conductor having an apertured free end portion adapted to receive a wirelike conductor, said resilient conductor being operable in response to being flexed into an off-normal position to grip said wirelike conductor, a member having a recess for engaging and assisting in the retention of the wirelike conductor in a position wherein it is gripped by said resilient conductor, and a pivoted member rotatable relatively to

said first-mentioned member, said pivoted member being operable to retain the wirelike conductor in the recess in said first-mentioned member whereby said wirelike conductor continues to be gripped by said resilient conductor.

3. In a connector plug of the telephone type, a plug portion adapted to be inserted in a spring jack, a hollow handle for said plug, a resilient conductor disposed within said handle and connected to said plug portion, said resilient conductor having a free end portion adapted to engage a wirelike conductor and operable in response to being flexed into an off-normal position to grip said wirelike conductor, said handle having means for engaging and assisting in the retention of the wirelike conductor in a position wherein it is gripped by said resilient conductor, and a member movable relatively to said handle and operable conjointly with said handle to retain the wirelike conductor in a position wherein it continues to be gripped by said resilient conductor.

4. In a connector plug of the telephone type, a plug portion adapted to be inserted in a spring jack, a hollow handle for said plug, a resilient conductor disposed within said handle and connected to said plug portion, said resilient conductor having a free end portion apertured to receive a wirelike conductor and operable in response to being flexed into an off-normal position to grip said wirelike conductor, said handle having a recess in which said wirelike conductor is seated when grippingly engaged with said resilient conductor, and a pivoted member rotatable relatively to said handle, said pivoted member being operable to retain the wirelike conductor in the recess in said handle whereby said wirelike conductor continues to be gripped by said resilient conductor.

5. In a connector plug, a plug portion comprising tip and sleeve conductors, a pair of resilient conductors connected, respectively, to said tip and sleeve conductors, each of said resilient conductors having an apertured free end portion adapted to grippingly engage a wirelike conductor, a two-part hollow handle embracing said plug portion and enclosing said resilient conductors, each part of said handle having a recess for receiving and assisting in the retention of one of the wirelike conductors in gripping engagement with its respectively associated resilient conductor, and a pair of pivoted plate members each adapted to cooperate with one of the parts of said handle in retaining one of the wirelike conductors in the recess therein whereby said wirelike conductors continue to be gripped by said resilient conductors.

6. In a connector plug, a plug portion comprising tip and sleeve conductors, a pair of resilient sheet metal conductors connected respectively to said tip and sleeve conductors, and each having an apertured free end portion adapted to receive and grippingly engage a wirelike conductor, a two-part hollow handle of insulating material embracing said plug portion and enclosing said resilient conductors and a pair of plate members pivotally attached to said handle, said resilient conductors, said handle, and said plate members being operable conjointly to retain the wirelike conductors in gripping engagement with said resilient conductors.

In testimony whereof I affix my signature.

LOUIS G. PACENT.