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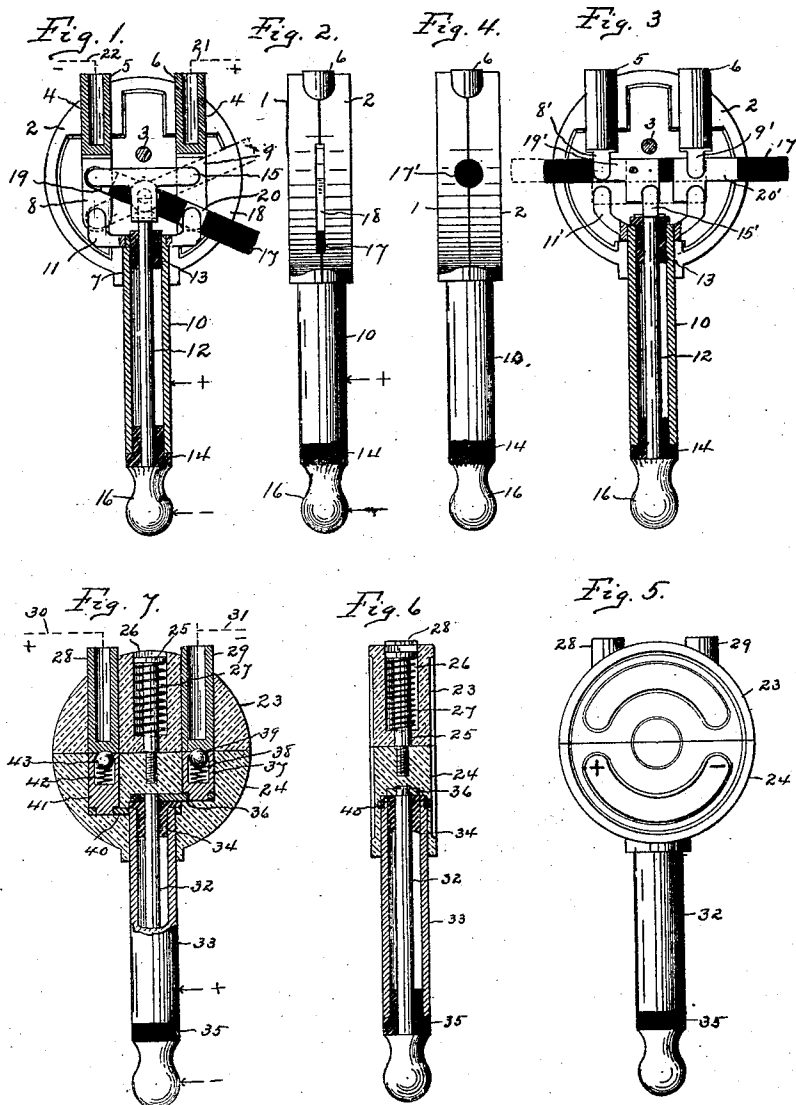
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POLE CHANGING JACK PLUG

Filed June 18, 1924

2 Sheets-Sheet 1



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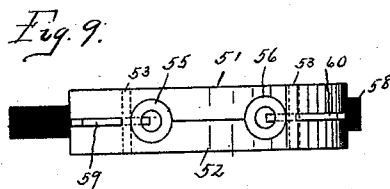
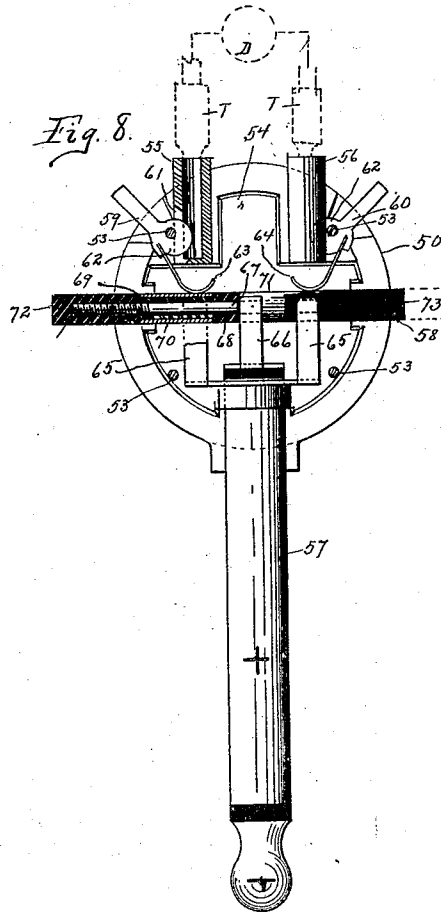
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POLE-CHANGING JACK PLUG.

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In the operation of radio-telephone receiving sets, it very often occurs that the changing or reversing of the receiver leads will result in clearer and better reception. Again, it is often found that incorrect receiver connections, that is, wrong polarity connections, will result in "bleeding" the receiver magnet of its permanent magnetism, and that it will gradually become weaker until it becomes practically useless. To correct this difficulty requires, ordinarily, the shifting of the leads either at the receiver or at the plug, an operation that consumes time and is otherwise inconvenient; and while it is being done the receiver head set must be removed, so that the results of the change cannot be quickly observed.

The object of this invention is to provide a pole changing device within the plug, so that current polarity leading to the receiver may be changed, and the results thereby obtained may be observed or "listened to" without shifting the headset or changing any other previously made adjustments, thereby affording the important and often necessary time saving element in radio reception.

In the accompanying drawing, three distinct embodiments of the improvement are shown, viz: the switch lever type, the push button type and the swivel type; in each case, the usual outlines of the plug are retained, and the necessary operating elements are enclosed within the contour of the plug handle. In the drawing,

Figure 1 is a longitudinal sectional view of a plug, showing the pole-changing mechanism within the handle.

Figure 2 is an edge view of the plug.

Figure 3 is a sectional view of a plug of the push button type.

Figure 4 is an edge view of the same.

Figure 5 is a plan view of a plug of the swivel type.

Figure 6 is a longitudinal sectional view of the same taken at right angles to the face.

Figure 7 is a sectional view of the same in a plane parallel to the face.

Figure 8 is an inside elevational view of a modified form a push button reversing plug, partially in section.

Figure 9 is a top plan view of the same.

The general outlines of the plug are of the usual shape, the handle consisting of a pair of mating disk sections 1, 2, each of

which is recessed so as to form a hollow interior to contain the operative parts. The sections 1, 2 are held together by a screw bolt 3, and are made of suitable insulating material, molded to shape, with semi-cylindrical recesses 4, 5 formed therein to secure the sockets 5, 6 in place and also a recess 7, in which the plug terminals are secured.

The sockets 5, 6 are each provided with flat extension contacts 8, 9. The plug terminal consists of a tubular electrode 10, secured in the recess 7, and having at its inner end a two armed contact 11, in alignment with, but spaced away from, the ends of the contacts 8, 9.

The electrode 12, extends through the tube 10 with insulation 13, 14 at the ends as shown, and terminates at the inner end in a T-shaped contact 15, the ends of which are in alignment with, but spaced away from the contacts 8, 9, and has at the outer end a terminal head 16.

Pivoted to the handle section 2 is a lever 17, of insulating material, having one end extending out through the slot 18; the lever swings between the contacts 8, 9 and the electrode contacts 11 and 15, and is provided with metal contact ferrules 19, 20, in position to engage the several contacts as the lever is swung from one position to the other.

Assuming that current enters the plug through the electrode 10, it will be noted that a metallic path is open to it by way of contact 11, ferrule 20, extension contact 9, socket 6, to the lead wire 21 to the receiver or other instrument in circuit, returning through the lead wire 22, socket 5, extension contact 8, ferrule 19, contact 15, to electrode 12, terminal head 16, and so back to the source of current. By shifting the lever 17, to the dotted line position shown, the direction of the current will be reversed through the lead wires 21, 22, as will be readily seen by retracing the metallic line.

Thus, by shifting the lever 17, the direction of the current through the lead wires may be changed as often as desired without otherwise shifting any of the external connections.

In the form shown in Figs. 3 and 4, the same results may be obtained by shifting the insulating push rod 17' endwise through the body of the handle. On the push rod two L-shaped contacts 19', 20' are secured in

position to make contact with the contacts 8', 9', the two-armed contact 11', and the contact 15', thereby accomplishing the same results as above described.

In the form shown in Figs. 5, 6 and 7, the handle is made up of the two half disk sections 23, 24, pivotally connected by the shouldered bolt 25 so that the section 23 may swivel upon the section 24. In order that the two sections may be yieldingly secured together, the bolt 25 has a long shank extending into a socket 26, with the coiled spring 27 surrounding the shank of the bolt between its head and the bottom of the socket. The section 23 has two lead sockets 28, 29, to receive the plugs on the ends of the two lead wires 30, 31, said sockets being molded into the composition from which the section is made and having their lower ends flush with the flat face of the section. The other section 24 has the plug molded therein, with the electrode 32 within and insulated from the tubular electrode 33, by the insulation 34, 35.

The electrode 32 has a lateral arm 36 secured to its inner end, from which a socket contact 37 extends to the flat face of the section, with the spring 38 and contact ball 39 in said socket contact, in position to engage a slight indentation in the inner end of the lead socket 29.

The tubular electrode 33 is provided with a lateral arm 40 for engagement with an indentation in the inner end of the lead socket 28. When the section 23 is given a half turn about the bolt 25 the two lead sockets 28, 29 will be shifted to contact respectively with the contact balls 43 and 39, thereby changing the current direction in the lead wires 30, 31.

In the form shown in Figs. 8, 9, the general contour of the structure is retained but the internal connections are slightly modified. The handle 50 is made up of two discs 51, 52 connected together by rivets 53, so as to form an internal recess 54. Two lead sockets 55, 56, and a plug terminal 57, are inserted between the two sections 51, 52 in recesses provided therefor, and held in place by means of the rivets 53. A lateral aperture is formed between the two sections 51, 52, through which the push pin pole changer 58 is mounted to slide back and forth. The two sockets 55, 56, into which the circuit lead terminals are inserted, are provided with gripping dogs, 59, 60, said gripping dogs being respectively pivoted upon certain of the rivets 53. The sockets are each provided with a lateral slot 61 into which the eccentric disc-like end 62, of the dog projects for engagement with the lead terminal as T. The dogs have extending arms, so that they may be gripped between the thumb and finger and simultaneously release both of the lead terminals. In order that the lead

terminals may be held within the sockets against accidental displacement, each of the dogs is provided with a flat spring 63, 64, extending downwardly and inwardly with upturned end bearing upon a contact section of the push pin 58. These springs 63, 64, therefore constitute connections between the plug terminal contact elements 65, 66 and the lead sockets 55, 56.

The push pin pole changer is made up of the central rod 67, screw threaded at its ends and having mounted at its middle an insulating collar 68. On each side of the collar 68 is an insulating tube 69, outside of which are the tubular connectors 70, 71. These two connectors are held rigidly in place by the insulating end pieces 72, 73 which are screwed on to the screw threaded ends of the rod 67, the whole forming a push pin of cylindrical outline of a size to be received into the aperture formed between the two sections 51, 52. The two tubular contact sections 70, 71 are so shaped and positioned as to afford a circuit through the device as follows, assuming the parts to be in the position shown in Fig. 8: from the tubular electrode of the terminal 57, through the spring extension 65 to the contact 70, thence through spring 63, dog 59, socket 55 and out through the lead terminal T inserted therein through the translating device D, whatever it may be, returning through the other lead terminal T and the socket 56, dog 60, spring 64 tubular contact 71, spring contact 66, to the other plug electrode. On reversing the position of the push pin, the direction of that portion of the current between the sockets 55, 56, will be reversed as will be understood.

The provision of the gripping dogs 59, 60 affords an added convenience to the device and insures the electric connection of the plug in the circuit against accidental displacement, at the same time rendering the detachment of the lead terminals from the plug a very simple operation; namely, that of pinching together the operating arms of the dogs 59, 60. Gripping devices of the same character may be applied to the other forms of plug, if desired and it is not deemed necessary to illustrate or further describe them.

From the foregoing description it will be seen that by the use of any one of the forms of jack plugs, the current direction through the lead wires may be quickly and conveniently changed without disconnecting any of the lead wire connections.

While the device as described is especially adapted for use in changing the current polarity of telephone receivers, yet I do not wish to confine it to that use alone since it may be used in any relation where it is necessary or desirable to change or reverse current polarity.

The forms shown and described illustrate the embodiment of my invention yet the principle of the invention is readily capable of embodiment in other forms which come within the scope and intent of the appended claims.

I claim:—

1. A jack plug comprising a handle, composed of two equal parts, receiver sockets engaged in said handle, a plug comprising concentric electrodes extending within said sectional handle and means within said handle whereby said electrodes may be alternately connected respectively with said sockets.

2. A jack plug comprising a handle having a pair of uniform mating sections secured together, conductor sockets and a plug having concentric electrodes extending into the body of said handle and means located between the sections of said handle for electrically connecting each of said electrodes selectively with each of said sockets.

3. A jack plug comprising a handle composed of two duplicate sections having a chamber therebetween, a pair of sockets extending into the chamber, a pair of concentric positive and negative electrodes forming a plug both electrodes extending into the chamber in said handle, and means operative within said handle for alternately connecting said electrodes with said sockets for effecting a change of polarity in said sockets.

4. A jack plug comprising a pair of mating disk sections, means for rigidly securing said sections together to form a plug handle, a pair of conductor receiving sockets clamped between said sections, each having an extension contact thereon, a pair of concentrically mounted and electrically insulated electrodes forming a plug clamped between said sections, each of said electrodes being provided with an extension contact, and means located between said sections for alternately connecting the extension contacts of said electrodes respectively with each of said contact extensions, whereby the polarity of said sockets may be reversed at will.

5. A jack plug comprising a cylindrical handle having flat sides, receiver sockets within said handle, a plug comprising con-

centric positive and negative electrodes extending from within said handle, means within said handle extending outwardly for manipulation for alternately connecting said electrodes respectively with said sockets, and means for detachably gripping an external lead terminal in each of said sockets.

6. A jack plug comprising a sectional handle, receiver sockets within said handle, a plug comprising concentric electrodes extending within said sectional handle, means movably within said handle whereby said electrodes may be alternately connected respectively with said sockets, and means for detachably gripping a terminal in each of said sockets.

7. A jack plug comprising a pair of mating sections secured together to constitute a handle, sockets and a plug having two electrodes extending into the body of said handle, means located between said sections of said handle for electrically connecting each of said electrodes alternately with each of said sockets, and means for detachably gripping an external terminal in each of said sockets.

8. A jack plug comprising a sectional handle, a pair of sockets extending into said handle, a pair of concentric positive and negative electrodes forming a plug extending from within said handle, and a bar slidably connected with said handle for alternately connecting said electrodes with said lead sockets for effecting a change of polarity in said sockets.

9. A jack plug comprising a pair of mating disc sections, means for rigidly securing said sections together to form a plug handle, a pair of receiving sockets clamped between said sections, each having an extension contact thereon, a pair of concentrically mounted and electrically insulated electrodes forming a plug clamped between said sections, each of said electrodes being provided with an extension contact, a bar slidable between said sections for alternately connecting the extension contacts of said electrodes respectively with each of said contact extensions, whereby the polarity of said lead sockets may be reversed at will.

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