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W. KAISLING

1,813,167

PLUG

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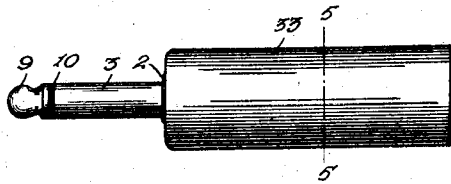


Fig. 1.

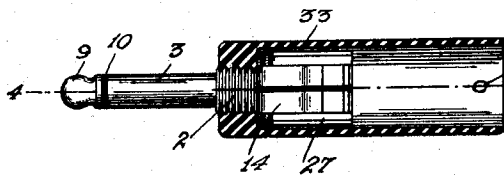


Fig. 2.

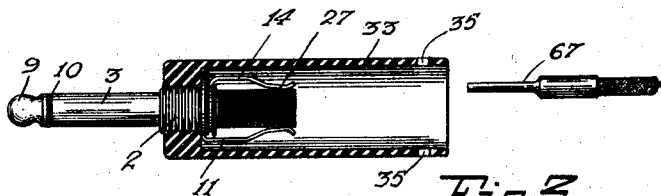


Fig. 3.

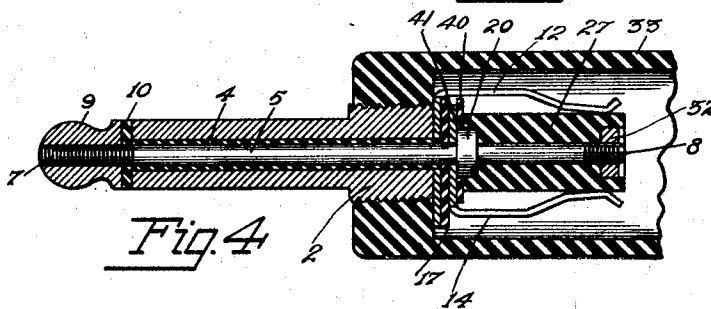


Fig. 4.

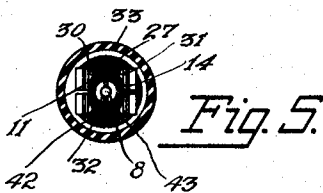


Fig. 5.

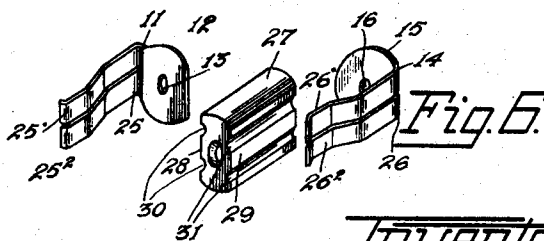


Fig. 6.

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UNITED STATES PATENT OFFICE

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PLUG

Application filed August 16, 1923. Serial No. 857,678.

My invention relates to improvements in connecting plugs, and has to do more particularly with that class of plugs which are adapted to have connected thereto one or more instrumentalities. The plug of my invention is particularly adapted for use in connection with radio receiving sets to which may be connected head phone sets for connecting them in the various circuits where jacks are provided.

An object of my invention is to construct a connecting plug of a few and simple parts so arranged as to be easily assembled and at the same time very durable and strong.

It is desirable at times to connect more than one head phone set to the connecting plug so that when the connecting plug is inserted into the various jacks to connect to the various circuits more than one individual may listen in at the same time. Various types of plugs have been marketed to accomplish the multiple connection of head phone sets and suitable terminal means in the form of screw fasteners are provided for fastening the cord tips of the head set phones to the respective terminals of the connecting plug. This type of screw terminal has its disadvantages in that when connecting more than one set of head phones to the plug terminals, the cord tips must be held in position while the terminal screw is tightened to hold the cord tips in position.

To overcome these objections I have designed a connecting plug which is provided with spring terminal means, and a feature of my invention is the provision of a pair of spring terminal means for the respective contacts of the connecting plug. The cord tips of the head phone set to be connected to the plug of my invention are inserted under the spring terminals and the tension of the spring terminals is such as to hold them in engagement therewith and against displacement. The stay cord of the cord of the head phone set is tied to the sleeve of the plug to take up the strain of the cord, and also prevent the cord tips from being dislodged.

For a more complete understanding of my invention, reference may be had to the accompanying drawings in which like reference

characters in the several views denote like parts, and in which

Fig. 1 is a view of the connecting plug assembled;

Fig. 2 is a view of the connecting plug with the handle or sleeve in section to clearly illustrate the plug;

Fig. 3 is a view similar to Fig. 2 illustrating another view of the plug;

Fig. 4 is an enlarged sectional view taken on the line 4—4 of Fig. 2.

Fig. 5 is a sectional view along the line 5—5 of Fig. 1; and

Fig. 6 is a disassembled perspective view of the spring terminals and an insulating block associated therewith.

Referring now more in detail to my invention as illustrated in the accompanying drawings, the plug comprises a main threaded body 2 and a cylindrical sleeve portion 3 which is provided with a central orifice which receives an insulating sleeve 4. A conducting stem or bolt 5 extends through the insulating sleeve 4 and its forward end is provided with a threaded portion 7, and its rear end with a threaded portion 8. A tip contact 9 is provided with a suitable tapped orifice which has screw threaded engagement with the threaded end 7 of the conducting bolt 5. The tip contact 9 is insulated from the sleeve contact portion 3 of the plug by means of an insulating bushing 10. A spring terminal 11, angular in shape, is provided with a circular disk portion 12, and is provided with a central orifice 13 of a size to receive the protruding end of the sleeve of insulation 4. This disk portion 12 of the spring terminal 11 registers with the face of the main body portion 2 of the plug, it being insulated from the conducting bolt 5 by means of the insulating sleeve 4. The terminal 11 forms the terminal of the sleeve portion 3 of the plug. A terminal 14, angular in shape, is also provided with a disk portion 15, and is provided with a central orifice 16 of a size to receive the conducting bolt 5. An insulating bushing 17, provided with a central orifice of a size to receive the connecting bolt 5, rests between the disk portion 12 of the terminal 11 and the disk portion 15 of the

terminal 14 to insulate one from the other.

The conducting bolt 5 is provided with an enlarged portion 20 and the shoulder thus formed by the enlarged portion 20 registers with the face of the disk portion 15 of the terminal 14, and forms a conducting means between the tip contact 9 and its terminal 14. The tip contact 9 when threaded into position on the threaded end 7 of the bolt 5 draws the enlarged portion 20 against the disk portion 15 of the terminal 14, clamping the members 11, 17 and 14 in position. The rearwardly extending portion 25 of the terminal 11 is bifurcated as is also the rearwardly extending portion 26 of the terminal 14 for purposes as will presently be described. The bifurcated ends 25 and 26 of the terminals 11 and 14 are formed so as to bend inward, and an insulating block 27 is provided with a central orifice of a size to receive the end 8 of the conducting bolt 7. The block 27 is provided with flat faces 28 and 29, which respectively engage the bifurcated ends 25 and 26 of the terminals 11 and 14 when the block 27 is inserted between the said ends 25 and 26 to force them outward against their normal tension. The faces 28 and 29 of the block 27 are provided respectively with grooves 30 and 31, there being two grooves 30 in the face 28 in alignment with the bifurcations 25' and 25² of the end 25 of the spring 11 and grooves 31 of which there are two in the face 29 of the block 7 are in alignment with the bifurcations 26' and 26² of the end 26 of the terminal 14. The block 27, which is positioned between the ends 25 and 26 of the terminals 11 and 14, is secured in position by means of a slotted nut 32 which has screw-threaded engagement with the threaded end 9 of the conducting bolt 5, the said nut 32 resting in a suitable orifice in the end of the block 27. A thin strip 40 of suitable insulation material is provided with an orifice 41 of a size to permit the insulation strip 40 to be slipped over the intermediate enlarged portion 20 of the bolt 5 and when the same is in position it rests against the disk portion 15 of the terminal 14. The strip 40 is substantially rectangular in shape and rests between the extended portions 25 and 26 of the terminals 11 and 14 with its sides 42 and 43 parallel with the extended portions 25 and 26 and in proximity thereto. The block 27 when positioned as just described by the nut 32 clamps the insulation strip 40 between its bottom face and the disk portion 15 of the terminal 14 and the sides 42 and 43 being parallel with the inner faces of the extended portions 25 and 26 of the respective terminals 11 and 14 will thus prevent the terminal 11 from rotating relative to the terminal 14. A form of cord tip that may be used is illustrated at 67 in Figure 3.

Now to insert the cord tips of the head

phone set into engagement with the tip 11 and sleeve terminals 14, of the plug all that is necessary is to force the cord tips into the grooves 30 and 31 of the block 27 against the normal tension of the bifurcations 25' and 26' of the terminals 11 and 14. The tension of the bifurcations 25' and 26' are such as to hold the cord tips in the grooves 30 and 31 against displacement and insure a positive connection between the terminals 11 and 14 and the cord tips at all times. I provide a protective sleeve or handle 33 of suitable insulating material which has screw-threaded engagement with the threaded portion 2 of the plug, and serves as a cover or enclosing member for the plug and also as a handle for grasping the plug. The handle 33 is also provided with a pair of orifices for the stay cords of the head set cords for purposes as will presently be described.

To relieve the strain from the cord should the plug be accidentally withdrawn by grasping the cord instead of the handle of the plug, a stay cord is put through the orifice 35 in the handle 33 of the plug and ties so as to allow slack in the individual conductors leading from the cord tips to the cord so that the cord tips will not be accidentally withdrawn from under the bifurcations 25 and 26 of the terminals 11 and 14.

To connect another head set to the plug, all that is necessary is to insert the cord tips of the second head set into the grooves 30 and 31 in the block 27 under the bifurcations 25² and 26² in which position the cord tips are connected to the terminals 11 and 14. It may be seen that it is a very simple matter to connect a head set to the plug of my invention without the usual trouble of loosening screws and holding the cord tips in position while the screw is again tightened, and especially so when trying to connect two head sets to the plug at the same time. The means of holding the cord tips in position in the plug of my invention is very advantageous over other plugs as the method of connecting the cord tips is very simple.

While I have described a particular form of my invention it is to be understood that changes and modifications will readily suggest themselves to those skilled in the art and I therefore aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

What I claim as new and desire to secure by United States Letters Patent, is as follows:—

1. A connecting plug of the class described having a sleeve contact extension, a tip contact, a conducting bolt, spring terminals for said tip and sleeve contacts provided with rearwardly extending bifurcated members, a block having a plurality of grooves in its faces and secured to said conducting bolt for separating said spring terminals, said con-

ducting bolt securing said tip contact in association with said sleeve contact and securing said spring terminals in conductive relation with their respective contacts to form engaging means for multiple connections.

2. A connecting plug of the class described having a sleeve contact extension, a tip contact, a conducting bolt, spring terminals for said tip and sleeve contacts, said conducting bolt securing said tip contact in association with said sleeve contact and for securing said spring terminals in conductive relation with their respective tip and sleeve contacts, rearwardly extending bifurcated portions for said springs forming engaging means for multiple connections, and an insulating block secured to said conducting bolt and adapted to separate said spring terminals.

3. A connecting plug of the class described having a sleeve contact extension, a conducting bolt, a tip contact, spring terminals for said tip and sleeve contacts, rearwardly extending bifurcated spring members integrally formed with said terminals to form engaging means for multiple connection, a block composed of insulating material and having a plurality of grooves in its faces for separating said bifurcated spring members, said conducting bolt securing said tip contact, terminal springs and block to form a unitary structure.

4. A connecting plug of the class described having a sleeve contact extension, a tip contact, a conducting bolt for securing said tip contact to said sleeve extension, spring terminals for said tip and sleeve contacts secured by said bolt in conductive relation respectively with said tip and sleeve contacts, rearwardly extending bifurcated members integrally formed with said spring terminals forming engaging means for multiple connections to said terminals and a block positioned by said bolt for separating said bifurcated members.

5. In a connecting plug of the class described having a sleeve contact, a tip contact, a conducting bolt for securing said tip contact in association with said sleeve contact extension, spring terminals secured by said bolt in conductive relation respectively with said tip and sleeve contacts a block having a plurality of grooves in its opposite faces, said block secured to said sleeve by means of said bolt, rearwardly extending bifurcated members for said spring terminals, said bifurcated members aligning with said grooves for receiving connections to said spring terminals.

6. A connecting plug of the character described including a hollow sleeve member, a tip member, contact springs provided with rearwardly extending bifurcated members, a central bolt extending through said hollow sleeve securing said contact springs and tip member to said sleeve member, said bifurcated members forming engaging means for

a plurality of connections, and an insulating block having a centrally located orifice arranged to fit over the said central bolt for preventing one contact spring from rotating relative to the other contact spring.

7. A connecting plug of the character described including a hollow sleeve member, a tip member, contact springs provided with rearwardly extending bifurcated members, said bifurcated members forming engaging means for multiple connections, a central bolt extending through said hollow sleeve securing said contact springs and tip member to said sleeve member, and an insulating block having a centrally located orifice arranged to fit over the said central bolt for preventing one contact spring from rotating relative to the other contact spring, and an insulating stud in between said contact springs.

8. A connecting plug of the character described including a hollow sleeve member, a tip member, contact springs, a central bolt extending through said hollow sleeve securing said contact springs and tip member to said sleeve member, and an insulating block having a centrally located orifice arranged to fit over the said central bolt for preventing one contact spring from rotating relative to the other contact spring, and an insulating stud in between said contact springs, said insulating stud having grooves adapted to receive contact members.

9. A connecting plug of the character described including a hollow sleeve member, a tip member, contact springs, a central bolt extending through said hollow sleeve securing said contact springs and tip member to said sleeve member, and insulating means for preventing one contact spring from rotating relative to the other contact spring, and an insulating stud in between said contact springs, said insulating stud having grooves adapted to receive contact members, and means for securing said insulating stud to said central bolt.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 11th day of August, 1923.

WILLIAM KAISLING.