

Oct. 8, 1946.

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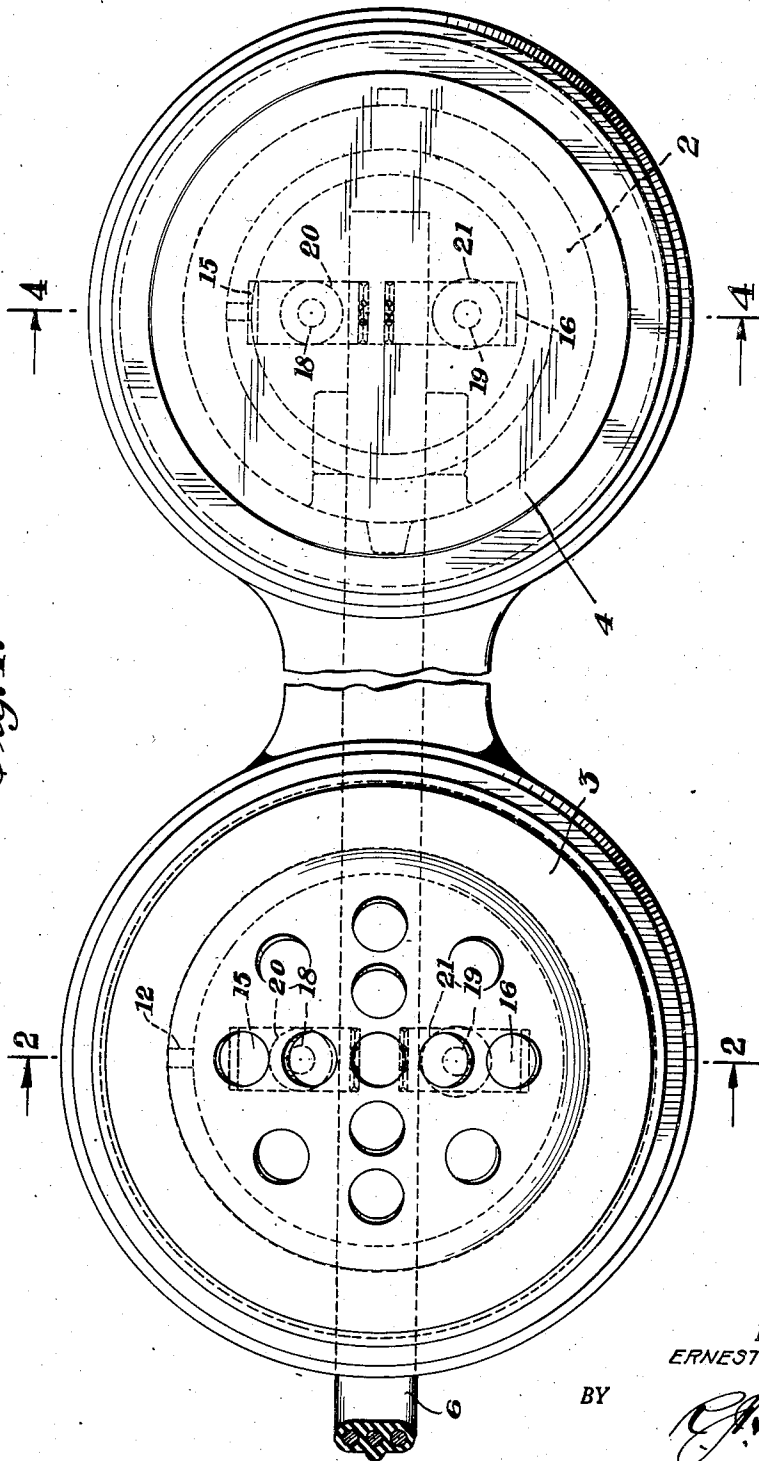
2,408,796

TELEPHONE INSTRUMENT

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3 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

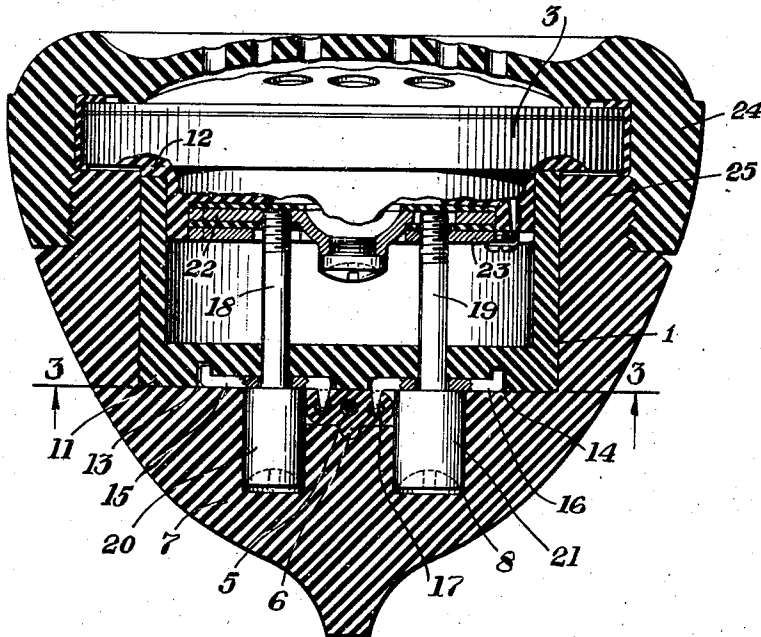
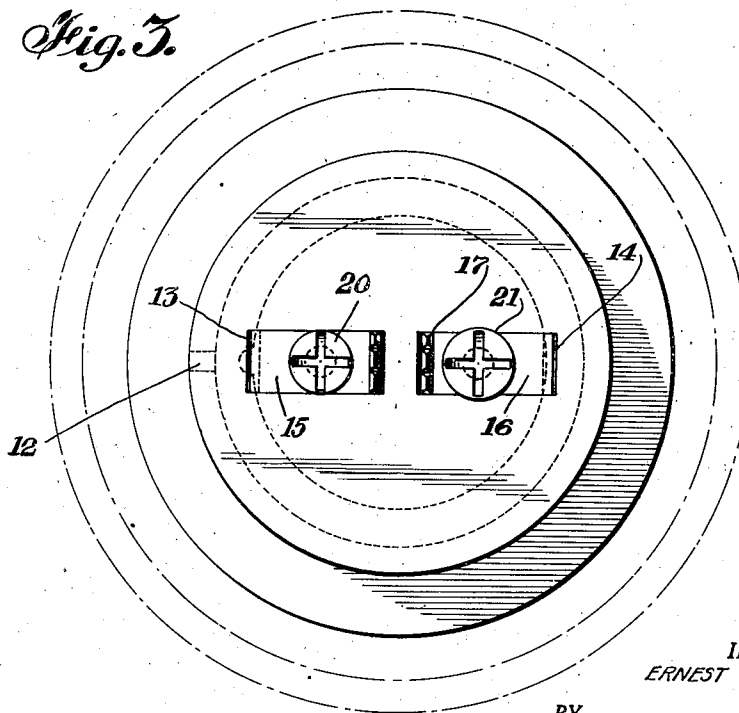


Fig. 3.



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Fig. 4.

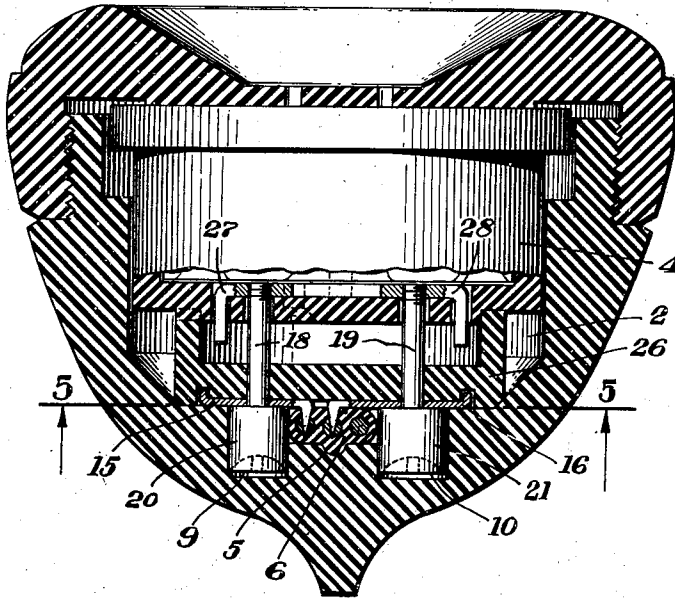
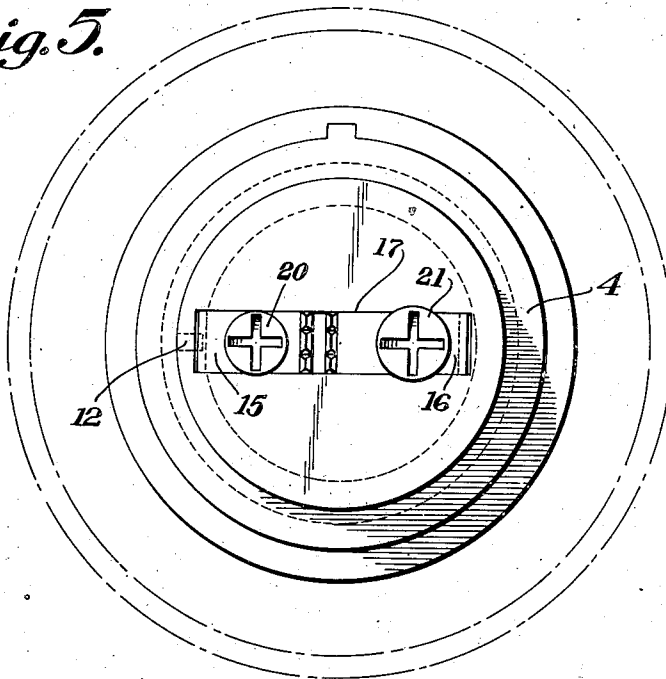


Fig. 5.



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TELEPHONE INSTRUMENT

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Application July 29, 1944, Serial No. 547,171

10 Claims. (Cl. 179—101)

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This invention relates to telephone transducer instruments and particularly to means for connecting a multi-conductor cord to the transmitter and receiver capsules of telephone handsets.

An object of the invention is to provide transmitter and receiver capsules especially for use with the so-called tip-less cordage but which are so arranged that by removing certain portions by a simple operation they are suitable for use in standard handsets arranged for use with the conventional tipped cords.

In my copending application, Serial No. 438,774, filed April 13, 1942, there is disclosed a telephone handset provided with a so-called tip-less cord which is threaded in a channel formed in the handset handle. The cord extends through an aperture in the transmitter capsule casing and down the handle from the transmitter capsule casing and down the handle from the transmitter cavity to the receiver cavity. The transmitter and receiver transducer capsules are provided, in this application, with connectors formed with sharp prongs which pierce the cord and make electrical connection with the proper stranded conductors when the transmitter and receiver caps are screwed down. It will be appreciated that this construction necessitates the use of specially constructed transmitter and receiver capsules. It is, therefore, another object of the present invention to provide adaptor devices which will permit the use of transmitter and receiver capsules not equipped with the pronged connectors in a handset of the kind employing a continuous tip-less cord extending between the transmitter and receiver cavities.

These and other objects and features of the invention will be clear from a reading of the following description in conjunction with the accompanying drawings, in which:

Fig. 1 is a plan view of a handset with the handle broken away, and showing, in broken lines, the disposition of the cord piercing adaptors;

Fig. 2 is a partial section of the transmitter end taken on the line 2—2 of the Fig. 1;

Fig. 3 is a section taken on the line 3—3 of Fig. 2;

Fig. 4 is a partial section of the receiver end taken on the line 4—4 of Fig. 1; and

Fig. 5 is a section taken on the line 5—5 of Fig. 4.

Referring first to Figs. 1, 2 and 4, the handset comprises a molded shell having cavities 1, 2 at the ends for accommodating the transmitter and receiver capsules 3 and 4, respectively. A channel 5 is molded along the length of the handset

to receive a flat three-conductor cord 6 which lies at the bottom of each cavity 1, 2 and passes through the handle. The rubber or plastic cover of the cord 6 is formed with a longitudinal ridge which fits into a corresponding groove in the channel 5 and thus insures that the cord is correctly positioned therein. The cavities 1 and 2, adapted to receive the capsules 3 and 4, have molded in their bases two socket depressions 7, 8 and 9, 10, respectively, which are provided for a purpose which will be clear as the description proceeds.

The adaptor 11, Fig. 2, for the transmitter capsule comprises a molded plastic cup-shaped member, the open end of which is dimensioned to fit over the raised back of the transmitter capsule 3 and is provided with a key way 12 adapted to register with a ridge on the back of the transmitter capsule in order that when the member 11 is fitted thereon it registers in the correct position. The other closed end of the cup-shaped member 11 is provided with two depressions 13 and 14 which accommodate the pronged connectors 15 and 16. One end of each connector 15, 16 is turned over to form a lip which projects into a slot in the back of the member 11 whilst the other end of each connector is also bent over at a right angle, the bent portion being formed with three sharp prongs 17.

The cup-shaped member 11 is secured on the back of the transmitter capsule by a pair of metal screw members 18, 19 which pass through apertures in the connectors 15, 16. One end of each of these screw members 18, 19 is formed with a plug 20, 21 whilst the other end is threaded. The threaded end of one of the screw members 18 screws into one electrode terminal 22 of the transmitter capsule whilst the threaded end of the other screw member 19 screws into the other electrode terminal 23 of the transmitter capsule. It will be noted that a clearance in the terminal 23 is provided for the screw member 18 whilst a clearance in the electrode terminal 22 is provided for the screw member 19. The screw members 18 and 19 effect electrical connection between the connectors 15 and 16 and the electrode terminals 22 and 23, respectively. The lengths of the connectors 15 and 16 are such that the prongs on their inner ends will make contact with the two outer conductors of the cord 6.

The screw members 18 and 19 may be made a frictional fit in the member 11 so that they are retained in the member when it is removed from the capsule.

After the cup-shaped adaptor 11 is secured to

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the back of the transmitter capsule 3 by the insertion of the screw members 18 and 19, the unit is placed in the transmitter cavity 1 with the plugs 20, 21 in register with the corresponding sockets 7 and 8 formed in the base of the cavity. The transmitter cap 24 is then screwed on and forces the capsule and adaptor snugly home in the cavity 1, the plugs 20 and 21 being pressed into the sockets 7 and 8. It will be appreciated that the depth of the cup-shaped member 11 is such that when the periphery of the transmitter capsule engages the top edge 25 of the shell, the prongs 17 have pierced the outer conductors of the cord 6 and complete electrical connection between these conductors and the two electrodes of the transmitter capsule.

It will be appreciated that when the portion 11 is removed by unscrewing the screw members 18 and 19 and the capsule is inserted in a standard handset, the centre contact spring in the transmitter cavity will contact the back electrode 22 whereas the off-centre spring will contact the front electrode 23.

The construction of the adaptor 26 for the receiver capsule is shown in Figs. 4 and 5 and is substantially identical with that of the transmitter capsule adaptor 11. The screw members 18 and 19 thread into the respective terminals 27, 28 of the receiver capsule. Since the pronged connectors 15, 16 are required to make connection, respectively, with the center and one outer conductor of the cord 6, the pronged end of the connector 16 is made somewhat longer than the pronged end of the connector 15. To insure that the receiver capsule and the adaptor 26 are inserted in the receiver cavity 2 in the correct position, one of the plugs 20 and its corresponding socket 9 has a slightly larger diameter than that of the other plug 21 and socket 10.

When the adaptor portion 26 is removed and the receiver capsule is inserted in a standard handset the contacts 27, 28 will engage the springs fastened in the receiver cavity.

It will be understood, of course, that the two pronged connectors at the receiver end might be arranged to effect contact with the two outer conductors respectively, and the two pronged connectors at the transmitter end with the center and an outer conductor depending upon the manner in which the conductors of the cord 6 are connected to the substation circuit.

What is claimed is:

1. A telephone instrument comprising a transducer capsule having two electrode terminals, a detachable member shaped at one end to fit on to the back of said transducer capsule, a pair of connectors each having at least one sharp projecting prong, means for locating said connectors on the other end of said member and electrical connecting means between said connectors and said respective electrode terminals.

2. A telephone instrument comprising a transducer capsule having two electrode terminals, a housing shell formed with a cavity for accommodating said transducer capsule, a conductor cord comprising a plurality of parallel conductors, a seating for said cord in the base of said cavity, a cup-shaped member shaped at its open end to fit onto the back of said transducer capsule, a pair of connectors each having at least one sharp projecting prong, a plurality of projecting plugs on the other end of said cup-shaped member, a plurality of corresponding sockets formed in the base of said cavity, means for positioning said connectors on said other end of

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said cup-shaped member in such position that when said capsule and said cup-shaped member are forced home in said cavity with said plugs entering said sockets, the said prongs pierce said cord and make electrical contact with conductors thereof, and electrical connecting means between said connectors and said respective electrode terminals.

3. A telephone instrument comprising a transducer capsule having two electrode terminals, a detachable cup-shaped member shaped at its open end to fit onto the back of said transducer capsule, a pair of connectors each having at least one sharp projecting prong, and threaded screw members for attaching said connectors to said other end of said cup-shaped member, said screw members passing through the interior of said cup-shaped member and threading into said electrode terminals to form electrical connections between said connectors and the respective electrode terminals.

4. A telephone instrument comprising a transducer capsule having two electrode terminals, a housing shell formed with a cavity for accommodating said transducer capsule, a conductor cord comprising a plurality of parallel conductors, a seating for said cord in the base of said cavity, a cup-shaped member shaped at its open end to fit onto the back of said transducer capsule, a pair of connectors each having at least one sharp projecting prong, a plurality of positioning sockets formed in the base of said cavity, threaded screw members for attaching said connectors to said other end of said cup-shaped member in such position that when said capsule and said cup-shaped member are forced home in said cavity said prongs pierce said cord and make electrical contact with conductors thereof, plug-shaped portions formed at one end of said screw members for entering said positioning sockets, and threaded shank portions at the other end of said screw members which pass through the interior of said cup-shaped member and screw into said electrode terminals to constitute electrical connections between said connectors and the respective electrode terminals and to secure said cup-shaped member to said capsule.

5. The combination with a transducer capsule having two electrode terminals of a cord piercing adaptor comprising a cylindrical member shaped at one end to fit onto the back of said capsule, a pair of connectors each having at least one sharp projecting prong, screw means for attaching said connectors to the other end of said cylindrical member and electrical connecting means between said connectors and the electrodes of said capsule.

6. The combination with a transducer capsule having two electrode terminals of a cord piercing adaptor comprising a cup-shaped member shaped at its open end to fit onto the back of said transducer capsule, a pair of connectors each having at least one sharp projecting prong, a pair of screw members each of which passes through an aperture in a respective connector and through the interior of said cup-shaped member and threads into a respective electrode terminal thereby to provide an electrical connection between said connector and said electrode terminal and to secure said cup-shaped member to said transducer capsule.

7. An adapter for making connections to a transducer capsule in a telephone handset comprising a member adapted to fit onto the capsule within the handset, a pair of connectors having

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sharp outwardly extending prongs carried by said member and adapted to penetrate and make electrical contact with conductors carried by said handset, said connectors being insulated from each other, and means electrically to connect said connectors to the terminals of said transducer capsule when said adapter is applied thereto.

8. A telephone instrument comprising a transducer capsule having two electrode terminals, a member shaped at one end to fit onto the back of said transducer capsule, a pair of connectors each having at least one sharp projecting prong, and connecting members for attaching said connectors to the other end of the member by engagement with the electrode terminals to form electrical connections between the connectors and the respective electrode terminals.

9. A telephone instrument comprising a transducer capsule having two electrode terminals, a housing shell formed with a cavity for accommodating said transducer capsule, a conductor cord comprising a plurality of parallel conductors, a seating for said cord in the base of said cavity, a cup-shaped member shaped at its open end to fit onto the back of said transducer capsule, a pair of connectors each having at least one sharp pro-

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jecting prong, threaded screw members for attaching said connectors to said other end of said cup-shaped member in such position that when said capsule and said cup-shaped member are forced home in said cavity said prongs pierce said cord and make electrical contact with conductors thereof, and threaded shank portions at the other end of said screw members which pass through the interior of said cup-shaped member and screw into said electrode terminals to constitute electrical connections between said connectors and the respective electrode terminals and to secure said cup-shaped member to said capsule.

10. The combination with a transducer capsule having two electrode terminals of a cord piercing adaptor comprising a cylindrical member shaped at one end to fit onto the back of said capsule, a pair of connectors each having at least one sharp projecting prong, and means for attaching said connectors to the other end of said cylindrical member thereby forming electrical connections between said connectors and the respective electrodes of said capsule.

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