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2,899,549

ANTENNA AND AUDIO CONNECTOR CABLE UNIT

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Fig. 1.

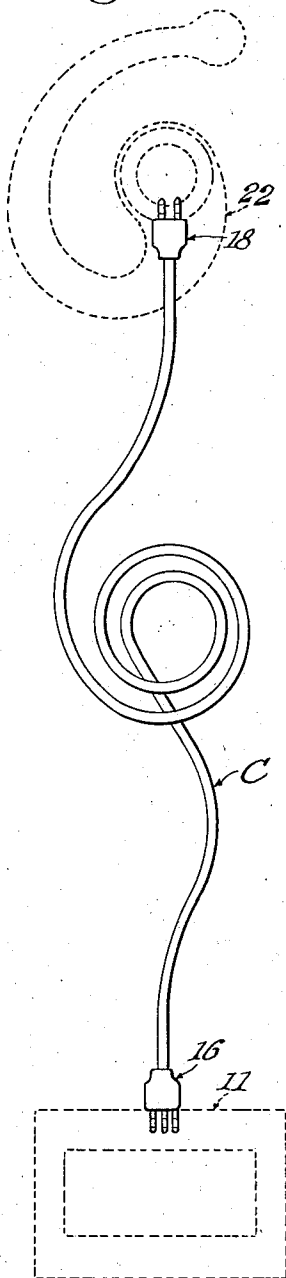


Fig. 2.

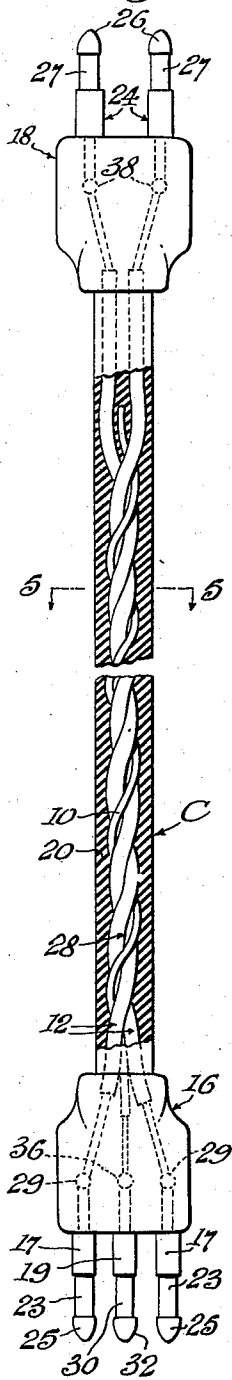


Fig. 3.

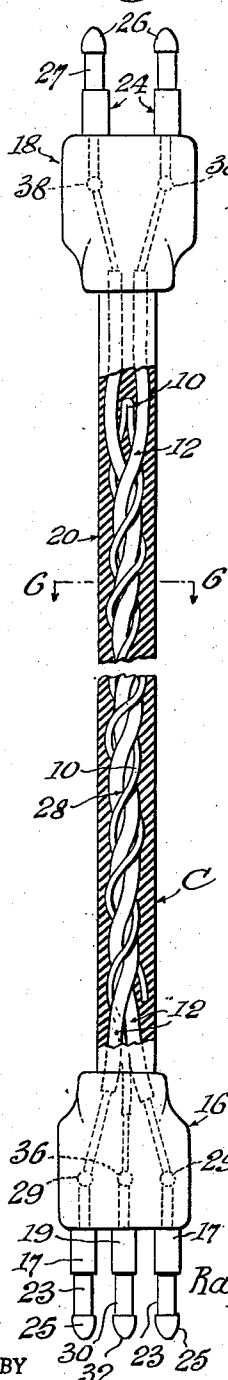


Fig. 4.

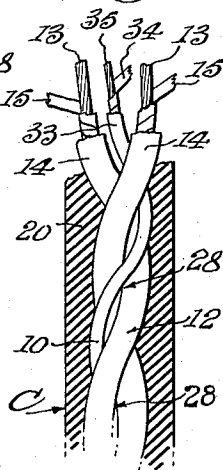


Fig. 5.

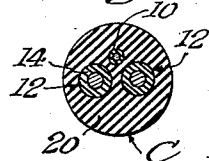
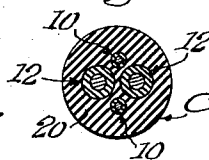


Fig. 6.



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ANTENNA AND AUDIO CONNECTOR CABLE UNIT

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1 Claim. (Cl. 250—16)

My invention relates to a combined conducting and antenna unit.

An important object of the invention is to provide a device of the above-mentioned character which may be worn upon the person and readily concealed thereon, and embodying a cable containing the various elements.

A further object of the invention is to provide a multi-purpose cable device which may be used for conducting current and also as an antenna.

A further object of the invention is to provide a cable having conductors arranged therein and also an antenna.

A further object of the invention is to provide a cable device having an antenna therein and conductors with means for connecting the antenna with a radio circuit or the like when the conductors are connected with an earphone or the like.

A further object of the invention is to provide means for supporting and holding the three terminals which are connected with the conductors and antenna so that they may be readily connected in the circuits when the supporting means is reversed.

Another object of this invention is to provide a novel multi-purpose, composite, self-contained, antenna and audio cable suitable for use with a radio or the like.

Other objects of this invention are to provide a satisfactory light, small, flexible and durable cable containing a concealed radio antenna and audio conductor cords for connecting a pocket radio circuit to an earphone or the like.

There are occasions and circumstances in which concealable and wearable antennas are very desirable. For example, from a personable standpoint, such an advance in antenna design and application enhances the attire or dress of a well groomed man or woman using a pocket radio. In military application, a concealed and wearable antenna is highly desirable in field combat, as it gives no indication to the enemy that a communication set is being carried on the person of combat personnel. In detective work by law enforcement personnel, this method of concealing an antenna may also be used to a good advantage in observing and following the maneuvers of the much wanted criminal.

The foregoing and other objects, features and advantages of my invention will become apparent after a study of the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view illustrating the use to which the cable may be placed;

Fig. 2 is a perspective view of the completed cable having a cutaway section showing the orientation of the antenna of one length with respect to the conductor cables within the cord;

Fig. 3 is similarly a perspective view of the completed cable having a cutaway section showing the twisted orientation of the antenna of a longer length folded back along the audio conductor cords;

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Fig. 4 is a perspective cutaway section showing the structure of Fig. 2;

Fig. 5 is a sectional view on line 5—5 of Fig. 2 looking in the direction of the arrows; and

Fig. 6 is a sectional view on line 6—6 of Fig. 3 looking in the direction of the arrows.

Referring now to the drawings of my new and composite connector cable C, the antenna there shown is of a substantially vertical type when in audio use, with a pocket radio, which comprises a length of conductor wire covered with suitable dielectric material as shown by member 10 in the drawings. Conductor cords are shown as two members denoted by reference numeral 12, in which these two conductors have an outer continuous covering of suitable dielectric material and are secured by their connector means 29 to prongs 17 and by connector means 38 to prongs 24 and spirally twisted about one another (to cancel out harmful coupling effects and extraneous noise interference during use) uniformly for substantially their full length. Conductors 12 and their terminals 17 and 24 are used as a circuit closing means. Antenna means 10 is secured by connector means 36 to connector prong or terminal 19 and is twisted about members 12 by being placed in groove 28 between said members and oriented as shown in either Fig. 2 or Fig. 3 in order to make a neat, strong and compact cable C. By orienting the antenna 10 in this way more antenna capacity is obtained per unit length of cable C. Antenna means 10 and members 12 are detachably attached to the radio circuit 11 by the new and novel reversible three-prong plug 16 having metal conductor prongs 17 and 19, while the two-prong plug 18 on the opposite end of cable means C is attached to the audio conductor members 12 to earphone 22 by connector means 38 and metal prongs 24 of the two-prong plug 18 on the opposite end of cable means C. The cable means C has a suitable outer flexible dielectric covering of synthetic or other suitable material 20. The ends of cable C terminate in plugs 16 and 18 of a similar material comprising the complete cable unit C containing therein antenna means 10 and audio conductor means 12. Prong 17 has a detent engaging recess 23 and an arcuate end surface 25 facilitating quick and easy attaching of the cable C to member 11. Prong 19, likewise has a detent engaging recess 30 and an arcuate end surface 32. Prong 24 of plug 18, for like reasons, has a detent engaging recess 27 and an arcuate end surface 26 for attaching plug 18 to earphone 22. Members 10 and 12 may consist of any suitable conductor cord of the hearing aid variety for audio use. However, members 10 and 12, as shown, are each known in the trade as tinsel cord. As shown, in Fig. 4, member 10 has a stranded synthetic fiber center 35 which is outwardly covered by a spiral wound metal ribbon-like conductor 34 which is externally covered by a suitable tough and flexible synthetic material 33. Member 12, for audio use, likewise, has a stranded synthetic fiber center 13 which is outwardly covered by a spiral wound metal ribbon-like conductor 15 which is externally covered by a like suitable tough and flexible synthetic material 14. The three-prong or terminal members (17 and 19) of plug 16 are symmetrically aligned and are spaced equidistant apart. While plug members 16 and 18 are shown as having male prongs, conventional female terminal connections may be substituted for prong members 17, 19 and 24 in said plug members.

My new aligned three-prong plug 16 has utility, in that, it is a simultaneous two-use plug and is reversible, in the sense, that for each 180 degrees of rotation of this plug about its axis during attachment to the radio circuit the plug is automatically and properly positioned for connection to the pocket radio circuit for imme-

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diate use. This plug has an advantage of convenience and use over a three-prong polarized or unsymmetrical offset plug as a simultaneous two-use or double purpose plug.

Fig. 3 shows a special embodiment of my invention in which the antenna 10 is folded back and rewound about itself and conductors 12 in grooves 28.

My novel antenna and utility cable C may be oriented and assembled as shown, of any suitable materials and manufactured by any suitable method. For example, for audio or earphone use, members 10 and 12, each being of any suitable and flexible hearing aid conductor cord, cable C may be made or manufactured by the following steps, in which, the metal conductor elements of members 12 are securely connected to prong members 17 and 24 by solder, or other suitable means, and members 12 are spirally twisted together (to cancel out harmful coupling effects and extraneous noise interference in use) uniformly for substantially their full length, after which the metal conductor element of antenna member 10 is likewise secured to prong member 19, after which prong 19 is properly placed and held in position between prong members 17, after which member 10 is likewise twisted and arranged in grooves 28 in such fashion, as shown, about audio conductors 12. Then the outer member 20 of cable C may be applied as an outer covering of a synthetic material (for example, a polymerized chloroprene, to which a color additive may be added for appearance, if desired) is sprayed, extruded or molded in place and then cured, after which the plug members 16 and 18 may be molded of the same synthetic material in situ and cured, completing the structure of my new antenna and earphone cable C, after which the completed cable C may be still further treated superficially, waxed and labeled as a new article of manufacture for sale and use. The synthetic covering 20 for audio use should always be of a type which is flexible and is resistant to wear, abrasion and the reaction of salts and oils commonly found in the perspiration of human personnel.

Various changes and modifications may be made in my invention without departing from the spirit and scope thereof. It is to be understood, therefore, that the patent is not limited to the embodiment of the invention de-

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scribed herein or in any manner other than by the scope of the appended claim.

Further objects of invention will become apparent in the following appended claim.

Having thus described my invention, what I claim as new and wish to secure by Letters Patent is:

In combination, a portable pocket radio receiver having terminal means, said terminal means including two terminals for the audio output and a third terminal constituting the antenna input terminal, sound reproducing earphone means having two terminals for receiving actuating currents, and a small flexible cable having terminal means at each end thereof, the terminal means at the first end of the cable having three terminals respectively adapted to engage the said three terminals of the receiver and the terminal means at the second end of the cable including two terminals adapted to engage the two terminals of the sound reproducing earphone means, said cable including wires respectively connecting the audio output terminals at the first end thereof with the two terminals at the second end of the cable, an antenna wire connected to the remaining terminal at the first end of the cable and extending along the length of the cable adjacent the other two wires of the cable, said antenna wire extending from said first end along most of the length of the cable, the several wires of the cable being twisted about each other, the terminal means at the first end of the cable being detachably connected to the terminal means of the radio receiver, and the terminal means at the second end of the cable being detachably connected to the terminal means of the sound reproducing earphone means.

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