Feb. 18, 1930. I. A. BENNETT 1,747,214

ELECTRIC CONDUCTOR WITH IMPROVED GROUND WIRE

Filed Nov. 2, 1928

FIG.1.

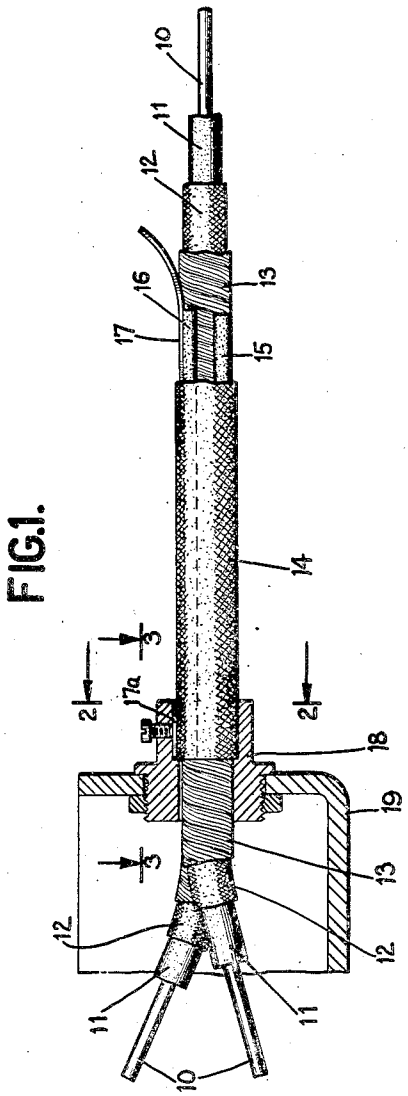


FIG.3.

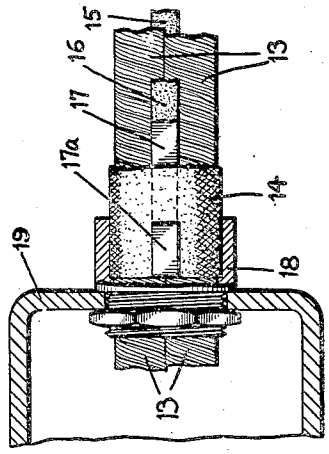
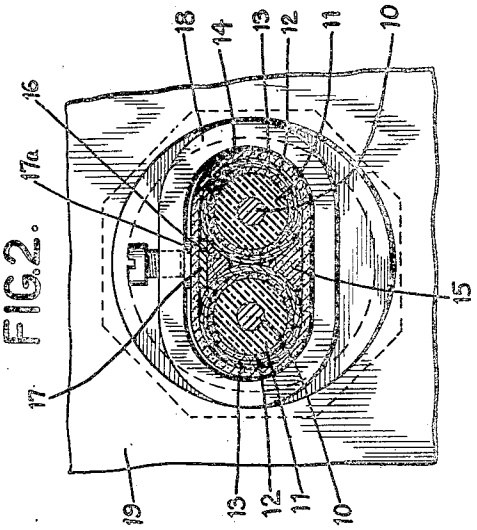


FIG.2.



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UNITED STATES PATENT OFFICE

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ELECTRIC CONDUCTOR WITH IMPROVED GROUND WIRE

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This invention relates to improvements in wire for electric wiring uses.

At the present time, the use of ground return circuits is being widely advocated and in certain instances is being positively required. The common practice is to provide an extra conductor in the wire or cable to serve as a ground return. Notwithstanding the use of distinctive color coding for the current carrying conductors and the ground return wire, inexperienced persons frequently improperly connect this ground return wire or conductor. In many cases it is improperly connected to a current carrying terminal. When this is done the safety factors which are intended to be secured by the employment of the ground return are not only wholly lost but the improper connection absolutely establishes a relatively more dangerous condition. It is accordingly, one of the objects of the present invention to provide a new form of cable wherein the ground return conductor is of such form and configuration that it is not adapted for attachment to the screw terminals which are intended to receive the current carrying conductors.

It is a further object of the present invention to provide a cable with a ground return conductor of such configuration and so disposed in the cable that it is readily adapted to be properly connected to an outlet box or to the exposed metal parts of any unit or appliance which is to be grounded. Furthermore, the disposition and configuration of the ground conductor is such that such conductor will not be confused with the current carrying conductors and improperly connected in lieu thereof.

According to the present invention an electric cable of ordinary form is employed and preferably such cable has the usual braided outer covering. Disposed within such braided outer covering is a flat strip-like conductor which is adapted to serve as a ground return. The flat strip-like configuration of such conductor serves to prevent its being improperly connected to a binding screw terminal and such strip being disposed just below the outer covering can be readily folded back alongside the braid to establish proper ground contact with the metal parts of an outlet box or other parts.

Further objects and advantages will be hereinafter pointed out in the accompanying specification and claims and show in the drawings which by way of illustration show a preferred embodiment of the invention.

In the drawings:

Figure 1 is a fragmentary view of a wire incorporating my improvements and shown associated with an outlet box or other element having exposed metal parts which are to be grounded.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1 and looking in the direction of the arrow.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1 with certain parts broken away to show the interior construction.

In more detail the cable comprises the usual current carrying conductors 10. Each of these conductors is provided with insulation 11 and over such insulation there is disposed the usual braid 12. Over the braid there may be a crinkled paper wrapping as indicated at 13. Around the whole there is the usual braid or other outer covering or wrapping 14. Disposed within this outer braid wrapping 14 and in between the wires are jute filler elements 15 and 16. The latter of these elements is adapted to form a cushion bed for the ground return conductor which will now be described. Such ground return conductor 17 is in the form of a flat strip and is relatively broad. It is disposed just above the filler element and below the braid 14. Such position of the ground return conductor serves to permit its readily being folded backward along the outside of the braid as indicated at 17a in Figs. 1 and 3. In this position it is adapted to be readily clamped to a part such as 18 of an outlet box 19 to thereby properly establish a ground return circuit thereto.

It will be readily understood that the current carrying conductors are of such size and shape (for example being relatively round) that such conductors 10 are easily wrapped around the binding screw terminals which are intended to receive such conduc-

tors. The flat strip-like round return conductor 17 on the other hand is preferably of such breadth that it is too wide for proper association with the binding screw terminals if any attempt be made to improperly wrap such ground return conductor flatwise around a screw terminal. The strip 17 is furthermore relatively too stiff to permit its ready deformation for improper wrapping about a binding screw terminal if any attempt be made to bend it in its flat plane around such terminal. The configuration and disposition of the flat strip, however, immediately suggests even to the inexperienced persons that the proper disposition of such strip in making up a connection is to bend it back along the outside of the braid so that it will properly establish contact with the exposed metal parts which are to be grounded.

It will further be understood that even if the flat ground wire or ground strip 17 is improperly connected through extreme carelessness or ignorance that the special configuration of the strip will afford a ready means for an electrical inspector to detect the improper connection in the wiring and cause the defect to be remedied before the wiring is put into service.

What I claim is:

1. In a cable for electrical wiring uses having the usual insulated current carrying conductors which are adapted to be connected to binding screw terminals and having in combination therewith a ground return conductor disposed within the cable and comprising a flat strip of metal which is of such configuration as to prevent its association with the binding screw terminals which receive the current carrying conductors.

2. In a cable for electrical wiring uses having the usual insulated current carrying conductors which are adapted for connection to binding screw terminals and having the usual braided outer covering and having in combination therewith a ground return conductor comprising a flat relatively broad strip disposed within the cable and below the braided outer covering so as to be readily adapted to be folded back along the outside of the braided cover when a ground return is to be established thereto.

3. In a cable for electrical wiring uses having the usual insulated current carrying conductors adapted for easy wrapping around binding screw terminals and having in combination therewith a ground return conductor disposed within the cable and having a flat strip-like configuration, said strip having such breadth as to hinder its association with binding screw terminals if attempt is made to wrap the strip flatwise around such terminals and such strip having such transverse stiffness as to prevent its ready deformation for wrapping in the other plane around such terminals.

4. A cable for electrical wiring uses having the usual current carrying conductors adapted for ready association with binding screw terminals and having the usual braided outer covering and having in combination therewith a filler element between the insulated conductors and below the braided cover and a flat strip-like ground conductor supported upon said filler element and below the braid for the purpose described.

5. A cable for electrical wiring uses having usual substantially round current carrying conductors adapted for ready association with binding screw terminals, said cable having also the usual outer insulation covering and having disposed within said covering a ground wire of flat strip-like configuration so that improper connection of said ground wire can readily be detected by its distinctive configuration.

In testimony whereof I hereto affix my signature.

INSLEE A. BENNETT.