March 10, 1931. E. J. SCHNEIDER ET AL 1,795,577

INSULATED COUPLING

Filed April 4, 1929

Fig. 1,

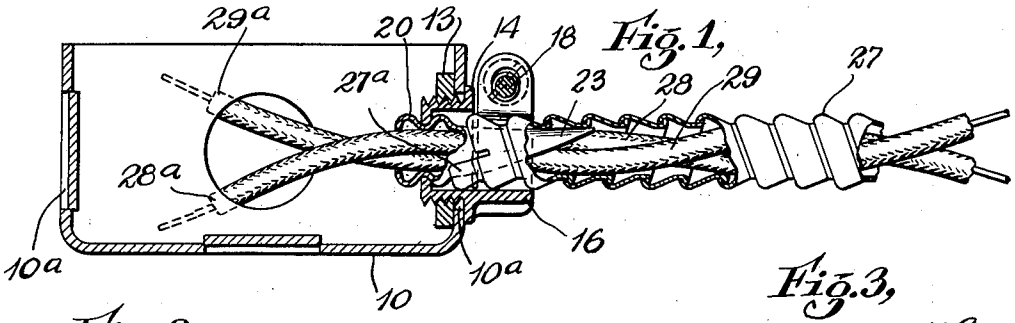


Fig. 2,

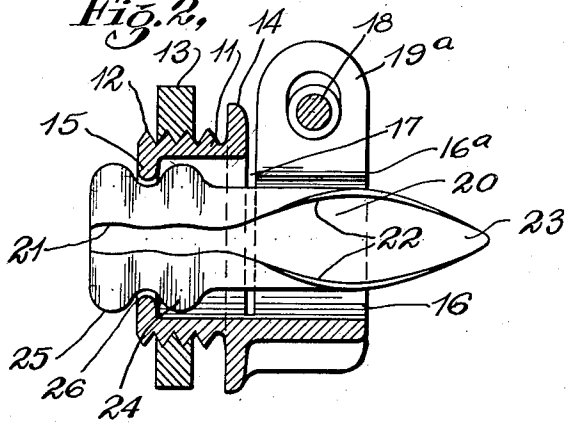


Fig. 3,

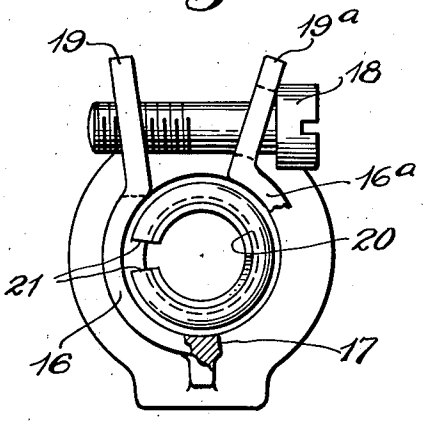


Fig. 4,

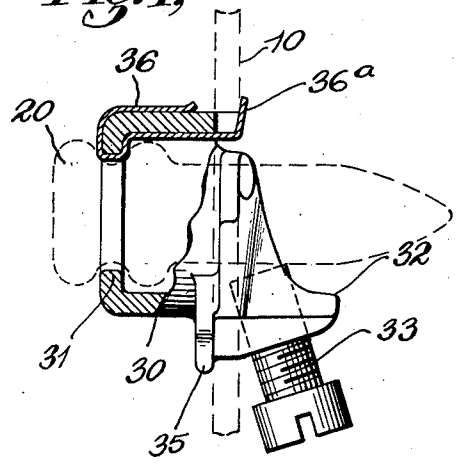


Fig. 5,

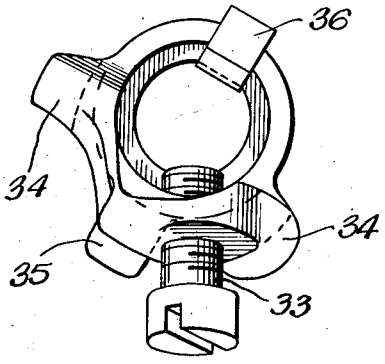
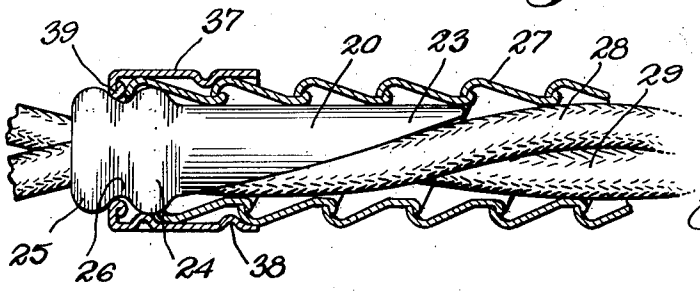


Fig. 6,



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UNITED STATES PATENT OFFICE

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INSULATED COUPLING

Application filed April 4, 1929. Serial No. 352,394.

This invention relates to couplings of various kinds and classes and particularly to devices of this class used in securing the ends of an armored cable in outlet boxes, fuse boxes, switch boxes, fixtures and the like; and the object of the invention is to provide a coupling of conventional or any desired form and construction with a shield of insulating material coupled therewith in such manner as to constitute a unit part thereof and so as to provide an insulation for the conductors or wires where they extend outwardly through the armor of the cable and through the coupling; a further object being to provide an insulator shield of the class specified in the form of a split cylindrical body, one end portion of which is pronged to facilitate the insertion into the cable between the armor and the conductors and the other end portion of which is fashioned to form an annular recess in which a flange portion of the coupling operates to prevent accidental displacement of the shield with respect to the coupling and yet permitting the coupling to freely rotate with respect to the shield; a further object being to provide a shield of the class specified which may be used in conjunction with a ferrule to form an insulated and reinforced end portion to the armored cable where the conductors project therefrom, facilitating the mounting of the cable in connection with electrical boxes or conductors of any kind or class; and with these and other objects in view, the invention consists in a device of the class and for the purpose specified which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of our improvement are designated by suitable reference characters in each of the views, and in which:—

Fig. 1 is a sectional view showing one form of coupling with one of our improved insulator shields arranged therein and illustrating one method of its use.

Fig. 2 is an enlarged sectional view of a part of the construction shown in Fig. 1.

Fig. 3 is an end view of the structure as seen in Fig. 2.

Fig. 4 is a view similar to Fig. 2 showing a modified form of coupling.

Fig. 5 is an end view of the structure shown in Fig. 4; and,

Fig. 6 is a view similar to Fig. 1 showing only a part of the construction and showing another modification.

For the purpose of illustrating one use of our invention, we have shown in Fig. 1 of the drawing, one type of outlet box 10, and in Figs. 1 to 3 inclusive, one form of coupling used in conjunction with boxes of any kind or class such for example as fuse boxes, switch boxes or any kind of electric fixtures, the coupling consisting of a tubular body 11, one end portion of which is externally threaded as seen at 12 to receive a nut 13, the coupling having an outwardly extending flange 14 centrally thereof, and the threaded end portion having an inwardly extending flange 15.

The other end portion is in the form of a split ring or collar 16, one side wall 16*a* of which is severed as seen at 17 to permit it to yield forming a clamp of said ring which may be gripped about the cable by the tightening of a screw 18 which is in threaded engagement with one wing 19 of the collar 16 and passes loosely through another wing 19*a*. This coupling is of conventional form and is adapted to pass through one of the knock out apertures 10*a* of the box 10 and is secured thereto by the nut 13 and flange 14 as seen in Fig. 1 of the drawing.

In carrying our invention into effect, we employ in conjunction with the coupling, an insulator shield 20 and the brief description of this shield will apply to the shield shown in the other figures. The shield 20 is in the general form of a split tubular body, the split being indicated at 21 and the walls of the split portion at one end thereof being beveled and tapered as seen at 22 and terminate in a pointed or pronged end 23 which facilitates the placement of the shield in the armored cable as later described.

The other end portion of the shield is fash-

ioned to form two outwardly extending annular beads or projections 24 and 25 between which is an annular recess 26, and the outside diameter of the shield at the recess 26 is equal to the diameter of the shield proper inwardly of and adjacent the projection 24.

In practice, the shield 20 is inserted in the coupling by arranging the flange 15 in the recess 26 and with the pointed end projecting through and beyond the clamp, collar or ring 16. When mounted in this position, the shield constitutes a unit part of the coupling and cannot be removed therefrom except by compression of the walls of the shield so that the projections 24 and 25 will clear the flange 15. In Fig. 1 of the drawing, we have shown an armored cable consisting of an outer flexible metallic casing 27 in which are arranged two insulated conductors 28 and 29, and these conductors as well as the casing 27 may be made in any desired manner.

In the use of our improved coupling, the same may be passed over the free end portions 28*a* and 29*a* of the conductors by passing said end portions through the bore of the shield 20 as will be apparent and then placing the pronged end 23 of the shield in one of the crevices or recesses formed between adjacent conductors at the end portion 27*a* of the armored casing 27. This shield is forced inwardly into the casing and around the conductors to form an insulated body to protect the conductors at the end portion 27*a* of said casing after which the entire assemblage thus formed may be coupled with a box, fixture or the like such as the box 10 by passing the end portions of the conductors through one of the knockouts 10*a* of the box and arranging the threaded end of the coupling in said knock out, after which the nut 13 may be passed over the conductors and moved into position to securely clamp the coupling to the box.

It is understood that in the assemblage of the coupling with the cable, the clamp ring 16 has been secured about the casing 27. In this connection, it will also be noted that clearance is provided between the flange 15 and the recessed portion 26 of the shield so as to permit relative rotary movement of the parts with respect to each other.

Instead of proceeding as above, it will also be understood that the assembled coupling including the shield may be first secured to the box, after which the cable may be coupled therewith by passing the free end portions 28*a* and 29*a* of the conductors through the coupling and the shield 20 thereof, inserting the prong into the end portion of the casing 27 as described, and then locking the ring 16 in position.

In Figs. 4 and 5 of the drawing, we have shown another conventional form of coupling, but at this time it will be apparent that our invention is applicable to couplings of the class under consideration of any design and construction, the two most commonly known being shown to illustrate the general application and broad use of the invention. This coupling comprises a tubular body 30 one end portion of which has an inturned flange 31, similar in all respects to the flange 15, and the other end portion of the coupling is provided with an outwardly projecting lug 32 in which is arranged an angularly disposed set screw 33 adapted to be moved into contact with the exterior of the casing 27 to secure the casing against movement relatively to the coupling, the lug also including extending shoulders 34 which are adapted to bear against the outer wall of the box 10 which is indicated in dotted lines in Fig. 4.

A lug 35 is arranged on the inner wall of the box 10. The coupling is held in position by a spring 36 mounted upon the wall of the coupling as seen in Fig. 4 at a point disposed oppositely to the lug 35, the end 36*a* of the spring engaging the wall of the box. A bushing 20 is indicated in dotted lines in Fig. 4 of the drawing showing its arrangement within the coupling.

In Fig. 6 of the drawing we have shown another modification wherein the shield 20 is used in conjunction with a finishing ferrule 37 of conventional or any desired form, the ferrule being constructed to form screw threaded portions 38 whereby the ferrule may be threaded upon the spiral contour of the casing 27 which is also indicated in Fig. 6 of the drawing, the outer end of the ferrule having an inturned flange 39 which is adapted to seat in the recess 26 of the shield so that the shield becomes a unit part of the ferrule and may be coupled with the cable by inserting the prong end 23 of the shield into the casing 27 and around the conductors 28 and 29, it being understood that in the rotation or threading operation of the ferrule the shield 20 may be turned with the ferrule to thread the same into the outermost coil of the casing 27, after which the ferrule is free to rotate independently of or without rotation of the shield 20.

It will be apparent that the shield 20 constitutes a unit part of the ferrule 37 and this ferrule in all respects operates as a coupling member. While this structure may be used merely to finish, reinforce and insulate the outer or free end of a cable, it may also be used as a coupling means.

It will be understood that the insulator shield may be made of any suitable material preferably of a relatively stiff and springy nature, and while we have shown certain methods of using the shield and have illustrated a shield of specific contour, our invention is not necessarily limited in these respects, and various changes in and modifications of the structure herein shown and de-

scribed may be made within the scope of the appended claims without departing from the spirit of our invention or sacrificing its advantages.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. The combination with a metallic tube having at one end an inwardly and radially arranged flange, of a split tubular insulator arranged in the bore of said tube, one end portion of the insulator having spaced outwardly and radially projecting members between which is a recess adapted to receive the flange of said tube, said members serving to prevent displacement of the insulator with respect to said tube, and the other end of the insulator being of prong formation.

2. A shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being of prong formation and the other end being substantially circular in cross sectional form and provided with longitudinally spaced outwardly and radially projecting members.

3. The combination with a coupling used in securing the end portion of armored cable in an outlet box or the like, of an insulating shield having means thereon for retaining the same against accidental displacement from the coupling so as to constitute a unit part thereof, one end portion of said shield being of prong formation, facilitating its insertion into the casing of armored cable arranged within the coupling.

4. The combination with an insulator shield comprising a split tubular body, one end portion of which is fashioned to form spaced, outwardly and radially projecting members between which is an annular recess, of a tubular metallic body, one end portion of which is provided with an inwardly extending flange adapted to seat in the recess of said shield to retain the tube against displacement from the shield, and the other end portion of the shield being pronged.

5. An insulator shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being fashioned to form spaced outwardly and radially projecting portions between which is a recess, the diameter of the recess portion of the shield being substantially similar to the diameter of the shield adjacent the innermost projecting portion, and the other end of the shield being of prong formation.

6. An insulator shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being fashioned to form spaced outwardly and radially projecting portions between which is a recess, the diameter of the recess portion of the shield being substantially similar to the diameter of the shield adjacent the innermost projecting portion, and the walls of the split portion of the shield being cut away to form of the other end portion of the shield, a prong.

7. An insulator shield of the class described comprising a split tubular body composed of insulating material, one end portion of said body being fashioned to form spaced outwardly and radially projecting portions between which is a recess, the diameter of the recess portion of the shield being substantially similar to the diameter of the shield adjacent the innermost projecting portion, the walls of the split portion of the shield being cut away to form of the other end portion of the shield, a prong, and the projecting portions of the shield being semi-circular in cross sectional form.

In testimony that we claim the foregoing as our invention we have signed our names this 2nd day of April, 1929.

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