

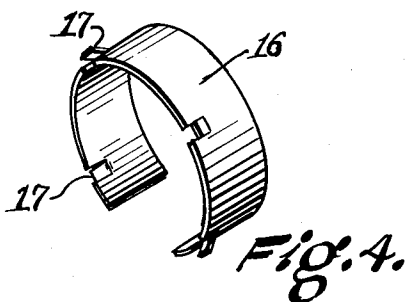
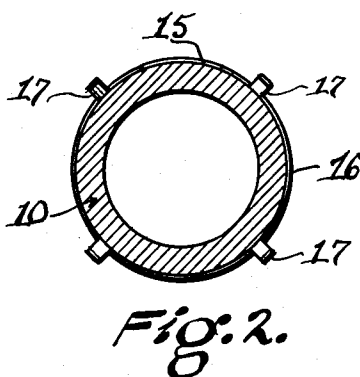
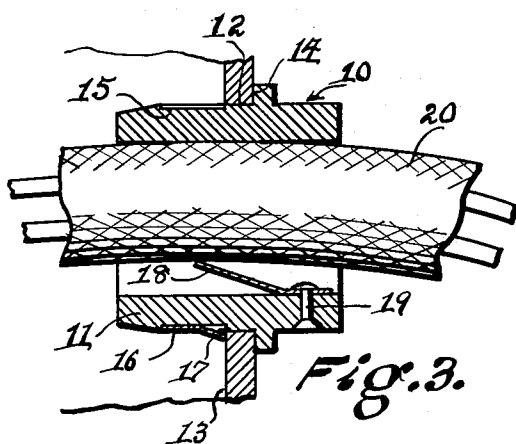
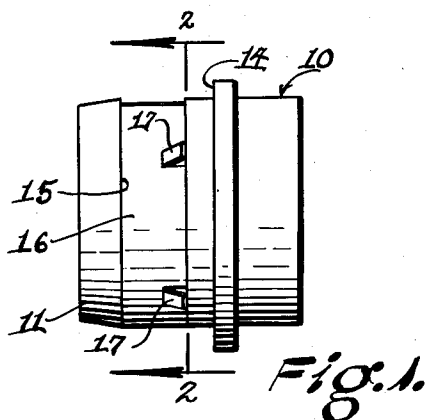
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BUSHING MEANS FOR ATTACHING CABLE IN PLATE

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BUSHING MEANS FOR ATTACHING CABLE IN PLATE

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1 Claim. (Cl. 285—6.5)

Our invention relates to a new and useful attaching means for electrical connectors such as are employed in association with junction boxes and an object thereof is to produce an exceedingly simple, compact and relatively inexpensive article of this character including a cylindrical member for insertion in a hole in a junction or outlet box or similar structure and provided with means to grip and firmly hold an insulated wire on the box and having means to removably fasten the cylindrical member in place on the box.

Another object of this invention is to provide, in combination, a cylindrical or tubular connector member having a peripheral channel to receive a fastener in the form of a resilient split ring provided with outturned lugs which will retract as the tubular member with the fastener thereon is projected through a hole in a wall of box and then snap into place behind said wall to hold the tubular member temporarily in place on the box, said fastener being displaceable when it is necessary or desirable to remove the tubular member.

A further object of the present invention is to provide an electrical connector including a tubular member having a flat resilient gripping finger fixed on the inside of said member adjacent the end of the latter and inclined forwardly from its location of fixation towards the axis of said member.

A still further object of the invention is to produce a fastener for use in association with an electrical connector and a junction or outlet box to removably attach the former to the latter, said fastener consisting of a longitudinally relatively wide resilient split ring with lugs fashioned from one end thereof and projecting outwardly with relation to the outer circumference.

With the above and other objects in view this invention consists of the details of construction and combination of elements hereinafter set forth and then designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same we will describe its construction in detail referring by numerals to the accompanying drawing forming a part hereof in which:

Fig. 1 is a side elevation of an electrical connector tubular member with our improved fastener thereon.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a longitudinal sectional view thereof mounted on a wall of a junction box, portions of which are broken away, with a piece of insulated conductor in the connector member.

Fig. 4 is a perspective view of the fastener removed from the connector member to illustrate details of construction.

In carrying out our invention as herein embodied 10 represents an electrical connector member having a forward end 11 of a size to be projected through a hole 12 in a junction or outlet box 13. The tubular member 10 has an exterior annular shoulder 14 formed in any ap-

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propriate manner, to engage a face, such as the outside face, of the box 12 to position the connector member and limit its projection through the hole.

A peripheral channel 15 is formed in the circumference of connector member 10 spaced from the shoulder 14, forwardly thereof, a distance approximately equal to or slightly less than the thickness of the walls of the box with which the connector is to be used so that one side wall of said channel will be substantially flush with the face of the box wall opposite the face engaged by the shoulder 14 when the connector is assembled on the box.

The fastener 16 is a resilient broad band split ring produced from metal substantially the same thickness as the depth of the channel 15 in which said fastener is normally seated and of a width approximately that of said channel so there will be no appreciable endwise or longitudinal movement of the fastener within the channel.

From the body of the ring are fashioned a plurality of resilient lugs 17 preferably formed by partially severing small areas of the ring material therefrom along one edge thereof and bending said partially severed areas outwardly to project angularly from the exterior circumference of said ring. Said lugs are suitably spaced circumferentially about the ring and are on the rear or trailing end thereof when assembled and considered with relation to the projection of the connector into a hole in the box.

In practice when it is desirable to mount a connector the split ring fastener 16 is assembled in the channel 15, which may be done during the course of manufacture or other appropriate time, with the lugs 17 projecting rearwardly. Naturally said lugs extend outwardly beyond the circumference of the ring and the contiguous surfaces of the connector member at both sides of the channel 15. Upon projecting the connector into a hole in a box wall with sufficient force to overcome the tension and friction of the lugs on the edges of the wall surrounding the hole said lugs will be pushed into the channel 15 or retracted until they pass through the hole when they will immediately snap back into their normal extended positions behind the box wall. This will temporarily or removably securely fasten the connector in place. When it is necessary or desirable to remove the connector the fastener ring 16 is pryed out of the channel thereby releasing connector member 10 so that it may be withdrawn from the hole.

To hold the insulated electrical conductor in the connector the tubular member 10 has a flat resilient gripping finger 18 secured internally of said tubular member or within the bore thereof, said gripping finger being fastened in place by a rivet 19 or some equivalent securing means such as, for example, welding. The fixed portion of the gripping finger lies against the inner surface of the tubular member at near or towards the rear or trailing end thereof and the free end of said finger projects forwardly and towards the axis of said tubular member at a suitable angle.

As an insulated conductor, wire or cable 20 is inserted into or projected through the tubular member or sleeve 10 it will engage the gripping finger 18 and depress the free angular end thereof until said conductor is inserted the desired distance. Since the gripping finger remains in constant engagement with the conductor, any rearward movement of said conductor will be prevented because a backward "pull" will cause the gripping finger to grip the insulating cover somewhat after the manner of a ratchet pawl and the stronger the pull the more powerful will be the counteracting holding action of the finger. In actual practice it is only necessary to project the conductor into the tubular member of the connector from the rear or outer end thereof past the terminal

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of the free end of the gripping finger to produce the holding function and since said terminal is not sharp or pointed it will not penetrate the insulating cover but merely roughen said cover slightly. As the conductor engaging movements of the gripping finger are not controlled by the mechanic making the installation, as is the case when screws are employed, said finger cannot be forced into contact with the electric conductive elements to cause a short circuit.

From the foregoing it will be apparent that we have produced an electrical connector having many advantages, particularly the elimination of screws in conjunction with the wire cable, which have been known to cause short circuits.

Of course we do not wish to be limited to the exact details of construction herein shown and described as these may be varied within the scope of the appended claim without departing from the spirit of our invention.

Having described our invention what we claim as new and useful is:

In combination, a tubular attaching means adapted to enclose an insulated electrical conductor and form a projecting housing therefor through a hole in the wall of a junction box and a resilient flat gripping finger within said attaching means secured at one end to the interior of the tube of said attaching means, the other end extending at an oblique angle towards the axis of said tube to hold the outer surface of said conductor and restrain withdrawal of said conductor from the tube, said tubular attaching means having an exterior shoulder for engaging one face of said wall, and a peripheral channel

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which is spaced from said shoulder a distance approximately equal to the thickness of said wall to place the wall of said channel opposite the shoulder in flush engagement with said face of the wall box, a thin resilient split fastener ring seated in said channel having substantially the same width of said channel, the external diameter of said ring about said tubular attaching means being not greater than the external diameter of said attaching means at its end which is opposite said shoulder, said shoulder having an external diameter which is greater than the external diameter of said ring and of said tubular attaching means; said ring being removable from said channel to withdraw the attaching means from the box while the conductor is held fast in said attaching means, and a plurality of resilient straight lugs formed from circumferentially spaced end portions of the material of said ring by bending outwardly at an intermediate portion of said ring, said lugs projecting substantially in a straight line longitudinally and outwardly from the outer surface of said ring adjacent to said shoulder in an angular direction which is in opposed relation to said shoulder, said lugs being adapted to retract when said attaching means is pushed into the hole and snap back into a normally extended position behind the box wall when the attaching means is in place.

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