Nov. 27, 1956 T. C. SMITH 2,772,323

WIRE CONNECTOR

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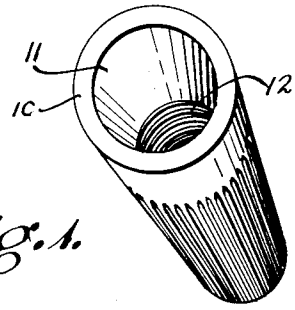


Fig. 1.

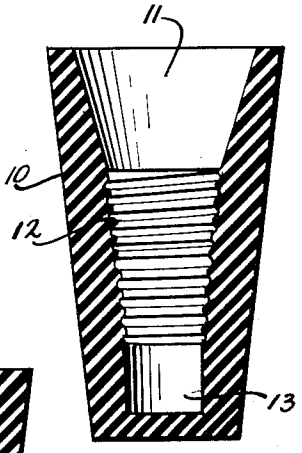


Fig. 2.

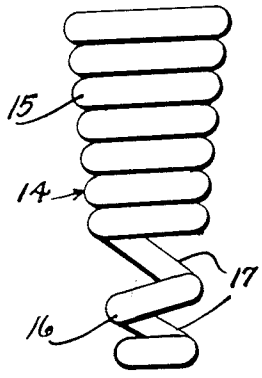


Fig. 3.

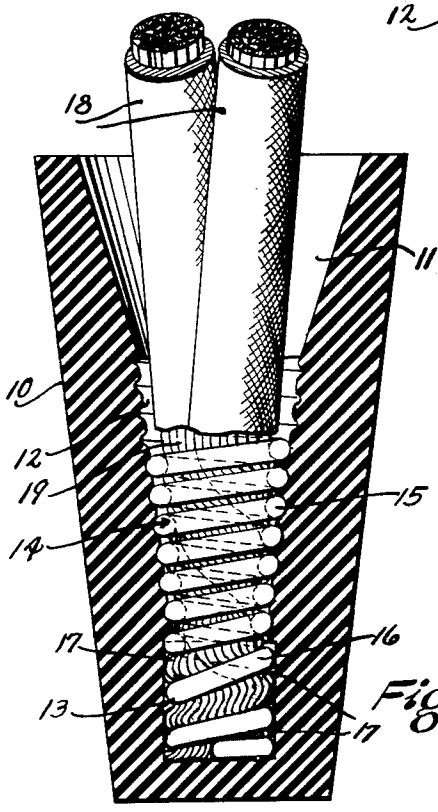


Fig. 4.

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WIRE CONNECTOR

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6 Claims. (Cl. 174—87)

My invention relates to a new and useful wire connector and has for one of its objects to generally improve articles of this character to produce a highly efficient connector having excellent wire gripping properties without the use of screws or other equivalent fastening devices.

Another object of this invention is to provide an exceedingly simple and inexpensive wire connector comprised of a body or cap of insulating material having a central longitudinal cavity therein including a funnel shaped open mouth, a threaded slightly tapered intermediate throat and a cylindrical pocket closed at the rear end, said cavity having a coiled wire sleeve therein in which the coils of that portion of the sleeve within the throat are closed together and the coils at the inner end which are within the pocket are considerably spaced to provide interstices to receive the bared ends of highly flexible wires forced into said interstices due to screwing the wire ends into the sleeve.

Another object of the present invention is to produce a wire connector comprised of a hollow insulated body or cap closed at the rear end, the interior of said body constituting a cavity including a funnel shaped open mouth at the forward end, a threaded intermediate throat and a cylindrical pocket, said cavity having a substantially cone shaped coiled wire sleeve mounted therein and positioned within the throat and pocket, the coils at the forward end being close together and a few coils at the rear end being considerably spaced to provide interstices to receive bulged portions of bared wire ends, said bulged portions of the wire being formed by forcibly screwing the ends of the wire into the sleeve.

A further object of the invention is to construct the coiled wire sleeve in such a way that the relatively greater spaced coils at the rear end of the sleeve either follow the contour of the conical formation of said rear end coils may be of equal diameters.

Heretofore, in the use of coiled wire sleeves the coils thereof have been evenly spaced, generally in actual contact with one another, to provide a symmetrical thread into which the bared ends of conductors are screwed to fasten the wire connector in place. I have discovered that by substantially increasing the spacing of the coils at the rear end of the sleeve the bared ends of flexiblt conductors including a multiplicity of fine wires can be forcibly screwed into the closely coiled portion and caused to bulge into the interstices formed by the relatively wider spaced coils and produce bights in the conductors which grip the coils in the region of the widely spaced ones that even under extraordinary stresses the conductors will not be detached from the connector. Therefore, a still further object of the invention is to produce a wire connector having a coiled wire sleeve mounted in an insulated body, said sleeve including a closely coiled portion at the forward end and a relatively wider spaced coiled portion at the rear end, said closely coiled portion being of conical formation.

Still another object of this invention is to provide a

unique method of joining the ends of two or more connecting flexible conductors.

With the above and other objects in view this invention consists of the details of construction and combination of elements hereinafter set forth and the steps for carrying out the method of joining conductors described below and then designated by the claims.

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

Fig. 1 is a perspective view of a wire connector constructed in accordance with my invention.

Fig. 2 is a slightly enlarged longitudinal sectional view of the insulated body or cap.

Fig. 3 is a further enlarged side elevation of the coiled wire sleeve.

Fig. 4 is a further enlarged sectional elevation of the complete wire connector showing it mounted on the bared ends of two flexible conductors.

In carrying out my invention as herein embodied 10 represents the hollow body or cap of the wire connector and is composed of any appropriate insulating material. This body is closed at the rear end thereby providing a central longitudinal cavity, the walls of which are so formed as to provide a funnel shaped mouth 11 open at the forward end of the body and having its restricted portion communicating with a slightly tapered and threaded throat 12 the smaller end of which, in turn, communicates with a smooth walled cylindrical pocket 13.

To provide a symmetrical appearance and save material in the manufacture of the article said body may be formed in frusto-conical shape and the exterior thereof may be roughened to provide a good gripping surface.

The numeral 14 denotes the coiled wire sleeve, having the forward end portion 15 of closely wound coils to intermesh with the threads of the throat as the sleeve is screwed thereinto and further including a rear end portion 16 composed of a number of relatively wider spaced coils to provide interstices 17.

This sleeve 14 is placed in the cavity of the body 10 and screwed into position so that the rear end portion 16, comprised of the relatively wide spaced coils, is located in the pocket 13 and the closely coiled forward end portion 15 is situated in the threaded throat to prevent withdrawal of the sleeve accidentally or otherwise, unless purposely screwed out.

When the throat 12 is of tapered formation the sleeve 14 is of similar or conical configuration, either the entire length thereof or only for the closely coiled forward end portion. In the latter case the rear end portion of widely spaced coils is a plain cylindrical spiral of equal diameter throughout.

In practice, the insulation is removed from the ends of a number of conductors 18 and the wires twisted together to form a terminal 19. The wire connector is now screwed onto the twisted terminal 19 in the same manner as a nut is screwed on the threaded end of a bolt. As the connector is screwed onto the terminal 19 said connector will forcibly be drawn over said terminal until the extremee end of the latter and the bottom of the pocket contact each other. Thereafter the bared terminal will be crowded into the interstices in back of the widely spaced coils of the sleeve. The bulged parts thus formed constitute bights or enlargements which function as stops or barriers to firmly hold the conductors and connector together and insulate the bared ends of the wires forming the terminal when said wires are twisted together.

It will now be apparent that I have produced an ex-

ceedingly simple and effective wire connector providing highly efficient and strong gripping attributes for attaching said connector to wire terminals.

Of course I 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 claims without departing from the spirit of my invention.

Having described my invention, what I claim as new and useful is:

1. A wire connector comprising a body of insulating material having a central longitudinal cavity therein open at the forward end and closed at the rear end, and a coiled wire sleeve substantially fixedly mounted in the cavity of said body, the coils of said sleeve adjacent the open end of the body being closely wound to constitute threads for screwing the connector onto bared ends of conductors and the coils adjacent the closed end of said body being spaced relatively further apart to form interstices into which the conductors are radially forced to provide a gripping action between the connector and conductors.

2. The wire connector of claim 1 wherein the sleeve is of conical formation.

3. The wire connector of claim 1 wherein the portion of the sleeve having closely wound coils is of conical formation and the portion thereof having relatively widely spaced coils is of regular cylindrical formation.

4. A wire connector comprising a body of insulating material having a central longitudinal cavity therein and including a funnel shaped mouth open at the forward end of said body, a slightly tapered threaded throat and a smooth walled cylindrical pocket closed at the rear end of said body, and a generally conical shaped coiled wire sleeve fitted in the body cavity, said sleeve including a forward portion of closely wound coils to mesh with the throat threads and a rear portion of relatively widely spaced coils positioned in the pocket and forming interstices into which bared ends of flexible conductors will be forced as the connector is screwed onto the conductors

and the extremities of the bared ends and the bottom of the pocket contact each other.

5. A wire connector comprising a plurality of conductor ends, a rigid body of insulating material having a cavity open only at one end into which the conductor ends are received, and a coiled wire sleeve carried by said body within the cavity and including a forward portion of closely wound coils to function as a thread for screwing the connector on said conductor ends and a rear portion of relatively widely spaced coils positioned contiguous the closed end of the body and forming interstices into which said conductor ends are radially forced when the closed end of the body engages the extremities of said conductor ends.

6. A wire connector including a body of insulating material having a conical cavity therein open at one end and closed at the other end, and a conical coiled wire sleeve in said cavity to receive the bared ends of flexible conductors, the coils of said sleeve adjacent the open end of the body being closely wound and fitting threaded walls of the cavity and the coils adjacent the closed end of the body being spaced axially further apart to provide substantial interstices, said body being further characterized by the provision of an unthreaded pocket at the closed end into which the widely spaced coils of the sleeve project whereby when the bared ends of conductors and the bottom of the pocket engage one another during rotation of the connector said bared ends of conductors will be forced laterally into the interstices.

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