Aug. 25, 1959 M. LAZAR 2,901,528

WIRE CONNECTOR

Filed Dec. 24, 1957

FIG. 1

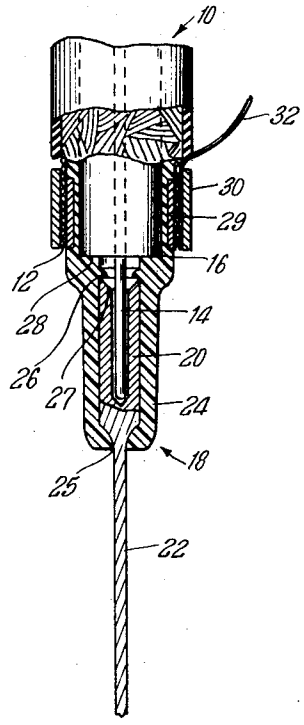


FIG. 2

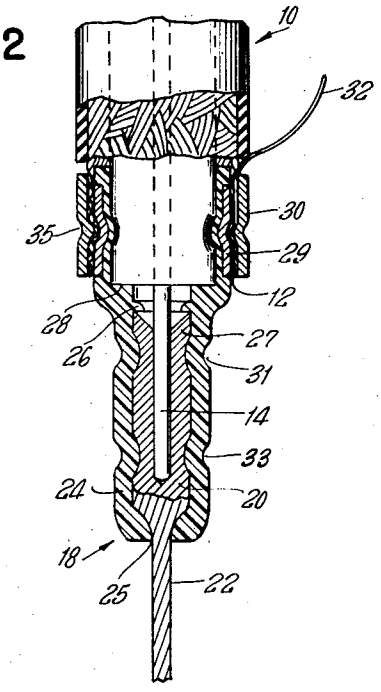
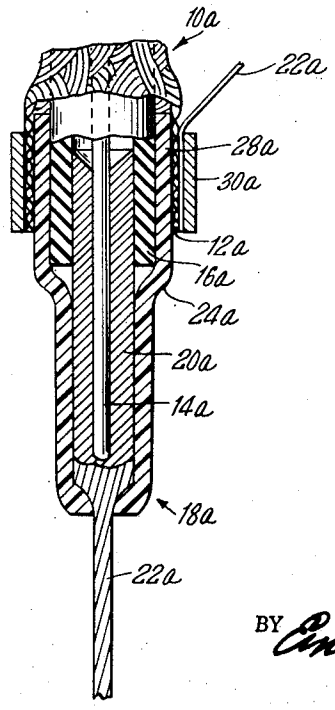


FIG. 3



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WIRE CONNECTOR

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2 Claims. (Cl. 174—75)

My invention relates to a wire connector and more particularly for a wire connector for attaching a soft or brittle conductor to a terminal or binding post.

Coaxial cables with very small diameter solid copperweld or copper wire inner conductors have been known and used in applications where a wire wrapping tool is utilized to connect the inner conductor to a small stud, prong, terminal or binding post. It has been found that the small inner copperweld conductors are brittle and copper wires are weak and do not readily lend themselves to wire wrapping by tool or otherwise. In addition, it has been found that the attachment of the conductor to the stud does not result in a desirable strength of mechanical bond between the two elements. Where it is desirable to connect the inner conductor of a coaxial cable to a terminal, no convenient means have been provided to ground the shield.

One of the objects for my invention, therefore, is to provide a wire connector suitable for attaching a brittle wire conductor to a small stud or prong.

Another object of my invention is to provide a wire connector for a coaxial cable which has increased mechanical strength.

Still another object of my invention is to provide a wire connector for attaching a coaxial cable to a terminal in which simple means are provided for grounding the outer conductor of the coaxial cable.

One of the features of my invention is the provision of a wire connector having a flexible terminal portion which is electrically coupled to the conductor and which is flexible enough to permit wrapping it around the standard stud.

Another feature of my invention is the provision of an insulating sheath for the flexible terminal which grips the insulation of the coaxial conductor.

These and other objects and features of my invention will become more apparent by reference to the following description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a partial cross-sectional view in elevation of wire connector of my invention for use in attaching a coaxial cable to a terminal;

Fig. 2 is a partial cross-sectional view in elevation of the wire connector of Fig. 1 after attachment to the coaxial cable;

Fig. 3 is a partial cross-sectional view in elevation of a modification of the wire connector of my invention.

Referring to Fig. 1 of the drawing, there is therein shown in detail one embodiment of a wire connector of attaching a coaxial cable to a terminal in accordance with the principles of my invention. The coaxial cable **10** comprises an outer conductor **12** and a solid inner conductor **14** which is disposed in coaxial relation to the outer conductor **12** and spaced therefrom by insulation **16**. The wire terminal **18** of my invention comprises a tubular portion **20** having an inner diameter approximately that of the inner conductor **14**, of the coaxial cable **10**. Integral with tubular portion **20** is a flexible wire-

wrap tail **22**. The tubular portion **20** is slid into a molded insulation cap **24** composed of a suitable insulating material and the wire wrap tail **22** is fitted through an opening **25** in the insulation cap **24** and thus projects therethrough. Shoulders **26** are molded into the insulation cap to ensure the retention of the tubular body **20** and tail **22** in their proper location. The upper end **27** of the tubular portion **20** has its ends beveled to provide for easy insertion of the inner conductor **14** of the coaxial cable. The connector body **20** and tail **22** is formed of electrolytic copper tubing having a proper inner diameter to accommodate the coaxial conductor while the tail portion **22** is formed by swaging one end of the copper tubing to the desired diameter.

Alternately, a rod may be cold forged into the desired shape. Where maximum flexibility is desired in the tail **22** a stranded wire could be crimped or spliced to the end of a shortened tail portion.

In use, the coaxial cable **10** has its insulation **16** stripped back exposing a portion of the inner conductor **14**. The inner conductor **14** is placed in the tubular portion **20** which is then crimped or otherwise electrically and mechanically secured thereto. The insulation cap **24** is fitted over the insulation **16** of the coaxial cable **10** and shoulders **28** provide a rest against which insulation **16** may abut. Obviously, when the insulation cap and tubular portion are provided as a single unit, tubular portion **20** may be crimped through the insulation to provide the proper electrical and mechanical connection as shown in Fig. 2 by the reference numerals **31** and **33**.

In the form of the invention illustrated in Fig. 1 an inner sleeve **29** may be molded on to the insulation cap **24** or may be slid over the insulation cap after it is located on the insulation **16** of the coaxial conductor. The inner sleeve **29**, of a hard metal such as brass, is located on the shroud end of the insulation cap **24** and the outer conductor **12** of the coaxial cable **10** is disposed thereover. A malleable metal outer ring **30** is slid over the end of the outer conductor **12** and located over the inner ring **29**. If desired, the end of a ground jumper lead **32** may be inserted between the outer ring **30** and the outer conductor **12**. The outer metal ring **30**, which is preferably made of a soft copper material, is then crimped as shown by numeral **35** in Fig. 2, securing the ground lead **32** electrically and mechanically to the outer conductor **12** by compression against the hard metal inner sleeve **29**.

As previously described, the insulation cap **24** may be provided with an inner peripheral bead **26** past which the tubular connector body is force-fitted to assist in holding the parts in position.

Referring to Fig. 3 of the drawings, an alternate embodiment of a wire connector in accordance with the principles of my invention is therein illustrated. Parts of the embodiment shown in Fig. 3 which are similar to parts in the embodiment of Fig. 1 are identified by similar numbers with the letter *a* added. Thus, the exposed coaxial inner conductor **14***a* is inserted into the connector body **18***a* with the wire-wrap tail **22***a* extending therefrom. The tubular portion of the connector body **20***a*, however, is extended and forced under the insulation **16***a* of the coaxial cable **10***a* and provides the support for the malleable outer ring **30***a* eliminating the need for the inner ring shown in Fig. 1. Thus the outer ring **30***a* may compress the outer conductor **12***a* and a ground jumper lead **22***a* against the tubular body **20***a*. In other words, the shroud end **28***a* of the insulator cap **24***a* extends over the coaxial conductor insulation **16***a* and is compressed into securing the ground jumper lead **32***a*.

In both forms of the invention the extending wire wrap tail may be conveniently wrapped around a stud or prong by hand or mechanical wire wrapping tools. The invention thus permits an easily installed, flexible connection

to be made from a solid or brittle conductor. In addition, the insulator cap which is provided acts to increase the mechanical strength of the connection by providing an insulation grip, and when necessary grounding means for the outer conductor of a coaxial conductor is conveniently provided.

While I have described above the principles of my invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of my invention as set forth in the objects thereof and in the accompanying claims.

I claim:

1. A termination for a coaxial cable having an inner conductor, an insulation material disposed about said inner conductor and a coaxially disposed outer conductor comprising a terminal member having a tubular body section having one end closed and adapted to receive said inner conductor and mechanically secured thereto, a flexible conductor section integral with and extending

from the closed end of and having a diameter less than said body section, an insulating cap enclosing said body section and having an aperture therein through which said flexible conductor section extends, said cap including a portion extending between said inner and outer conductors, an outer sleeve made of collapsible metal positioned over said outer conductor and said extended portion of said insulating cap and an inner sleeve positioned between said outer and inner conductors coaxially with said outer sleeve.

2. A termination for a coaxial cap in accordance with claim 1 wherein said inner sleeve is integral with said terminal body section.

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