June 28, 1960 R. J. BERTLING 2,943,135

INSULATED DEAD-END FOR CABLES AND THE LIKE

Filed Dec. 12, 1957

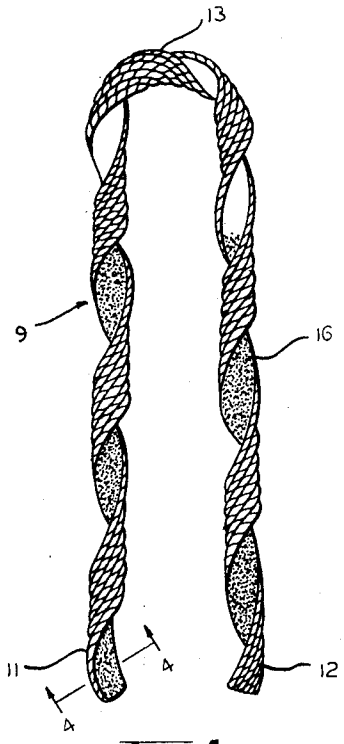


Fig. 1

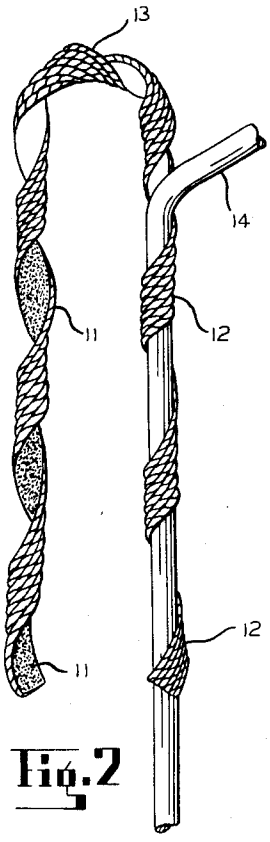


Fig. 2

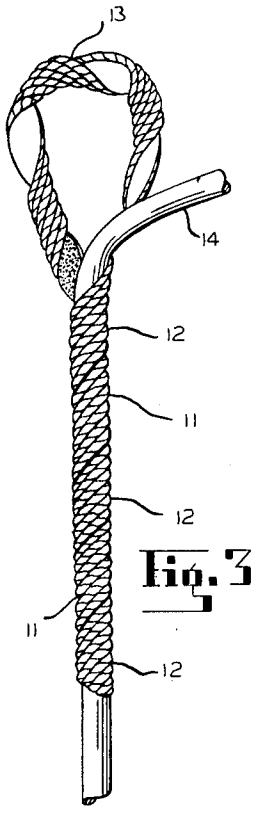


Fig. 3

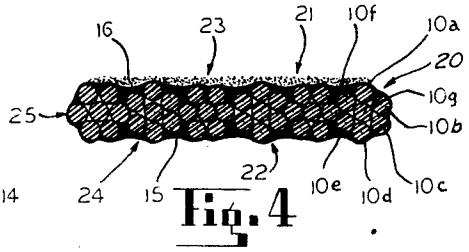


Fig. 4

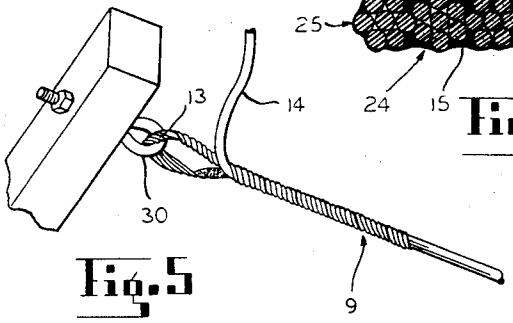


Fig. 5

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INSULATED DEAD-END FOR CABLES AND THE LIKE

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1 Claim. (Cl. 174—40)

This invention relates to preformed dead-ends and, more particularly, to preformed dead-ends formed of insulating material and the like.

Preformed dead-ends made of steel are a recent advance in the electrical industry. These preformed metallic dead-ends have several advantages over other means of connecting electrical cables to grounded members since they eliminate bolts, complicated connectors, etc., and are exceedingly easy to apply in the field. However, the preformed dead-ends used heretofore are merely a substitution for other types of connectors and have not, in any way, eliminated the additional insulating member needed to be interposed between a conductor cable or the like and a grounded member such as a guy rod, eye bolt, etc., where it is desired to maintain electrical insulation between said conductor cable and the grounded members.

It is a general object of this invention to provide a preformed connector which is made of high dielectric material which eliminates the need of insulating means between the grounded member and either insulated or bare electric cables while maintaining the ease of installation afforded by the heretofore known metallic connectors.

It is a further object of this invention to provide a preformed insulating type dead-end which is exceedingly easy to install both in initial installation and for reinstallation after disassembly thereof.

It is a further object of this invention to provide a dead-end which is completely corrosion free since the parts are formed of chemically stable substances.

It is a further object of this invention to provide a dead-end which allows a compaction of many electrical fittings, for example, fibre or wood guy strain insulator rods since the metal end fittings for connecting to these rods may be eliminated while maintaining requisite dielectric strength.

It is a further object of this invention to provide a preformed dead-end made of insulating material which is more flexible than steel, is electrically nonconductive and is otherwise well adapted for the purposes for which it is designed.

The novel features that are characteristic of the invention are set forth with particularity in the appended claim. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof may best be understood by the following description of specific embodiments when read in connection with accompanying drawings, in which:

Fig. 1 is a view of a dead-end formed of insulating material, said dead-end being shown in its unstressed position prior to application to a conductor;

Fig. 2 is a view similar to Fig. 1 with one of the leg portions of the dead-end being disposed in assembled relationship to a conductor or the like;

Fig. 3 is a view similar to Fig. 2 showing a dead-end in its finally assembled state upon a conductor or the like;

Fig. 4 is an enlarged sectional view along lines 4—4 of Fig. 1;

Fig. 5 is a view of applicant's insulated dead-end applied to a conductor, the bight portions being directly disposed upon an eye bolt or the like in a field assembly.

As shown in the drawings, a hollow helical preformed element **9** is bent to form a bight or bearing eye **13** intermediate its length, said element **9** having helical legs or half lays **11** and **12** which are adapted to be wrapped coaxially about any elongated body such as a conductor **14** to be dead-ended so that the helix of each leg is in substantially balanced (180° phase) relationship with the helix of the other leg when disposed coaxially about the said conductor **14** to be dead-ended. Thus, the two legs or half lays **11** and **12** of a single preformed element **9** are neutrally balanced around the periphery of the body of association when twisted together to form a whole lay, the latter being adapted to sustain and support the body of association substantially without deflection.

In practice, I have found that I can preform a plurality of twisted strands of high dielectric strength material such as fiberglass **10***a*, **10***b*, **10***c*, **10***c*, **10***e*, **10***f* and **10***g* into individual rope-like larger strands **20** to **25**, for example, lay the larger strands **20** to **25** side by side on a mandrel, bond the strands **20** to **25** together with a suitable epoxy, polyester, or other resin **15** and cure them over the mandrel to form the hollow helical shape desired. It is also possible to preform laminated or single layers of fiberglass tape to the desired hollow helical shape. As shown, a helical element **9** is formed having a common pitch and internal diameter. After curing the strands or tapes, they will retain the helical shape shown and may be bent to form the two half lay legs **11** and **12** in Fig. 1. During the curing operation, a suitable abrasive material **16** is disposed upon the surfaces of the polyester or other bonding coating and on those surfaces of the helix that will form the internal surface of the preformed helix strands. This provides a highly abrasive surface which, in turn, will closely grip a conductor **14** or the like. To preserve the insulating strength of the dead-end, it is preferred that the abrasive material **16** be nonconducting, for example, material such as aluminum oxide or the like.

When the dead end is applied to a conducting cable **14**, it is preferred that the internal diameter of the preformed element **9** be slightly less than the outer diameter of the conductor. This aids in a tight gripping action. To assemble the dead-end in the field, all that is required is to wrap one half lay or leg such as **12** around the conductor **14** and then wrap the other leg, for example **11**, around the conductor **14** in the intervening spaces formed by leg **12**. Thus, the helical axis of the legs **11** and **12** are coincident with the axis of the conductor **14** and the two legs **11** and **12** are substantially 180° out of phase with each other.

Since the preformed helical dead-end components are all of high dielectric strength, the conductor **14** may be dead-ended directly by placing the bight **13** directly onto an eye bolt **30** (or guy rod, etc., not shown) without requiring an intervening insulator. This is an important advantage since all other known dead-ends require an extra insulator.

Although a specific embodiment of the invention has been shown and described, it is with full awareness that many modifications thereof are possible. The invention, therefore, is not to be restricted insofar as is necessary by the prior art and by the spirit of the appending claim.

What is claimed as the invention is:

An insulated dead-end assembly having in combination a conductor of electricity, fixedly mounted metallic eyebolt means, and a dead-end, said dead-end

comprising a plurality of twisted small strands of high dielectric strength material placed in side by side parallel relation, said strands being impregnated with and bonded by a dielectric bonding resin forming an integral flat strap-like member which is substantially greater in width than depth in transverse cross-section, said strap-like member being helically pre-formed and cured to a resilient helical shape having an internal diameter approximately equal to the external diameter of said conductor, said helically pre-formed strap-like member having a thin layer of friction material spread over the flat inner face thereof, a half-lay of said strap-like member being applied around the conductor to tightly grip said conductor, the strap-like member being doubled back upon itself with the opposite half-lay being inter-twisted with

said first half-lay to completely enclose and grip said conductor, the bight portion of said dead-end defined thereby being in engagement with said eyebolt means, said conductor being spaced and electrically insulated from said eyebolt means by the dimension of said bight portion thus forming an insulated dead-end assembly not requiring additional insulator means.

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