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W. J. HILL

2,195,569

WIRE ANCHORING DEVICE

Filed March 23, 1939

FIG. 1

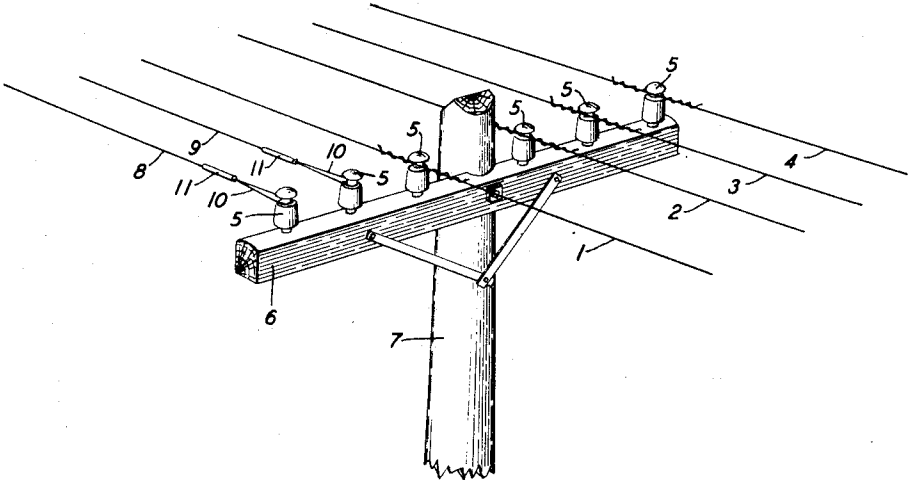


FIG. 2

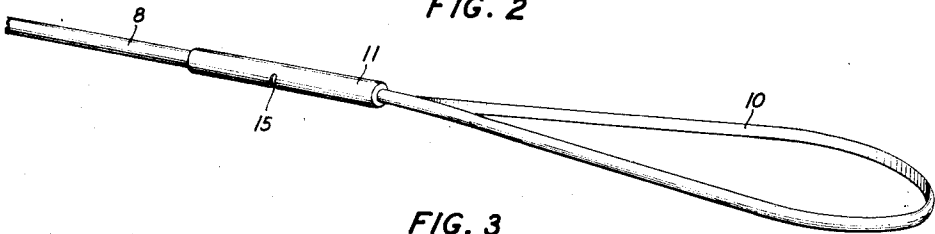


FIG. 3

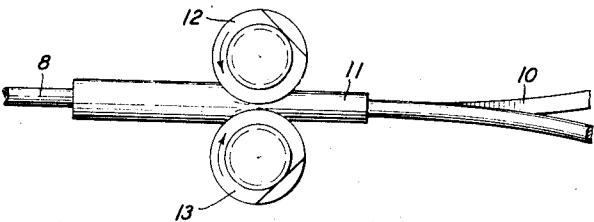


FIG. 6

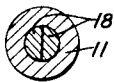


FIG. 4

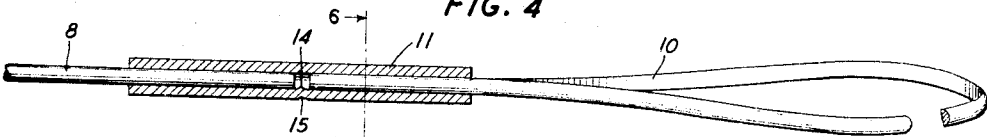
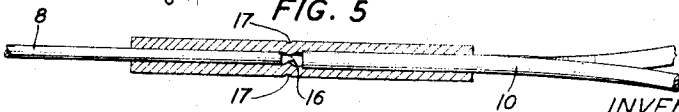


FIG. 5



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WIRE ANCHORING DEVICE

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6 Claims. (Cl. 24-115)

This invention relates to the anchoring of wire ends to a support and is particularly applicable to the dead-ending of a wire to an insulator.

The object of the invention is to provide means on a wire end for anchoring the wire to a suitable support. The support may be, for instance, an insulator supported on a cross-arm of a pole.

A feature of the invention resides in the form and arrangement of a loop member adapted to engage a support.

Other features reside in the combination of the parts.

In the drawing:

Fig. 1 is a view in perspective of a portion of a wire line system and including a pole and cross-arm for supporting the wires of the system;

Fig. 2 is a view in perspective of a portion of a wire to be dead-ended and the means I have devised for dead-ending the wire to an insulator;

Fig. 3 illustrates a step in the process of making the dead-end connection;

Fig. 4 is a side view, partly in section, of the dead-end connection means;

Fig. 5 shows a modification of the structure shown in Fig. 4; and

Fig. 6 is a cross-sectional view of a portion of Fig. 4 taken on the line 6-6 and enlarged relative to Fig. 4.

Figs. 2 to 6 are enlarged relative to Fig. 1.

In the dead-ending of wires, a common practice is to loop an end portion of the wire around an insulator and then wrap the end portion of the wire several times around a straight portion of the wire. Another common practice is to form a looped end on the wire and provide either a single or double-barrel sleeve on the parallel extending portions of the wire adjacent the loop and then twist the sleeve and the portions of the wire enclosed therein to maintain the wire end in looped formation.

When a wire is being dead-ended to an insulator supported, for instance, on the cross-arm of a pole, the lineman may readily loop the end of the wire about the insulator and twist the wire and even a sleeve applied thereto to hold the parts together providing the wire and sleeve are made of relatively soft material. The twisting and bending of the parts, however, have a tendency to weaken them.

In some cases, however, the wires employed are made of relatively hard and stiff material and cannot readily be bent and twisted to the required form even by means of sleeve twisters or other suitable tools in the hands of a lineman on a pole.

In my invention no bending or twisting of the wire to be anchored is required, and hence a wire of relatively stiff and hard material may be readily dead-ended to an insulator by a lineman working on a pole. The dead-ending may also be accomplished without the application of bending or twisting strains to the wire such as might cause weakening of the dead-ended parts.

To illustrate the invention, I have shown in Fig. 1 its application to a so-called open line-wire system, the through line wires 1, 2, 3 and 4 of which are secured to insulators 5 supported on a cross-arm 6 of a pole 7 as commonly found in systems of the type above mentioned. The wires 8 and 9 are dead-ended to insulators 5 supported on the cross-arm 6. Each dead-ended wire is anchored to an insulator 5 by means of a loop member 10 and a sleeve 11, the loop member 10 being extended around the insulator 5 and the sleeve 11 being affixed to an end of the wire to be dead-ended and to two parallelly disposed ends of the loop member 10. The loop member 10 may be made of any material found suitable for the purpose but should have a cross-sectional form at the point of entrance to the sleeve 11 suitable for inserting two parallelly arranged end portions of the loop member into the sleeve 11. The loop member 10 may be made, for instance, as shown in Figs. 2, 3, 4, 5 and 6 of a suitable length of half round material, the cross-sectional dimension of which is slightly less than half the internal diameter of the sleeve 11. The length of material is bent into the form of a loop suitable for passing around the insulator 5, the flat side of the material being on the inside of the loop. The two free ends of the piece of material forming the loop member 10 are brought together in parallel relation with the flat sides *s* in face-to-face relation, the ends thus cooperatively forming a cylindrical portion suitable for insertion into an end of the sleeve 11. The two free end portions of the piece of material forming the loop member 10 when thus brought together are inserted longitudinally in one end of the sleeve 11 and pushed a sufficient distance therein to maintain the loop member 10 in required form. The distance of insertion, for instance, may be about half-way through the sleeve 11 as shown in Figs. 4 and 5. An end of the wire 8 or 9 to be dead-ended is inserted longitudinally in an end of the sleeve 11 opposite to that occupied by the parallelly arranged ends of the loop member 10, the sleeve 11 having an internal diameter slightly greater than the diameter of the wire 8. The wire 8 is thrust about

half-way through the bore of the sleeve 11, as shown in Figs. 4 and 5. The sleeve 11 is then compressed about the wire 8 and the two parallelly arranged ends of the loop member 10 to hold the parts together. The compressing of the sleeve may be readily accomplished by means of a pair of roller dies 12 and 13, as shown in Fig. 3, the dies 12 and 13 being rolled along the sleeve to reduce the diameter of the sleeve 11. Since the means for compressing the sleeve forms no part of this invention, the specific means for performing this operation is not herein shown. A suitable tool for compressing the sleeve, however, is described and shown in W. S. Hayford et al. Patent 1,896,512, issued February 7, 1933. The sleeve might also be compressed by means of the tool shown and described in W. S. Hayford et al. Patent 1,871,321, issued August 9, 1932. In this event, the sleeve would be compressed by means of two spaced inwardly movable die members rather than by means of a pair of rollers.

A stop may be formed in the bore of the sleeve 11 to limit the extent of thrust of the ends of the loop member 10 and the wire 8 into the sleeve 11. In Fig. 4, the stop is simply an embossing 14 formed at a required point in the bore of the sleeve 11. The embossing 14 may be formed by striking the outside of the sleeve adjacent the desired location of the stop with a suitable instrument and thus forming the stop 14 in the bore and a corresponding nick 15 in the outside of the sleeve 11 as shown in Figs. 2 and 4. The stop may also be in the form of an annular embossing 16 in the bore of the sleeve as shown in Fig. 5. In this case, the embossing 16 may be made by annularly indenting the outside of the sleeve 11 at 17.

It is desirable that the loop member 10 be at least equal in tensile strength to that of the wire dead-ended thereby, and that it be made of material sufficiently flexible to be bent into the loop form required without important impairment in its strength. The sleeve 11 should be made of material sufficiently soft to permit compression of the sleeve about the inserted ends 18-19 of the loop member 10 and the end of the wire 2 by means of tools of the character above mentioned. In some cases the wire to be dead-ended and the loop member and sleeve may be made of copper or various compositions thereof, the material of the loop member 10 having a greater tensile strength than that of the wire 2 since the cross-sectional area of a single strand portion of the loop member 10 is only about half that of the wire 8. In such cases I may use a copper sleeve and have the loop member 10 made of brass or bronze. When the loop member 10 is made of brass or bronze, the material may be annealed before bending into the required loop form. After annealing and bending to the required form, the material of the loop member 10 may be in some instances subjected to a hardening process to make the material sufficiently hard to resist deformation when the sleeve 11 is compressed about the parts. This will result in the material of the loop member 10 cutting slightly into the interior of the sleeve 11 and better holding together of the loop member 10 and sleeve 11.

When the wire to be dead-ended is a steel wire, the sleeve 11 and the loop member 10 may also

be made of steel, the tensile strength of the sleeve 11 and the loop member 10 being at least equal to that of the wire 8 but the sleeve 11 being sufficiently malleable to permit compressing about the wire 8 and the end parts 18-19 of the loop member 10 inserted therein.

Although the loop member 10 is shown in the figures in the drawing as being made of half round cross-sectional material and as having the same cross-sectional form throughout its entire length, it is obvious that other cross-sectional form material may be employed and that the cross-sectional form of the ends inserted in the sleeve 11 need not be continued throughout the entire length of the loop member 10 and that changes such as above mentioned may be made without departing from the spirit of the invention.

What is claimed is:

1. In a dead-end connection for a wire, a sleeve, frictionally supported on an end of said wire and extending longitudinally thereof, a loop member extending from an end of said sleeve opposite to that occupied by said wire, and end portions of said loop member held together within and by means of said sleeve and each of said end portions having a cross-sectional form equal to half the cross-sectional form of the bore of said sleeve.

2. In a dead-end connection for a wire comprising a cylindrically bored sleeve frictionally supported on an end of said wire, a half round cross-sectional wire bent into the form of a loop and having end portions parallelly arranged and frictionally held in said sleeve.

3. In a dead-end connection for a wire comprising a cylindrically bored sleeve frictionally supported on an end of said wire, a half round cross-sectional wire having a tensile strength at least as great as that of the first-mentioned wire and bent into the form of a loop, and end portions of said half round cross-sectional wire disposed in flat face-to-face relation within said sleeve and frictionally held in place in said sleeve.

4. In a dead-end connection for a wire, a sleeve of malleable material frictionally supported on an end of said wire, a wire bent into the form of a loop and made of material harder than that of said sleeve and at least equal in tensile strength to the wire first mentioned and end portions of the wire in said loop being about half the cross-sectional size and form of the wire first mentioned and said end portions being frictionally held in parallel relation in said sleeve.

5. In a dead-end connector, means for connecting a line splice to a support comprising a loop element, said loop element comprising a length of wire the opposite end portions of which are substantially half round in cross-section and complementary to each other whereby to provide a substantially cylindrical end for insertion in said line splice.

6. In a dead-end connector, means for connecting a line splice to a support comprising a loop element, said loop element comprising a length of wire the opposite end portions of which are complementary parts of a substantially cylindrical end for insertion in said line splice.

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