Feb. 13, 1951 J. B. CLAPP 2,541,406

GROUND WIRE ASSEMBLY

Filed Nov. 14, 1945

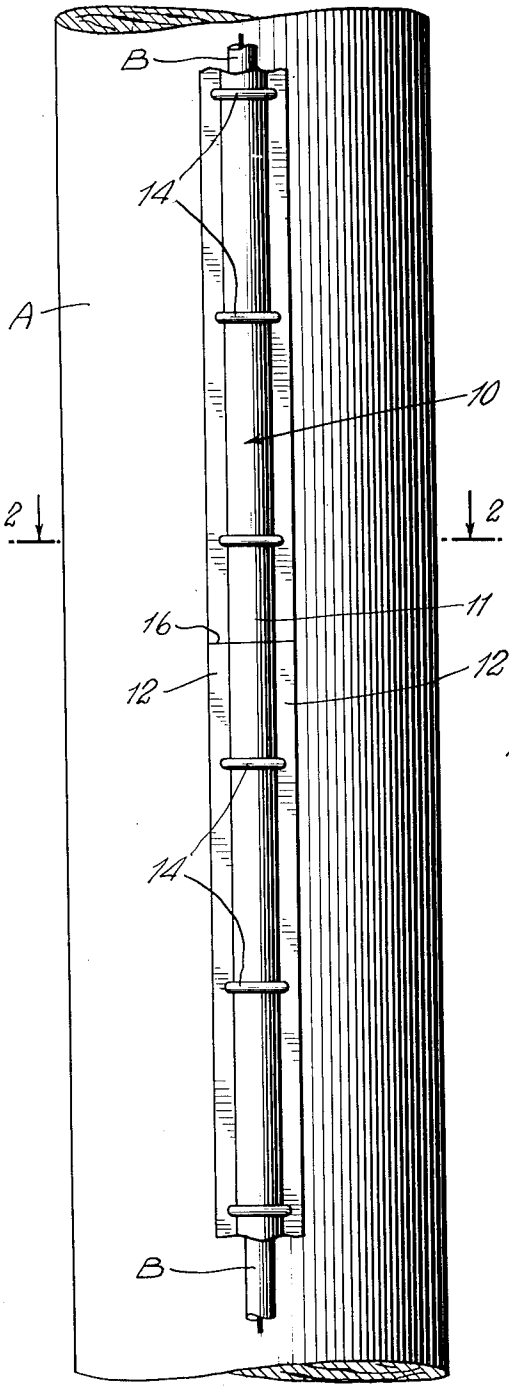


Fig. 1.

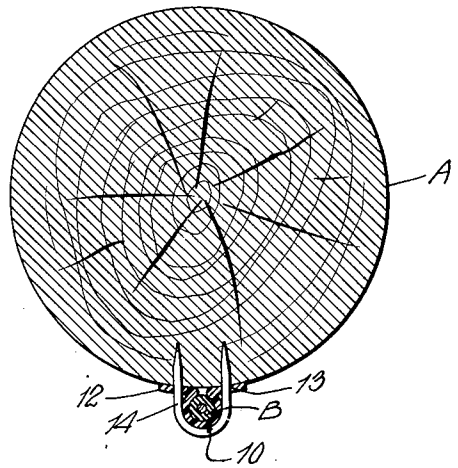


Fig. 2.

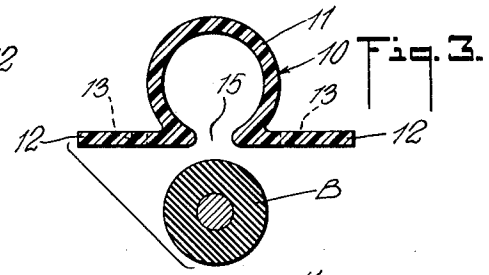


Fig. 3.

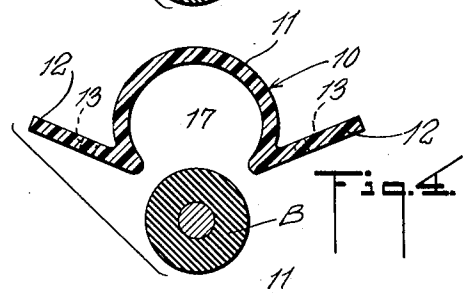


Fig. 4.

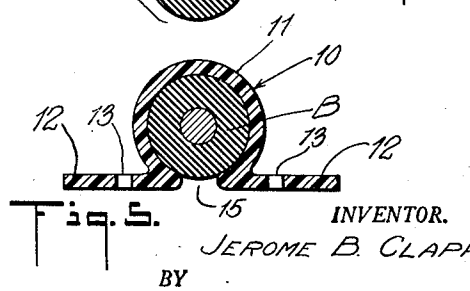


Fig. 5.

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Patented Feb. 13, 1951

2,541,406

UNITED STATES PATENT OFFICE

2,541,406

GROUND WIRE ASSEMBLY

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Application November 14, 1945, Serial No. 628,437

6 Claims. (Cl. 174—45)

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The invention relates in general to a mounting for securing an electric wire, cable or similar conductor in place on a support wherever such mounting may be necessary or prescribed, and the invention specifically relates to an article of manufacture constituting a ground wire and associated mounting forming an assembly designed to be secured as a unit in place on a pole or equivalent outside support.

The invention also relates to an improved method for assembling one or more preformed mounting strips in fixed clamping engagement with a ground wire to form a chain-like ground wire assembly adapted to be secured as a prefabricated custom-made unit to a pole or other support.

It is a common practice at present when securing a ground wire to a pole or house side either to staple it directly to its support, or to locate a protector, usuallly a half round wood (locust) molding over the wire and secure the same in place by means of metal straps or clamps nailed in place. These forms of mounting have not proven satisfactory, particularly after they have been in use for a while. Among other reasons which cause dissatisfaction is that they develop defects due to pole shrinkage which causes at least a slight separation between the ground wire and the staples or nails, or between the wire and the wooden molding or its fastening means; and in these cases, arcing develops. Once an arc is established, there is thereafter a continuous static resultant which is detrimental to television and radio reception. Further, the mounting of a ground wire following conventional practices is tedious, difficult for unskilled labor and even for skilled labor. For instance, present practices necessitate the temporary holding of both the wire and its wooden protector in place while being nailed to the support, and care must be exercised to make sure that the wire and wooden molding are correctly assembled with the protector overlapping the wire, and retained in assembled position during the entire time the assembly is being nailed in place.

The primary object of the invention is to provide a structure which will facilitate a simplified technique in the mounting of electric wires, such as ground wires; which will defeat any tendency to develop arcing even if the support should warp or shrink; and in general to provide a ground wire mounting which will avoid interference with adjacent radio equipment.

Still another object of the invention is to provide a simplified and inexpensive form of protection for wires like ground wires, arranged so that the protective means can be easily installed on the wire; the assembly thereof easily mounted on its post or other support; and when mounted in place will maintain its preset relation for a long time without necessity of further attention.

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Broadly, the invention features the use of one or more long lengths of preformed mounting strips or ducts, formed of an insulating material having high dielectric strength, and strung end to end on the wire protected thereby before the resulting assembly of wire and mounting strips is secured in place.

Still another object of the invention is to provide an improved form of wire mounting which can be produced cheaply as a factory proposition with simple form of molding machinery and in which the least amount of material is used and still obtain the requisite physical characteristics herein featured. In general, the mounting is simply a long strip of sheet-like insulating material formed primarily of a body portion in the form of a split tube or cylinder having outstanding fastening flanges.

Each mounting strip is of sufficient rigidity to maintain its normal preformed configuration when free of any forces which tend to distort it. On the other hand, its wire containing split body portion is sufficiently flexible along its axis to respond to ordinary manual force to distend, at least momentarily, the parts on opposite sides of the slotted opening sufficiently to permit the insertion therein of the associated wire or cable, and of sufficient elasticity to cause the body portion to spring back into its initial contour and incidentally grasp the contained wire resiliently when the manually applied distorted forces are removed. Likewise, the fastening flanges are sufficiently rigid to resist such manually applied distortion and yet are sufficiently bendable about said axis to conform more or less to their supporting surfaces when distorted under such forces as may develop incidental to driving nails or prongs therethrough and into the support.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of grounding wire mounting embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:

Fig. 1 is a view in side elevation of the por-

tion of a post to which is attached the contacting ends of a pair of mounting strips, constituting a preferred embodiment of the invention and functioning to support a ground wire from one side of the post;

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1 and showing the mounting strip in horizontal cross section at the point engaged by one of the staples;

Figs. 3 to 5 inclusive are each transverse sectional views of the mounting strip and wire enlarged from the showings in Figs. 1 and 2; Figs. 3 and 4 being composite views showing the relation of the mounting strip and wire in two succeeding steps prior to being assembled; Fig. 3 showing the strip in its normal position; Fig. 4 showing the strip with its ends sprung apart to receive the wire; and

Fig. 5 is a view of the strip and wire assembly before it is mounted in position on the pole as shown in Figs. 1 and 2.

In the drawings there is shown a wooden post A which supports an insulated ground wire B, such as is used to ground a transformer or similar electric instrument mounted on the post. The wire is supported from and secured to the post by being encased in one or more mounting strips or ducts 10 and the assembly so formed nailed to the post. The strips or ducts include a one-piece body portion 11 of somewhat cylindrical form and provided with a pair of outstanding flat fastening flanges 12 integral with the body portion and normally disposed in a plane tangent to the body portion 11, as best shown in Fig. 3. The body portion is provided along one side and between the flanges with a longitudinally extending slot 15. The slot is relatively narrow, and in the instant case, the body portion is almost a complete circle in cross section and normally, that is when unstressed as shown in Fig. 3, has an arc length of about 325°.

The bore of the body portion is of substantially the same diameter as that of the wire B, or preferably of slightly smaller diameter, to provide for a frictional tight snug fit on the wire, as suggested in Fig. 5. Each flange is provided with a line of nail or staple receiving holes or apertures 13, with the holes disposed in transverse pairs to receive the prongs of U-shaped staples 14.

The mounting strips are molded to shape from some suitable form of plastic material having high dielectric strength, and in the illustration is made from a laminated phenolic sheet, one form of which is known commercially as "Formica." This material has numerous advantages over other forms of insulating plastics in that it is substantially free from moisture absorption, is relatively inexpensive, and can be easily molded to shape. In one commercial embodiment of the invention, the stock strips were eight feet long, and the material of which they were formed permitted them to be sawed to any desired length where necessary to fill out the desired length of protection. The prepared stock strips terminate in carefully finished squared off ends 16, so that they can be joined in abutting relation to form a neat joint as shown in Fig. 1 and which is hardly noticeable.

In operation, the necessary number of lengths of mounting strips were strung on the wire in end to end relation to form the assembly shown in cross section in Fig. 5. Preferably, each mounting strip is laid on a table, on the street, or on any convenient more or less level support with the slotted side uppermost; and by bearing down on the outstanding flanges, either with his two hands or with a suitable form of spreading tool, the slot is opened as shown in Fig. 4 a distance to permit the pressing of the wire B through the slot while so temporarily distended and into the groove-like channel 17 provided by the body portion 11. As it would be difficult for one man to open the entire slot for its eight foot length, the usual procedure is for the operator to open the slot for a few inches at a time, press the wire downwardly into position in the channel, permit the open sides to snap back into their normal position snugly engaging the wire as shown in Fig. 5, and then proceed with the next length of a few inches until the entire length of the strip has received its proportion of the entire wire. Then another length of strip is laid in end abutting relation to the previously filled strip, and the operation is continued until the entire length of wire, except its extreme ends, is covered. As thus formed, the assembly is a long, substantially rigid unit with the wire acting as a core connecting the mounting strips in a chain-like assembly.

The assembly so formed is elevated into a vertical position by means of a rope, is laid against the pole with the flanges in engagement therewith, and is nailed in place by passing the prongs of staples 14 through the aligned pairs of openings 13; and then the staples are driven into the post one after the other into position, as shown in Fig. 2. In this way, there is no necessity of separately handling both the wire and its protector as they are mounted in place.

Numerous advantages follow as the result of this technique. For instance, there was only one mounting operation, that of stapling the assembly to its support. The usually exposed length of wire is completely housed and does not come in contact with any metals on the post or even with the fastening staples, and thus there is eliminated any possibility of arcing between the ground wire and any adjacent metal. The wire is completely hidden from view, and there is thus eliminated the possible hazard to children who might otherwise poke at it. As the mounting strip need only have a width about twice the diameter of the conductor carried thereby, the space on the pole taken up by the mounting is quite narrow compared with known used protectors, and the presence of this device does not materially interfere with the climbing safety of the linesman.

I claim:

1. A chain-like ground wire assembly including two long mounting strips in end-to-end relation forming a joint therebetween and an insulated electric conductor of cylindrical form resiliently clamped by each of said strips, acting as a flexible core to the assembly, bridging the joint and connecting the strips, each strip formed of a sheet of laminated phenolic insulating material and including a body portion of hollow cylindrical form provided at all times along one side with a narrow slot through which the conductor may be inserted laterally when the slot is sprung open sufficiently to permit the conductor to pass therethrough and into the channel provided by the body portion, and each of said strips provided with at least one outstanding mounting flange by means of which the associated body portion may be located relative to and secured to a support independently of the

securing to the support of the other body portion.

2. The ground wire assembly defined in claim 1 and in which the outstanding flange of each strip is normally flat and possesses sufficient flexibility to permit it to conform substantially to the surface of the support when its associated strip is stapled to the support.

3. In a device of the class described, the combination of an insulated ground wire means for enclosing a material length of the wire, said means including a plurality of units in end to end relation, each unit including, a mounting strip of insulating material encasing a length of the conductor and including a body portion of somewhat cylindrical form in which the conductor length is entirely contained, and said body portion provided with a pair of outstanding normally flat fastening flanges integral with the body portion and by means of which the body portion may be deformed to receive its proportionate part of the conductor therein, said body portion provided between the flanges with a longitudinally extending slot through which the conductor may be passed, the bore of the body portion having a diameter not greater than the diameter of the conductor and providing a frictional tight snug fit on the conductor clamped thereby.

4. A ground wire assembly including two long mounting strips in end-to-end relation forming a joint therebetween and an insulated conductor clamped by each of the strips, acting as a flexible core to the assembly and extending across the joint between the strips, to connect the same flexibly and with a slight degree of permissible relative rotary twist, each strip being formed of one piece of a sheet of laminated phenolic insulating material and including a tubular portion provided on one side with a longitudinally extending slot open at all times, said body portion provided on at least one side of the slot with an outstanding flange integral therewith and normally disposed in a plane substantially tangent to the body portion, the bore of said body portion normally having a cross section less than the cross section of the conductor and resiliently gripping the conductor in snug binding engagement therewith.

5. A ground wire assembly adapted to be mounted on the cylindrical surface of a pole, including a length of cable and a mounting therefor co-existing therewith, said mounting including a plurality of lengths of mounting strips in end-to-end relation and each strip being of one-piece and including a body portion in the form of a split tube resiliently clamped to its associated length of cable and including outstanding fastening flanges flexed into snug engagement with the cylinder like surface of the pole, and fastening means, at least one for each mounting strip, bearing on the body portion and passing through the flanges of its associated strip for securing the strip to the pole independently of the securing of every other strip to the pole.

6. In a device of the class described, the combination of a pole which is liable to become warped or to shrink in time, a ground wire carried by and located on the outside of the pole and means for securing the wire to the pole, said means including a mounting strip formed of insulating material and including a body portion in the form of a split cylinder having sufficient flexibility to permit the cylinder to be opened along its longitudinal axis by manual effort to facilitate the insertion therein of the portion of the wire allotted to the same and having sufficient elasticity to permit the cylinder to spring back into position gripping and encasing the wire, said strip held by the wire with the slotted side of the body portion at all times open and facing the pole, and in binding engagement with the wire and said body portion provided with a pair of normally rigid outstanding flanges having sufficient flexibility to conform to the contour of the portion of the pole to which they are fastened, and said pole reacting on the flanges to hold them under tension and distorted from their initial flat configuration, said flanges being sufficiently elastic to make them capable of readjusting themselves automatically to conform to any changes in the contour of the pole surfaces to which they are attached, and said flanges provided with longitudinally spaced-apart pairs of transversely aligned apertures, and U-shaped staples at least one for each pair of apertures and each staple with its crotch portion looped about and bearing on the body portion of its associated strip and having its prongs passed through a pair of apertures in the flanges to secure the strip to the post with both the body portion and the flanges distorted from their initial configuration.

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