

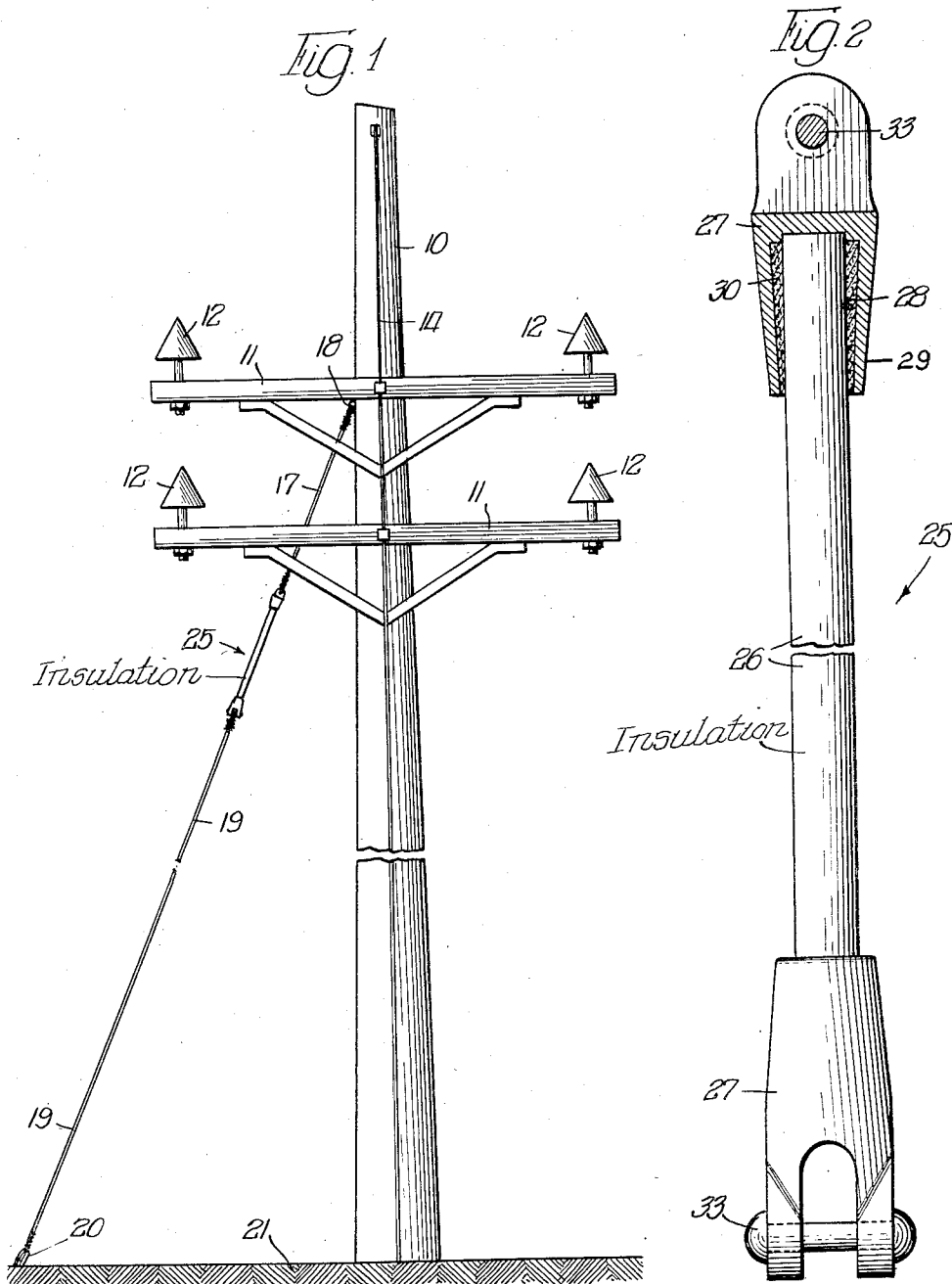
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INSULATOR

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INSULATOR

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1 Claim. (Cl. 174—207)

This invention relates, generally, to insulators and it has particular relation to strain insulators for connection between guy wire sections used to hold high voltage electric power transmission line poles in upright position.

Guy wires are employed to hold such poles particularly where they are subjected to unusual stresses such as at a place where the transmission line changes direction. Ordinarily guy wires consist of galvanized steel or copper covered wires stranded together. It is a conventional design of transmission lines to so construct them so to avoid outages resulting from lightning strokes. In order to do this full advantage is taken of insulation that is provided by porcelain insulators carrying the line conductors, the wood in the pole and cross arms and the air itself. The guy wires, unless insulated, may affect adversely some of this insulation unless proper precautions are taken. These precautions take the form of the installation of one or more strain insulators in a guy wire.

It has been customary in the past to employ wood in the fabrication of strain insulators for guy wires, the wood forming the insulating medium since it has a high insulating value. However, wood does not have as high an insulating value as does porcelain, glass and certain plastic materials. It is heavy, cumbersome and sometimes arcing horns are required at the ends of the wood insulator in order to prevent it from splintering as the result of its being subjected to a lightning stroke. While plastic insulators have been used for this purpose, they have not been satisfactory because of the particular fittings employed and the manner in which they have been secured to the plastic insulator. Such devices have not withstood service conditions.

Accordingly, among the objects of this invention are: To provide a guy strain insulator that can be readily and economically manufactured and installed and which is resistant to weather and lightning flashover and is strong enough to withstand the tension stress applied thereto under normal operating conditions; to employ for the insulating medium a plastic insulating material in the form of a rod and to secure metallic clevis fittings to the ends thereof; and to provide each clevis fitting with an outwardly tapered cavity and to secure an end of the rod therein by cement.

Other objects of this invention will, in part, be obvious and in part appear hereinafter.

This invention is disclosed in the embodiment thereof shown in the accompanying drawing and it comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claim.

For a more complete understanding of the nature and scope of this invention reference can be had to the following detailed description, taken together with the accompanying drawing, in which:

Figure 1 is a view which shows a conventional type

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of transmission line pole carrying cross arms and arranged to be guyed to the ground; and

Figure 2 is a view, partly in side elevation and partly in section, showing the details of construction of the guy strain insulator that is incorporated in the guy wires shown in Figure 1.

Referring first to Figure 1 of the drawing it will be observed that the reference character 10 designates a wood pole that is one of several poles that are employed for supporting a high voltage transmission line. In this instance the high voltage transmission line may comprise three conductors and these conductors may be mounted on wood arms 11 carrying pin type insulators 12 at their ends. Since three conductors are assumed to be used only three insulators 12 are shown. A down lead 14 extends from the upper end of the pole 10 to ground in order to provide a definite ground for the transmission lines as is conventional. It will be understood that the pole 10, cross arms 11, insulators 12 and the downlead 14 are shown merely to illustrate a typical installation with which the present invention can be employed. It will be understood that other arrangements can be made as is well known to those skilled in the art.

As pointed out above it is necessary to brace the pole 10 against unusual stresses such as occur where the transmission line changes direction or where the line is dead-ended. For this purpose a guy wire is employed that may comprise an upper guy wire section 17 that is connected at 18 to the pole 10. It also includes a lower guy wire section 19 that is connected at 20 to an anchor (not shown) in the ground 21 at a suitable distance spaced from the foot of the pole 10 which extends into the ground some distance in accordance with conventional practice.

In order to provide a mechanical connection between the guy wire sections 17 and 19 and at the same time maintain them in insulated relation, a strain insulator assembly, shown generally at 25, is employed. The details of construction of the strain insulator assembly 25 are shown more clearly in Figure 2 of the drawings.

As there shown the strain insulator assembly 25 comprises a plastic rod 26 the length of which is several times its diameter. The length of the plastic rod 26 is determined, in part, by the system voltage and various lengths are used accordingly. Preferably the plastic rod 26 is formed of fibrous glass impregnated with a plastic material so that it is relatively strong in tension. Such material is resistant to the weather and to lightning flashover. Also, it is sufficiently strong where a suitable cross-section is employed to withstand the tension stress to which it is likely to be subjected.

At the ends of the plastic rod 26 metallic clevis fittings 27 are located. Each fitting has a cavity 28 which receives the corresponding end of the plastic rod 26. It will be observed that the cavity 28 is tapered outwardly from the end 29 through which the corresponding end of the plastic rod 26 extends. In order to hold the end of the plastic rod 26 securely in position within the metallic clevis fitting 27 a suitable cement is applied in fluid form in the outwardly tapered cavity 28 and then the end of the rod 26 is inserted therein so that it becomes embedded in the cement. The cement employed forms a bond with the adjacent end of the plastic rod 26 which is stronger than the rod 26 itself so that there is no likelihood of the fitting 27 pulling off of the end of the rod 26. This results from the outwardly tapered cavity 28 and the embedment of the end of the rod 26 in the cement 30 which in effect forms a tapered enlargement on said end of the rod.

Any suitable means can be employed for attaching the guy wire sections 17 and 19 to the metallic clevis fittings 27. For example, clevis pins 33 may be employed and

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the adjacent ends of the guy wire sections 17 and 19 can be positioned therearound and secured in accordance with conventional practice.

Since certain changes can be made in the foregoing construction and different embodiments of the invention can be made without departing from the spirit and scope thereof, it is intended that all matters shown in the accompanying drawing and described hereinbefore shall be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

A strain insulator adapted to be interposed between sections of a guy wire for guying a high voltage power line pole whereby to provide a sparkover gap between said sections comprising the combination of a pair of metallic fittings each having connecting means comprising a clevis with a transverse pin adapted to extend through the looped end of a guy wire section, said fittings having tapered sockets aligned with and facing each other with the smaller ends of the sockets extending toward each other, and a single solid cylindrical rodlike body of insulating material of substantially uniform cross section from end to end having its ends projecting into said sockets, said rodlike body consisting of glass fibers bonded together by plastic into a solid body, and a body

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of rigid cement in each tapered socket bonded to the adjacent surfaces of the rodlike body to form at each end a rigid conical enlargement upon the end of the rodlike body within said tapered socket, said enlargement resisting movement of said end of the rod out of the socket when tension is applied to said metallic fittings, said strain insulator being characterized by being light in weight, strong in tension, resistant to deterioration by weathering and resistant to damage by lightning flash-
10 over.

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