Sept. 12, 1939. D. C. SHERMAN 2,172,810

REINFORCEMENT FOR TRANSMISSION LINES AND THE LIKE

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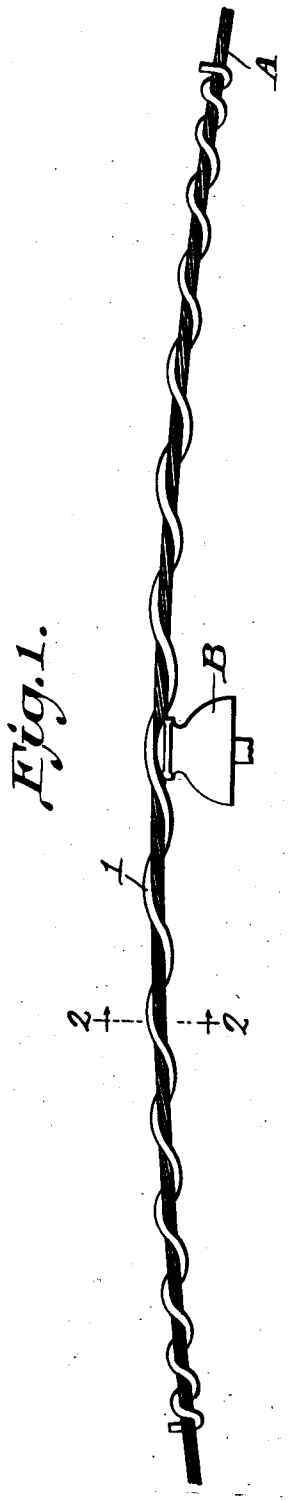


Fig. 1.

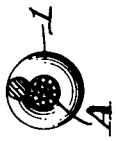


Fig. 2.



Fig. 3.



Fig. 4.

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REINFORCEMENT FOR TRANSMISSION LINES AND THE LIKE

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3 Claims. (Cl. 174—42)

It is well known to those skilled in the art of electrical transmission lines, spans of solid wire or wire strand are usually supported on insulators or upon clamps or hangers connected at intervals to poles, towers or other supports.

The weight of the span is usually such as to flex or bend the wire or strand at the point of support to such an extent as to cause injury to the material of the strand and reduce its longevity. Spans of wire or strand supported as stated tend to vibrate from the action of the wind and other cause and as a result of this vibration the wire or strand impinges upon the supporting element at the points of contact therewith.

An object of the present invention is to provide the suspended wire or strand with supplemental means for supporting it for a predetermined distance on each side of the supporting element, this supplemental means being of such construction as to distribute the bending or flexing of the wire or strand so that the amount of flexing at any point is so slight as not to be injurious to the supported wire or strand, thus offsetting the objectionable result due to vibration, etc.

Another object of the present invention is to reduce the vibration of the suspended wire or strand. Vibration occurs in waves, which impinge upon the ends of the freely suspended span of wire or strand. Any uniform section of such span of wire or strand will vibrate at a certain rate or period. The frequency of vibration of any particular section depends upon the length and tension. The present invention introduces a gradually increasing stiffness for a predetermined distance at the ends of the span. The waves of vibration then meet this gradual transition, to an increased flexural strength or stiffness, instead of terminating at the fixed end of a uniform section. The impinging of the waves upon this gradually altering section tend to set up counter waves, or what might be described as "returning waves". These counter vibrations tend to upset the regular order, rate or period of the waves in the uniform section, and thus have an effect to "damp out" or "mute" the vibration of the span.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing the preferred form of the invention has been shown.

In said drawing

Figure 1 is a side elevation of a portion of a supported strand showing the supplemental support applied thereto.

Figure 2 is a section on line 2—2, Figure 1.

Figure 3 is an enlarged elevation of a portion of the supplemental support shown in Figures 1 and 2.

Figure 4 is an elevation of a portion of a modified form of supplemental support.

Referring to the figures by characters of reference A designates the usual strand or wire of a transmission line or the like and B designates an insulator or other support therefor, it being understood that these supports are located on poles or other structures disposed at regular intervals and carry the full weight of the strand or wire A. Suitable tying means are employed for holding the parts together but as these constitute no part of the present invention, they have not been shown or described.

The present invention has for an object to support the strand or wire for predetermined distances in opposite directions form each supporting insulator B or the like so as to eliminate the abrupt sag in the strand or wire which generally occurs at each side of the support B. For the purpose of eliminating this sag by distributing the bending or flexing of the strand or wire for a desired distance in opposite directions from the insulator B or the like, and for the further purpose of reducing vibration of the suspended wire or strand, a supplemental supporting means has been devised and the same constitutes the present invention. This supplemental supporting means can be of different constructions two of which have been illustrated. In the structure shown in Figures 1, 2 and 3, the supplemental support comprises a length of cylindrical wire or rod 1 of uniform diameter and shaped to form a helix of proper dimensions to surround the wire or strand A. For the purpose of effecting a gradual transition of the weight of the strand or wire to the supplemental support, said support can be formed in either of two ways. For example, and as shown in Figures 1 and 3, the pitch of the helix can decrease from the center of the supplemental support to the ends thereof so that the flexibility of the support will increase toward its ends. In the structure shown in Figure 4, however, the pitch of the helix can be maintained

uniform but the rod or wire 2 from which the support is formed, can be tapered gradually toward both ends from the center so that the flexibility will increase toward the ends.

It will be apparent that when either form of supplemental support is applied to a strand or wire so that the center of the supplemental support will extend over the insulator B or the like and the oppositely extending portions of the supplemental support are applied properly to the strand or wire, the abrupt flexing of the supported strand or wire close to the insulator B or the like will be eliminated and, instead, said strand or wire will be supported yieldingly for predetermined distances beyond the insulator B or the like so that danger of crystallization or other injury due to abrupt bends at the points of support, is thus eliminated and the strand or wire will last longer than otherwise.

A valuable attribute of the present invention is the property or characteristic whereby it "damps" or "mutes" vibration waves in a span of wire or strand.

What is claimed is:

1. The combination with a main support and a wire mounted thereon, of an attachment bridging the support and engaging the wire at opposite sides thereof, said attachment comprising a helical member surrounding the wire and of gradually increased flexibility from the support to the ends of the attachment, said wire constituting the sole means for holding the attachment assembled with the support.

2. The combination with a main support and a wire mounted thereon, of an attachment bridging the support and engaging the wire at opposite sides thereof, said attachment comprising a helical member surrounding the wire and of gradually increased flexibility from the support to the ends of the attachment, said wire constituting the sole means for holding the attachment assembled with the support, the convolutions of the attachment being decreased gradually in pitch toward the ends of the attachment.

3. The combination with a main support and a wire mounted thereon, of an attachment bridging the support and engaging the wire at opposite sides thereof, said attachment comprising a helical member surrounding the wire and of gradually increased flexibility from the support to the ends of the attachment, said wire constituting the sole means for holding the attachment assembled with the support, the said helical member consisting of a rod tapered toward both ends from the center.

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