Feb. 17, 1953 B. M. SMALLEY 2,628,805

INSULATOR SUPPORT

Filed July 17, 1948

Fig. 1.

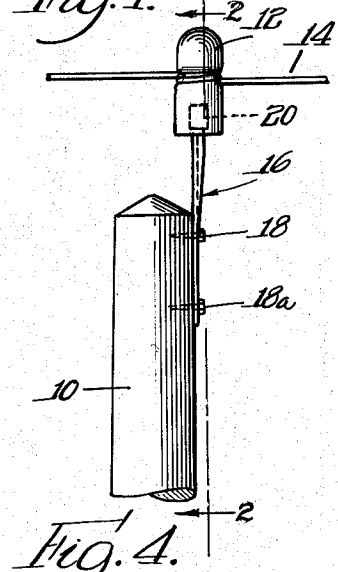


Fig. 2.

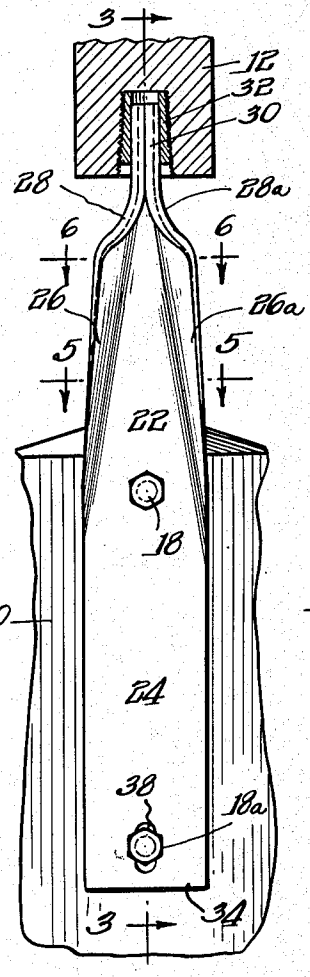


Fig. 3.

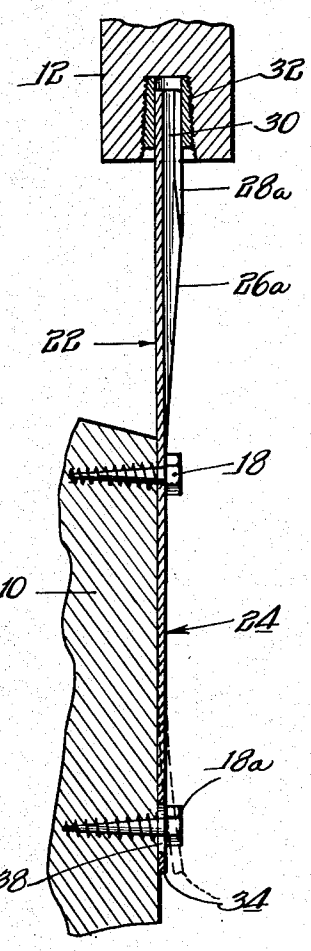


Fig. 4.

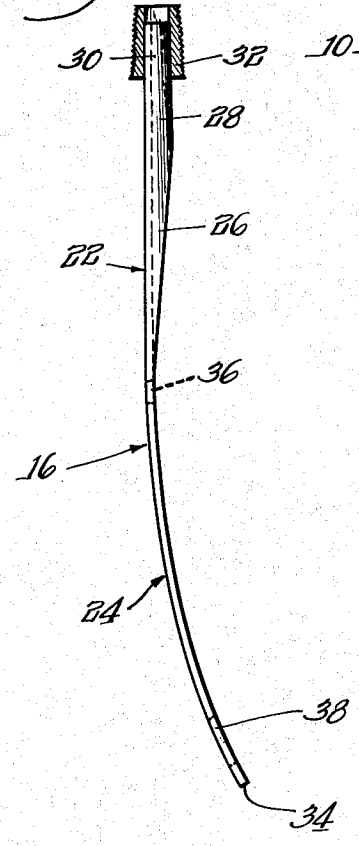


Fig. 5.

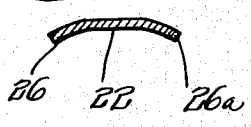
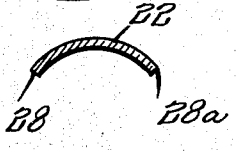


Fig. 6.



INVENTOR.
Burt M. Smalley
BY
Moore, Olson & Trexler
attys.

Patented Feb. 17, 1953 2,628,805

UNITED STATES PATENT OFFICE

2,628,805

INSULATOR SUPPORT

Burt M. Smalley, Chicago, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill., a corporation of Illinois

Application July 17, 1948, Serial No. 39,287

2 Claims. (Cl. 248—221)

1

The present invention relates to new and useful improvements in electrical transmission systems and more particularly to such improvements in supporting means for the insulators carrying the electrical conductors of high tension transmission circuits and the like.

In general, the invention is concerned with the supporting of the electrical conductors of overhead high voltage transmission lines wherein there are provided ground supported uprights in the form of posts having one or more cross trees thereon. Insulators carrying the conductors are mounted along the cross trees and usually there is an insulator mounted at the top of each pole for supporting the top wire of the high tension circuit. While the invention is more particularly concerned with the insulator support at the top of the pole, it is of course contemplated that the support might be used to carry the insulators on the cross trees. The supports for the insulators, when used at the tops of the poles, have been generally termed pole top pins which are usually secured to the outer surface at the top of each pole and each of which includes at the free end thereof means for securing the insulator thereto. While the poles are generally formed of wood suitably treated or conditioned to resist the elements, there is substantial shrinkage and expansion due to varying climatic conditions. It is of course desirable to maintain all connections tight in order to eliminate radio or like interference resulting from loose connections and vibration. Heretofore, the pole top pins have generally been secured to the pole by bolts, screws or the like and, to compensate for shrinkage of the pole, lock nuts or spring washers have usually been employed in efforts to eliminate looseness and vibrations.

An object of the present invention is to maintain a firm and tight mounting connection between an insulator support and a ground supported upright in overhead electrical transmission lines so as to substantially eliminate interference in the lines and burning of the uprights.

Another object of the invention is to provide an insulator support which is constructed and arranged to be maintained inherently stressed and resilient when secured in place on an upright to eliminate looseness and vibration resulting from shrinkage or other changes induced in the upright due to climatic, atmospheric or similar influences.

A further object of the invention is to provide an insulator support adapted to be secured to a post and having the secured portion thereof

2

under stressed deformation when secured to the pole so as to automatically eliminate and compensate for looseness tending to occur in the connections therewith.

A still further object of the invention is to provide an insulator support substantially of the above type having a body portion bowed out of the plane thereof and adapted to be straightened into contact with the upright or other support when secured thereto so as to be maintained under resilient stress in order to maintain tight connection with the upright.

A still further object of the invention is to provide an insulator support in the form of a pin having a resilient shank or body portion curved slightly between bolt receiving openings but substantially straightened by the bolts when secured to the upright whereby to maintain a tight connection therewith.

The invention still further aims to provide a pole top pin substantially of the above type which is simple in construction, which is easily installed and which has a minor abnormal form adapted to be overcome to such an extent when secured to the pole as to provide inherent resiliency maintaining tight connection therewith.

The above and other objects of the invention will in part be obvious and will be hereinafter more fully pointed out.

In the accompanying drawings, in which like reference characters refer to like parts throughout the several views—

Figure 1 is a fragmentary elevation showing the upper end of a pole with the pole pin and insulator secured thereto;

Figure 2 is an enlarged fragmentary section taken substantially along the line 2—2 of Figure 1 and particularly showing the connection between the insulator and the free end of the pole pin;

Figure 3 is a view similar to Figure 2 but taken substantially along the line 3—3 thereof;

Figure 4 is a detail view showing the pole pin and securing means for the insulator;

Figure 5 is a sectional view taken substantially along the line 5—5 of Figure 2; and

Figure 6 is a sectional view taken substantially along the line 6—6 of Figure 2.

Referring more in detail to the accompanying drawing and particularly Figure 1 thereof, there is shown an upright in the form of a wooden pole 10 or the like on which is mounted an insulator 12 for carrying the top electrical conductor 14 of an overhead electrical transmission system. A pole pin 16 is secured by screws

18, 18a, bolts or the like to the outer substantially vertical face of the pole 10 adjacent the top thereof and this pole pin is provided with means 20 for securing the insulator 12 thereto. The top wire 14 of the high tension circuit is wound in the recess of the insulator 12 and supported thereby. Obviously, the pole 10 may be provided with cross trees or arms (not shown) on which additional pins or other connectors may be secured for carrying other conductors of the system.

Referring more particularly to Figures 2–6 of the accompanying drawing, it will be seen that the pole pin 16 includes a body preferably formed of sheet metal and having an upper shank portion 22 and a lower shank portion 24. The upper shank 22 has the edges 26, 26a thereof bent inwardly with respect to the normal plane thereof and in progressively increasing angularity and magnitude toward the top thereof. These side edges or flanges 26, 26a begin substantially at the junction of the upper and lower shank portions 22, 24, respectively, and as they approach the top of the upper shank portion 22, the cross section thereof gradually changes from substantially that of Figure 5 to the substantially arcuate cross section of Figure 6, thus materially strengthening the upper shank portion and resisting any bending thereof. These side flanges merge into curled edges 28, 28a which approach one another and form a tubular extension 30 at the free end of the pole pin. The tubular extension has force fitted thereon a thimble 32 which may be formed of lead or similar material externally threaded to receive the porcelain or glass insulator 12. The tendency of the curled edges forming the tubular extension 30 is to expand so as to thus maintain the thimble 32 in tight engagement with the insulator. The thimble may be split for this purpose if so desired.

The lower shank portion 24 of the pole pin is flat throughout the width thereof and is curved outwardly away from the plane of the body of the upper shank portion 22. Thus, during manufacture, the lower end 34 of the shank portion 24 is bowed outwardly so as to inherently tend to remain spaced outwardly from the plane of the upper shank to thus act in the nature of a spring when straightened into the plane of the upper shank portion. While only an outwardly bowing has been shown in the drawing, it is, of course, to be understood that any other suitable original shaping of the pole pin may be accomplished so that upon securing of the pole pin in position with resultant deformation to place the same under stress, the secured lower shank portion 24 will inherently tend to compensate and overcome any looseness in the connection.

The top screw or bolt 18 passes through an opening 36 in the lower shank portion 24 and is secured adjacent the top end of the pole 10. This screw or bolt opening 36 is located substantially at the point at which the lower shank portion 24 joins the upper shank portion 22 and begins its deformation or outward bowing. The lower end 34 of the shank portion is provided with an elongated vertical slot 38 through which the lower screw 18a or bolt is passed. Upon tightening of the lower bolt 18a into the pole 10, the outwardly bowed or otherwise deformed lower shank portion 24 will be forced inwardly into substantial surface engagement with the pole throughout the length thereof. This is particularly true where there is a slight and gradual outward bowing, as illustrated, although other forms of deformation of the lower shank portion 24 may not result in substantial surface contact thereof with the pole throughout its length. When the shank portion 24 is tightly secured, as shown in Figure 3, against the surface of the pole 10, it is placed under internal stress so as to inherently tend to move outwardly against the headed end of the screw or bolt 18a. Thus, upon shrinkage of the pole 10, the lower end 34 of the shank portion 24 will continue to be forced tightly against the head of the bolt 18a as diagrammatically illustrated by the dotted line position thereof in Figure 3. Thus, vibration or other relative movement of the pole pin 16 over the area of its connection with the pole 10 is substantially eliminated and with it resultant radio or other electrical interference. The elongated slot 38 permits this slight movement of the shank without tending to pull or push on the shank of the bolt 18a which might itself tend to loosen the bolt with resultant interference due to vibration.

From the foregoing description taken with the embodiment shown in the drawing for purposes of illustration, it will be readily apparent that the present invention provides a thorough efficient insulator support wherein the mounting connection of the support with the pole of an overhead electrical transmission system will at all times be maintained firm and tight in order to eliminate electrical interference and burning of the pole due to loose vibrating parts. The shaping of the lower shank portion 24 abnormally with respect to the plane of the upper shank portion 22 and the location of the upper securing bolt 18 substantially at the bottom of the upper shank portion is such that straightening or otherwise deforming the lower shank portion 24 as it is secured to the pole will not result in bending of the upper shank portion from the desired predetermined position thereof with respect to the pole. The inherent or stored resiliency of the stressed lower shank portion, when secured, will maintain tight connections at both the securing bolts and through the extent thereof, particularly with the slight outward bowing shown in the drawing.

While one form of the invention has been shown for purposes of illustration it is to be clearly understood that various changes in the details of construction, arrangement of parts, and particular manner of relatively shaping or stressing the lower portion of the pin with respect to the upper portion thereof may be accomplished without departing from the scope of the invention as set forth in the appended claims.

I claim:

1. A pole top pin for supporting an overhead electrical conductor adjacent the top of one side of a supporting pole or the like, and comprising an elongated body portion including upper and lower shank portions, the lower shank portion being resilient and angularly bent outwardly with respect to the upper shank portion in unstressed condition and having a substantially flat surface adapted for contact with the adjacent surface of the pole, said upper shank portion having at the free end thereof insulator supporting means, fastener means associated with the body portion substantially intermediate the ends thereof in the region of the juncture between the upper and lower shank portions for securing the pin to the pole support, and lower fastener means connected with the angularly bent part of the said lower shank portion for permissive relative sliding movement therebetween and engage-

able with the pole support for drawing the said lower shank portion into substantially continuous surface contact with the pole support whereby the stressed resiliency of the straightened lower shank portion will maintain a tight connection with the fastener means at all times.

2. A pole top pin as claimed in claim 1, wherein the insulator supporting means at the free end of the upper shank portion includes curled edges approaching one another to form a tubular extension and wherein an insulator supporting thimble is press fitted on the tubular extension to compress the curled edges toward one another whereby the curled edges exert an expanding securing action against the inner surface of the thimble.

BURT M. SMALLEY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
936,527	Fisher	Oct. 12, 1909
1,219,746	Keppler	Mar. 20, 1917

FOREIGN PATENTS

Number	Country	Date
500,444	France	Dec. 17, 1919