(No Model.)

C. C. NESMITH & G. F. ARNETT.

INSULATOR FOR TELEGRAPH OR OTHER ELECTRIC WIRES.

No. 584,235. Patented June 8, 1897.

Fig. 1.

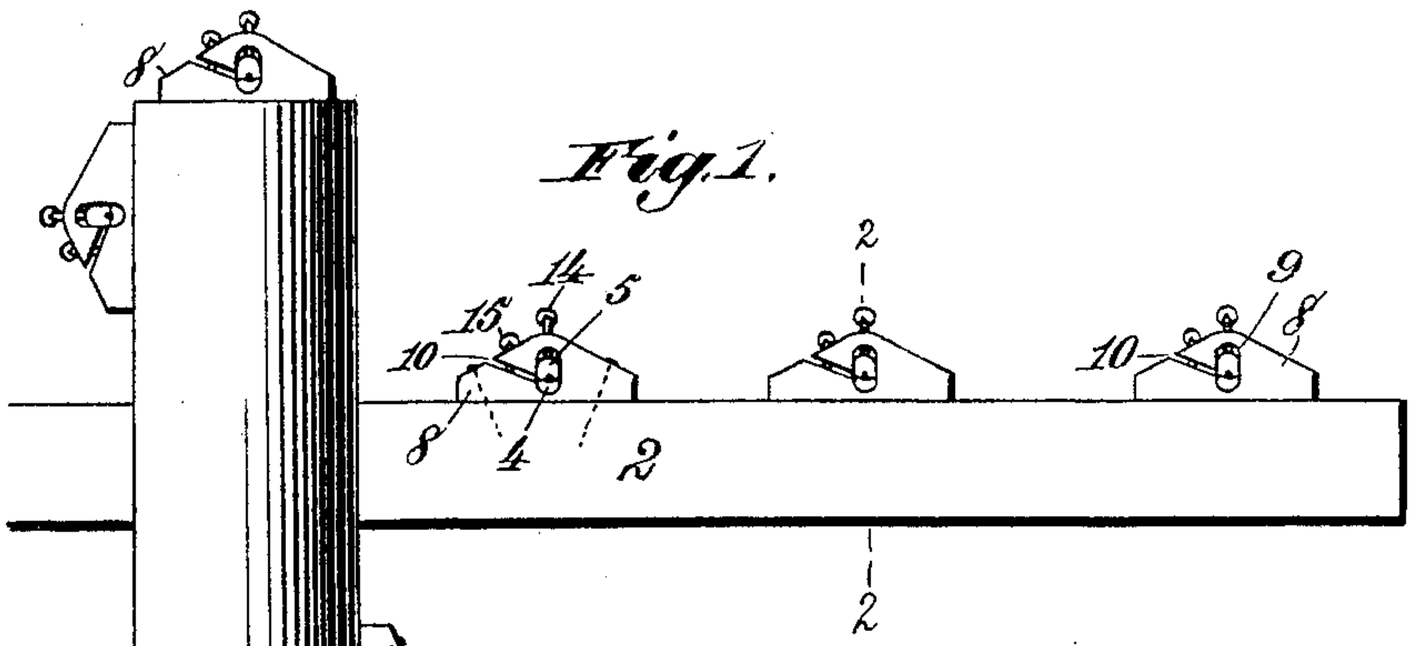


Fig. 2.

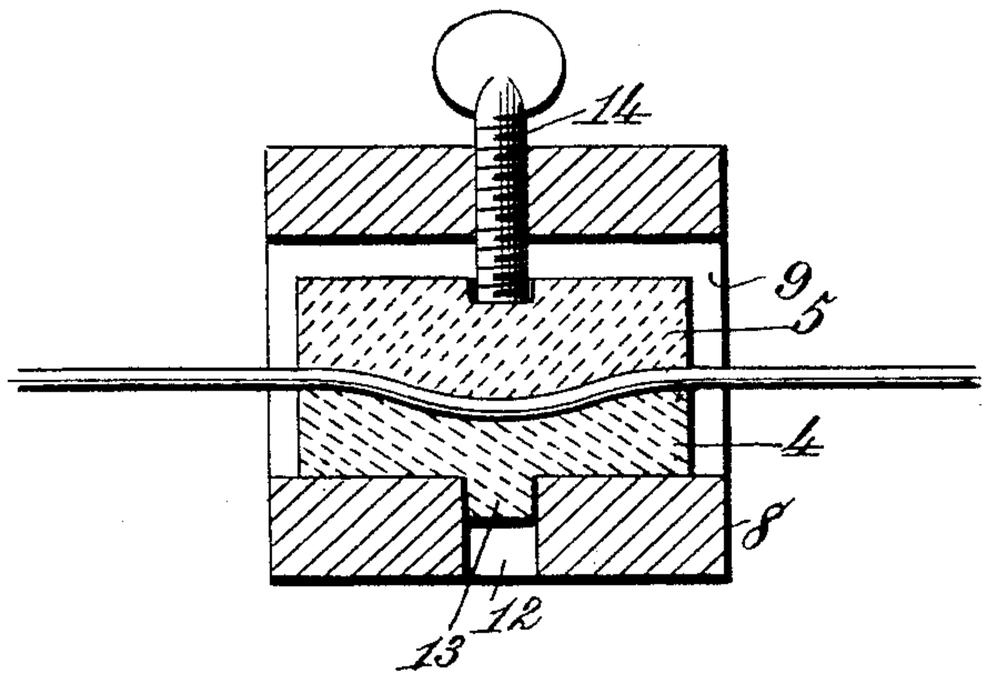


Fig. 3

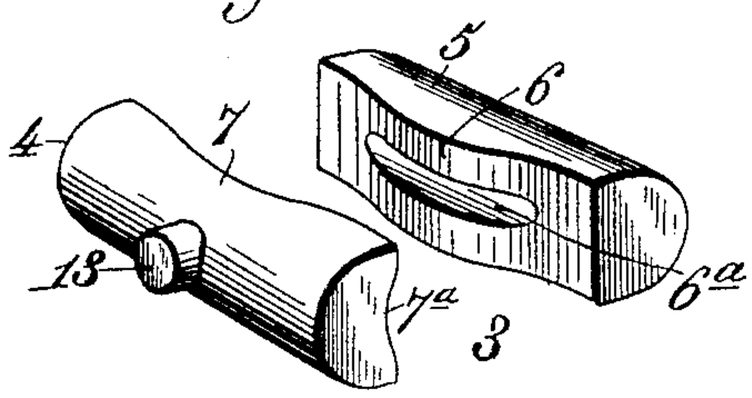
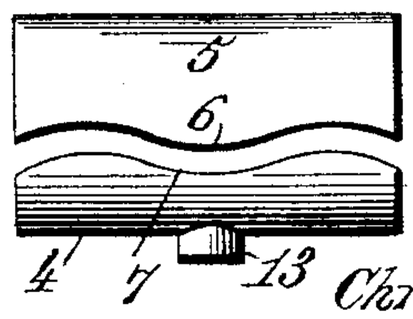


Fig. 4



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UNITED STATES PATENT OFFICE.

CHRISTOPHER C. NESMITH AND GEORGE F. ARNETT, OF MANCHESTER, ALABAMA.

INSULATOR FOR TELEGRAPH OR OTHER ELECTRIC WIRES.

SPECIFICATION forming part of Letters Patent No. 584,235, dated June 8, 1897.

Application filed March 27, 1897. Serial No. 629,607. (No model.)

To all whom it may concern:

Be it known that we, CHRISTOPHER C. NESMITH and GEORGE F. ARNETT, citizens of the United States, residing at Manchester, in the county of Marshall and State of Alabama, have invented new and useful Improvements in Insulators for Telegraph or Other Electric Wires, of which the following is a specification.

Our invention relates to insulators for telegraph or other electric wires, our purpose being to provide a device of this character which shall be protected from fracture by stones or other missiles thrown by mischievous boys, as well as from other injury.

It is our object also to provide an insulator having a simple and inexpensive construction, by which the wire shall be firmly and permanently held without danger of slipping longitudinally, so that even if the wire is broken at any point neither of the ends will be drawn through the insulating-support by the weight of the portion extending between the supporting-poles.

Finally, it is our purpose to provide an insulator which can be made from glass or any suitable material at a very low cost and which will be free from liability to accumulate moisture or water either from rain-storms, from melting snow or ice, or from condensation of watery vapor in the atmosphere.

Our invention also possesses other novel and valuable features, which will be described hereinafter and then particularly pointed out and defined in the claims which conclude this specification.

To enable those skilled in the art to which our invention pertains to fully understand the same, we will now explain said invention in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is a side elevation showing our improved insulator. Fig. 2 is a section of the same, taken upon the line 2 2 in Fig. 1. Fig. 3 is a detail view of the insulator removed from its bracket. Fig. 4 is a similar view showing a slight modification in construction.

The reference-numeral 1 in said drawings indicates a telegraph or other pole upon which overhead wires are supported to carry electric currents. Said pole is supplied with cross-arms 2, in any preferred manner, and a wire or wires may be supported upon the upper end of the pole, as seen in Fig. 1, upon the cross-arms and upon the sides of the pole. We may, however, use any other support in place of the ordinary pole, and our invention is not limited to any particular form or construction thereof, as our present improvements relate to the insulator and the bracket holding the same.

The insulator 3 we construct of glass, porcelain, gutta-percha, or any other non-conducting material which is suitable for the purpose. It is formed in two parts 4 and 5, one of which has a convex and the other a corresponding concave surface, said surfaces being denoted by the reference-numerals 6 and 7 respectively. In the ordinary forms of the insulator and for use under ordinary conditions a single curve or deviation from a right line will be all that is required for securing the wire safely and permanently, but where the strain is great or the spans unusually long and in cases where the ordinary form is not regarded as entirely secure it may be desirable to use a plurality of such curves or deviations. We have shown, therefore, in the drawings, in Fig. 3, the preferred construction, which will consist of one, and in Fig. 4 we show an insulator having two or even more, if required, of the same convex and concave surfaces or seats for the wire. By this duplication the line will be so securely held under all possible conditions as to weight or longitudinal strain that any longitudinal displacement will be wholly impossible. Should the wire be broken between any two of the poles or other supports, it will be prevented from slipping through the insulator and escaping therefrom, whereby its end, if long enough, may reach the ground. This security cannot fail to be a valuable and important feature since in the case of wires carrying currents of high tension the fall of the wire to the ground, especially in large cities or upon streets where there are many persons or vehicles passing, is exceedingly dangerous, as any person or animal struck by or coming into contact with such a wire becomes for the moment part of an electric circuit which is completed through the earth. Many lives

have been lost in this manner, and an insulator which will secure the wire in the manner described has long been a desideratum.

The insulator is inserted or seated in a bracket 8, which is provided with an opening or recess 9, so formed as to receive it and in which it has a loose fit, said recess being somewhat longer than the insulator. We preferably make the latter substantially elliptical in cross-section and divide it into the two parts 4 and 5 at a point between one end and its center.

The bracket 8 is provided with a channel or slot 10, cut therein at an angle to the side upon which it rests and intersecting the recess 9 at a point lying on one side of the line of division between the two parts 4 and 5. In the middle of the recess 9 an aperture 12 is formed, passing through the flat side and adapted to receive a lug 13 upon the part 4 of the insulator. A set-screw 14 is tapped through the opposite part of the bracket and enters the recess 9 at a point where it can engage with the other part 5 of the insulator. By the adjustment of this screw the two parts of the insulator can be pressed together with any required force, thus causing the wire to assume the curvature of the surface or surfaces provided for it. In order to resist the strain caused by the pressure of said screw, a brace-screw 15 may be tapped into the bracket at any suitable point between the screw 14 and the end through which the channel 10 opens. This screw crosses said channel and its end enters the wood upon the other side thereof. Any other means of preventing the channel 10 from widening under great pressure of the screw 14 may be substituted for the screw 15, but we regard the latter as preferable by reason of its simplicity and cheapness.

We prefer to form a groove 6^a in the convex surface 6, having a depth equal to about half the diameter of the wire. It is an advantage also to give the concave surface 7 a substantially conchoid form in cross-section, as shown in Fig. 3 by the reference-numeral 7^a. This groove disappears at its ends before entirely passing off the convex face, and its depth is so small that the wire is compelled to follow the curvature of the two contact-faces of the insulator. The groove being of substantially uniform depth throughout, save only at its ends, it follows the curvature of the convex face in which it is formed, or nearly so. At its ends, where it disappears, the depth diminishes in such a manner that the wire leaves said groove without being bent at an angle and without departing materially from the line of curvature of the convex face. This construction aids materially in keeping the wire in place, and it renders a lateral escape of the wire from the insulator practically impossible. We do not, however, restrict our invention to this feature.

The width of the bracket is greater than the corresponding dimension of the insulator, so that the latter will not only be wholly inclosed, but its ends will lie some distance within the open ends of the recess 9. This affords very efficient protection to the insulator, as it renders it almost impossible to throw a stone or other missile so as to strike it, as the wire held by said insulator assists in guarding the ends of the recess against the entrance of any missile. Moreover, being elevated at some distance from the ground, the ends of the insulator are concealed from view by the projecting wall of the recess containing it, so that it is practically impossible to hit the same with a bullet.

It will readily be seen that the bracket may be mounted horizontally upon the cross-arms of poles or fixed upon the vertical face of a pole or other support and can be turned to bring the open end of the channel 10 either at the upper or the lower end of the bracket. When turned downward, no water can enter the channel 10 and recess 9, except as rain may be blown in upon one side or the other. This is of no importance, as water so entering will immediately run off. It should be noted also that moisture from condensation cannot accumulate, as the overhanging ends of the recess 9 will effectually prevent such condensation from taking place upon the insulator.

Our invention provides a most efficient insulator, which will hold a wire with perfect security against longitudinal displacement should a break occur at any point in the span or even close to the insulator. It affords also a complete protection against injury by stones, gun-shots, or other means so commonly employed by mischievous boys. It protects the insulator from wet and thereby preserves the covering upon the wire.

The entire device can be manufactured at an extremely low cost and is applicable to use upon poles, houses, or any structure to which it may be attached in any position, either horizontally, vertically, or at any angle. It can be fastened by nails, screws, or any suitable means and requires no special skill or training to enable employees to use it.

The insulator and bracket combined provide simple and economical means whereby electric conductors of all kinds can be repaired rapidly and easily. The bracket cannot easily be detached from its support, as it is securely nailed or screwed at both ends to the pole or other support and will not pull loose by the strain of the wire.

What we claim is—

1. An insulator for electric wires, consisting of two separable parts, their contacting faces having one or more curves and the convex face of one of the separable parts having a half-round groove the ends of which disappear before passing off the convex portion, and the concave portion being conchoidal, a bracket having a recess to receive said insulator and provided with a channel intersecting said recess, and a set-screw entering said

recess to bear against one of said parts of the insulator and force it against the other part, substantially as described.

2. An insulator for electric wires consisting of two separable parts having contact-faces which are provided with one or more curves and a channel in one of said faces for the wire, a bracket having a recess to receive the insulator, provided with an aperture to receive a lug upon one of the parts of the insulator, and a set-screw tapped into the bracket and entering the recess to bear against the other part, substantially as described.

3. An insulator for electric wires formed in two parts and having a curved surface for the wire forming the contacting face of one of said parts, a reversely-curved surface in the other part, a bracket having a recess to receive said insulator and an aperture in the middle of the same to receive a lug upon one of the parts of the insulator, a set-screw bearing against the other of said parts, and an independent brace-screw tapped into said bracket across a channel by which the wire is brought into the recess, to prevent the strain of the screw upon the insulator from spreading said channel, substantially as described.

4. The combination with the two parts of the insulator, one having a convex surface and the other a concave surface which is conchoid in cross-section, of a bracket formed in a single piece having a recess to receive the insulator and a channel entering said recess from the exterior a set-screw tapped into said recess to rest on one of the parts of the insulator and a brace-screw tapped into the bracket across the channel therein, the bracket being attached to its support at both ends to prevent it from pulling loose by the strain of the wire, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

CHRISTOPHER C. NESMITH.
GEORGE F. ARNETT.

Witnesses:
SILAS P. BEARD,
JULIUS H. ZASTROW.