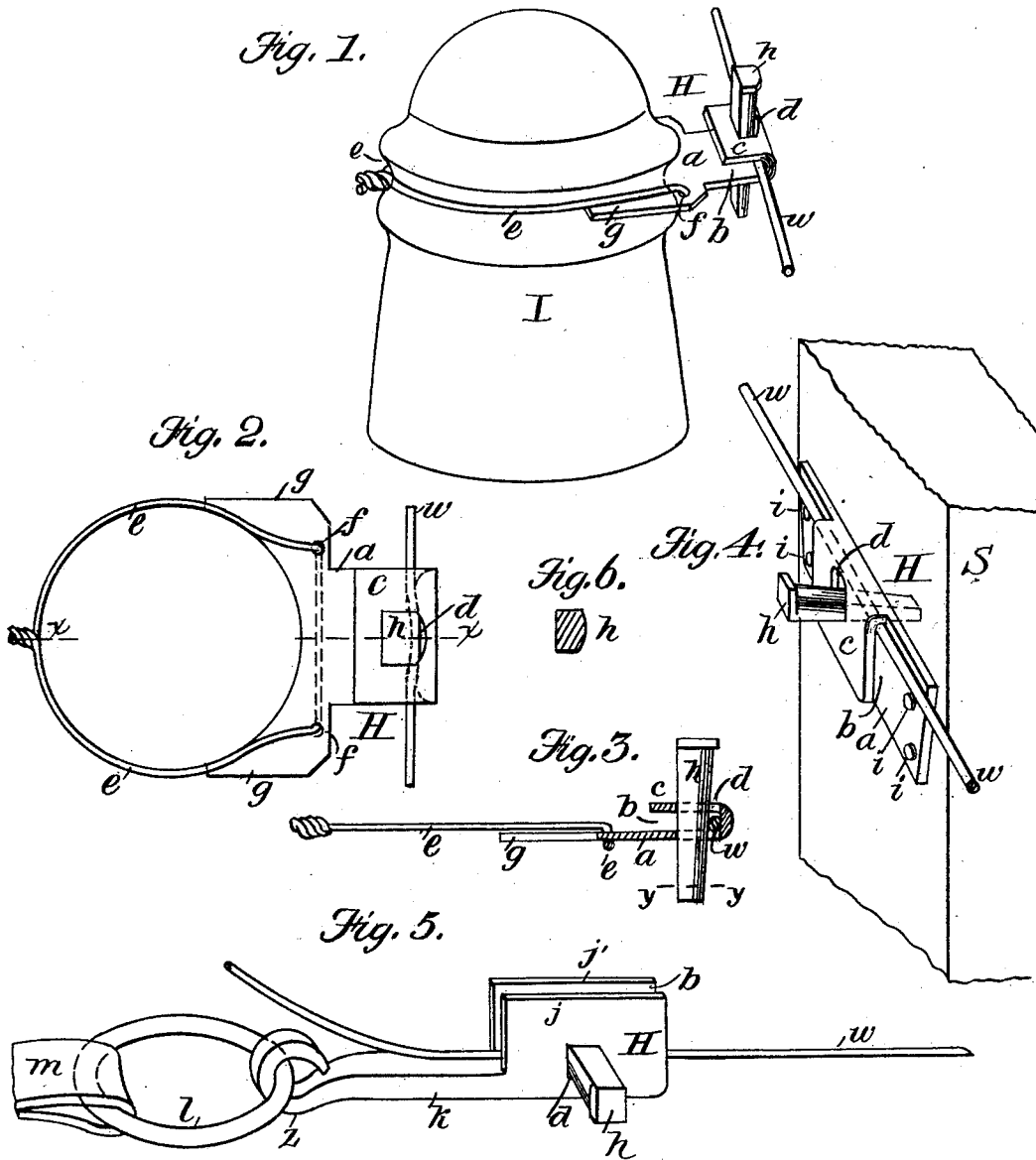


(No Model.)

J. K. DUNBAR.  
ELECTRIC INSULATOR.

No. 434,144.

Patented Aug. 12, 1890.



Witnesses.

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Inventor.

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# UNITED STATES PATENT OFFICE.

JOHN K. DUNBAR, OF AUSTIN, TEXAS.

## ELECTRIC INSULATOR.

SPECIFICATION forming part of Letters Patent No. 434,144, dated August 12, 1890.

Application filed February 6, 1890. Serial No. 339,467. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN K. DUNBAR, residing at Austin, in the county of Travis and State of Texas, have invented certain Improvements in Line-Wire Holders and Clamps, of which the following is a specification.

My invention relates to the clamping of electric line-wires, and is applicable to a variety of associated purposes. It is, for example, well adapted to serve as a wire-clamp in connection with pulleys and blocks or other tackle, forming what is known to linemen as a "come along," whereby lines of wires in process of construction are pulled up to the proper degree of tightness. It is also perfectly suitable for use as a lineman's vise, in connection with a strap, and is then used to temporarily hold wires in place while a joint or splice is being made. I find it, however, more especially useful as an improvement in means for affixing line-wires to their insulating or other supports—in short, as a substitute for the ordinary tie-wire. Experience has demonstrated that the ordinary mode of securing line-wires to the insulators is in many respects unsatisfactory. It requires two or three minutes to make a single attachment. The tie-wires generally so injure the line-wires as to render them unreliable if it becomes necessary to pull them up and fasten them at a new place. The most serious disarrangement, however, of the common plan, and one which my invention reduces to a minimum, appears when the main line requires to be freed for any purpose from its insulators. The tie-wires of the old plan, when coiled around the main line, become brittle. They can rarely be taken off without breaking into small pieces, and to remove them entirely requires the use of two pairs of pliers and a large expenditure of time. It is frequently necessary, in the maintenance of electric lines, to loosen the tie-wire and tighten up the main line. This cannot well be done without moving the tie entirely, and after the completion of the "dressing-up" (as the tightening operation is technically called) the attachment of a new one, and the said operation of removing a tie-wire properly and of placing a new one usually consumes from five to ten minutes.

The design of my invention is to provide a

wire-holder easy of operation, simple in construction, and adapted for the several purposes to which I have referred, but more particularly to provide improved means of fastening wires to their insulators, whereby the said wires may quickly and effectually be secured to their supports, and whereby they can be as expeditiously loosened from the said supports and again refastened, the entire operation being easily and quickly performed, and with great economy, since the same appliance can be used without any inconvenience over and over again.

I will now describe my appliance in detail, referring to the drawings which form a part of this specification.

Figure 1 is a perspective view of an ordinary standard glass insulator fitted with my wire-holder and showing a wire attached thereto. Fig. 2 is a plan view of the wire-holder and its securing appliance freed from the insulator. Fig. 3 is an edge view in section on line *xx* of Fig. 2, with its securing-wedge in place and shown as holding a line-wire. Fig. 4 indicates another mode of using my wire-holder, comprising the grooved and slotted flange and the securing-wedge. Fig. 5 shows the application of the said wire-holder to a lineman's vise or come along, and Fig. 6 is a cross-section of the wedge, illustrating the convexity of its outer side.

Figs. 1, 2, 3, and 6 should be considered together, since they exemplify the principal embodiment and utilization of my invention, which consists both in the clamp or wire-holder *H* itself made by the doubly-slotted flanged plate, forming a pair of opposing jaws with the wire-seat between them and the wedge adapted to pass through the slot and thereby to secure the wire, and in the association of such a device with an insulating or other point of support whereby tie-wires can be dispensed with, and also in the combination, with ordinary insulators, of my wire-holding device and means for attachment. In applying the wire-holder *H* to this purpose it will be observed that I employ a metal base-plate *a*, preferably made of sheet or malleable iron, which plate is made substantially in the form shown, with one—its outer—end turned over on the upper side, thus practically forming a pair of jaws. A recess *b*, of

sufficient width to loosely receive the line-wire, is thus formed between the turned-over flange *c* and the body of the plate *a*, or, in other words, between the two jaws, within which a wire *w* can be slipped. This recess does, in fact, form the wire-seat. A hole or slot *d* is cut or drilled through both flange and plate near the bend or turning point and rounded off or made concave at its outer side, and through this hole a metal key or wedge, square at the inner side and rounded off at the outer side, is to be driven. Fig. 6 shows the shape of the cross-section of the said wedge, while Figs. 1 and 3 show it as driven through the hole or slot. To attach this device to the glass insulator in ordinary and universal use, or to any other insulator of similar shape, the plate *a* is widened out at the side opposite to the flanged wire-seat and its edge is made concave, so that it can be fitted to the groove of the insulator *I* and caused to bestride the same, as shown, the inner edge of the two limbs *g* and of the entire concavity resting upon the lower surface of the said groove. To secure the wire-holder in this position, an iron wire *e* of suitable size (No. 16 will answer very well) is threaded from below through holes *f*, drilled through the plate *a*, the two ends thereof being drawn over the upper surface of the limbs *g* of said plate and then passed round the insulator and fastened together tightly behind the same with a twist-joint. The middle portion of the wire *e* crosses the under side of the plate *a*, as shown in dotted lines in Fig. 2, and the said plate, and necessarily the entire device, is thus securely attached to the insulator. It will be found most convenient to attach the wire-holding device *H* to the insulator before the latter is put upon the pin or other support. The hole or slot *d* must be so cut as to allow a little space behind it in the flanged recess, and so that when the wedge *h* is driven in its rounded side will force the conducting-wire slightly out of line into the said depression or space, and thereby more firmly hold the said wire in position and prevent slipping. The key or wedge *h* is, as I have already described, to be rounded on one side for the purpose of preventing any abrasion of or injury to the line-wire. The groove or recess *b* is at its inner end to be so reamed out into a convex curve at its two sides at the point where the flange *c* turns over as to avoid any sharp edges, and thus a little lateral motion of the line may occur without any danger that it will be cut or nicked, as might be the case were the said sharp edges suffered to remain. It will be seen that by the use of this wire-holder *H* so mounted it is in stringing the line-wire only necessary to slip the wire into the recess between the flange and the main plate, drop the wedge behind it into the slot and give the same one sharp blow, whereupon the main line is securely fastened and absolutely without injury, strain, or twist.

Fig. 4 shows the wire-holder applied to a wall, block, or similar appliance in a manner well understood. *S* is a block of non-conducting material, such as dry wood or vulcanized fiber. The holder *H*, made, as in the former case, of malleable or sheet iron, differs sufficiently in form to meet the diverse conditions. In the present instance it consists, as shown, simply of a back plate *a*, provided with means—such as nails or screws driven or otherwise passed through holes at the corners—for affixing it to the block *S*. This has an overlapping flange *c*, preferably cut away at its ends, so that its length may be about one-half that of the back plate. This, however, is not a material point. Through the overlapping flange and back plate the rounded slot *d* is cut for the reception of the securing wedge or key *h*. A suitable depression in the block to receive the inner end of the wedge is with this construction required. As in the former example, a recess of suitable width is formed between the flange *c* and the back plate *a* for the reception of the line-wire *w*. The wire-holder need not necessarily be placed as shown on the block, and may, for example, if desired, be inverted. I prefer the manner of affixing shown, however, because it affords less opportunity for the collection of moisture, and thus is less liable to result in depreciated insulation.

As shown in Fig. 5, the wire-holder *H* is applicable in other ways than associated with a fixed support. It is in this instance caused to serve as the clamping appliance of a line-man's vise, or as a come along; both of which tools are well known in line construction and repairing. The differences are again merely those of detail. The wire recess *b* is formed between the jaws or flanges *j* and *j'* of equal breadth, and is made wide enough to receive any wire which it may be called upon to grasp. They have the slot *d* for the reception of the key and wedge *h*, as in other forms, and the peculiarities as to the rounded surfaces, the rounding off of corners, and like details are to be observed, as in the form which I have first described. The two flanges *j* may be equal in breadth, and are both forged or otherwise manufactured integrally with an iron shank or stem *k*, terminating in a ring or ring-like end *z*, turned close over the strapping *l* and permanently attached thereto, this being fastened to the strap *m*. The wire *w*, held by the wedge *h* between the jaws *j*, is gripped tightly, but is freed with ease and great facility by a tap on the small end of the wedge, and whenever a grasp at a new point is desired it is clear that this can be achieved quicker and more efficiently by the use of this device than would be possible by the ordinary screw vice or clamp.

The use of my wire-holder involves certain very important advantages in line construction and maintenance. Some of these may be stated.

The attachment can be affixed to any insu-

lator in two or three motions and in a very brief space of time. When employed, it holds the line-wire firmly in one position and does not rock up and down, as frequently happens when tie-wires are used.

When it is required to "dress up" or tighten up wires which are unduly slack, or to remove wires altogether from their supports, a sharp blow upon the lower end of the wedge frees it at once. If tightening up only be required, after loosening the wedge the wire can be left loose in the recess of the holder, or in a series of them on a number of successive poles, and when pulled taut one blow on the upper end of each wedge fastens it securely, whereas when the ordinary tie-wire is employed it is difficult to loosen them, the line where they have been is strained and twisted, and in again tightening up a new tie-wire is required.

When necessary to take down the line, the wire-holder need not be removed from the insulator. The wedge can be reinserted and the entire device left until again required.

Having now fully described my invention, I claim—

1. The herein-described wire-holder, which comprises a pair of fixed metal jaws or flanges having a common base of the same material integral therewith, and having between them a recess or groove for the reception of a wire, a key seat or slot passing through both jaws near their point of permanent union, and rounded off or made with a concave surface at its outer side, and a key or wedge convexly rounded on one side of its surface to correspond with said slot and adapted to be driven therein and to pass through both jaws and thereupon to hold the wire in said recess, for the purposes specified.

2. The hereinbefore-described wire-holder adapted to take the place of a tie-wire, and consisting of the overlapping flanged plate,

comprising a base-plate provided with two lugs fitted to and adapted to bestride the groove of an ordinary insulator, a flange-extension of said base-plate formed by overlapping its outer end back over itself, a wire-space between the two surfaces of the base-plate and said flange-extension, the slot or wedge-seat passing through flange and base, and the key or wedge fitted to said slot and adapted to be driven therein for the purpose of securing a wire in the said recess, substantially as described.

3. The combination, substantially as hereinbefore described, of an insulator of ordinary form for overhead wires, a wire-holder adapted to serve as a substitute for the ordinary tie-wire, said wire-holder consisting of a metal plate terminating at its outer extremity in a turned-over extension constituting a flange and forming the wire-recess between said flange and the body of said plate and having a slotted hole or wedge-seat cut through flange and plate near the bend thereof, a wedge or key fitted to said slot and adapted to secure the line-wire in its recess when driven therein, and means for firmly securing the said wire-holder to the insulator, said means comprising a pair of lugs at the rear end of the wire-holder plate adapted to bestride the insulator at the groove thereof, and a securing-wire threaded through said lugs and united after passing round the said insulator, for the purposes specified.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 31st day of January, 1890.

JOHN K. DUNBAR.

Witnesses:

FRANK W. HALL,  
B. S. WILKINSON.