April 12, 1938. C. A. BOOKER ET AL 2,113,673

INSULATING DEVICE FOR HIGH TENSION CONSTRUCTIONS

Filed Feb. 3, 1936

Fig. 1.

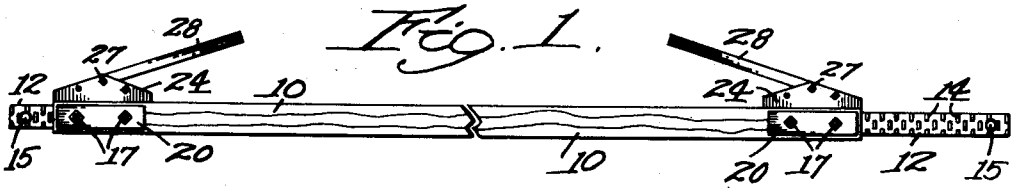


Fig. 2.

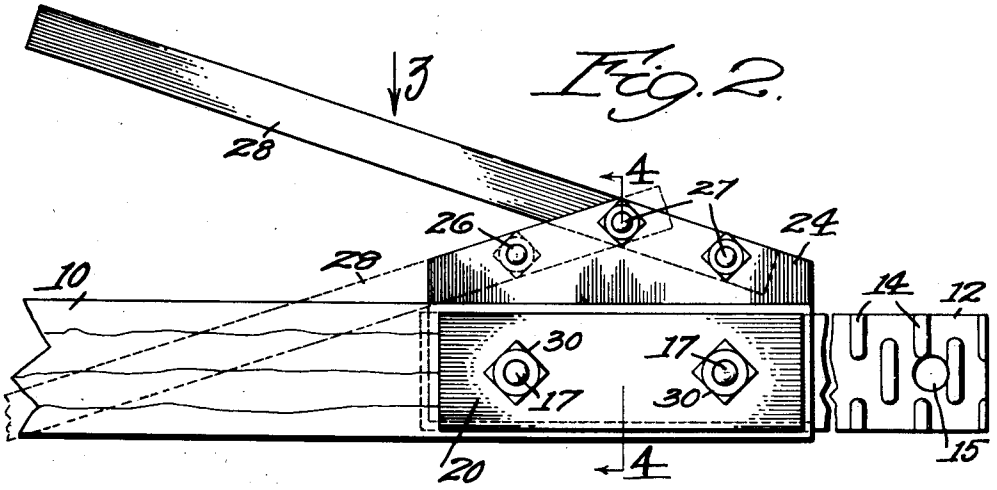


Fig. 3.

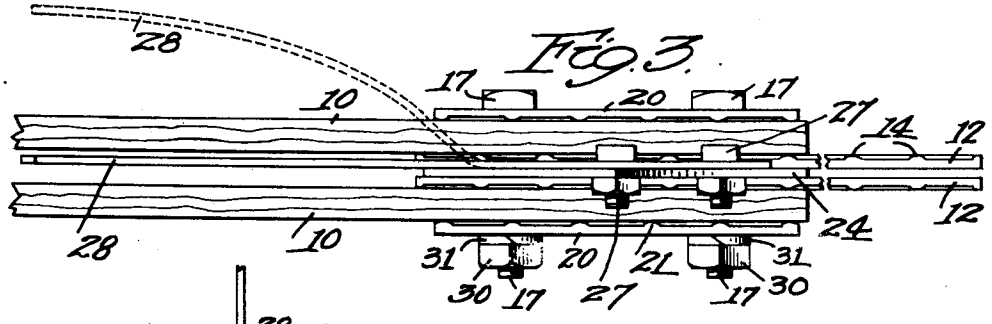


Fig. 4.

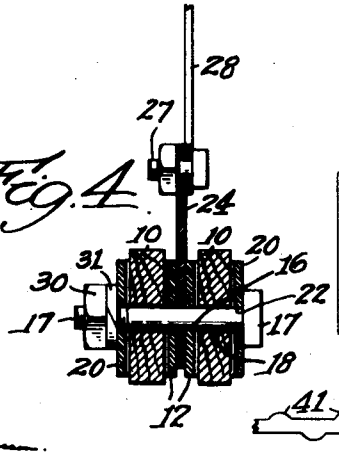


Fig. 5.

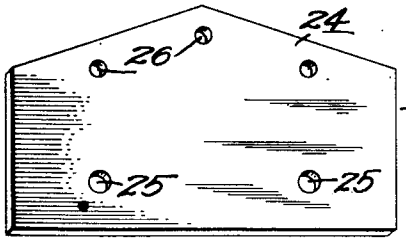
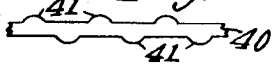


Fig. 6



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INSULATING DEVICE FOR HIGH TENSION CONSTRUCTIONS

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Application February 3, 1936, Serial No. 62,082

6 Claims. (Cl. 173—366)

This invention relates to an insulating device for use in high tension constructions such as electrical transmission lines. While capable of general application, our invention is particularly designed to provide effective insulation for guy wires used in high tension constructions.

It is the general object of our invention to provide an effective and economical construction in an insulating device by which stresses may be transferred between a draw plate and one or more elongated wood bars. When used as a guy wire insulator, the parts are all under tension but in other applications compressive stresses may be encountered.

An important feature of our invention relates to the use of "checkered" steel plates of commercial design to provide non-slipping engagement between adjacent wood and metal parts.

Our invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of our invention is shown in the drawing, in which

Fig. 1 is a side elevation of an insulating device embodying our improvements;

Fig. 2 is an enlarged side elevation of one end portion of the insulator shown in Fig. 1;

Fig. 3 is a plan view, looking in the direction of the arrow 3 in Fig. 2;

Fig. 4 is a sectional end elevation, taken along the line 4—4 in Fig. 2;

Fig. 5 is a side elevation of a washer plate to be described, and

Fig. 6 is an edge view of a modified form of draw plate.

Referring to the drawing, our improved wood guy insulator comprises a plurality of elongated wood bars 10 which should preferably be of some comparatively soft wood such as fir which has been treated with creosote or some other suitable wood preservative.

Draw plates 12 are secured between the bars 10 at each end thereof and are preferably formed from "checkered" steel plates of commercial construction having numerous projections 14 on one face thereof. One design of such projections is clearly shown at the right in Fig. 2 but our invention is not to be restricted in any way to the particular design and arrangement disclosed.

Holes 15 are provided in the ends of the draw plates 12 to receive hooks, links, cables, or other connecting members, and spaced holes 16 (Fig. 4) are provided to receive clamping bolts 17 when the connector is assembled. Similarly, spaced holes 18 (Fig. 4) are provided in the wood bars 10, the latter holes preferably being somewhat larger than the holes through the plates 12.

Washer plates 20 are made preferably of the checkered plate previously described, and are preferably provided with projections 21 on their inner faces. These washer plates 20 have spaced holes 22 corresponding to the holes 16 in the draw plates 12 and adapted to receive the clamping bolts 17.

An additional supporting plate 24 of ordinary flat sheet steel may be inserted between the draw bars 12 and is provided with spaced holes 25 (Fig. 5) to receive the bolts 17, and with additional holes 26 to receive bolts 27 by which a bar 28 may be secured to the upper edge of the plate 24 in either the full or dotted line position shown in Figs. 2 and 3.

These bars 28 form arcing horns, the free ends of the bars 28 being spaced from the wood bars so that any electrical discharge which may occur will pass alongside but not through the wood bars. Instead of projecting outward away from the bars 10 as indicated in Fig. 1 and in full lines in Figs. 2 and 3, the bars 28 may be downwardly inclined but offset laterally, so that the arcing horns will be spaced sidewise rather than edgewise from the bars 10.

The clamping bolts 17 are provided with the usual nuts 30 and preferably with lock washers 31.

When assembling our improved wood guy insulators, the fir bars 10 are first treated with creosote. The bars 10 are then assembled with the draw plates 12 and washer plates 17, preferably while the wood is still moist and relatively soft from the creosote treatment, and the parts being arranged as shown in Figs. 3 and 4.

If arcing horns are to be provided, supporting plates 24 are inserted between the draw plates 12, but if the arcing horns are not required, the plates 24 may be omitted.

An essential feature of our improved construction is that the checkered draw plates 12 and washer plates 20 shall be so disposed that the tightening of the nuts 30 on the bolts 17 will cause the projections 14 on the draw plates 12 and the projections 21 on the washer plates 20 to be pressed into the relatively soft surfaces of the bars 10 until they are entirely embedded therein.

When thus embedded and firmly retained in position by the nuts 30 and lock washers 31, the draw plates 12 and wood bars 10 are so firmly connected that they will resist very heavy tensional or compressive stresses. The resistance to

stress may be increased by increasing the length of the washer plates 20 and the corresponding portions of the draw plates 12, and this resistance may easily be made equal to or greater than the strength of the wood bars themselves.

Under actual test of preliminary samples, using two fir bars of one inch by three inch cross section, stresses as high as 17,000 to 18,000 pounds were required to cause the insulator to yield. When more carefully constructed and assembled in the commercial form shown in the drawing, it is probable that even higher stresses would be resisted.

It should be particularly noted that all parts of our improved connector are formed of regular commercial materials, and that these parts may be carried in stock and readily assembled in any desired combinations.

In Fig. 6 we have shown a portion of a draw plate 40 having raised portions 41 on both surfaces. With this construction, a single draw plate may be used instead of the two plates shown in Fig 3.

The use of soft wood bars and checkered washer plates has been indicated as preferable, but harder wood and plain washer plates may also be used to advantage. A single wood bar may also be used, or an assembly of more than two bars.

Having thus described our invention and the advantages thereof, we do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what we claim is:—

1. An insulating device for high tension constructions comprising a pair of wood bars, a pair of draw plates each of substantially uniform thickness throughout its length but having a plurality of longitudinally spaced raised portions on one surface thereof, a pair of washer plates having similar spaced raised portions on one surface thereof, and clamping bolts extending through all of said plates and said bars and holding said plates in assembled relation, with the raised portions of said draw plates and of said washer plates embedded in the sides of said wood bars, said draw plates being assembled back to back between said wood bars, and said washer plates engaging the outer sides of said wood bars.

2. An insulating device for high tension constructions comprising a pair of wood bars, a pair of draw plates each of substantially uniform thickness throughout its length but having a plurality of longitudinally spaced raised portions on one surface thereof, a pair of washer plates having similar spaced raised portions on one surface thereof, a supporting plate mounted between said draw plates, an arcing horn mounted on said supporting plate, and clamping bolts extending through all of said plates and said bars and holding said plates in assembled relation, with the raised portions of said draw plates and of said washer plates embedded in the sides of said wood bars, said draw plates being assembled back to back between said wood bars, and said washer plates engaging the outer sides of said wood bars.

3. An insulating device for high tension constructions comprising a pair of wood bars each of substantially uniform thickness throughout its length, a pair of metal draw plates between said wood bars and each having a plurality of spaced raised portions on the surface thereof adjacent one of said wood bars, washer plates adjacent said wood bars, an arcing horn, a supporting plate for said horn positioned between said draw plates and having a laterally projecting portion to which said horn is secured, said plate abutting the surfaces of said draw plates which have no raised portions, and clamping bolts extending through said wood bars, said draw plates, said washer plates and said supporting plate and holding said parts in assembled relation, with the raised portions of said draw plates embedded in the sides of said wood bars.

4. An insulating device for high tension constructions comprising a pair of wood bars, an arcing horn, and a supporting plate for said horn clamped between the ends of said wood bars and having a portion projecting laterally therefrom, said arcing horn being secured to the laterally projecting portion of said supporting plate and having its free end extending substantially away from said wood bars, and said supporting plate having provision for attachment of said arcing horn to said laterally projecting portion in either one of two oppositely inclined positions.

5. An insulating device for high tension constructions comprising a pair of wood bars, a draw plate which is of substantially uniform thickness throughout its length, said draw plate being mounted between the ends of said bars and having a plurality of longitudinally spaced raised portions on each side surface thereof, a pair of washer plates each having similar spaced raised portions on one surface thereof, and clamping bolts extending through all of said plates and through said bars and holding said draw plate, said washer plates and said wood bars in assembled relation, with the raised portions of said draw plate and of said washer plates embedded in the sides of said wood bars.

6. An insulating device for high tension constructions comprising a pair of wood bars, a pair of draw plates mounted back-to-back between said wood bars and each of substantially uniform thickness throughout its length but having a plurality of longitudinally spaced raised portions on one face thereof, a pair of washer plates mounted outside of said wood bars, and clamping bolts extending through all of said plates and said bars and holding said plates in assembled relation, with the raised portions of said draw plates embedded in the sides of said wood bars, and said draw plates being extended substantially beyond said wood bars for attachment of tension members thereto.

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