March 26, 1940. H. W. BODENDIECK 2,195,020

CONDUCTOR HOLDER

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Fig. 1.

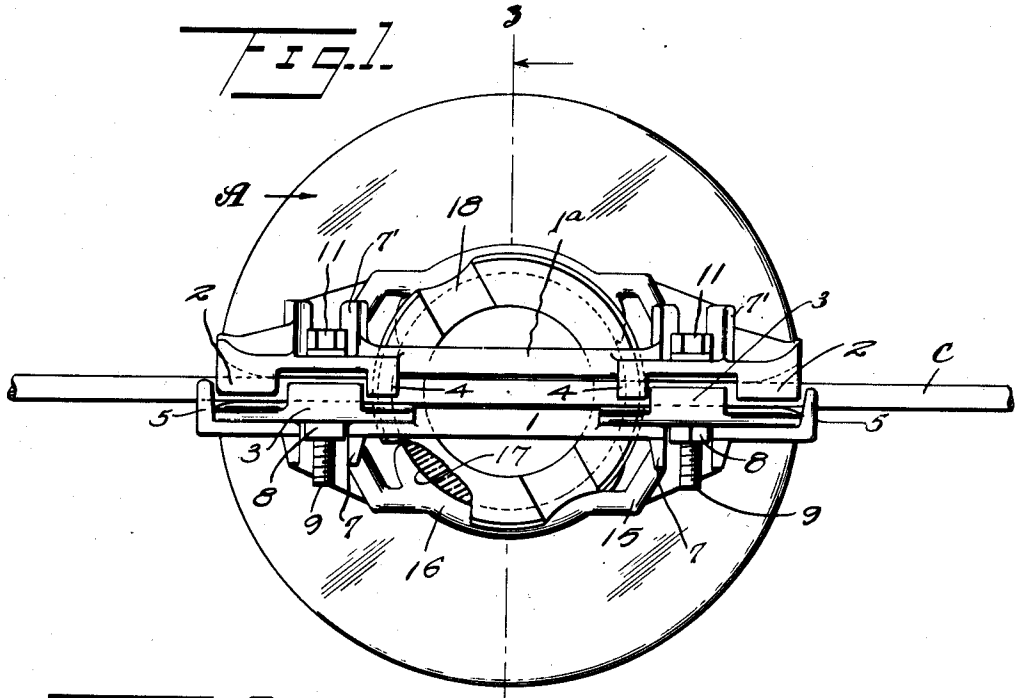
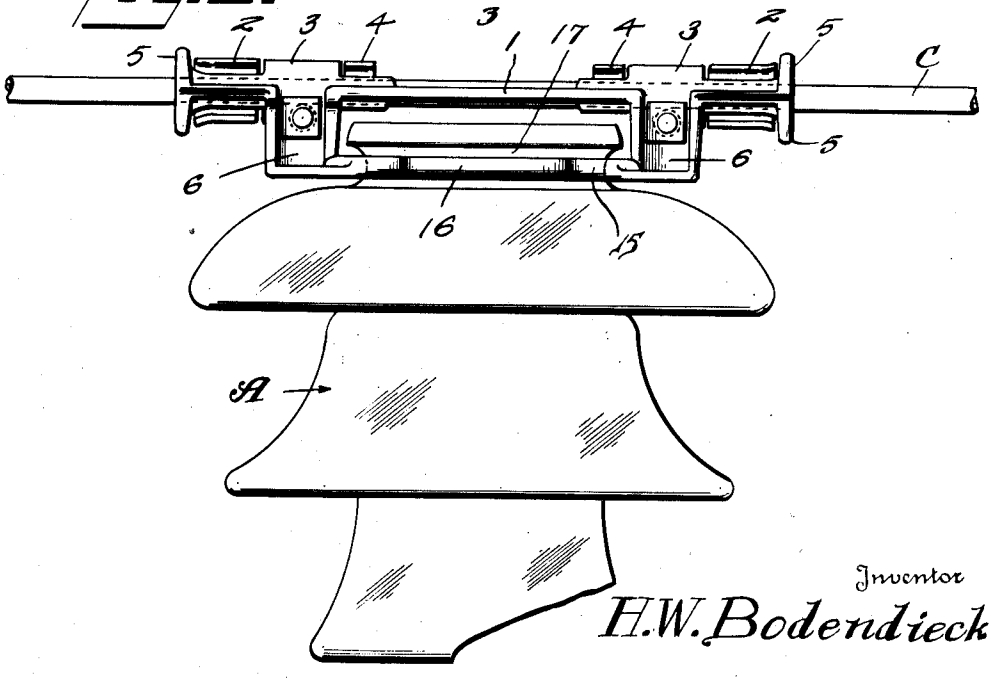


Fig. 2.



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Fig. 3.

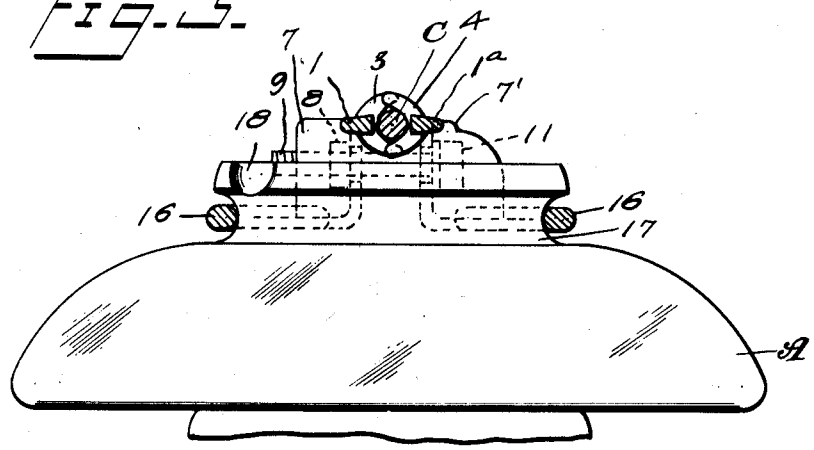


Fig. 6.

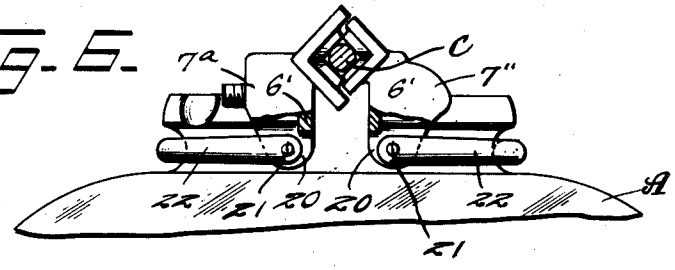
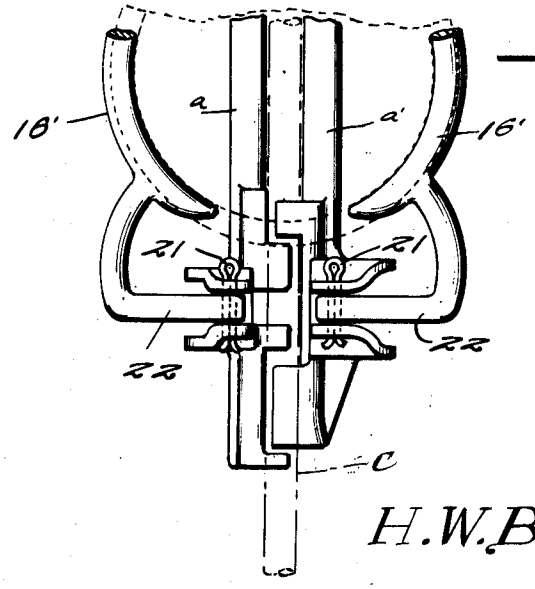


Fig. 7.



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Fig. 4.

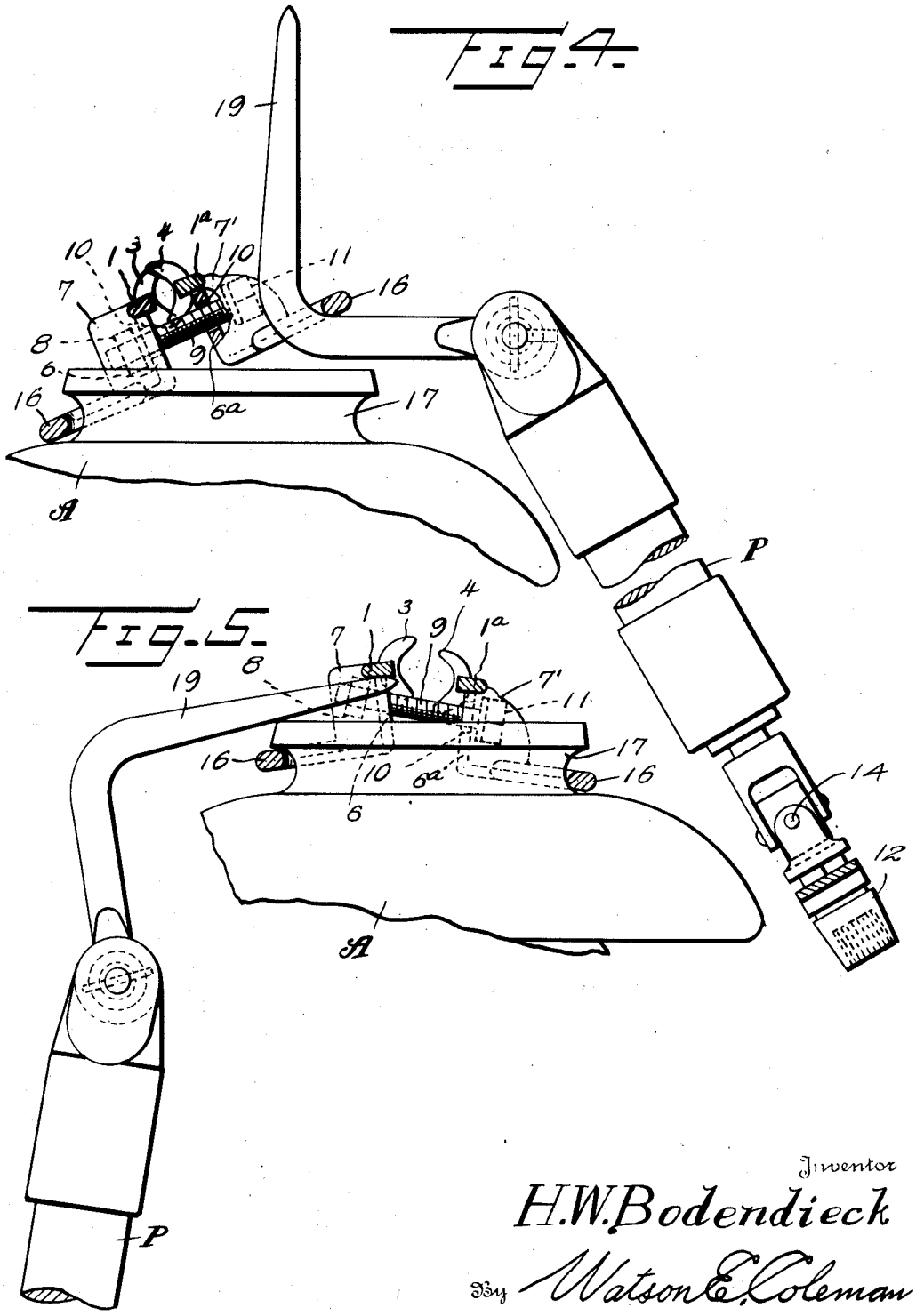


Fig. 5.

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UNITED STATES PATENT OFFICE

2,195,020

CONDUCTOR HOLDER

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Application December 18, 1937, Serial No. 180,641

6 Claims. (Cl. 174—169)

This invention relates to conductor holders and has relation more particularly to a holder of this kind for connecting a high voltage conductor to an insulator, and it is primarily an object of the invention to provide a holder of this kind which dispenses entirely with the necessity of using a tie wire.

The invention also has for an object to provide a device of this kind which will hold the conductor in the clear of the insulator so that the insulator groove does not have to line up with the conductor.

The invention also has for an object to provide a holder of this kind which does not appreciably reduce flash-over values and which eliminates all of the conductor wear as a result of bearing on the insulator.

A still further object of the invention is to provide a holder of this kind which minimizes possibility of conductor breakage due to vibration or whipping and wherein the holder is sufficiently flexible and resilient to permit the holder to function similar to a dampener.

The invention also has for an object to provide a holder of this kind constructed and assembled in a manner whereby it will remain for a protracted period of time upon an insulator and more especially for a time considerably longer than a conventional tie wire now generally in use.

A further and particular object of the invention is to provide a holder of this kind which initially is completely assembled as a unit requiring no dismantling either in putting on or taking off the holder.

The invention also presents a holder constructed in a manner to engage or clamp a conductor in a way to minimize endwise slippage of a conductor in case of line breakage.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved conductor holder whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in top plan of a conductor holder constructed in accordance with an embodiment of my invention and in applied position upon a conventional petticoat type of insulator, a portion of the insulator being broken away;

Figure 2 is a view in side elevation of the assembly as illustrated in Figure 1, the insulator being shown in fragment;

Figure 3 is a detailed sectional view taken substantially on the line 3—3 of Figure 1 with the insulator fragmentarily shown in elevation;

Figure 4 is a fragmentary view partly in elevation and partly in section illustrating an initial step employed in placing the holder upon an insulator;

Figure 5 is also a fragmentary view partly in section and partly in elevation illustrating a means for separating the clamping jaws of the holder to receive a conductor therebetween;

Figure 6 is a fragmentary view partly in section and partly in elevation illustrating a holder constructed in accordance with another embodiment of my invention;

Figure 7 is a fragmentary view in top plan of the structure illustrated in Figure 6 with the associated insulator indicated by broken lines.

In the embodiment of the invention as particularly illustrated in Figures 1 to 5 inclusive, my improved holder comprises a pair of elongated bars 1 and 1^a substantially straight from end to end. The bar 1 is slightly longer than the second bar 1^a and the extremities of bar 1^a are formed to provide clamping jaws 2 substantially V-shaped in cross section for coaction with the jaws 3 also substantially V-shaped in cross section carried by the bar 1 adjacent the ends thereof. The bar 1^a also carries the additional jaws 4 substantially V-shaped in form and which are positioned inwardly of and spaced from the jaws 2. The jaw 3 is carried by the bar 1 and is received between the jaw 2 and jaw 4 of the second bar 1^a whereby the bars 1 and 1^a are effectively maintained against undue relative endwise movement. The extremities of the bar 1 are provided with the outstanding diverging lugs 5 which coact with the jaws 2 of the bar 1^a to provide a further means for holding the bars 1 and 1^a against relative endwise movement and which also serve to facilitate the placement of a conductor C between the several jaws 2, 3 and 4 for clamping engagement thereby.

The bars 1 and 1^a immediately adjacent to the inner ends of the jaws 2 and 3, respectively, are provided with the depending webs 6 which have their side marginal portions defined by the outstanding flanges 7 and 7'. The flanges 7 are carried by each web 6 of the bar 1 and the flanges 7' by each web 6^a of the bar 1^a. The flanges 7

are spaced apart a distance to snugly receive therebetween the nuts 8 threading upon the elongated headed bolts 9. These bolts 9 are freely disposed through suitable openings 10 provided in the webs 6 and 6a. These openings 10 are of a diameter slightly in excess of the diameter of the bolts 9 so that the webs 6 and 6a may have slight rocking movement in a direction lengthwise of the bolts 9 or in a direction transversely of the bars 1 and 1a.

The heads 11 of the bolts 9 are received between the flanges 7' and these flanges are spaced apart a distance sufficiently and so constructed and formed to permit a wrench head 12 to be received therebetween for proper engagement with the heads 11 to either tighten or loosen the bars 1 and 1a, or more particularly the clamping jaws 2, 3 and 4 carried thereby. As is particularly illustrated in Figure 4 the wrench head 12 is of a socket type and has universal connection, as at 14, with an insulated pole P so that it is possible for a lineman to effect a tightening or loosening of the bars 1 and 1a from positions below and to one side of the insulator or from other positions which may be found necessary for the lineman to occupy. These flanges 7' by their shape and arrangement also serve as guide elements to facilitate the proper centering of the wrench head 12 for engagement with a bolt head 11.

The inner flanges 7 of the bar 1 and the inner flanges 7' of the second bar 1a have integrally formed with the lower portions thereof an interposed bar 15 so constructed and arranged to provide a central jaw 16 to be received within a conventional side groove 17 provided in the top or outer portion of the insulator A. It is also to be noted that the bars 15 are so constructed and formed to provide for the requisite spacing of the jaws 16. As is particularly illustrated in Figures 2 and 3 of the drawings, it is to be noted that the webs 6 are of such length as to clear the bars 1 and 1a and the jaws carried thereby from the outer or upper end of the insulator A so that in applying my improved holder it is not required to have the groove 18 in the top of the insulator line up with the conductor C.

In view of the foregoing description it is believed to be obvious that the holder comprises two separate sections which are held together by the bolts 9 so that when the holder is received by the lineman for placement the holder is a completely assembled unit requiring no dismantling in putting the holder on the insulator. At this time it is also to be stated that no dismantling will be required in taking the holder off of the insulator.

In applying the holder H to an insulator the bolts 9 are so adjusted as to assure a sufficient initial separation of the bars 1 and 1a and the jaws 16 to assure a proper placing of such jaws within the groove 17. The pole P hereinbefore referred to carries an adjustable work engaging member or hook 19 which is engaged with one of the jaws 16 as illustrated in Figure 4. With the holder hanging down from the member 19 of the pole P such pole is manipulated by the lineman until a second jaw 16 of the holder is engaged within the groove 17 of the insulator. The hook or member 19 can then be manipulated to cause the jaw 16 with which it is engaged to drop down upon the insulator A in position to also be received within the groove 17. During this latter operation the member or hook 19 is freed from the holder which can be readily done by turning the pole P to bring the member or hook 19 into substantially a horizontal position.

After the holder H has thus been initially and loosely applied to the insulator the lineman causes the member or hook 19 to be engaged under one of the bars, as 1 as illustrated in Figure 5, so that upon proper manipulation of the pole P said bars 1 and 1a together with the jaws 2, 3 and 4 carried thereby will be separated to permit the reception of the conductor C therebetween. After this operation the wrench head 12 is engaged with the heads 11 of the bolts 9 to draw the bars 1 and 1a one toward the other to effect desired clamping action upon the conductor C and also to cause the jaws 16 to have desired tight engagement within the groove 17 with the insulator A. Effective clamping engagement with both the conductor C and with the insulator is assured due to the rocking movement permitted the webs 6.

In actual field work it has been clearly and undeniably established that when a holder as hereinbefore described is in applied position upon an insulator there is a certain amount of resilient flexibility in the holder to materially reduce the liability of conductor breakage due to vibration or whippage and more particularly when the stretch of the conductor between insulators is for any considerable distance.

It has also been found in actual practice that a holder as hereinbefore described will remain tight for a time much longer than a tie wire and it has the further advantage of being easily tightened from time to time as may be required without dismantling or without handling of the conductor. It is also to be noted that the formation of the jaws 2, 3 and 4 is such as to permit the holder to be employed with conductors of different gauge and that the coaction of the holder with the conductor is such to minimize liability of endwise slippage of the conductor in case of line breakage. It is to be emphasized that a holder as hereinbefore described eliminates radio interference and that a material reduction is effected in the time required for ordinary installations and for changing insulators.

In the embodiment of my invention as illustrated in Figures 6 and 7 the bars *a* and *a*1 are constructed and formed in substantially the same manner as hereinbefore set forth with respect to the first form of holder except that the flanges 7a and 7'' extend below or beyond the webs 6' to provide ears 20 between which are pivotally held by the cotter pins 21 or the like the inwardly disposed angular end arms 22 carried by the arcuate clamps 16'. These clamps 16' coact with the horizontal or outer groove 17 of the insulator A in the same manner as has hereinbefore been set forth with respect to the jaws 16 in the first form of the invention. Aside from the swinging or pivotal mounting of the jaws 16' this form of the invention as illustrated in Figures 6 and 7 is substantially the same as the first embodiment and this second form of holder is installed or taken off in the same manner as has hereinbefore explained with respect to the first structure.

It is to be understood that my improved holder can be employed to advantage in connection with supports other than an insulator of the type disclosed in the accompanying drawings and can be used for purposes other than holding a high tension conductor.

From the foregoing description it is thought to be obvious that a conductor holder constructed in accordance with my invention is particularly

well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A conductor holder to be engaged with an insulator comprising two elongated bars having conductor engaging jaws, webs extending laterally from said bars, an elongated member secured to and bridging the space between said webs of each bar, the central portion of each elongated member having a jaw to engage the insulator, and means disposed through and coacting with the webs for holding the parts in assembled relation and to draw the jaws of the elongated bars into clamping engagement with the conductor and the jaws of the elongated members connecting the webs into clamping engagement with the insulator to secure the holder to the insulator, said webs being of a length to clear the elongated bars from the insulator when the jaws of the elongated members are clamped to the insulator.

2. A conductor holder to be engaged with an insulator having a circumferential groove comprising two elongated bars having conductor engaging jaws at the outer portions thereof, the portions of the bars between the jaws being unobstructed to allow a tool to be engaged with either of the bars to facilitate the reception of the conductor between the jaws of the bars, webs extending laterally from said bars, members secured to said webs to engage within the groove of the insulator, and means disposed through and coacting with the webs for holding the parts in assembled relation and to draw the bars into clamping engagement with the conductor and the members into clamping engagement with the insulator, said means coacting with the webs also permitting relative rocking movement of the bars before the bars are drawn into clamping engagement with the conductor, said webs being of a length to clear the bars from the insulator when the members are clamped to the insulator.

3. A conductor holder for a high tension insulator to be applied to an insulator having a circumferential groove comprising two elongated clamping bars to hold a conductor therebetween, members carried by the bars and having jaws to engage within the groove of the insulator, said members being offset with respect to the bars a distance sufficiently to clear the bars from the adjacent end of the insulator, said jaws of the members being so constructed and arranged to permit engagement of a tool therewith for initially placing the holder on the insulator, the elongated clamping bars being so constructed and arranged to allow a tool to be engaged with either of the bars after the holder has been initially applied to the insulator to separate said bars to facilitate the reception of the conductor between the bars, and means coacting with the bars and members initially holding said members in assembled relation and also providing means for drawing said bars and members into required clamping engagement with the conductor and with the insulator, said bars having coacting parts to hold the bars against undue relative endwise movement.

4. A conductor holder for an insulator having a circumferential groove comprising elongated bars to clamp a conductor therebetween, laterally disposed webs carried by the bars, members operatively engaged with the webs for positioning within a groove of the insulator to clamp the holder to the insulator, said webs being of a length to position the bars beyond the adjacent end of the insulator and entirely free of contact with the insulator, said elongated bars being so constructed and arranged to have their central portions free and unobstructed, said webs having openings, headed bolts disposed through the openings of the webs with the heads positioned for contact from without with the webs of one of the bars, nuts threaded on the bolts for contact from without with the webs of the second bar, the openings of the webs being of a diameter in excess of the diameter of the bolts to allow rocking movement of the webs upon the bolts, turning of the bolts in one direction effecting a clamping engagement of the bars with the conductor and a clamping engagement of the members with the insulator.

5. A conductor holder for an insulator having a circumferential groove comprising elongated bars to clamp a conductor therebetween, laterally disposed webs carried by the bars, members operatively engaged with the webs for positioning within the groove of the insulator to clamp the holder to the insulator, said webs having openings, headed bolts disposed through the openings of the webs with the heads positioned for contact from without with the webs of one of the bars, nuts threaded on the bolts for contact from without with the webs of the second bar, the openings of the webs being of a diameter in excess of the diameter of the bolts to allow rocking movement of the webs upon the bolts, turning of the bolts in one direction effecting a clamping engagement of the bars with the conductor and a clamping engagement of the members with the insulator, means carried by the webs for holding the nuts against rotation, and means carried by the remaining webs to facilitate engagement of a tool with the bolts for turning the same.

6. A conductor holder for an insulator having a circumferential groove comprising elongated bars to clamp a conductor therebetween, laterally disposed webs carried by the bars, members pivotally connected to the webs for positioning within the groove of the insulator to clamp the holder to the insulator, said webs having openings, headed bolts disposed through the openings of the webs with the heads positioned for contact from without with the webs of one of the bars, nuts threaded on the bolts for contact from without with the webs of the second bar, the openings of the webs being of a diameter in excess of the diameter of the bolts to allow rocking movement of the webs upon the bolts, the central portions of the bars being free and unobstructed to permit engagement of a tool with either of said bars to separate the bars to facilitate reception of a conductor therebetween, turning of the bolts in one direction effecting a clamping engagement of the bars with the conductor and a clamping engagement of the members with the insulator.

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