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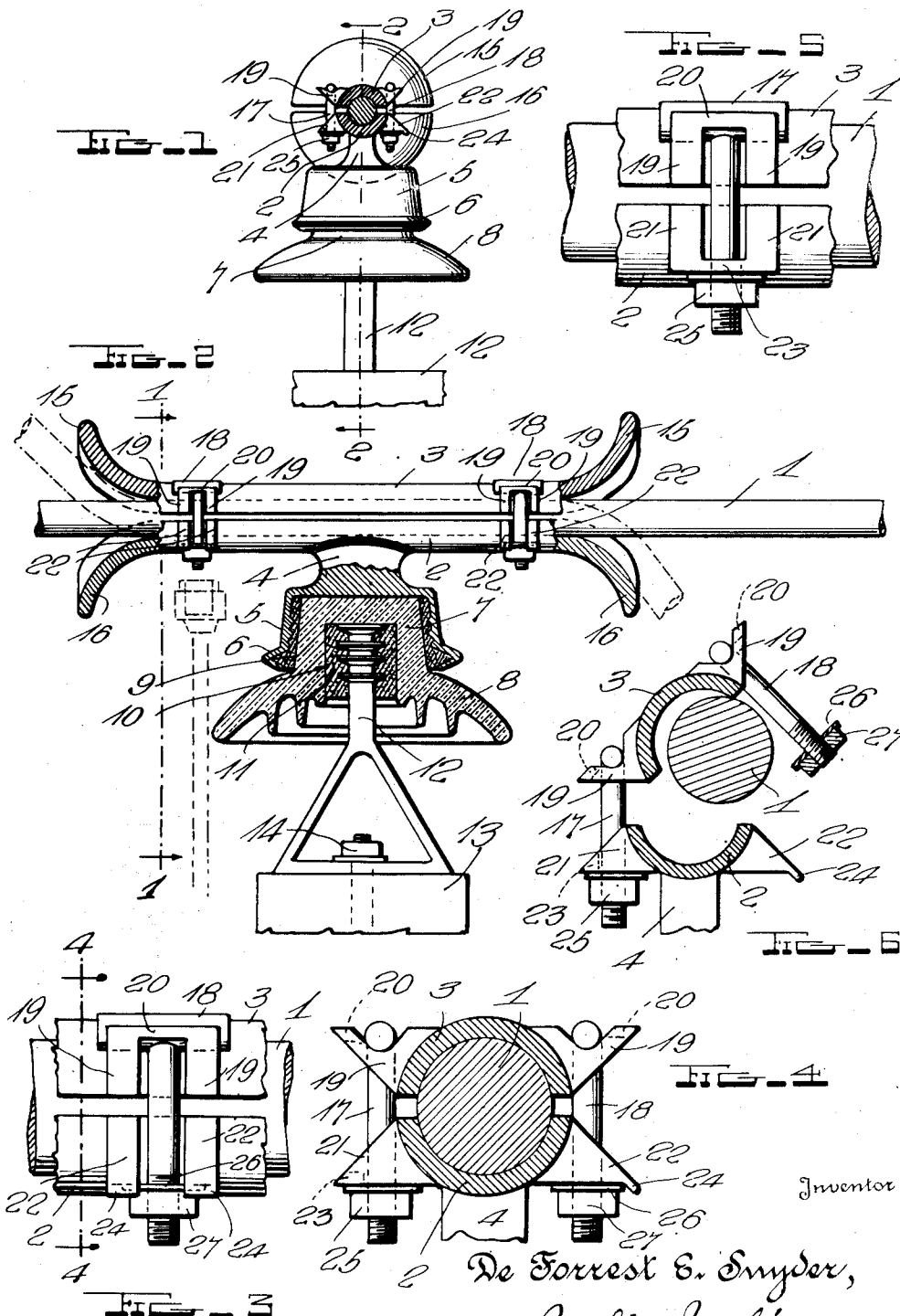
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HOT LINE CLAMP AND INSULATOR

Filed Sept. 8, 1933

2 Sheets-Sheet 1



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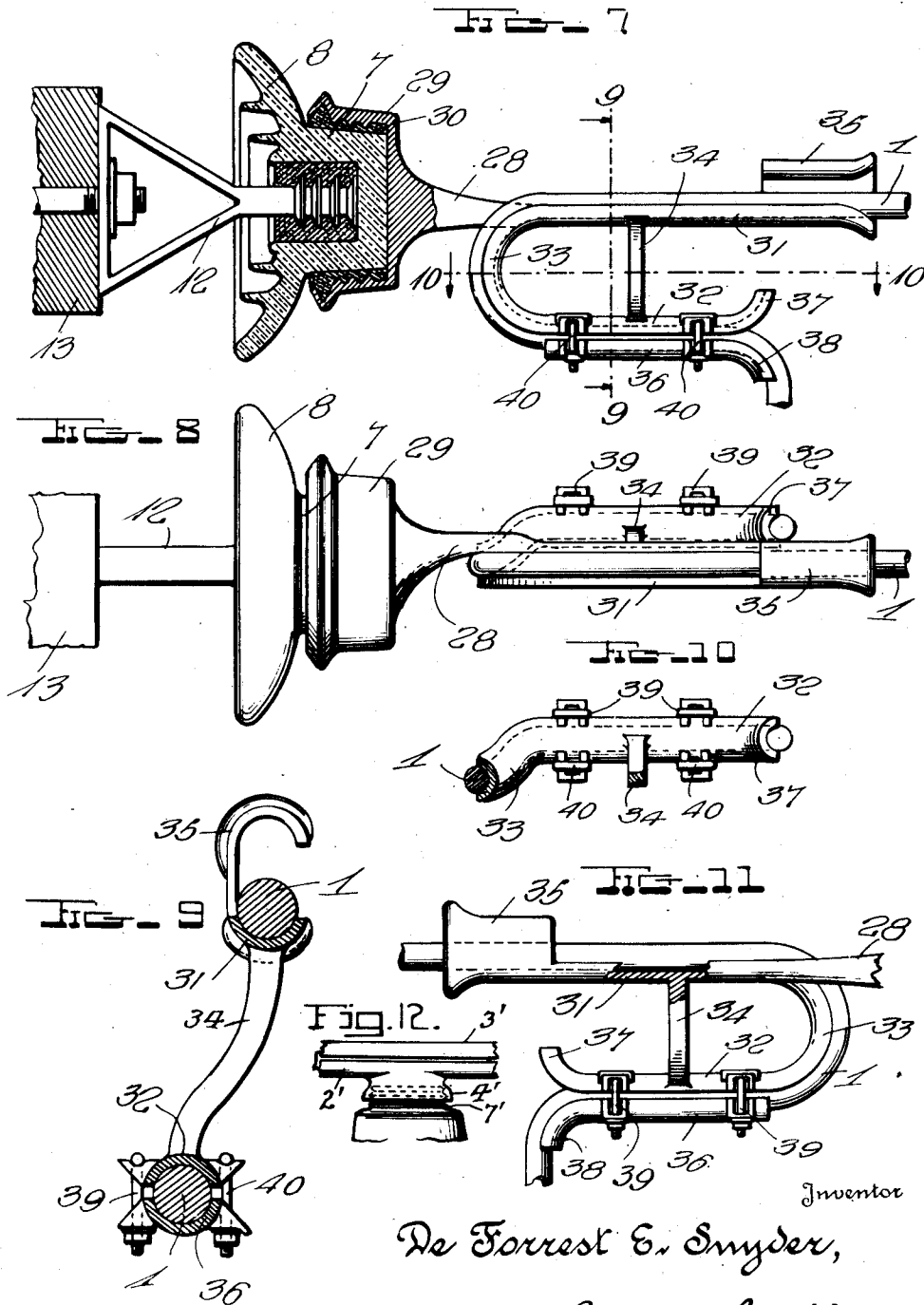
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HOT LINE CLAMP AND INSULATOR

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Application September 8, 1933, Serial No. 688,654

4 Claims. (Cl. 173-313)

This invention relates to electric insulators and more particularly to an improved clamp and insulator for use in mounting heavily charged power lines known as hot lines.

5 A hot line is very dangerous as it is heavily charged with electricity and therefore highly trained men are employed for stringing and repairing these lines. They stand upon the ground or on ladders at quite a distance from the line and use an implement known as a hot line stick for moving the line into engagement with an insulator and securing the line. It is, therefore, 10 one object of the invention to provide an improved clamp and insulator of such construction that the power line or wire can be easily moved into engagement with the clamp and the clamp then tightened to tightly grip the wire and firmly hold it in place.

Another object of the invention is to so form 20 the clamp that when it is engaged about a wire, the wire may extend through the clamp in a straight line or bent transversely at either end of the clamp.

A still further object of the invention is to provide 25 improved means for connecting an adjustable section of the clamp with a stationary section thereof and not only permit the adjustable clamp section to be secured in tight gripping engagement with a wire extending between the sections but permit the adjustable section to be 30 easily and quickly released and moved to a wire releasing position without danger of its securing bolts becoming disconnected from the clamp and dropping upon the ground.

35 Still another object of the invention is to prevent danger of the bolts working loose from the stationary clamp section after being tightened.

Another object of the invention is to provide 40 an improved clamp of such construction that it can be used as a dead end clamp or as a clamp for securing a power wire at a point where the wire is to be bent upon itself and extended transversely of its original direction.

A still further object of the invention is to so 45 form the clamp that if so desired, a loop can be formed in the line wire when bent to extend in a transverse direction without portions of the bent wire contacting with each other.

50 Still another object of the invention resides in providing a device which is simple and durable in construction, inexpensive to manufacture and one which will be very efficient in application to use.

55 With these and numerous other objects in view, my invention consists in the novel features of

construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings forming a part 5 of this application:

Figure 1 is a view showing the improved clamp and insulator principally in end elevation and partially in section, the view being taken along 10 the line 1-1 of Figure 2;

Figure 2 is a view taken along the line 2-2 of Figure 1 and showing the clamp and insulator partially in longitudinal section and partially in side elevation;

Figure 3 is a fragmentary view in elevation 15 looking at one side of the clamp;

Figure 4 is a section taken along the line 4-4 of Figure 3;

Figure 5 is a view similar to Figure 3 looking 20 at the other side of the clamp;

Figure 6 is a view similar to Figure 4 showing the clamp opened;

Figure 7 is a view showing a dead end clamp constructed in accordance with this invention;

Figure 8 is a top plan view of the dead end 25 clamp;

Figure 9 is a section taken vertically through the dead end clamp along the line 9-9 of Figure 7;

Figure 10 is a section taken horizontally along 30 the line 10-10 of Figure 7;

Figure 11 is a view of the clamp looking at the opposite side thereof from that shown in Figure 7; and

Figure 12 is a fragmentary side elevation of a 35 slightly modified form of the invention with parts broken away, illustrating one form of separable connection between the insulator and clamp.

In describing the invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views and in which the application to use is as follows. This improved clamp and insulator is for use in mounting a highly charged power wire 1 known as a hot line and has a stationary jaw 2 and adjustable jaw 3 which when drawn towards the stationary jaw causes the power wire to be firmly gripped between the jaws. A neck 4 projects from the stationary jaw intermediate the length thereof and carries a socket 50 5 having its walls formed with internal threads or ribs and about its open end being formed with a circumferentially extending channel 6. By this arrangement, the stationary clamp may be applied to an insulator 7 having an outstanding 55

skirt and firmly held in place by cement 9 which enters the channel and has firm interlocking engagement with the threads when dry. The insulator has a center socket 10 filled with cement 5 11 in which a ribbed stool 12 is embedded and the stool is secured to an arm 13 or other portion of a pole by a bolt 14. The stool may extend in an upright position, a depending position or substantially horizontally from the support 13 10 according to which position is found most convenient when initially applying the stool to the support.

The clamp is of greater length than the diameter of the skirt 8 of the insulator 7 and the adjustable section 3 of the clamp is connected 15 with the stationary section by fasteners located near flared ends 15 and 16 of the two clamp sections and spaced from each other longitudinally of the clamp a distance slightly greater than the 20 diameter of the skirt so that a hot line stick indicated by dotted lines in Figure 2 may extend vertically when in use and be easily engaged with the fasteners instead of diagonally as would be the case if the fasteners were located near the 25 neck of the clamp. This also causes pressure to be applied near ends of the clamp and the power wire will be very firmly gripped.

The fasteners consist of T-bolts having their heads seated in notches or recesses formed in lugs 30 or ribs 19 projecting from opposed side portions of the adjustable clamp section and connected by a bridge 20. The lugs of each set are spaced from each other longitudinally of the clamp section and the shanks of the bolts extend downwardly 35 between the lugs back of the bridges. Therefore, the bolts will be prevented from slipping off the outer ends of the lugs and also pivotal movement of the clamp section when released and swung upwardly from the position 40 illustrated in Figure 4 towards that of Figure 6 will be limited and the adjustable section prevented from moving to a position out of superimposed relation to the stationary section.

The stationary clamp section is also formed 45 with opposed sets of lugs 21 and 22 and referring to Figure 5, it will be seen that the lugs 21 are connected at their lower ends by a bridge 23 whereas the lugs 22 separate from each other and each is formed with a lip 24 projecting 50 downwardly therefrom at an outward incline. The bolts 17 extend between the lugs 21 back of the bridges 23 and each carries a washer and securing nut 25 and the bolts 18 extend between the lugs 22 and each carries a plate or free bridge 55 26 and nut 27. The plates 26 bear against the under faces of the lugs 22 with their outer edges overlapped by the fingers 24 and when the nuts 27 are tightened there will be no danger of the plates slipping forwardly out of engagement with 60 the lugs. When, however, the nuts 27 are loosened the bolts 18 may be swung forwardly and the adjustable clamp section can then move upwardly to the position shown in Figure 6 to permit a power wire to be moved into place between 65 the clamp sections or out of the clamp. During this movement, the bolts 17 will be prevented from moving out of place between the lugs 21 and as these bolts will be retained in an upright position by engagement with the bridges 23, the adjustable clamp section will be retained in such 70 a position that it can be easily and quickly moved downwardly towards the stationary clamp section and the bolts 18 moved into position between the lugs 22 with their plates engaging 75 under faces of these lugs. The nuts 27 can then

be engaged by the socket head of a hot line stick and the nuts tightened to draw the movable clamp section toward the stationary clamp section and cause the power wire to be firmly 5 gripped in the clamp. The flared ends of the clamp sections permit the power wire to be easily engaged through the clamp when opened and also permits the wire to be bent transversely at either end of the clamp if necessary without 10 a sharp bend being made which would be liable to cause the wire to snap.

In Figures 7 through 11 there has been illustrated a clamp and insulator constructed in accordance with this invention and known as a dead 15 end clamp. In this embodiment of the invention the stool 12 is secured in a horizontal position to a pole arm or other support 13 and the insulator is cemented upon the insulator as previously described. The insulator carries a bracket 28 having 20 a socket 29 corresponding to the socket 5 and cemented upon the insulator as shown at 30. This bracket is formed of metal and has an upper arm 31 concaved in cross section as shown in Figure 9 to provide a wire receiving trough and a 25 lower arm 32 joined to the upper arm by an arcuate bridge 33. The bridge and lower arm are also arcuate in cross section and in order to brace the lower arm and retain it in offset relation to the upper arm as shown in Figures 8 and 9 there 30 has been provided a bracing bar 34. A bill 35 is carried by the upper arm in overhanging relation to the free end portion thereof and this bill and the outer end of the upper arm are flared so that the wire may be easily moved into engagement 35 with the bracket and engaged in the trough of the upper arm. The bill also serves to limit movement of the wire away from the upper arm in case it does not extend in direct alinement therewith and in addition reduces likelihood of vibration 40 shaking the wire loose from the bracket.

The lower arm 32 serves as a stationary jaw of a wire gripping clamp and beneath this arm or jaw is disposed and adjustable jaw 36 corresponding 45 to the jaw 3. These jaws have flared outer or free ends 37 and 38 to permit the wire to be bent either upwardly or downwardly without a sharp bend being formed and in order to retain the adjustable jaw in connection with the stationary jaw and permit it to be secured in tight 50 gripping engagement with a wire there have been provided fastener means 39 and 40 disposed in opposed relation to each other at sides of the jaws and corresponding in construction and operation to the fasteners provided for the jaw 3. 55 As the construction and operation of the fasteners is the same as previously described in reference to Figures 1 through 6 it is not necessary to again describe them in detail.

When this dead end clamp is in use it is secured 60 in a horizontal position upon a pole arm or other support and the power wire 1 is engaged with the upper arm and then carried downwardly along the bridge 33 and moved into place between the adjustable jaw and the stationary jaw. The 65 nuts of the T-bolts are then tightened with a hot line stick and the power line will be firmly gripped and securely held in engagement with the dead end clamp. The portion of the power wire projecting from the outer ends of the jaws can be 70 bent either upwardly or downwardly and referring to Figure 8 it will be seen that if it is bent upwardly it can pass the upper arm without engaging the same due to the offset position of the 75 lower arm. Therefore, the power wire after be-

ing secured can be safely bent to extend transversely in either direction.

In the drawings, I have disclosed, as preferable, an integral connection between one section of the clamp and the socket, as for instance the integral neck 4 between the socket 5 and the stationary section 2 of the clamp. I do not wish to be limited to this integral connection and it will be understood that a separable connection may be provided between the clamp and socket in any one of many well known ways as for instance, a threaded connection, pin and clevis connection and ball and socket connection. These are conventional forms of connection between elements in this industry and it is obvious that for purposes of economy, such separate connections may be desirable. In the event, a portion of the clamp becomes damaged for any reason whatsoever, said portion may be removed and a new such portion substituted therefor without substituting an entirely new assembly.

Illustrative of the idea of a separable connection is the disclosure of a conventional form of connection as shown in Figure 12 of the drawings. The clamp sections 2' and 3' are shown, the lower clamp section 2' being provided with the internally threaded neck portion 4' which receives the threaded insulator stem 7'. This is merely one of various forms which may be used for providing a separable connection.

From the foregoing description of the construction of my improved device, the operation thereof and the method of applying the same to use will be readily understood. It will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention and while I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to, without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described the invention, what is claimed is:

1. In a hot line clamp, an elongated stationary jaw, an elongated movable jaw disposed above and in substantially parallel relation to said stationary jaw, sets of ears projecting from opposite sides of said jaws, the ears of the movable jaw being connected in pairs by bridges and formed with seats back of the bridges, T-bolts extending between the pairs of ears back of said bridges with their cross heads resting in said seats, said bolts extending between ears of the stationary jaw, the ears at one side of the stationary jaw being bridged and the ears at its other side being unbridged and having downwardly extending lips at their outer ends whereby bolts extending between the bridged ears of the stationary jaw will be held in engagement

therewith and the bolts at the other side of the clamp releasably held in engagement with the ears having lips.

2. In a hot line clamp, an elongated stationary jaw, an elongated movable jaw in opposed parallel relation to said stationary jaw, sets of ears projecting outwardly from opposite sides of said jaws, the ears at both sides of the movable jaw being connected in pairs by bridges and the stationary jaw having the ears at one side thereof bridged and the ears at its other side free from each other, bolts extending between ears of the movable jaw and having cross heads at their upper ends resting upon ears thereof, said bolts extending between ears of the stationary jaw and having securing nuts and washers bearing against the lower edge faces of the ears thereof, the bolts at one side of the second jaw when loosened being shiftable outwardly from between the unbridged ears to permit upward tilting movement of the movable jaw to an opened position and the bolts at the other side of the clamp being engaged by the bridges of ears carried by both jaws to limit transverse tilting of the movable jaw and retain the movable jaw in connection with the stationary jaw.

3. In a hot line clamp, an elongated stationary jaw, an elongated movable jaw in opposed parallel relation to said stationary jaw, sets of ears projecting from opposite sides of said jaws, the ears of the movable jaw being connected in pairs by bridges across their outer ends and the stationary jaw having the ears at one side bridged across their outer ends and the ears at its other side free from each other, bolts extending between ears of the movable jaw and having heads resting upon upper edges of the ears, said bolts extending between ears of the stationary jaw and having securing nuts and washers bearing against lower edges of the ears, the ears at one side of the stationary jaw being bridged at their outer ends to retain the bolts in place between the ears and the ears at the other side of the stationary jaw being unbridged and having lips at their free outer ends to overlap the washers and nuts of cooperating bolts and prevent outward movement of the said bolts when their nuts are tightened.

4. In a hot line clamp and insulator, a clamp having an elongated stationary jaw and an elongated movable jaw, a neck extending from said stationary jaw intermediate its length and terminating in a socket, an insulator secured in said socket and having a skirt of greater diameter than the socket, a stool secured in said insulator, and fasteners for said jaws at opposite sides thereof spaced from each other longitudinally of the clamp a distance greater than the diameter of said skirt.

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