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CONDUCTOR CLAMPING ASSEMBLY FOR USE ON HORIZONTALLY
EXTENDING INSULATORS
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3,437,299

FIG. 1.

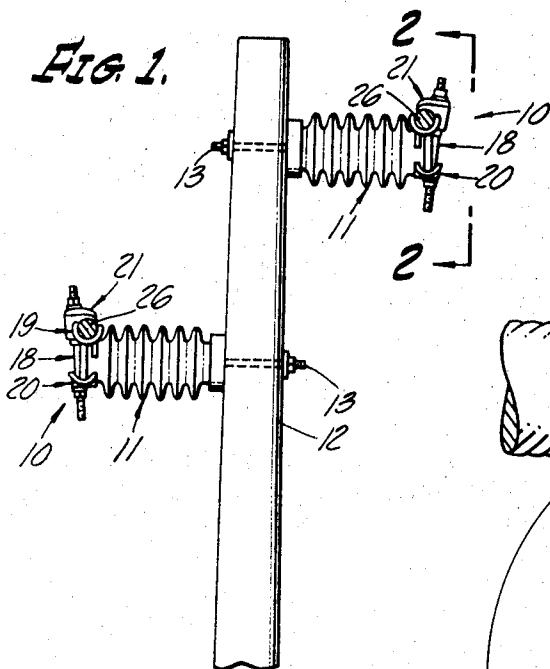


FIG. 2.

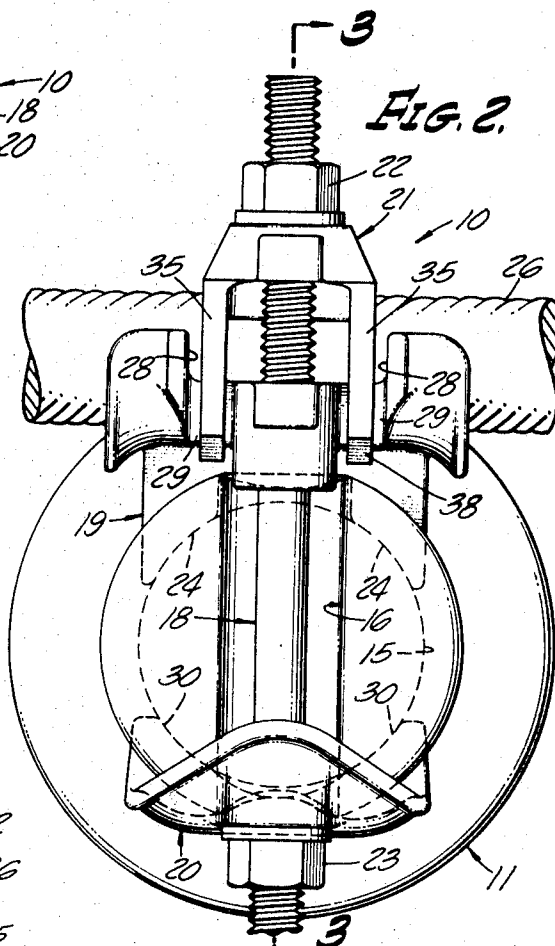


FIG. 3.

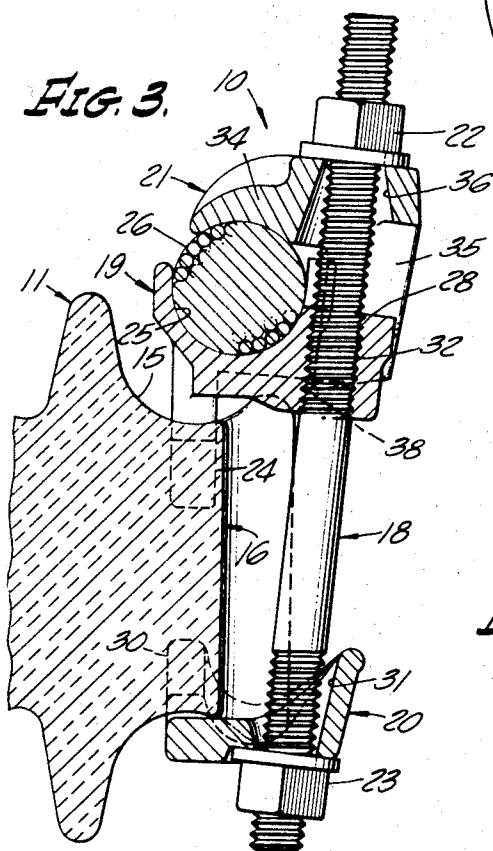
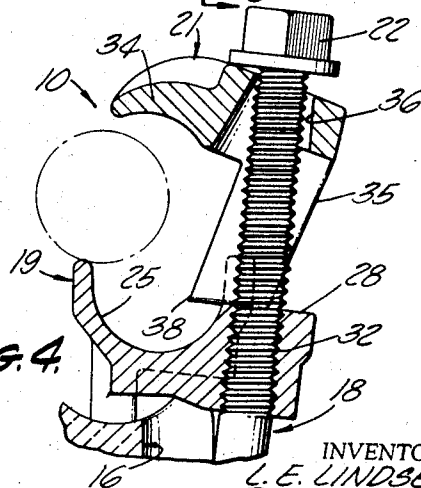


FIG. 4.



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**CONDUCTOR CLAMPING ASSEMBLY FOR USE ON
 HORIZONTALLY EXTENDING INSULATORS**
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17 Claims

ABSTRACT OF THE DISCLOSURE

A clamping assembly suitable for mounting on a support such as the outer end of an insulator and including two independently adjustable clamping jaws, one of which is adjustable to clamp the assembly to the support and the second of which is adjustable to clamp or release a power conductor or the like without disturbing the clamped position of the assembly. When loosened, the conducting clamping jaw is tiltable and effective to sustain the jaw in an open position clear of the conductor thereby facilitating servicing of a conductor without interference from the jaw.

This invention relates to conductor clamping assemblies and more particularly to an improved rugged high-reliability clamping assembly utilizing three jaws in combination with a common interconnecting threaded rod and a pair of nuts to hold the assembly in place on the outer end of a horizontally extending insulator as well as to clamp a conductor in place crosswise of the clamping assembly. A first pair of jaws are designed to embrace the groove commonly present in the outer end of the pole type insulators, the upper one of the jaws including a conductor seating groove across its top side cooperating with a third clamping jaw mounted on the upper end of the threaded rod to clamp a conductor firmly in place therein. The threaded rod preferably has a semi-permanent connection with one of the assembly mounting jaws, the other two jaws to either side thereof being freely movable along the rod when the associated nuts are loose. In consequence of this arrangement, one of the nuts is effective to clamp the assembly firmly to the insulator whereas the second nut is adjustable to clamp a conductor. The conductor clamping jaw features a pair of legs located along the rod exteriorly of one side of the conductor seat and cooperating with the side of the seating groove jaw to hold the conductor clamp selectively in one of two positions, one being effective to clamp the conductor and the other being a non-operating position entirely to one side of the conductor seat. All that is necessary is to back off the clamping nut sufficiently to permit the conductor jaw to be rotated through a half revolution while remaining assembled to the upper end of the threaded rod.

New problems are being presented to designers of hardware for use on power lines in view of the growing trend toward mounting insulators cantilever fashion along the opposite sides of an upright pole or other support. In consequence, conductors heretofore made with conductor seating grooves crosswise of their upper ends are difficult to use when mounted horizontally along the sides of a pole for lack of suitable provision for anchoring the power conductor to the outer end of the insulator. Various techniques have been proposed for meeting this need but these are found deficient in various respects and are far from satisfactory and acceptable.

It is therefore a primary object of the present invention to provide a simple rugged clamping assembly of a versatile nature especially adapted for use with the mentioned conventional insulators having a conductor seating groove crosswise of their outer ends. According to a preferred embodiment, the invention clamp features a single

threaded member having nuts at its opposite ends, one of which can be wrenched to clamp the assembly rigidly to the outer end of a horizontally mounted insulator, and the other of which can be wrenched independently of the first mentioned nut to adjust the conductor clamping jaw. The assembly is so made as to normally support the conductor across the upper outer corner of a cantilever-mounted insulator. The entire assembly can be mounted on or removed from an insulator by manipulating a single one of the clamping nuts and a conductor can be inserted or removed by manipulating the other nut without disassembling any of the jaws from the threaded rod. Additionally, the conductor clamping jaw may be selectively supported either in a clamping position or in a non-clamping position with the jaw proper positioned entirely outside the conductor seating groove for maximum convenience while stringing a conductor along the power line.

It is therefore a primary object of the present invention to provide an improved inexpensive but rugged foolproof clamping assembly for use on the outer end of a cantilever-mounted insulator.

Another object of the invention is the provision of a pole line insulator clamping assembly featuring a single threaded rod passing through three clamping jaws two of which are usable to clamp the assembly to an insulator and two others of which are usable independently of the first two to clamp a conductor in place on the assembly.

Another object of the invention is the provision of a conductor clamping assembly for use on pole line insulators and featuring a conductor clamping jaw selectively movable between a conductor clamping position and a non-clamping position wherein the jaw is located entirely outside the conductor seating groove.

These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawing to which they relate.

Referring now to the drawing in which a preferred embodiment of the invention is illustrated.

FIGURE 1 is a fragmentary elevational view of a typical operating environment showing a preferred embodiment of the clamping assembly mounted on the outer ends of insulators supported cantilever fashion from the opposite sides of a pole;

FIGURE 2 is an elevational view on enlarged scale taken along line 2—2 on FIGURE 1;

FIGURE 3 is a cross-sectional view taken along line 3—3 on FIGURE 2; and

FIGURE 4 is a fragmentary view similar to FIGURE 3 showing the conductor clamping jaw in its alternate non-operating position.

Referring initially more particularly to FIGURE 1, there is shown a typical installation of the invention clamping assembly, designated generally 10, secured to the outer end of a conventional type insulator secured generally horizontally to a pole 12 by mounting bolt 13. As here shown, insulator 11 has a diametric groove 16 opening into an annular groove 15 encircling its outer end. Groove 16 is of the type frequently used heretofore to seat the power conductor, the latter being customarily clamped in this groove by tie wires anchored in groove 15. When the insulators are mounted cantilever fashion along the sides of a pole as illustrated in FIGURE 1 it is no longer feasible to employ groove 16 in the manner just referred to.

Referring now more particularly to FIGURES 2 and 3, it is pointed out that clamping assembly 10 comprises a threaded rod 18, a first clamping jaw 19, a second clamping jaw 20, and a third or conductor clamping jaw 21 of inverted L-shape. As herein shown, only clamping jaw 19 has a semi-permanent fit with the threads on the upper end of rod 18, the other two jaws 20, 21 having a loose fit with the rod as is clearly evident from FIGURE 3.

Typically, clamp 19 is rotated forcibly against the end of the threads along the upper end of rod 18. The two remaining components of the assembly include an upper nut 22 and a lower nut 23.

The first clamping jaw 19 features a pair of arcuate jaws 24, 24 shaped to seat snugly within insulator groove 15 whereas the upper or exterior side of jaw 19 has a long semicylindrical conductor seating groove 25 appropriately sized to seat a power conductor 26 snugly therein. To be noted is the fact that seating groove 25 overlies and is located in the same plane as jaws 24 and supports the conductor closely above insulator groove 15.

As is best shown in FIGURES 2 and 3, the outer or right hand side of groove 25, as viewed in FIG. 3, is notched at 28 for a purpose which will be explained in detail below. This notch 28 opens into a pair of notches 29 extending vertically along either side of threaded rod 18.

The second or lower clamping jaw 20 is shaped as shown in FIGURES 2 and 3 and includes inwardly projecting jaws 30, 30 shaped to seat in insulator groove 15 and cooperating with jaws 24 of jaw unit 19 to anchor assembly 10 firmly to the outer end of the insulator. Jaw 20 has a large opening 31 fitting freely and loosely over the threaded lower end of rod 18.

The third or conductor clamping jaw 21 in shaped as is best shown in FIGURES 2 and 3 and includes an arcuate shaped jaw 34 embracing the upper side of a conductor 26 and a pair of legs 35, 35 extending generally vertically along either side of rod 18. An opening 36 through jaw 21 is sized to slide freely over the threaded rod. The lower inner corners 38 of its vertically disposed legs 35 bear against the outer adjacent sides of jaw 19 in a manner clearly illustrated in FIGURE 3 when the conductor clamping jaw is positioned to clamp a conductor as is clearly shown in that figure. However, when initially installing, servicing or replacing a conductor, it is usually desirable that jaw 21 not interfere. This convenience is easily achieved by backing off nut 22 close to the upper end of rod 18 thereby permitting jaw 21 to be elevated until the jaw can be cantled to the position shown in FIGURE 4 so that legs 35 can rest on the bottom of notch 28. The lower inner corners 38 of the legs will then protrude into and overlie seating groove 25. As the conductor is inserted into the seat it engages corners 38 and automatically dislodges the clamping jaw allowing it to drop against the conductor and nut 22 is retightened to clamp the conductor rigidly in groove 25 and without interfering in any way with the clamping action of nut 23 and its effectiveness in anchoring the entire assembly 10 rigidly in groove 15. Nor does the tightening of nut 22 alter the pressure acting on clamps 24 and 30 or increase the pressure on the insulator in any degree.

While the particular conductor clamping assembly for use on horizontally extending insulators herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

I claim:

1. A conductor clamp assembly for detachable support across the end of a pole line insulator of the type having an annular groove surrounding its outer end and opening into a diametric groove across said end, said assembly comprising first and second arcuate jaws adapted to seat in said annular groove opposite the ends of said diametric groove, said first jaw having a conductor seating groove opening outwardly away from the annular groove in the outer end of the insulator, rod means threaded at its opposite ends passing through aligned openings in said first and second jaws and adapted to extend along said diametric groove to clamp said jaws rigidly to an insulator, a conductor clamping jaw seated loosely over one

threaded end of said rod, and first and second nut means on the opposite ends of said threaded rod cooperating therewith to hold said assembly rigidly clamped to an insulator and to clamp a conductor seated in said seating groove.

2. A conductor clamp assembly as defined in claim 1 characterized in that said rod is normally non-rotatable relative to said first jaw, said second jaw having a loose fit about one threaded end of said rod, and said second nut means being effective when tightened to clamp said assembly rigidly to an insulator independently of the first one of said nut means.

3. A conductor clamp assembly as defined in claim 1 characterized in that said first nut means is effective independently of said second nut means to clamp a conductor firmly in said conductor seating groove.

4. A conductor clamp assembly as defined in claim 1 characterized in that said conductor clamping jaw includes means for holding the same supported in an elevated open position with said conductor seating groove substantially fully open and unobstructed by said conductor clamp.

5. A conductor clamp assembly as defined in claim 1 characterized in that said conductor clamp includes an arcuate conductor clamping jaw and a pair of parallel legs at right angles thereto and spaced to either lateral side of said rod, said legs being freely movable lengthwise of said rod and along one exterior lateral side of said first jaw, and said clamping jaw being tiltable when elevated along the upper end of said rod means until the lower ends of said legs rest on the top edge of said first jaw thereby to support said conductor clamp in open position.

6. A conductor clamp assembly as defined in claim 5 characterized in that the inner lower corners of the legs of said conductor clamping jaw are positioned to overlie one inner edge of said conductor seating groove when supported in open position whereby the insertion of a conductor into said seating groove is effective to dislodge said clamping jaw for gravitation into clamping position against the upper side of the newly seated conductor.

7. A conductor clamp assembly as defined in claim 1 characterized in that said threaded rod has close-fitting threaded engagement with a threaded opening through said first clamping jaw, and said second jaw and said conductor clamping jaw being free of threaded engagement with the threads of said rod and freely slidable therealong when said nut means are loosened.

8. A conductor clamp assembly adapted to be detachably clamped to the outer end of an insulator, said assembly comprising a headless rod threaded along its opposite ends, first and second jaw means mounted on said rod each having arcuate jaws facing toward one another and cooperable to clamp said assembly to the end of an insulator, a third jaw freely supported along one end of said rod and cooperating with an elongated conductor seating groove across the exterior side of said first jaw to clamp a conductor firmly in place therein, and separate clamping nuts threaded onto the opposite ends of said threaded rod and independently adjustable along said threaded rod, the first of said nuts being effective to clamp said first and second jaws to one end of an insulator without disturbing the clamped condition of a conductor to said assembly and the second of said nuts being effective to clamp a conductor within said conductor seating groove without disturbing the clamped condition of said assembly to an insulator.

9. A conductor clamp assembly as defined in claim 8 characterized in that said rod has threaded engagement only with a threaded opening through said first clamping jaw.

10. A conductor clamp assembly as defined in claim 8 characterized in that said conductor seating groove lies in a plane passing through the surfaces of said first and second jaws adapted to be clamped against the outer end of an insulator.

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11. A conductor clamp assembly adapted to be clamped to the outer end of an insulator, said assembly having a main body formed with a conductor seating groove one side wall of which is notched in the midlength thereof to accommodate a conductor clamping jaw, an inverted L-shaped conductor clamping jaw having a conductor engaging leg overlying said seating groove and a pair of vertically disposed legs extending downwardly therefrom along one exterior side of said main body, and threaded clamping means passing through the outer end of said clamping jaw between said pair of legs with the threads thereof mating with a threaded bore in said main body.

12. A conductor clamp assembly as defined in claim 11 characterized in that said main body includes a boss projecting laterally therefrom intermediate the opposite lateral edges of said notch, and said pair of clamping jaw legs being located astride said boss and movable vertically along the opposite sides thereof as the jaw is being tightened.

13. A conductor clamp assembly as defined in claim 12 characterized in that said threaded bore extends vertically and transversely of said boss.

14. A conductor clamp assembly as defined in claim 11 characterized in that the inner edges of said pair of legs bear against the juxtaposed exterior sides of said main body as said jaw is tightened against a conductor and cooperate with said main body in constraining said jaw to move linearly toward a conductor and toward the bottom of said seating groove as the jaw is tightened.

15. A conductor clamp assembly as defined in claim 11 characterized in that the outer end of said clamping jaw

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is provided with a generally vertically disposed downwardly-diverging opening therethrough positioned between said pair of legs for passing freely along the threads of said threaded clamping means for said clamping jaw and whereby said clamping jaw has limited play relative to said threaded clamping means when the jaw is untightened.

16. A conductor clamp assembly as defined in claim 12 characterized in that said pair of legs are relatively wide and thin with their broad surfaces lying generally parallel to one another and disposed adjacent the opposite sides of said boss.

17. A clamping assembly as defined in claim 16 characterized in that said clamping jaw when loosened has limited pivoting movement crosswise of said conductor seating groove thereby to permit the lower ends of said legs to rest against the bottom of said notch to support said jaw in an elevated open position.

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U.S. Cl. X.R.

174—169, 172; 248—74