July 3, 1951 W. A. LEWIS 2,559,218

QUICK-DETACHABLE INSULATOR

Filed April 25, 1949

FIG. 1

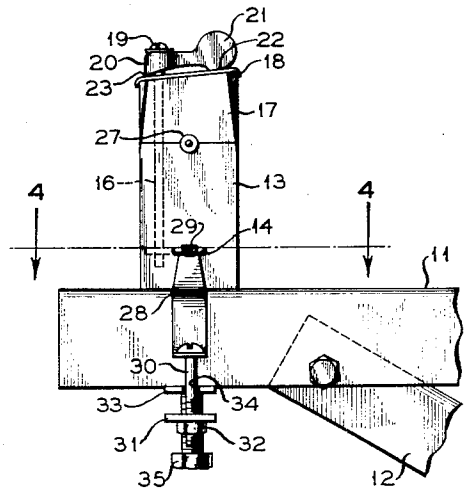


FIG. 2

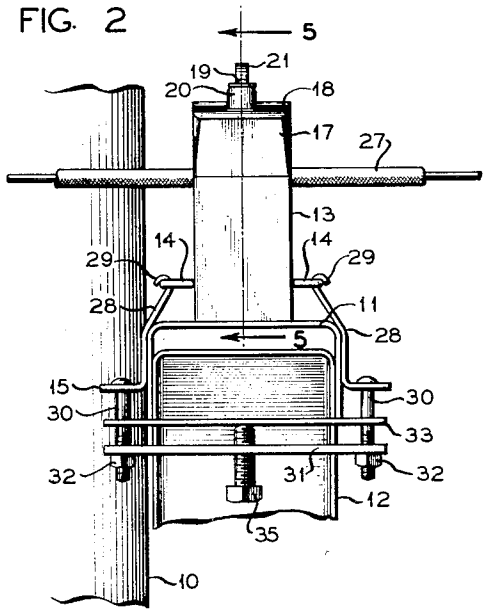
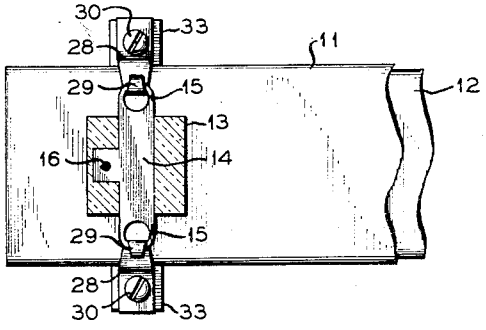


FIG. 4



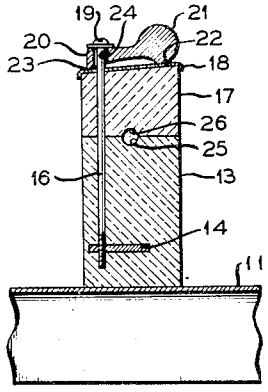
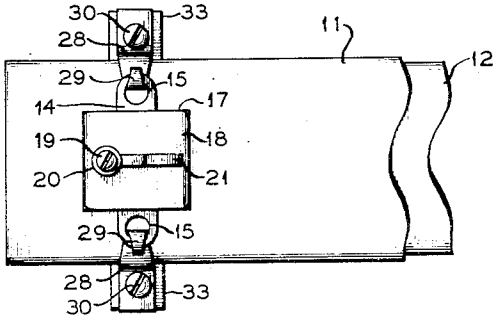


FIG. 5

FIG. 3



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QUICK-DETACHABLE INSULATOR

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5 Claims. (Cl. 174—157)

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This invention relates to electricity and more particularly to an insulator designed for relatively quick application to a support such as a cross arm on a tower or pole and for quick removal therefrom.

Insulators installed on towers or poles are frequently broken, particularly during the winter months when subjected to conditions of snow, ice and sleet, and it is desirable that these insulators be easily replaceable which necessitates the provision of some detachable means for securing the insulator to the support and also of means for releasing and clamping the conductor supported by the insulator.

It is therefore an object of this invention to provide a conductor-supporting insulator having a simple clamping means for securing the insulator to a support such as a cross arm, the clamping means being adjustable to adapt the same to different sizes of cross arms and further incorporating a rapidly operable means for clamping or releasing a conductor to be supported by the insulator.

It is a further object of this invention to provide a conductor-supporting insulator in which means is provided for securing the same to a support such as a cross arm without necessitating the provision of holes or the like in the cross arm which would be weakened thereby.

It is a further object of this invention to provide a conductor-supporting insulator of molded insulating material in which a plate is molded into the body of the insulator, this plate providing means for the attachment of the insulator clamping means and also serving to secure the means utilized for clamping a conductor to the insulator.

It is a further object of this invention to provide a conductor-supporting insulator of relatively simple inexpensive construction which may be conveniently utilized on new installations or which may be utilized as replacements for broken or otherwise damaged insulators already in service.

Further objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is an elevational view showing the insulator of this invention installed on a cross arm such as that provided on the conventional telephone pole or tower;

Fig. 2, an end elevation showing the details of the clamping means for securing the insulator to a cross arm and with a conductor clamped in place on the insulator;

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Fig. 3, a top plan view of the insulator of Fig. 1;

Fig. 4, a sectional view on the line 4—4 of Fig. 1, and,

Fig. 5, a sectional view on the line 5—5 of Fig. 2.

With continued reference to the drawing, there is shown a portion of a telephone pole or the like 10 on which is mounted a cross arm 11 supported by a diagonal brace 12. The cross arm 11 as shown comprises a channel shaped member preferably of metal but obviously this cross arm might take the form of the conventional solid wood member. Likewise the diagonal brace 12 which is shown as being of channel shape may be of any desired or convenient shape or material.

The insulator of this invention comprises a body 13 preferably formed of molded insulating material such as glass or plastic although this body may be made by other processes than by molding and need not be necessarily of the generally rectangular cross sectional shape as shown. The body 13 is of elongated construction and incorporated therein is a plate 14 extending from opposite sides of the body and being provided with apertures 15, the purpose of which will be presently explained. Plate 14 also serves to threadedly receive and hold a rod 16 which extends upwardly through the body 13 and projects for an appreciable distance above the top thereof. Slidably and rotatably received on rod 16 is a conductor-clamping member 17 of insulating material similar to that utilized in the body 13 and the upper surface of clamping member 17 is beveled as clearly shown in Figs. 1 and 5, to which is applied a cap 18 of metal or other suitable material. This cap provides a wear-resisting upper cam surface.

Also mounted on the rod 16 adjacent the head 19 thereof is a lever 20 having a finger-engaging portion 21 for convenient operation thereof. With the lever 20 in the position shown in Fig. 5, the portions 22 and 23 bear against the upper surface of cap 18 and firmly urge the clamping member 17 into engagement with the upper surface of the body 13. In order to release the clamping member 17 the lever 20 is rotated 180° from the position shown in Fig. 5 and due to the fact that the enlarged hole 24 allows sufficient clearance for the lever 20 to tilt on the rod 16 when in this position the clamping member 17 may be moved upwardly away from the body 13 a limited distance. The body 13 is provided with a groove 25 in the upper surface thereof which

mates with a groove 26 in the lower surface of clamping member 17 to receive and clamp a conductor 27 positioned therein.

It will therefore be seen that by the above described structure there has been provided a relatively simple yet highly efficient means for clamping a conductor to the insulator or for quickly releasing the same to permit removal of the insulator.

The means for securing the insulator to the cross bar 11 or other supporting member comprises a pair of straps 28 having hooked portions 29 at their upper ends for detachable engagement with the apertures 15 of the plate 14. Straps 28 extend downwardly below the lower surface of the body 13 and are provided with screw threaded adjusting means such as bolts 30 which serve to adjustably support a bar 31 slidably received on the bolt 30, the position of the bar 31 being adjusted by manipulation of the nuts 32. If desired, straps 28 might be replaced by threaded rods or other equivalent means.

Also slidably received on the bolts 30 is a clamping cross bar 33 provided with a slot 34 at each end thereof, which slidably engages the bolts 30. Clamping cross bar 33 is moved upwardly into clamping engagement with the under surface of cross bar 11 or other supporting means by a single clamping screw 35 threadedly received in the cross bar 31 adjacent the mid point thereof. The upper end of the clamping screw 35 engages the lower surface of clamp bar 33 and serves to force the bar 33 into firm engagement with the cross bar 11 thus securely clamping the insulator in place thereon. The bolts 30 and nuts 32 thereon provide a convenient means for adapting the device to various sizes of cross bars or supports and the clamping screw 35 provides a single clamping means which may be manipulated when applying or removing the insulator. Likewise the insulator and its clamping means means may be conveniently separated for shipment or storage by simply disengaging the hooks 29 on straps 28 from the apertures 15, thus permitting the device to be contained in a minimum of space. If desired, the clamping screw 35 might be replaced by a cam-operated or other equivalent clamping means.

It will be seen that there has been provided by this invention an insulator which may be quickly applied to a support such as a cross bar or removed therefrom and which also permits relatively rapid engagement and disengagement of the conductor supported thereby resulting in a structure highly usable for replacement purposes, particularly in areas where such insulators are subject to frequent breakage or other damage.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited by that which is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A conductor-supporting insulator comprising a body of insulating material, a plate disposed in said body and having apertured portions extending from opposite sides thereof, a conductor-clamping member of insulating material slidably mounted on a rod extending longitudinally from said body and secured to said plate, a cam surface on said clamping member, a lever pivotally mounted on said rod and engaging said cam surface whereby upon pivotal movement of said lever in one direction said clamping member will be moved toward said body to clamp a conductor therebetween and upon pivotal movement of said lever in the opposite direction said conductor will be released, a pair of straps having hooks at one end detachably engaging said apertured portions and adjustable screw threaded members secured to the opposite ends, a clamping bar slidably mounted on said adjustable members and movable toward and away from the bottom surface of said body and means for moving said bar toward said body comprising a cross bar received on said adjustable members and a screw threaded member threadedly received in said cross bar at substantially the mid point thereof and engaging said clamping bar whereby said insulator may be detachably secured to a supporting member.

2. A conductor-supporting insulator comprising a body of insulating material, a plate disposed in said body and having apertured portions extending from opposite sides thereof a conductor-clamping member of insulating material slidably mounted on a rod extending longitudinally from said body and secured to said plate, a cam surface on said clamping member, a lever pivotally mounted on said rod and engaging said cam surface whereby upon pivotal movement of said lever in one direction said clamping member will be moved toward said body to clamp a conductor therebetween and upon pivotal movement of said lever in the opposite direction said conductor will be released, a pair of straps detachably engaging said apertured portions and depending below said body, adjustable members secured to the lower ends of said straps, a clamping bar slidably mounted on said adjustable members and movable toward and away from the bottom surface of said body and means for moving said bar toward said body comprising a cross bar received on said adjustable members and a screw threaded member threadedly received in said cross bar at substantially the mid point thereof and engaging said clamping bar whereby said insulator may be detachably secured to a supporting member.

3. A conductor-supporting insulator comprising a body of insulating material, a plate disposed in said body and having portions extending from opposite sides thereof, a conductor-clamping member of insulating material slidably mounted on a rod extending longitudinally from said body and secured to said plate, a cam surface on said clamping member, a lever pivotally mounted on said rod and engaging said cam surface whereby upon pivotal movement of said lever in one direction said clamping member will be moved toward said body to clamp a conductor therebetween and upon pivotal movement of said lever in the opposite direction said conductor will be released, members detachably secured to said extending portions and depending below said body, a clamping bar slidably mounted on said members and movable toward and away from the bottom surface of said body and means for moving said bar toward said body comprising a cross bar received on said members and movable means on said cross bar engaging said clamping bar whereby said insulator may be detachably secured to a supporting member.

4. A conductor-supporting insulator comprising a body of insulating material, a conductor-clamping member of insulating material slidably mounted on a rod extending longitudinally from said body, a cam surface on said clamping member, a lever pivotally mounted on said rod

and engaging said cam surface whereby upon pivotal movement of said lever in one direction said clamping member will be moved toward said body to clamp a conductor therebetween and upon pivotal movement of said lever in the opposite direction said conductor will be released, members secured to said body and extending therebeneath, a clamping bar slidably mounted on said members and movable toward and away from the bottom surface of said body and means for moving said bar toward said body comprising a cross bar received on said members and movable means on said cross bar engaging said clamping bar whereby said insulator may be detachably secured to a supporting member.

5. A conductor-supporting insulator as defined in claim 3 in which said cam surface comprises a metallic cap secured to the upper surface of said clamping member.

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