Dec. 8, 1964 G. E. GOEWEY 3,160,378

SUPPORTING DEVICE

Filed Nov. 17, 1961

Fig. 1

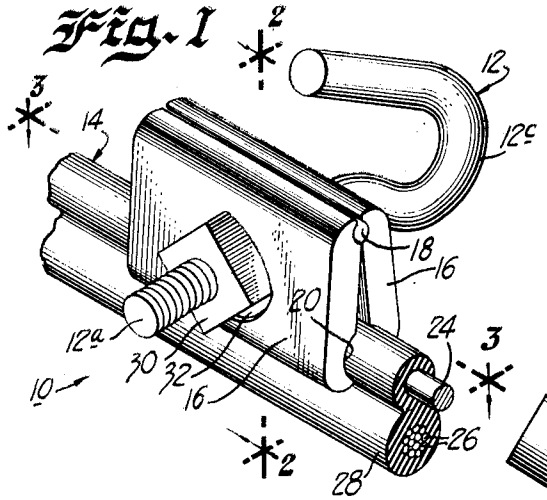


Fig. 3

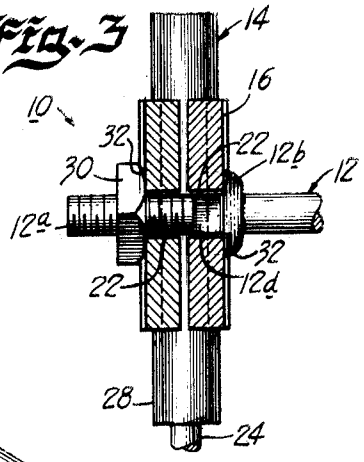


Fig. 2

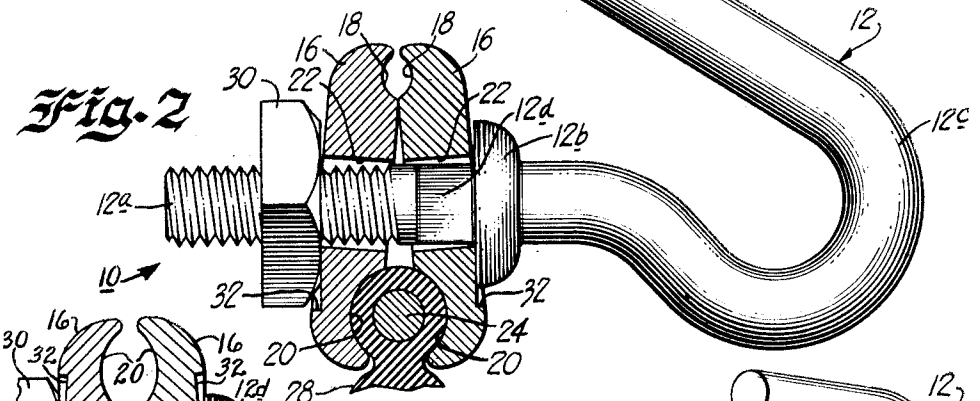
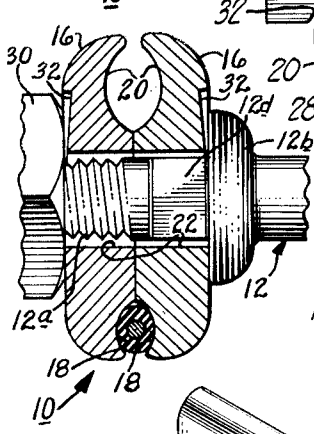
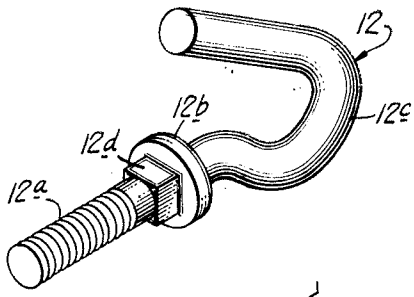


Fig. 5





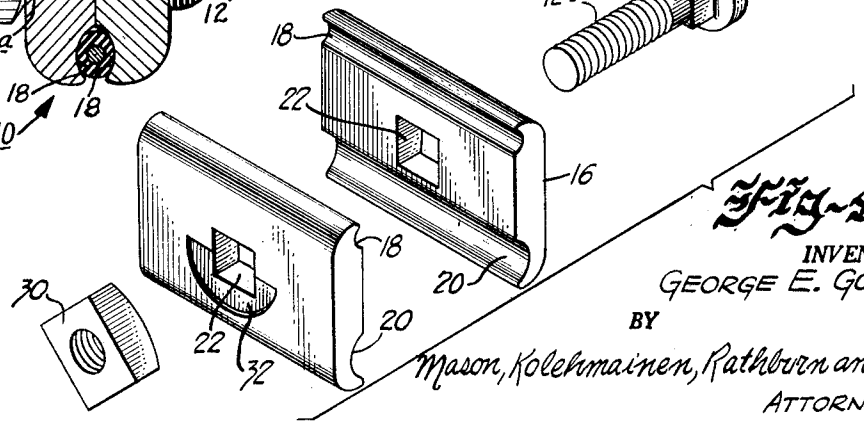


Fig. 4

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SUPPORTING DEVICE

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6 Claims. (Cl. 248—61)

This invention relates to a clamping or securing construction and, more particularly, to a device used in telephony for supporting a telephone drop from a messenger or suspension strand.

In extending lines or telephone drops to the homes of telephone subscribers, it is a common practice to make a connection between the drop and an aerial cable at a terminal block on the pole located closest to the subscriber's home. In many instances, the presence of trees or other obstacles or the length of the span involved makes it impossible or at least undersirable to extend the drop directly from the terminal block to the home. One method of overcoming this problem is to run the telephone drop parallel to the cable to a point that is properly located relative to the home. The drop is then extended directly to the home.

This method requires the provision of suitable telephone drop supporting means at the point from which the drop is directed away from the aerial cable to the subscriber's home. Since most aerial cables include both a conductor bundle and a relatively strong messenger or suspension strand for supporting the conductor bundle, various types of securing or clamping devices have been used to secure a telephone drop supporting means to the messenger strand at the point from which the drop is extended to the home. These clamping devices often comprise a pair of grooved plates that are forced into engagement with opposite sides of the messenger strand. The present clamping devices are designed for use with messengers of a given size or at least a single rather limited range of sizes and can be satisfactorily used within a given system where the messengers are of uniform size. However, these devices are not satisfactory for use by the many independent telephone companies in which many different sizes of messenger strands are encountered. One reason for this difficulty is that of securing adequate clamping purchase on the messenger strand when the grooves in the clamping plates are used with messengers of a size other than that for which the grooves were designed.

Accordingly, one object of the present invention is to provide a new and improved clamping or securing device.

Another object is to provide new and improved means for supporting a telephone drop from messengers of various sizes.

Another object is to provide a clamping or securing construction including two grooved plates providing messenger receiving openings or passageways of more than one size.

A further object is to provide a telephone drop securing means including means for adequately securing plural groove clamping plates to messenger strands of different diameters.

In accordance with these and many other objects, an embodiment of the invention comprises a pair of clamping plates having spaced and generally parallel grooves of different sizes formed on their inner surfaces. An opening is formed in each of the plates between the grooves so that when the inner surfaces of the plates are placed adjacent each other, the openings are aligned to permit the insertion of the shank portion of a telephone drop supporting means. This shank includes a shouldered portion bearing against the outer surface of one of the plates and a threaded portion disposed adjacent the outer surface of the other plate. A threaded fastener engages this portion of the shank and forces the plates toward

each other to clamp a messenger strand disposed in one of the two passageways formed by the opposed pairs of grooves of different sizes.

Since the conductor bundle is generally supported beneath the messenger strand by hangers or lacing, it is generally desirable to secure the telephone drop supporting means above the messenger strand. Accordingly, the shank of the drop supporting means and the opening in at least one of the plates are formed with locating means that permit the two clamping plates to be secured in two positions on the drop supporting means spaced substantially 180° from each other. A different one of two passageways for receiving the messenger is disposed adjacent the messenger in each of these two positions. When the smaller diameter passageway receives the messenger, the two clamping plates remain in a generally parallel relationship and an adequate bearing surface is provided between the threaded fastener and the outer surface of the adjacent plate to insure the application of adequate clamping force to the messenger from the two plates. However, when the plates are displaced 180° to the other position in which the larger diameter opening receives a messenger falling in a larger range of sizes, the clamping plates tend to remain more widely separated at their lower ends engaging the messenger than at their upper end. This results in a relatively small bearing surface between the threaded fastener and the outer surface of the plate. To provide an adequate or increased bearing surface, the outer surfaces of the plates are each provided with a recess or inclined surface in the area disposed adjacent the central shank receiving opening. Thus, even though the clamping plates are tipped or inclined, the recessed or inclined surfaces provided on the outer surfaces of the plates insure the adequate transmission of a clamping force to the messenger.

Many other objects and advantages of the present invention will become apparent from considering the following description in conjunction with the drawing in which:

FIG. 1 is a perspective view of a messenger clamp embodying the present invention;

FIG. 2 is an enlarged sectional view taken along line 2—2 in FIG. 1;

FIG. 3 is a sectional view taken along line 3—3 in FIG. 1;

FIG. 4 is an exploded perspective view of the messenger clamp; and

FIGURE 5 is a fragmentary sectional view of the messenger clamp according to the present invention and illustrating a messenger cable of smaller size.

Referring now more specifically to the drawing, therein is shown a messenger clamp or telephone drop supporting means, indicated generally as **10**, which embodies the present invention and which is used to support drops from a messenger strand. The device **10** includes a supporting element, indicated generally as **12**, which supports a telephone drop or drop securing means at a point between the terminal block and the subscriber's home and which is supported on a supporting cable **14** by a pair of identical clamping plates **16**. The clamping plates **16** are formed with a plurality of cable receiving grooves and are adapted to be mounted on the supporting element **12** in two positions spaced 180° from each other to permit the device **10** to be used with messengers of two different ranges of sizes or diameters.

Referring now more specifically to the clamping or securing plates **16**, these plates are of a generally rectangular configuration and include two grooved portions **18** and **20** of different sizes or radii for receiving messenger strands of different diameters. The grooves **18** and **20** are located adjacent the upper and lower edges of the

plates 16 and extend generally parallel to each other along the inner surfaces or sides of the plates 16. Each of the plates 16 is also provided with a centrally disposed and generally rectangular or square opening 22 for receiving the supporting element 12. The rectangular configuration of the opening 22 is such as to cooperate with a similarly formed structure on the supporting element 12 so that the clamping plates 16 can be held or positioned in a selected one of two angularly displaced positions relative to the supporting element 12.

The grooves 18 and 20 in the clamping plates 16 are designed to receive supporting cables or messenger strands falling within two ranges of sizes. In the device 10 illustrated in the drawing, the grooves 18 in the two plates 16 are designed to receive messenger strands having a diameter falling in the range between .109" and 3/16", FIGURE 5; and the grooves 20 provide a strand receiving passageway designed to accommodate messenger strands or supporting cables having a diameter in the range between 1/4" and 3/8" FIGURES 1 and 2. Further, the messenger clamp 10 can be used with many different types of aerial cables including not only those arrangements in which the conductor bundle or cable is connected to a messenger by lashing or hangers but also those in which the conductor bundle and the messenger strand are extruded in a unitary dielectric jacket or sheath. In the drawing, the illustrated cable 14 comprises a "figure-8" cable in which a supporting or load carrying strand 24 is disposed above a plurality of conductors 26, and both the messenger strand 24 and the conductors 26 are provided with a unitary dielectric sheath 28.

The clamping plates 16 are carried on a threaded shank portion 12*a* of the support element 12 interposed between a collar or flange 12*b* formed integral with the shank of the element 12 and a threaded fastener or nut 30 with the grooved inner sides or surfaces of the clamping elements 16 disposed adjacent each other. With this arrangement, an arcuate portion 12*c* of the supporting element 12 is disposed to one side of the two clamping plates 16 in a position for receiving the drop line or a separate securing means for the drop.

When the clamping device 10 is to be mounted on a cable, the nut 30 is loosened to permit the clamping plates 16 to be moved toward the left end (FIG. 2) of the threaded portion 12*a*. These plates are then rotated to one of two positions spaced 180° from each other about the axis of the threaded shank portion 12*a*. Since the clamping device 10 is generally supported above the messenger strand 24, the plates 16 are moved to place the pair of grooves 18 or 20 that is to receive the messenger strand in a position disposed beneath the threaded shank 12*a* of the support element 12. The plates 16 (FIG. 2) are then moved to the right so that a rectangular or square locating structure 12*d* formed integral with the element 12 to the left of the collar 12*b* is received within the similarly formed rectangular opening 22 in the right-hand plate 16. This insures that the plates 16 are located in a proper position relative to the supporting element 12.

In FIGS. 1–3, the clamping device 10 is to be mounted on the strand 24 of the cable 14 which requires the larger grooves 20, and the structure 12*d* engages the walls of the opening 22 to locate the grooves 20 in the plates 16 beneath the threaded shank portion 12*a*. The lower ends of the clamping plates 16 are separated, and the messenger strand 24 together with the portion of the insulation or sheath 28 surrounding this strand are disposed in the larger diameter passageway formed by the aligned grooves 20. The nut 30 is then tightened or moved to the right on the threaded shank 12*a* so that the upper inner surfaces of the opposed plates 16 are moved into engagement just beneath the opposed grooves 18 to provide a fulcrum about which the two plates 16 can be pivoted. The nut 30 is then further tightened or moved to the right so that the lower ends of the plate 16 are forced into clamping engagement with the dielectric sheath 28 surrounding the messenger strand 24 to positively secure the clamping device 10 on the cable in a position to receive and support a telephone drop.

As illustrated in FIGS. 1 and 2, the clamping plates 16 are tipped or inclined relative to each other when cables 14 of certain diameters are disposed within the cable receiving passageway defined by the larger size grooves 20. Thus, when the nut 30 is tightened, only the lower edge of the nut 30 and the lower edge of the collar 12*b* would bear against the outer surfaces of the plates 16, and it is often difficult to obtain sufficient forces for clamping the plates 16 against the cable 14 with this small bearing area. If the nut 30 is forced against the adjacent plate 16 under these conditions, there is a tendency for the nut to tip relative to the shank 12*a* and bind against the threads. Accordingly, to provide adequate clamping forces between the plates 16 and the cable 14 when the larger size grooves 20 are used, the outer surfaces of the plates 16 are each provided with an irregular or inclined surface formed by a recess 32 extending downwardly in the direction of the grooves 20 from the openings 22. The recesses 32 are inclined inwardly toward the inner surfaces of the plate 16 so as to be deepest adjacent the grooves 20 and relatively shallow immediately adjacent the openings 22. This increases the area engaged by the nut 30 so that it includes area both above and below the openings 22. In this manner and as illustrated in FIG. 2, a large area bearing surface is provided between the plates 16, the nut 30 and the flange or collar 12*b* by which a clamping force can be applied to the cable 14 disposed within the passageway formed by the pair of larger grooves 20.

When the clamping device 10 is to be placed on a messenger having a diameter falling within the range of smaller sizes or diameters for which the grooves 18 are designed, the nut 30 is loosened to permit tthe plates 16 to be moved to the left (FIG. 2) until the opening 22 in the right-hand plate 16 has moved beyond the locating structure 12*d* on the shank of the supporting element 12. The two plates 16 are then rotated 180° about the axis of the threaded shank portion 12*a* so that the smaller grooves 18 are disposed beneath the shank 12*a*. These plates are then moved to the right so that the locating structure 12*d* again enters the rectangular opening 22 in the right-hand plate 16. The lower ends of the plate 16 are separated to permit the insertion of the smaller diameter messenger in the passageway formed by the opposed grooves 18.

As best illustrated in FIGURE 5 nut 30 is then moved to the right or tightened to force the two plates 16 toward the collar 12*b*. This forces the walls of the grooves 18 into engagement with the messenger strand and secures the clamping device 10 to the cable 14 in a position above the conductor bundle. In view of the fact that the grooves 18 are designed to receive messenger strands of smaller diameters, the plates 16 are not tipped to an appreciable degree relative to each other when the messenger strand is received within the passageway formed by these grooves. Thus, the collar 12*b* and the right-hand surface of the nut 30 bear against the area adjacent the openings 22 and the area extending toward the grooves 18 to transmit clamping forces to the plates 16 and the interposed messenger strand.

Therefore, the clamping device 10 embodying the present invention utilizes the plural grooves formed in the inner surfaces of the clamping plates 16 and provides a device that is useful with messenger strands varying over a wide range of diameters. The recesses 32 in the plates 16 cooperate with the vertically spaced grooves 18 and 20 to provide means for insuring the application of an adequate clamping force to the messenger strand when it

is disposed in the passageway formed by the larger grooves 20.

Although the present invention has been described with reference to a single illustrated embodiment thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the spirit and scope of this invention.

What is claimed and desired to be secured by Letters Patent of the United States is:

1. A cable clamp comprising a pair of cable clamping plates, each of said plates having a pair of spaced and parallel cable receiving grooves, each of said plates having an opening passing therethrough disposed between said grooves, said plates being disposed adjacent each other with the grooves therein facing inwardly toward each other to define two parallel passageways for receiving a cable, a supporting element in said openings and including a detent portion bearing against the outer surface of one plate and a threaded portion disposed adjacent the outer surface of the other plate, fastening means engaging said threaded portion and bearing against said other plate to clamp a cable disposed in only one of said passageways, the cable clamping plates extending generally parallel to each other when the cable is disposed in one of the cable receiving openings and being tipped relative to each other when a cable is disposed in the other of the cable receiving openings, and an inclined surface on said other plate disposed adjacent said fastening means to provide a wide area bearing surface for the fastening means when the cable is disposed in said other cable receiving opening.

2. A clamp construction for use with a supporting element comprising a pair of clamping elements each having a pair of spaced and generally parallel grooves of different size formed on an inner surface thereof, said clamping elements being disposed with their inner surfaces adjacent each other to form two passageways of different size for receiving said supporting element, securing means connecting said clamping elements and including a threaded fastener movable toward and bearing against one of said clamping elements for forcing said clamping elements against a supporting element disposed in only one of said passageways, the clamping elements being disposed in a generally parallel position when the supporting element is received in a smaller one of the passageways and being tipped relative to each other when the supporting element is disposed in a larger one of the passageways, and an inclined surface formed on the outer surface of one clamping element extending toward the larger passageway and engaged by said threaded fastener to insure the application of an adequate clamping force to said clamping elements when said supporting element is disposed in the larger one of the passageways.

3. The clamp construction set forth in claim 2 in which an opening is formed in each of said clamping elements between said grooves, said openings being aligned to receive said securing means, and locating structure formed on said securing means and at least one of said clamping elements for securing the two clamping elements selectively in said parallel and tipped positions relative to said securing means depending on the selected passageway in which a supporting element is disposed and on the size of the supporting element.

4. A clamp construction for use with a supporting wire or cable comprising a pair of clamping elements each having a pair of spaced and generally parallel grooves of different sizes formed on an inner surface thereof, said elements being disposed with their inner surfaces adjacent each other to form two passageways of different sizes for receiving said wire or cable, each of said clamping elements having an opening passing therethrough between said grooves, supporting means including a securing means passing through said openings, the outer surface of each of said clamping elements having two portions of different levels disposed adjacent the opening therein, one of said portions being disposed on the same side of the opening as the groove of smaller size and the other of said portions being disposed to extend toward the same side of the opening as the groove of larger size, and fastener means carried on said securing means and movable into clamping engagement with one of said two portions in dependence on the position of the clamping elements relative to the securing means and on the size of the securing means.

5. A clamp construction for use with a supporting wire or cable comprising a pair of clamping elements each having a pair of spaced and generally parallel grooves of different sizes formed on an inner surface thereof, said elements being disposed with their inner surfaces adjacent each other to form two passageways of different sizes for receiving said wire or cable, each of said clamping elements having an opening passing therethrough between said two grooves, the opening in at least one of said clamping elements being defined by a locating structure, supporting means disposed in the openings in the two clamping elements, said supporting means including a locating structure that engages the locating structure on said one clamping element to selectively locate said two clamping elements in two different angular positions relative to said supporting means, the larger diameter passageway being disposed at one side of said supporting means in a first of said two positions and the smaller diameter passageway being disposed at said one side of the supporting means in the second of said two positions, at least one of said clamping elements having a recessed area formed in its outer surface adjacent said opening and disposed to extend toward the same side of said opening as said larger diameter passageway, and fastener means carried on said supporting means and movable into engagement with said one clamping element to clamp the cable or wire in the one of said passageways disposed at said one side of said supporting means.

6. A clamping construction for use with a supporting element comprising a pair of generally uniplanar clamping plates each having a pair of spaced and generally parallel grooves of different size formed on an inner surface thereof, said clamping plates being disposed with their inner surfaces adjacent each other to form a larger passageway and a small passageway for receiving supporting elements of different sizes, securing means carried on the clamping plates and including both a detent means bearing against one of the plates and a threaded fastener movable toward and bearing against the other of the plates for forcing the clamping plates against a supporting element disposed in only one of the passageways, the clamping plates being disposed generally parallel to each other and transverse to the securing means when the supporting element is received in the smaller passageway and being tipped relative to each other when the supporting element is received in the larger one of the passageways, and an inclined surface formed on the outer surface of each of the plates extending toward the larger passageway and engaged by the detent means and the threaded fastener when the securing means is received in the larger one of said passageways.

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