Sept. 13, 1960 W. WHEELER 2,952,729

ELECTRICAL CONNECTOR

Filed May 29, 1958 2 Sheets-Sheet 1

Fig. 1.

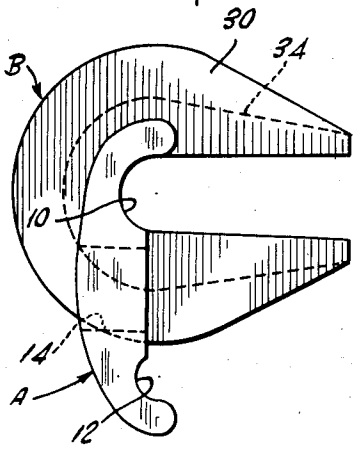


Fig. 4.

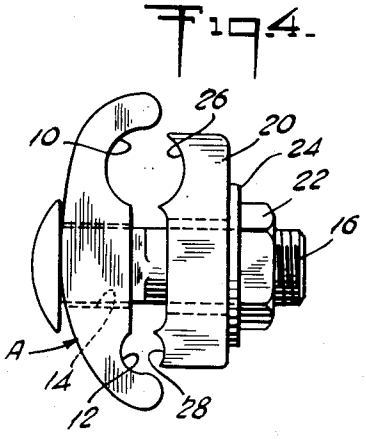


Fig. 2.

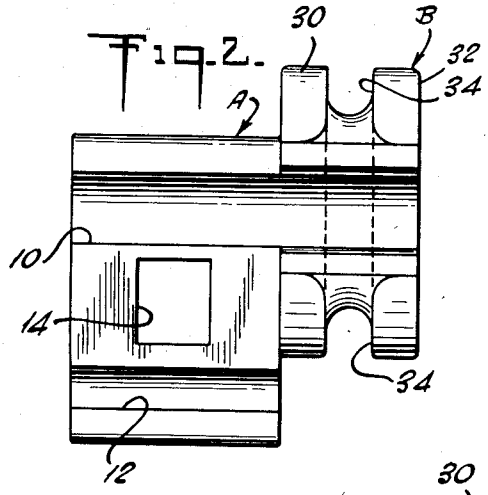
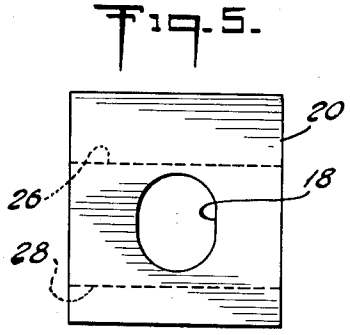


Fig. 5.



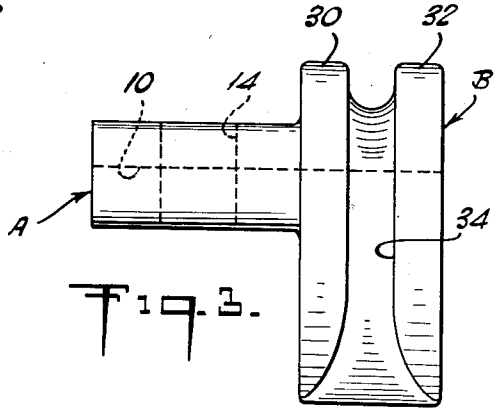


Fig. 3.

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Sept. 13, 1960 W. WHEELER 2,952,729

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Filed May 29, 1958 2 Sheets-Sheet 2

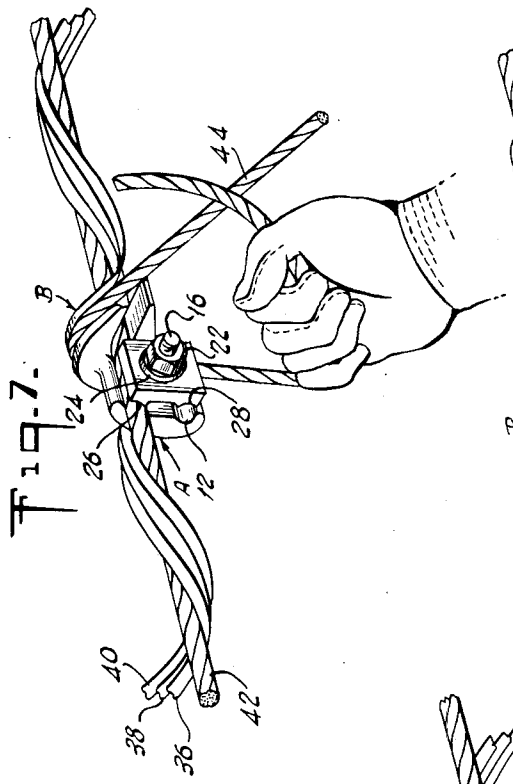


Fig. 7.

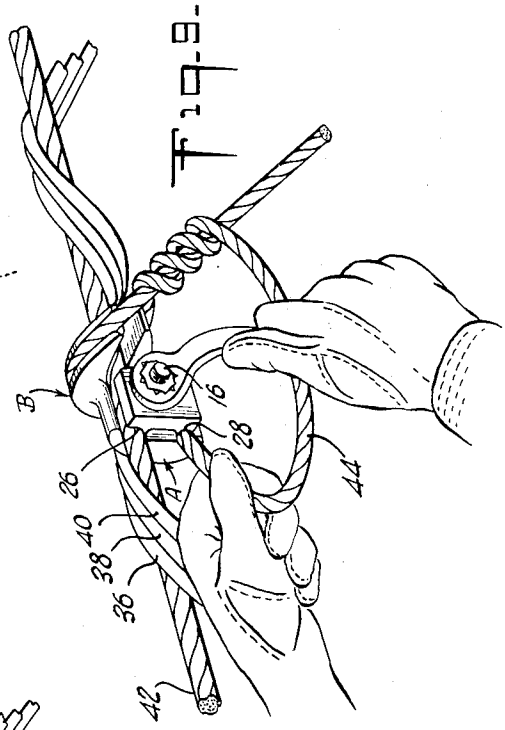


Fig. 9.

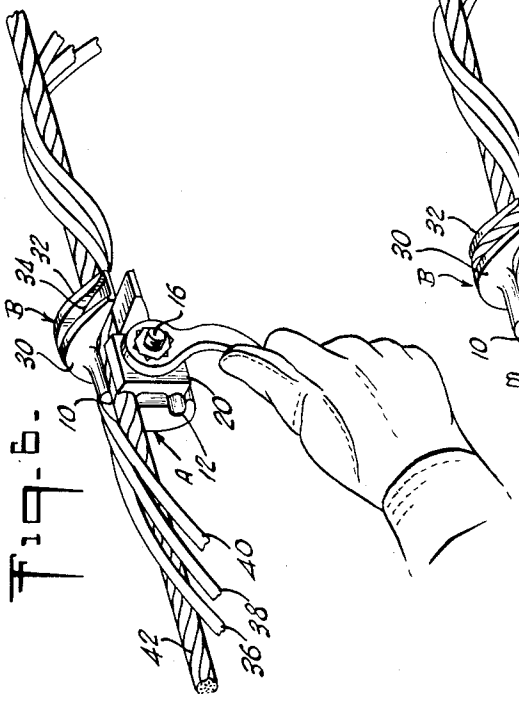


Fig. 6.

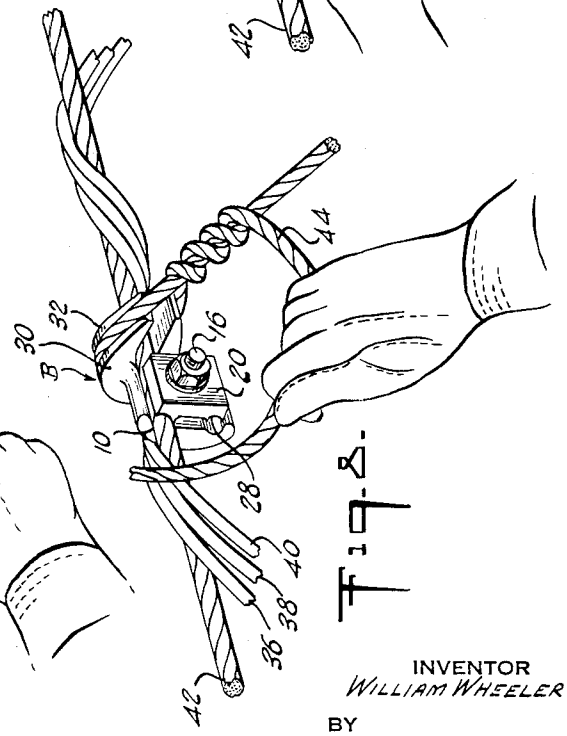


Fig. 8.

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ELECTRICAL CONNECTOR

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Filed May 29, 1958, Ser. No. 738,842

7 Claims. (Cl. 174—71)

This invention relates in general to electrical connectors and particularly to a new and useful connector having a single mechanical clamping connection for attachment to a main conductor and including a smooth contoured U-shaped channel stringer for a service drop neutral or tap cable, and means for securing the latter in the mechanical clamping connection.

The present connector finds particular application for attaching the neutral service drop cable to the neutral wire of a multiple wire cable such as a triplex secondary. In such connections it is necessary to spread the insulated wires of the multiple wire cable to expose the bare neutral wire for connector clamping purposes. It is most desirable to have a connector which will not damage the insulation of the wires but will permit easy threading between the wires and connection to the bare wire neutral. In previous constructions of connectors of this type, it was necessary to use a special tool to form the tap or service drop connector cable into a U or similar configuration prior to its positioning in the connector. It was a difficult matter to both clamp the neutral wire of the main cable as well as form and clamp the neutral service drop cable without damaging the triplex secondary insulation and without special clamping and cable forming tools.

In accordance with the present invention there is provided a novel connector including a U-shaped channel or thimble portion and an adjacent mechanical clamping portion. The connector construction permits easy spreading of the insulated wires by directing the diverging legs of the thimble portion therebetween, and thereafter positioning of the main neutral cable through the open end of the thimble portion, with a portion extending into the clamping portion. The connector is applied by tightening the clamping portion to secure the exposed neutral main cable, and then directing the service drop cable around the outer U-shaped channel face of the thimble portion to form a loop. The service drop cable is secured by wrapping it around itself one or more times and then positioning the end in the clamping portion. A single nut is tightened to secure both cables in tight electrical contact.

An advantage in combining both mechanical and electrical connections is that virtually all of the usual pole hardware is eliminated. This effects considerable saving in labor installation costs as well as parts cost, and provides a neat and uncluttered installation.

Accordingly, it is an object of this invention to provide an improved electrical connector.

A further object of the invention is to provide a connector including a U-shaped thimble portion having a clamping portion extending laterally to one side thereof and including an aligned groove extending across each portion and a channel defined on the outer face of the thimble portion to receive a service drop or tap cable.

A further object of the invention is to provide an electrical connector which is simple in design, rugged in construction and economical to manufacture.

The various features of novelty which characterized the invention are pointed out with particularly in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described a preferred embodiment of the invention.

In the drawings:

Fig. 1 is a side elevation of a connector constructed in accordance with the invention and with a portion of the mechanical clamping portion removed;

Fig. 2 is an end elevation of the connector shown in Fig. 1;

Fig. 3 is a top plan view of the connector shown in Fig. 1;

Fig. 4 is a side elevation similar to Fig. 1 but indicating only the complete mechanical clamping portion;

Fig. 5 is an end elevation of the cable clamping bar; and

Figs. 6 to 9, inclusive, are perspective views of the cable connector constructed in accordance with the invention, indicating the various steps of assembling a neutral service drop to the neutral of a triplex secondary.

Referring to the drawings in particular, the invention as embodied therein includes a parallel grooved clamping portion A and a thimble portion B, preferably made in a single cast piece of high strength and high conductivity such as an aluminum silicon alloy, for example.

The parallel grooved clamping portion A includes a main cable positioning groove **10** which extends completely across the connector and through the thimble portion B. The clamping portion A also includes a second groove **12** spaced from the groove **10** and parallel thereto. A small opening **14** is provided in the clamping portion A to receive the square head of a bolt **16** which extends therethrough and through slot **18** in a clamping cap or bar **20**. The bolt **16** is secured in position by a nut **22** threaded over a washer **24** applied at the outside end of the bolt **16**. The clamping bar **20** is provided with two parallel grooves **26** and **28** arranged to align with the grooves **10** and **12**, respectively.

The thimble portion includes a substantially U-shaped element in which the central inner portion forms the groove **10**. The thimble portion includes spaced parallel walls **30** and **32** perpendicular to the axis of the groove **10**, and a cable receiving surface or groove **34** defined therebetween. The wall portions **30** and **32** converge (as viewed in Fig. 1) in a direction toward the open end of the legs of the U-shaped thimble portion B. The pointed thimble portion end facilitates easy threading of the connector between a multiplicity of wires and affords easy positioning of the wire to be connected, in the groove **10**.

Referring to Figs. 6 through 9, there is illustrated the steps of securing the connector and the service drop neutral to the neutral of a triplex secondary. With the nut **22** loosened sufficiently on the bolt **16** to permit easy tilting of the bar **20**, the connector thimble portion is threaded between insulated wires **36**, **38** and **40**, and a neutral cable **42** is positioned in the groove **10**. The nut **22** is then tightened sufficiently to position the groove **26** alongside the cable **42** and hold the connector thereto. The connector may be installed alone, or in groups of two or more if desired, and it may be secured to the secondary either before or after the secondary is strung.

A cable such as a tap cable or a service drop neutral cable **44** is then directed over and around the U-shaped thimble portion B to position the cable **44** on the cable receiving surface **34**. The surface or groove **54** formed between the walls **30** and **32** is deeper than the cable diameter so that the insulated wires of the triplex secon-

dary need not be spread to insert the cable **44**. The correct amount of tension on the service drop neutral cable **44** is effected by pulling it around the thimble portion B (Fig. 7). After the desired tension has been established, the service drop neutral cable is wound around itself one or more times and the end is inserted between the grooves **12** and **28** (Figs. 8 and 9). With the end of the service drop neutral cable **44** thus positioned in the clamping portion A, the nut **22** is tightened to complete the electrical and mechanical connection. The cable **44** may be inserted from either side of the clamping portion A.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. An electrical connector comprising a one piece body having a substantially flat cable clamping portion and a thimble portion, a transverse groove for positioning a first cable therealong extending along said clamping portion and said thimble portion, said thimble portion including, a substantially U-shaped portion having a cable receiving recess for a second cable extending around a portion of said transverse groove in a curved path spaced from the axis of said groove and having a leg portion extending on each side of said groove, said leg portions being spread sufficiently to permit positioning of the first cable therebetween in said transverse groove, and means connectable to said clamping portion to clamp said cables to said body.

2. A connector comprising a body having two parallel spaced cable receiving transverse grooves, a U-shaped portion defining a groove extending around at least one of said transverse grooves in a curved path spaced from the axis thereof, said portion including spaced legs extending on each side of at least one of said grooves to permit threading of a cable therebetween for positioning in said transverse groove, and means for clamping a cable in each of said transverse grooves.

3. A connector comprising a body including a thimble portion and a clamping portion, said thimble and clamping portions having a common groove extending thereacross, said thimble portion including spaced walls defining a cable receiving recess therebetween extending around the outside of said thimble portion and said groove in an arc spaced from the axis of said groove for positioning of a tap cable to extend around a main cable in said common groove, said clamping portion including a second groove substantially parallel to the transverse groove for positioning the end of said tap cable therein, said thimble portion including spaced legs to permit the threading of a main cable therein for positioning on one of said transverse grooves and means for clamping said main cable and the end of said tap cable in said clamping portion.

4. A connector according to claim 3, wherein said U-shaped thimble portion is pointed to permit easy threading through a multiplicity of cables.

5. A connector according to claim 3, wherein said clamping means includes a clamping bar having grooves complementary to said transverse groove and to said second groove and including means for mechanically tightening said bar in said clamping portion to secure cables in said grooves.

6. A connector comprising a mechanical clamping portion having at least two substantially parallel spaced grooves extending thereacross, complementary clamping bar having spaced grooves in alignment with said clamping portion, means to adjustably clamp said clamping bar to said clamping portion, a tap cable receiving portion connected to said mechanical clamping portion including at least one groove in alignment with at least one groove of said clamping portion to permit a cable to extend completely therealong, said tap cable receiving portion including an open channel cable receiving recess extending in an arc radially spaced from said groove for positioning a tap cable therein.

7. An electrical connection between a neutral cable surrounded by a plurality of insulated cables and a service drop neutral cable comprising a connector including a body portion having a substantially flat cable clamping portion and a pointed thimble portion which is threaded through the insulating cables and includes a transverse groove for positioning of the neutral cable therein, said groove extending along said clamping portion and said thimble portion, said thimble portion further including a substantially U-shaped portion having a cable receiving recess for a service drop neutral cable extending around a portion of said transverse groove in a curved path spaced from the axis of said groove and having leg portions extending on each side of said groove, said leg portions being spread apart sufficiently to permit positioning of said neutral cable therebetween in said transverse groove, a service drop neutral cable extending around said thimble portion in said cable receiving recess and having its free end wound upon itself and positioned in said cable clamping portion, and means conectable to said clamping portion to clamp said cables to said body.

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