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ELECTRICAL CONNECTOR

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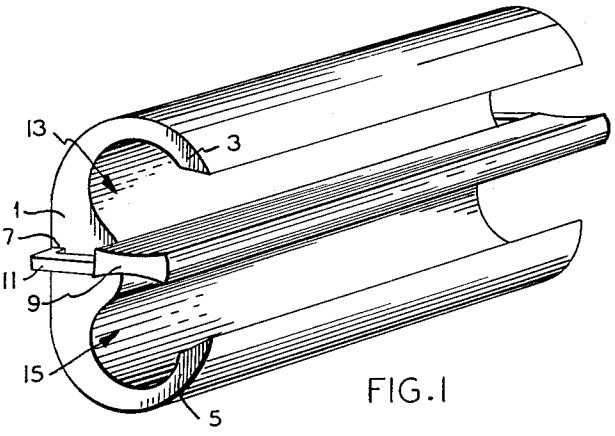


FIG. 1

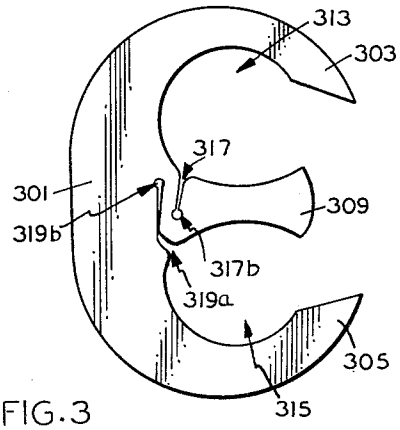


FIG. 3

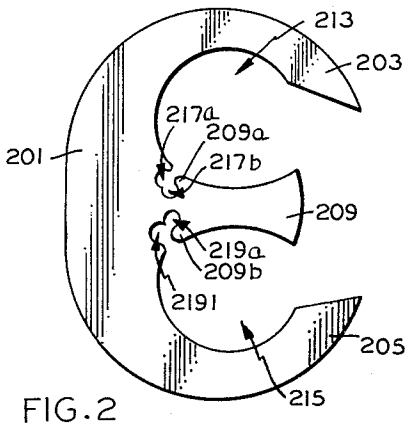


FIG. 2

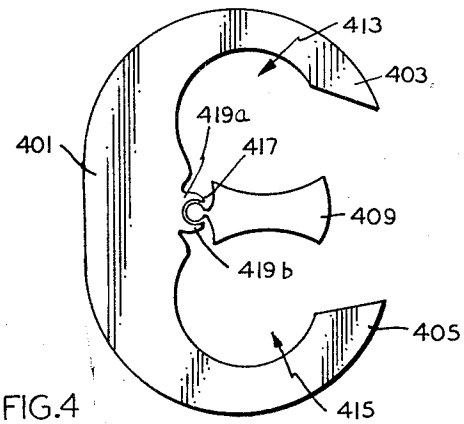


FIG. 4

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ELECTRICAL CONNECTOR

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This invention relates to connectors for wires or cables; and particularly to compression connectors for electrical conductors.

The problem of connecting one conductor to another conductor is commonplace in the electrical power distribution industry. There may be several elements to this problem. The connector may have to be put on a continuous run of conductor rather than the conductor being threaded through an orifice in the connector. The connector may have to connect conductors made of different metals, i.e., be subject to galvanic corrosion. It may be desirable, especially when working on remote, above ground or/and on energized conductors; that the connector be adapted for insertion in the installation tool with one conductor (e.g. a tap conductor), temporarily installed therein, so that the connector may be hooked onto the other conductor (e.g. a run conductor), and the assembly be compressed immediately. It may also be desirable that the connector accommodate a range of sizes in both conductors.

Several connectors are known to the prior art which meet some, but not all of the above-mentioned requirements.

A C shaped connector will accommodate a wide range of conductor sizes and can be hooked onto a conductor while held by an installation tool, but will not retain a tap conductor during the installation procedure. Further, a C shaped connector places both conductors into intimate contact, which affects rapid galvanic corrosion under adverse atmospheres.

A 6 shaped connector will accommodate a wide range of conductor sizes in its open portion only. The open portion can be hooked onto a conductor while held in an installation tool, but, in of itself, may not retain a tap conductor during the hooking-on procedure. The midsection does separate the conductors when installed, and it will reduce rapid galvanic corrosion.

An 8 shaped conductor will separate the conductors when installed, but can not accept a wide range of conductors, nor be hooked onto a conductor, nor in of itself, retain a tap conductor prior to compression.

An H shaped connector will separate the conductors when installed, and can accept a wide range of conductor sizes; but in of itself, it will not retain a tap conductor prior to compression, nor can it be installed in a tool and then hooked onto a conductor. Short springs or thin tabs may be disposed on the lips of the H adapted to be manually deformed to temporarily retain a conductor. However, the H connector still lacks the ability to be placed in a tool and then be hooked on a conductor and be compressed immediately.

An object of this invention is to provide a connector for run and tap conductors which is adapted to accommodate a very large range of conductor sizes, which isolates the conductors from each other to avoid rapid galvanic corrosion, which can be manually deformed to retain a conductor prior to compression, and which can be inserted into a compression hook, be hooked onto a conductor and be compressed immediately.

A feature of this invention is a substantially E shaped connector having a manually deformable center web.

These and other objects and features of this invention will become more apparent by reference to the following

description taking in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a connector embodying this invention;

FIG. 2 is an end view of another embodiment of this invention;

FIG. 3 is an end view of still another embodiment of this invention; and

FIG. 4 is an end view of a further embodiment of this invention.

Referring to FIG. 1 which illustrates a two-piece E shaped connector, reference character 1 indicates a generally C shaped body having arms at 3 and 5 and a rectangularly cross-sectioned groove 7 in the back of the center portion. A central web 9 is disposed within the C to form an E shape. The web 9 has rectangularly cross-sectioned lugs, as at 11, which are bent to fit into groove 7, and staked therein, to lock the web 9 in place relative to the body 1. Two conductor accommodating cavities 13 and 15 are thus formed.

A tap connector (not shown) may be inserted in either cavity 13 or 15, depending on its size relative to the run connector, and the central web 9 may be manually bent down on top of the tap conductor, to effectively lock the tap conductor in place.

The staked tabs 11 are capable of retaining any applied deformation. The connector and the inserted tap conductor may then be inserted in a compression tool, the connector hooked onto the run conductor, so that the run conductor is accommodated in the other of the cavities, 15 or 13, and the entire assembly may then be compressed. Under compression, the arms 3 and 5 are deformed into abutment with each other to include both the conductors and the central web 9. It will be noted that the central web 9 serves the dual function of locking the tap conductor in place prior to compression; and separating the two conductors, which may be of dissimilar metals, to avoid rapid galvanic corrosion.

FIG. 2 illustrates another embodiment of an E shaped connector, this embodiment being of one piece construction. A C shaped body 201 includes arms at 203 and 205 and a central web 209 integrally attached to body 201 to form cavities 213 and 215. Cavities 217*a*, 217*b*, and 219*a*, 219*b*, are formed at the juncture of the web and the body to provide a thin web which may easily be manually bent towards either the arm 203 or 205. The cavities 217*a* and 219*b* are shaped to accommodate and interlock with the shoulders 209*a* and 209*b* respectively.

FIG. 3 illustrates yet another embodiment of an E shaped connector, this embodiment also being of one piece construction. A C shaped body 301 includes arms at 303 and 305. A central web 309 is integrally attached to the body 301, forming cavities 313 and 315. Slits and cavities 317*a*, 317*b* and 319*a*, 319*b* are formed at the juncture of the web and body to provide a doubly hinged web which may easily be manually bent towards either the arm 303 or 305, and will accommodate a larger conductor than a central pivot.

FIG. 4 illustrates still another embodiment of an E shaped connector, this embodiment being of two piece construction. A C shaped body 401 includes arms at 403 and 405. A center web 409 is disposed within the C to form cavities 413 and 415. The web 409 is attached to the body 401 by means of a ball 417 and socket 419*a* and 419*b* cross-sectional arrangement, which adapts the web 409 to be bent towards either the arm 303 or 305.

The embodiments of FIGS. 2, 3, and 4 are utilized in substantially the same manner as that of FIG. 1 was previously described.

It should be noted that the use of a deformable central web in an E shaped connector adapts the connector to accommodate conductors of a diameter greater than the space between the central web and either arm. In other words, the web may be bent towards the upper arm and a large tap conductor inserted through the enlarged space between the web and lower arm into the lower cavity. The web may then be bent towards the lower arm, locking the tap conductor in the lower cavity. Next the connector may be hooked onto a large run conductor, the run conductor passing through the enlarged space between the web and the upper arm into the upper cavity. Finally the connector may be compressed, bending both arms around the included run and tap conductors and the central web.

The invention has thus been described but it is desired to be understood that it is not confined to the particular forms or usages shown and described; the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of the invention, and therefore, the right is broadly claimed to employ all equivalent instrumentalities coming within the scope of the appendent claims, and by means of which objects of this invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to obtain these objects and accomplish these results.

We claim:

1. A malleable metal connector, comprising:
a body portion of substantially C shape, including a base section and two arm sections;
a central web section, attached to said base section and interposed between said arm sections;
said base, arm and central web sections defining two cavities longitudinally in said connector;
each cavity having a longitudinal opening in a side of said connector to receive a conductor therethrough;
said body portion and said central web section being of two piece construction, said portion and said section including mutual interlocking means providing a junction between said portion and said section;

said junction having the physical characteristic of being adapted to be manually deformed, whereby said central web section will be nonelastically bent towards one of said arm sections.

2. A connector according to claim 1 wherein said mutual interlocking means includes a longitudinal, mediate, external groove in said base section, and a portion of said central web section extending longitudinally beyond each end of said base section; said portions and groove being interlocked.

3. A connector according to claim 1 wherein said joint interlocking means includes a ball cross-section formed on one section, and a socket cross-section formed on the other section; said ball and socket cross-section being interlocked.

4. A malleable metal connector, comprising:
a body portion of substantially C shape, including a base section and two arm sections;
a central web section, having a junction with said base section and interposed between said arm sections;
said base, arm and web sections defining two cavities longitudinally in said connector;
each cavity having a longitudinal opening in a side of said connector to receive a conductor therethrough;
a longitudinal slit transversely through a portion of said junction;
said junction having the physical characteristic of being adapted to be manually deformed, whereby said central web section will be nonelastically bent towards one of said arm sections.

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