

- [54] **TRANSFORMER TERMINAL CONNECTOR**
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- [52] **U.S. Cl.**..... 339/198 R, 339/213 R, 339/242
- [51] **Int. Cl.**..... **H01r 9/00**
- [58] **Field of Search**..... 339/213 R, 213 S, 213 T, 339/198 R, 242, 259 R, 259 F, 260, 261; 174/845; 287/60, 62

[56] **References Cited**

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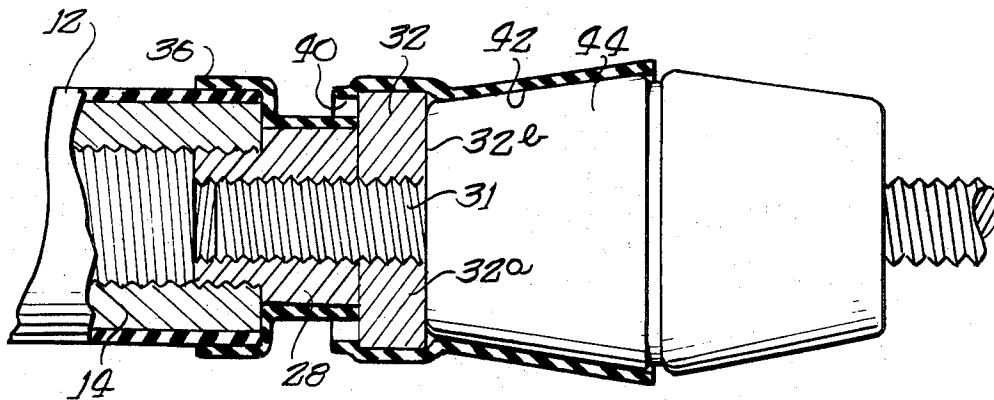
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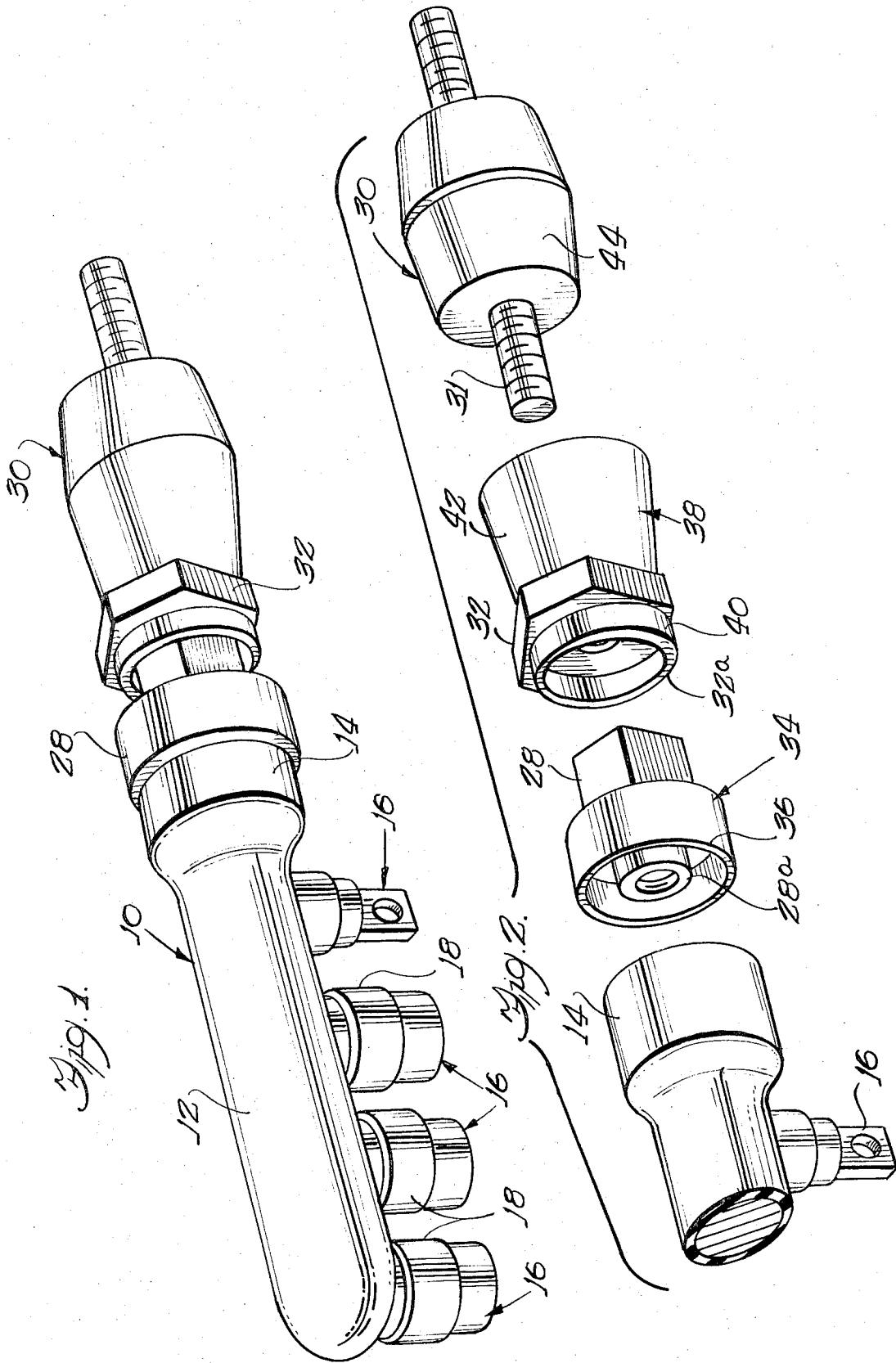
[57] **ABSTRACT**

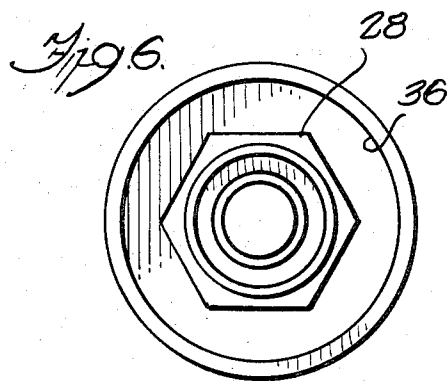
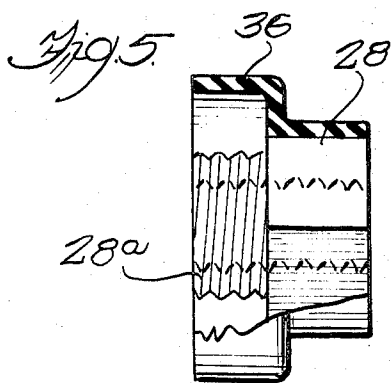
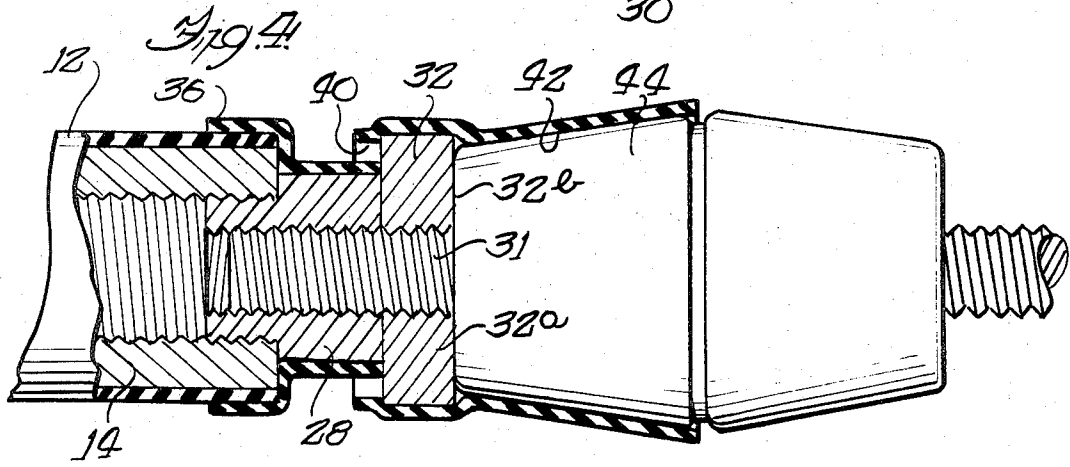
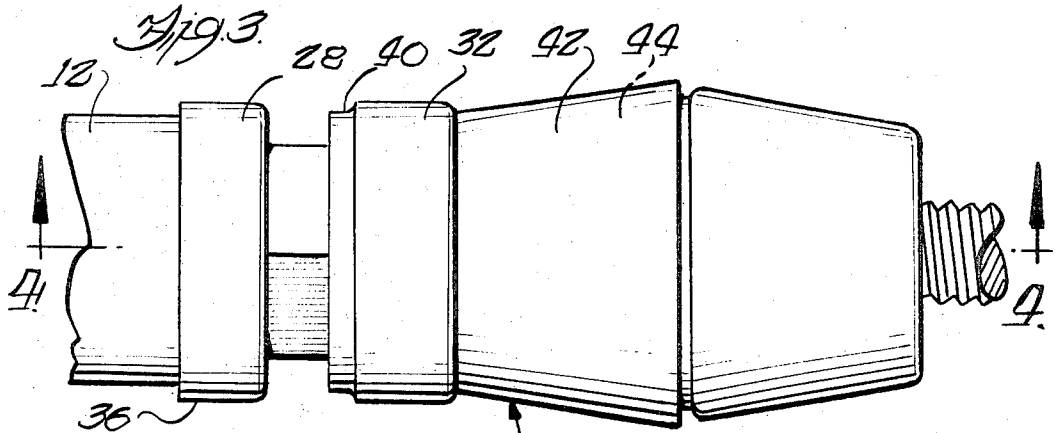
The invention disclosed herein is directed to a terminal connector for use in connecting a plurality of terminal lugs to a transformer current feedline. The terminal connector includes a threaded end which receives an adaptor having both right and left-hand threads formed thereon. The adaptor engages the threaded end of the terminal connector and the threaded end of a transformer current feedline. Upon turning the adaptor in one direction, the terminal connector and the feedline are brought tightly together for firm mechanical and electrical connection. When turning the adaptor in the other direction, the terminal connector and the transformer current feedline are separated to facilitate changing the transformer without necessitating the removal of the plurality of terminal lugs fastened to the terminal connector. Insulated shields are formed on the adaptor, the shields including radially outwardly extending and axially extending hood portions which overlie all metal conductive surfaces to prevent inadvertent electrical shock to personnel connecting and disconnecting the terminal connector.

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4 Claims, 6 Drawing Figures







## TRANSFORMER TERMINAL CONNECTOR

### BACKGROUND OF THE INVENTION

This invention relates generally to a terminal connector, and more particularly to a transformer terminal connector which has a relatively large current feedline connected to one end and a plurality of smaller distribution lines connected to terminal lugs formed along the body of the connector.

Terminal connectors have formed thereon a plurality of lug receiving means to which smaller distribution lines are connected to distribute the current from a large current feedline which may extend from a power transformer or the like. When the transformer becomes defective or for some other reason must be replaced, it is presently required that all of the terminal lugs connected to the lug receiving portion of the connector be removed so that the threaded end of the terminal connector can be rotated about the longitudinal axis to remove it from the end of the current feedline. This requires a relatively long period of time in that all of the lugs connected to the terminal connector have to be removed. Also, the exposed metal surface of the connectors may cause hazardous shock to personnel connecting and disconnecting the connector from the main current feed-line.

### SUMMARY OF THE INVENTION

Accordingly, it is an object of this invention to provide an improved transformer terminal connector which can be connected and disconnected from a transformer current feedline without causing dangerous shock to personnel while manipulating the connector locking mechanism.

Another object of this invention is to provide an improved insulated transformer terminal connector which can be disconnected from a transformer current feedline without necessitating the removal of all of the terminal lugs from the body of the connector.

Still another object of this invention is to provide an insulated transformer terminal connector which is simple and efficient in operation and inexpensive to manufacture.

Briefly, the transformer terminal connector of this invention utilizes a threaded end of an adaptor which makes it possible to disconnect the connector from the transformer current feedline without disturbing the plurality of distribution cables attached to the connector. This is accomplished by the use of a left-hand thread formed on one end of the adaptor and a right-hand thread formed on the other end of the adaptor so that turning the adaptor will cause simultaneous tightening or loosening of the connector from the current feedline depending on the direction in which it is turned. In service, when all of the components are assembled and cables are connected to the terminal connector, a serviceman need only rotate the adaptor in one direction for a prescribed number of turns to disconnect both the terminal connector and the current feedline from the adaptor. When a new transformer is placed in position, it is then connected to the terminal connector by rotating the adaptor in the opposite direction. This function of changing the power transformer connected to the terminal connector can be accomplished with power still applied to the terminal because of the fact that all of the exposed metal conductive

components thereof are coated with an insulated material. To insure that the hazards of shock are substantially completely eliminated, a shield portion is formed about the connecting components and includes a hood having a radially outwardly extending portion and an axially extending portion to circumscribe and overlie any adjacent components. This hood portion extends an axial distance greater than the terminating end of the metal components.

Many other objects, features and advantages of this invention will be more fully realized and understood from the following detailed description when taken in conjunction with the accompanying drawings wherein like reference numerals throughout the various views of the drawings are intended to designate similar elements or components.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing the transformer terminal connector of this invention with a transformer circuit feed element connected to one end thereof and further showing a plurality of terminal lugs depending therefrom for connection to other electrical equipment;

FIG. 2 is an exploded perspective view of the components shown in FIG. 1 further illustrating the insulating shield arrangement about the various components to protect personnel from electrical shock;

FIG. 3 is an enlarged elevational end view of the adaptor and jam nut used with the terminal connector of this invention;

FIG. 4 is a sectional view taken along line 4-4 of FIG. 3;

FIG. 5 is a sectional view of the threaded adaptor used with the connector of this invention and clearly illustrates the hood portion of the insulated shield to eliminate the possibilities of hazardous shock; and

FIG. 6 is an end view of the adaptor of FIG. 5.

### DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Referring now to FIG. 1, there is seen a terminal connector constructed in accordance with the principles of this invention and designated generally by reference numeral 10. The terminal connector 10 has an elongated conductive body 12 with threaded means 14 formed at one end thereof. In the illustrated embodiment the threaded means is a female thread, but it will be understood that a male thread may be used if desired. Positioned along the conductive body 12 is a plurality of lug receiving extensions 16 to which a plurality of conductive leads are connected by a nut and bolt, or by a nut engaging a threaded portion of a terminal engaging the same. Preferably, the lug receiving extensions 16 are covered with an insulating cap 18 so that those lug receiving extensions which are not used are maintained in an insulated condition at all times.

When the insulating cap 18 is removed from the respective lug receiving means, the metal portion of the lug receiving means is exposed so that a cable can be secured thereto. However, the connector lug 16 may be threaded to receive a corresponding threaded cable lug if desired. Also, crimping of a cable lug thereto can be accomplished if desired.

The terminal connector 10 includes an adaptor member 28 threadedly engaging the threaded portion 14 and the threaded end of a current feed connector 30.

This allows a main current feedline to be connected to the adaptor 28 which, in turn, is connected to the elongated body 12 to deliver current to the plurality of lug receiving means 16. The feedline member 30 has a threaded end 31 which passes through a jam nut 32 and therefrom through a threaded central portion of the adaptor 28. While the current feedline member 30 is shown as a threaded shaft and a pair of spaced apart conical portion insulating elements, it will be understood that the current feedline can take any suitable form so long as it incorporates a threaded end to be fastened to the terminal connector 10.

Referring now to FIG. 2, the exploded perspective view shows the adaptor element 28 as having an insulated shield portion 34 substantially completely circumscribing the metal adaptor portion and further including a hood portion 36 extending radially outwardly and axially forwardly so as to extend a distance substantially equal to or beyond the axial extent of the end of the metal threaded portion 28a of the adaptor.

The jam nut 32, in like manner, includes an insulated shield 38 completely surrounding the exterior metal conductive portions of the jam nut and further includes a hood portion 40 extending axially from the end surface 32a of the jam nut and a second shield 42 extending rearwardly from the opposite exposed conductive surface of the jam nut, the hood portion 42 being flared in a diverging direction so as to conform to the conical section portion of an insulator element 44 of the current feedline connector member 30.

By so providing insulated shields having axially extended hood portions on the connector members, including the adaptor 28 and jam nut 32, the terminal connector 10 can be completely disconnected and connected to the main current feed member 30 without fear of hazardous shock to personnel.

For a better understanding of the details of construction of the insulated shield and hood elements, reference is now made to FIGS. 3, 4, 5 and 6 which show the details more clearly. The adaptor nut 28 has the hood portion 36 of the insulated shield 34 extending radially outwardly and axially toward the threaded portion 14 so as to form a close fitting overlapping extension of insulated material. The jam nut 32, which allows firm mechanical locking of the adaptor 28, is provided with an insulated shield having a hood portion 40 extending toward the adaptor 28 and similarly overlying the end portion of the adaptor. Extending in the opposite direction is the hood portion 42, which is divergingly flared to conform substantially to the configuration of the insulated element 44. As seen in FIGS. 3 and 4, upon grasping the connecting elements, either the terminal connector 12, adaptor nut 28, jam nut 32, or insulator 44, there is no metal conductive material exposed to cause hazardous shock to personnel.

While a single specific embodiment of this invention has been shown in particular detail, it will be understood that variations and modifications of this invention may be effected without departing from the spirit and scope of the novel concepts disclosed and claimed herein.

The invention is claimed as follows:

1. A terminal connector for current distribution,

comprising in combination: an elongated conductive body having threaded socket means formed at one end thereof, a plurality of lug receiving means formed at spaced locations on said elongated conductive body for receiving cable lugs to be connected thereto, threaded connector means of conductive material connecting a current feedline to said threaded means formed at one end of said elongated conductive body, said threaded conductor means having a threaded stud extending therefrom, and an insulated shield covering the outer peripheral surface of said threaded connector means and having a first hood portion annularly about said threaded stud means and spaced therefrom, and extending axially therefrom and overlapping with said elongated conductive body as said threaded stud mates with said socket, and a second hood portion positioned annularly about said current feedline, and extending therefrom, so that when said current feedline is connected with said threaded connector means said second hood portion overlaps said threaded connector means said first and second hood portions extends axially to protrude beyond both ends of said threaded connector means so as to prevent inadvertent electrical shock to personnel connecting and disconnecting said threaded connector means.

2. The terminal connector according to claim 1 wherein said threaded connector means includes a threaded adaptor having first and second threaded portions, said first threaded portion engaging said threaded means of said elongated conductive body and said second threaded portion receiving the current feedline means from which current is delivered to said lug receiving means, said threaded adaptor having first and second threaded portions arranged simultaneously to tighten against said elongated conductive body and said current feedline means upon turning the adaptor in one direction and simultaneously to loosen said elongated conductive body and said current feedline upon turning said adaptor in another direction, whereby said current feedline can be changed without removing the cable lugs from said lug receiving means.

3. The terminal connector according to claim 2 further including a jam nut interposed between said threaded adaptor and a current feedline insulating member to cause said threaded adaptor to be securely locked in tight physical and electrical connection with said thread means of said elongated conductive body.

4. The terminal connector according to claim 3 wherein said threaded adaptor has a hood portion of insulating material extending radially outwardly and axially therefrom to overlie a corresponding peripheral portion of said thread means of said elongated conductive body to provide electrical insulation from conductive surface parts thereof, and said jam nut includes hood portions extending in opposite directions to circumscribe and overlie said threaded adaptor and said insulator completely to conceal all metal conductive components so that inadvertent electrical shock to personnel connecting and disconnecting the same is eliminated.

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