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SCREWED SLEEVE ELECTRICAL CONNECTOR

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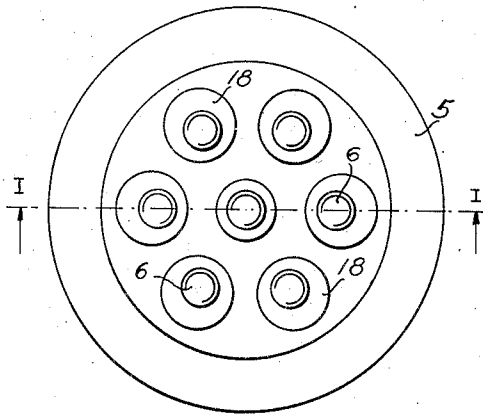


Fig. 2

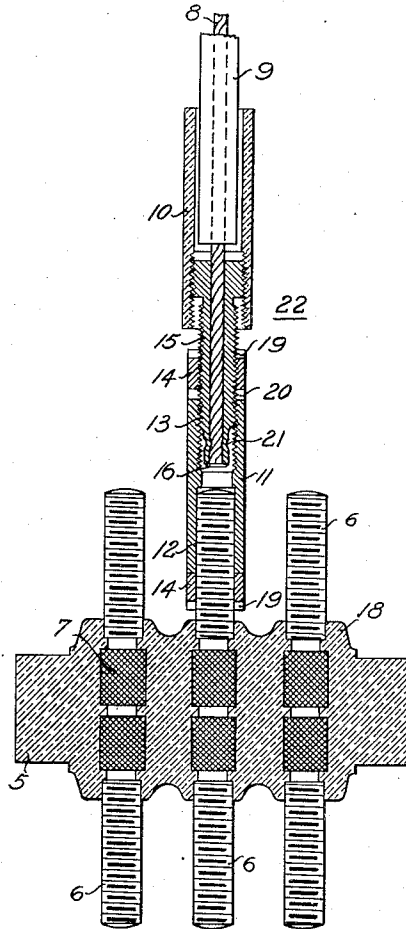


Fig. 1

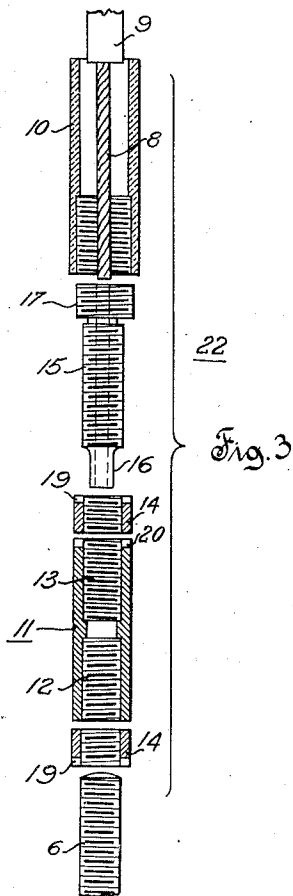


Fig. 3

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SCREWED SLEEVE ELECTRICAL CONNECTOR

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This invention relates in general to connectors for electrical conductors and relates particularly to a connector structure of the easily detachable type.

In terminal assemblies, in which a plurality of terminals are supported closely adjacent and in insulated relation to one another, an important problem is that of sufficient insulation distances between connectors joining conductors to the terminals. In many cases it is desirable to utilize a small space for a terminal assembly, but at the same time to maintain adequate insulation distances between connectors on the terminal studs and also to have such connectors easily detachable.

It is therefore an object of the present invention to provide an improved connector of the easily detachable type that can be manufactured at low cost.

It is also an object of the present invention to provide a connector of the easily detachable type that is rugged and efficient but that has a small outside diameter.

It is a further object of this invention to provide an assembly of a plurality of terminals each having an easily detachable connector of small overall cross-sectional area, whereby adequate insulation distances can be maintained between connectors although such terminal assembly is of small cross-sectional area.

Objects and advantages other than those above set forth will be apparent from the following description when read in connection with the accompanying drawing, in which:

Fig. 1 is a sectional front view, taken on the line I—I of Fig. 2, of a terminal assembly embodying the present invention.

Fig. 2 is a top view of the assembly shown in Fig. 1 with the connectors removed, and

Fig. 3 is an exploded view of the connector shown in Fig. 1.

Figs. 1 and 2 illustrate an embodiment of the invention in which a base or block 5 of insulating material is shown as supporting a plurality of terminal studs 6. These studs 6 may be molded in or otherwise held in the insulating block 5 and are shown as provided with knurled portions 7 effective to prevent rotation of the stud 6 in the block 5. The studs 6 are threaded at either end for connection of electrical conductors thereto.

Bosses 18 on the block 5 provide greater creepage distances between the studs 6.

In order that the terminal studs 6 may be placed close together, thereby maintaining a

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small cross-sectional area of the block 5, an improved connector 22 is utilized. This connector structure is not only of small diameter so that adequate insulation distances between adjacent connectors can be maintained, but it is also provided with means whereby the conductor is easily attachable and detachable although the close spacing of the terminals precludes use of an ordinary wrench.

A conductor 8 is connected in good mechanical and electrical relation to a stud 6 by a threaded connection between a conductor terminal member 15 and a conducting sleeve 11. The terminal member 15 is shown as tubular and as having an enlarged end 17 and a reduced end 16. A portion of the conductor 8 from which the insulation 9 has been removed, is inserted in the member 15 and crimped as shown at 21 in Fig. 1. The conductor 8 and the terminal member 15 may be alternatively or additionally united electrically and mechanically by soldering or brazing or otherwise rigidly uniting them.

The terminal member 15 is externally threaded both on enlarged portion 17 and on the main threaded portion. A conducting sleeve 11 has two internally threaded portions 12 and 13 which have oppositely directed threads. The sleeve 11 is provided with a recess such as saw cuts 20 in one end thereof by means of which a spanner type wrench can be used to assemble or disassemble the connector. Lock nuts 14 similarly provided with recesses 19 are utilized to hold the connector assembly 22 in the connected position shown in Fig. 1.

A sleeve 10 of insulating material has a partial internal thread cooperating with the enlarged portion 17 of the terminal member 15. The sleeve 10 provides insulation around the conductor 8 between the insulation 9 and the terminal member 15, thereby avoiding the necessity of taping the conductor at the end of the insulation 9.

In assembling the connector 22, a lock nut 14 is first backed down on a stud 6 and on the terminal member 15. Before the conductor 8 is soldered or crimped to the terminal member 15, the insulating sleeve 10 has been placed over the conductor 8 at a distance back from the bared end thereof. The sleeve 11 is then simultaneously threaded on the stud 6 and the terminal member 15, providing axial movement of the terminal member 15 and the stud 6 by means of the right and left hand threaded portions. When the terminal 15 and the stud 6 are drawn to the relative positions shown in Fig. 1, the lock nuts 14

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are tightened against the sleeve 11 as shown in Fig. 1. The insulating sleeve 10 is then screwed down on to the portion 17 of the terminal member 15, providing insulation at the joint of 8 and 15.

The present invention has particular advantages where conductors are to be led through a casing wall or partition where an oil or gas tight relation of such wall or partition must be maintained. The studs are easily maintained in oil or gas tight relation to the block 5, and the block 10, being of small cross-sectional area, can be easily maintained in oil or gas tight relation in a wall or partition.

Although but one embodiment of the present invention has been illustrated and described it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. A connector comprising a conducting stud provided with an external thread on a portion thereof, a tubular terminal member provided with means integral therewith for receiving an electrical conductor internally of said terminal member in nondetachable electrical and mechanical connection therewith, said terminal member provided with an external thread on a portion thereof, said threads being oppositely directed, said terminal member threaded portion being provided with a reduced end portion wherein said conductor is fastened, whereby the fastening of said conductor is effected without disturbing the thread of said terminal member, a conductive sleeve member provided with portions having oppositely directed internal threads thereon, said oppositely threaded portions of said sleeve cooperable with said threaded portions on said stud and said terminal member, whereby relative simultaneous axial movement of said stud and said terminal member in opposite directions is obtained upon rotation of said sleeve.

2. A terminal assembly comprising an insulating base, a plurality of conductive studs supported on said base closely adjacent one another and each provided with a threaded portion, and means for detachably connecting conductors to said studs axially thereof, said means comprising terminal members being provided with externally threaded portions and being provided with reduced end portions wherein said conductors are fastened, whereby the fastening of said conductors is effected without disturbing the thread of said terminal members, said means further comprising conductive sleeve members having oppositely directed internally threaded portions cooperable with said threaded portions on said studs and said terminal members.

3. A terminal assembly comprising an insulating base, a plurality of conductive studs supported on said base closely adjacent one another and each provided with a threaded portion, and means for detachably connecting insulation covered conductors to said studs axially thereof, said

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means comprising terminal members connected to the bared ends of said conductors and provided with externally threaded portions adjacent reduced end portions wherein the bared ends of said conductors are fastened, whereby the fastening of said conductors is effected without disturbing the thread of said terminal members, said means further comprising conductive sleeve members having oppositely directed internally threaded portions cooperable with said threaded portions on said studs and said terminal members, whereby relative simultaneous axial movement of said studs and said terminal members in opposite directions is obtained upon rotation of said sleeves, said means further comprising insulating sleeve members supported on said terminal members externally of said conductors and surrounding the ends of said conductor insulation.

4. A connector comprising a conducting stud provided with an external thread on a portion thereof, a terminal member provided with an axial bore for receiving the bared end of an insulation covered electrical conductor within said bore in non-detachable electrical and mechanical connection therewith, said terminal member provided with an external thread on a portion thereof and having a reduced portion wherein said conductor is fastened, whereby the fastening of said conductor is effected without disturbing the thread of said terminal member, a conductive sleeve member provided with portions having oppositely directed internal threads thereon, said oppositely threaded portions of said sleeve cooperable with said threaded portions on said stud and said terminal member, whereby relative simultaneous axial movement of said stud and said terminal member in opposite directions is obtained upon rotation of said sleeve, and an insulating sleeve member supported on said terminal member externally of said conductor and surrounding the end of said conductor insulation.

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