Oct. 1, 1957 E. A. NICHOLAS 2,808,449

TERMINAL CONNECTOR

Filed Sept. 12, 1956

Fig. 1

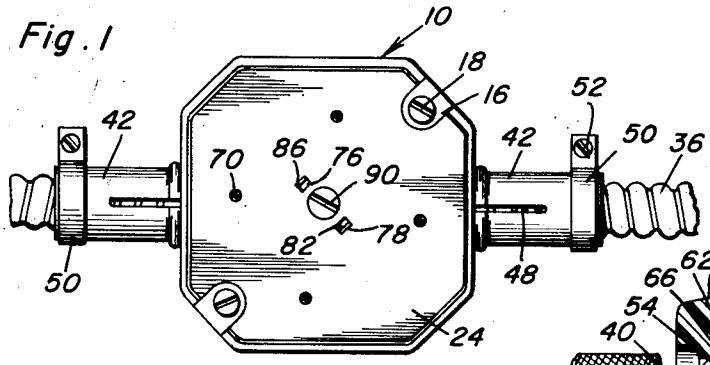


Fig. 7

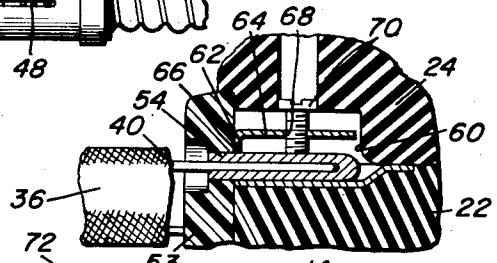


Fig. 2

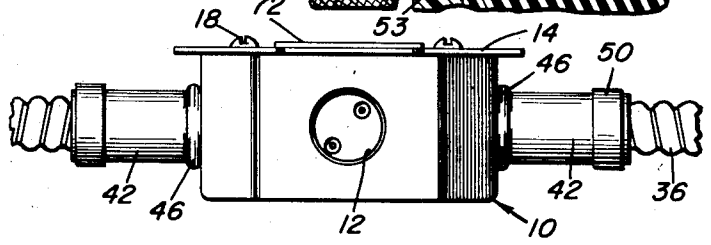


Fig. 3

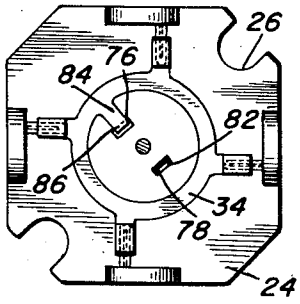


Fig. 4

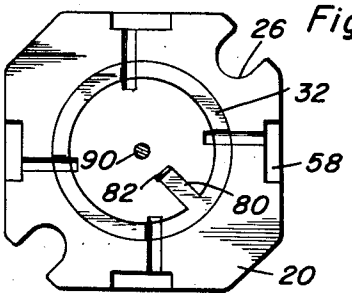


Fig. 5

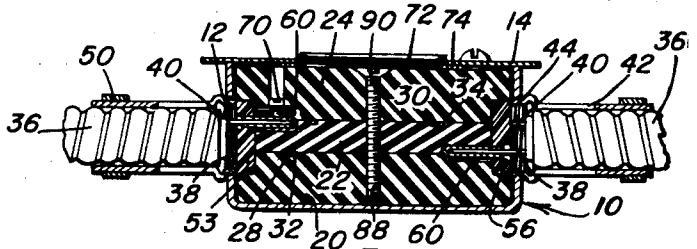
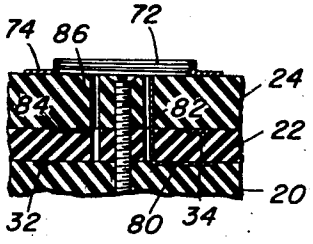


Fig. 6



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TERMINAL CONNECTOR

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1 Claim. (Cl. 174—59)

This invention comprises novel and useful improvements in terminal connectors, and more particularly pertains to terminal connector attachment for electrical outlet boxes.

Various important objects of this invention are to provide an article terminal connector which will detachably electrically connect a plurality of electric conductors together within a conductor box; which connector can be utilized to provide an electrical plug outlet; which is of simple construction, yet highly efficient for the purposes intended.

An important feature of this invention resides in the provision of a plurality of superimposed insulating blocks which are detachably receivable within the connector box, with an electrical conductor bar disposed between each of said blocks and adapted to be contacted by a conductor in a conduit attached to said box.

Another feature of this invention resides in the provision of a ferrule having an externally threaded pin portion with means attached to said ferrule for detachably securing an electrical conduit cable thereto.

A further feature of this invention resides in the provision of an insulating disk having electrical conductor sleeves depending therethrough which sleeves are adapted to receive the conductors of the electrical conduit cable, and which disk is adapted to abut the inner ends of the ferrule.

Yet another feature of this invention resides in the provision of a yoke portion on one of said conductor bars with fastening means mounted in said yoke portion and adapted to abut the conductor sleeves of the adjacent cable fastener.

These, together with various ancillary objects and features are attained by this device, a preferred embodiment of which has been illustrated by way of example only in the accompanying drawings, wherein:

Figure 1 is a top plan view of the electrical terminal connector;

Figure 2 is a side elevational view of the electrical terminal connector, a pair of conduit cables being shown attached thereto;

Figure 3 is a horizontal plan view of one of the electrical insulating blocks, a conductor bar being shown attached thereto;

Figure 4 is a horizontal plan view of another of the electrical insulating blocks, the second of said conductor bars being shown mounted thereon;

Figure 5 is a vertical sectional view of the electrical terminal connector unit;

Figure 6 is a fragmentary vertical sectional view showing the details of the construction of the plug outlet; and

Figure 7 is an enlarged fragmentary vertical sectional detail view showing the means for fastening the conductor sleeve, and the electrical cable to the conductor bars.

Referring now more specifically to the accompanying drawings wherein like numerals designate similar parts throughout the various views, it will be seen that there is provided an electrical terminal connector comprising

a casing indicated generally by the numeral **10**, which casing as is conventional, has provided therein a plurality of radially disposed apertures **12**, and a cover plate **14** which is detachably secured thereto. In order to have access through the cover plate **14** to the casing **10** there are customarily provided one or more inwardly extending flanges **16** which have internally threaded bores therein for receiving the fastening elements **18**. The structure thus far described is conventional.

A plurality of electrical insulator blocks **20**, **22** and **24** are configured complementarily to the interior of the casing **10** so as to be detachably received therein in superimposed relation. As is readily apparent, the blocks should be suitably recessed as at **26** in order to provide clearance for the flanges **16**.

Detachably received between the insulating blocks, as in suitable recesses **28** and **30** in the adjacent faces of the blocks, are electrical conductor bars **32** and **34**, which bars, for reasons which will later become apparent as the following description proceeds, are preferably in the form of circular centrally apertured disks.

Electrical conduit cables **36** having conductors **38** and **40** extending therethrough, are detachably secured to the casing **10**, by means of the ferrule **42**. The ferrule **42** has provided on one end thereof an externally threaded portion **44** which is adapted to be screw-threadedly received within the apertures **12**, the convoluted portion **46** being provided adjacent the externally threaded portion to provide an abutting flange to limit the distance which the ferrule may be threaded into the bore. In order to accommodate minor fluctuations in the diameter of the bores, it is intended that the ferrule **22** be suitably notched as at **48**, the inherent resiliency of the ferrule urging the threaded end portion into engagement with the sides of the apertures **12**. The cable **36** is detachably secured to the ferrule **42**, by means of an adjustable strap **50** which encircles the ferrule and which tightens the ferrule against the cable, by means of the fastener **52** which secures the free ends of the strap to each other.

In order to provide a cap for the cable **46**, and also to prevent the retraction of the cable from the ferrule, the latter is secured to the casing **10**, there is provided an electrical insulator disk **53**. Extending through the disk **53** are male plug sleeves **54** and **56**, which sleeves are adapted to receive the conductors **38** and **40** of the cable **36**. The disk **53**, as is readily apparent from a consideration of Figure 5 of the applicant's drawings, abuts against the inner end of the ferrule **42**, and when the conductors **40** and **38** are suitably fastened to their corresponding male plug sleeves **54** and **46**, it is apparent that removal of the cable **36** from the ferrule **42** will be prevented.

In order to accommodate the disk **53**, the insulating bars **20**, **22** and **24**, must be suitably recessed as at **58**, in that portion of the block which lies in axial alignment with the apertures **12**, so that the disk **53** may be detachably received therein. Further, the abutting edges of the blocks should be further recessed as at **60** in order to accommodate the male plug sleeves **54** and **56**.

As is readily apparent from a consideration of Figure 5 of the drawings, the conductor bar **32** underlies the male plug sleeves **56**, the electrical contacts therewith, the corresponding conductors **38** of the cable **36** being thereby electrically connected to each other. However, in the event it is not intended that the connection between the conductor and the corresponding male plug sleeves be soldered or otherwise welded, there is provided a suitable fastener, shown more clearly in Figure 7 of the drawings. This acts as an extension on the conductor bar **34** which extension is bent upwardly to form a vertical portion **62** and then bent back over the conductor bar **34**, to provide a parallel portion **64**. The vertical portion **62** is suitably apertured as at **66** in order to receive

the corresponding male plug sleeve 54, the parallel portion 64 having an internally threaded bore 68 therein which bore threadedly receives the adjusting screw 70, which screw can be adjusted to abut the sleeve 54 and compress the latter against the conductor 40 and the conductor bar 34 so as to retain those elements in engagement with each other.

It was also intended that the terminal connector also serve as an electrical plug outlet, and for this purpose the cover plate 14 is suitably apertured, preferably in the center thereof, a threaded sleeve 72 which has a flange 74 thereon which underlies the plate 14, being received in the aperture. The insulating blocks 22 and 24 are provided with transverse, preferably rectangular bores 76 and 78. The conductor bar 32 is provided with an inwardly extending conducting portion 80, having an upwardly extending terminal portion 82 which extends upwardly into the bore 78. Similarly, the conductor bar 34 has a corresponding conducting portion 84 which also terminates in an upwardly extending terminal portion 86 which extends into the bore 76. In this manner it is readily apparent that there is provided a suitable plug outlet.

In order to detachably secure the insulating blocks 20, 22 and 24 together, the blocks are provided with a central internally threaded bore 88, which bore firmly receives the fastener 90.

In operation the cable 36 having the conductors 38 and 40 extending therethrough has slid over the end thereof the ferrule 42, the disk 53 having the sleeves 54 and 56 extending therethrough being secured to the ends of the cable, in any desired manner. The ferrule 42 is then screw-threadedly mounted in the bores 12 in the casing 10, and the adjustable strap 50 then tightened to prevent further rotary or sliding movement of the cable 36 relative to the ferrule 42. The sleeves 54 and 56 are, of course, projected into the corresponding recess between the blocks, into electrical contact with the corresponding conductor bar 32 or 34 as the case may be. The fastener 70 is then threaded into contact with the sleeve 54, and inasmuch as the end of the sleeve is of deformable material, it is apparent that the conductor 40 will be frictionally retained therein, the sleeve 54 being retained between the fastener 70 and the conductor bar 34.

It is believed readily apparent that after the adjustable strap 50 is tightened, and rotary movement of the cable 36 relative to the ferrule 42 prevented, and further, relative

sliding movement of the conductor 40 relative to the sleeve 54 limited by the adjusting screw 70, a cable connection is provided which may not be readily rotated or slid out of its conductor bar engaging position.

In the event the conductors are soldered or otherwise welded to the corresponding sleeve, it is believed apparent that the disk 53 will prevent the cable from being retracted from the ferrule 42, and consequently, a rigid connection thereby insured.

From the foregoing, it is thought that the operation and construction of the device will be readily understood, and further discussion is believed to be unnecessary. However, numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to that shown and described, but all suitable modifications may be resorted to falling within the scope of the appended claim.

What is claimed as new is as follows:

A terminal connector for conduits having a plurality of electrical conductors extending therethrough comprising a casing having a plurality of apertures therein, a plurality of conduits, said apertures being adapted to receive said conduits, a plurality of superimposed electrical insulator blocks mounted in said casing, conductor bars disposed between said blocks each adapted to be contacted by a conductor in one of said conduits, means detachably securing said blocks together, means detachably securing said conduits to said casing including ferrules each having an externally threaded end portion thereon threadedly engaged with said casing in one of said apertures, said ferrules having means attached thereto for detachably securing said conduits thereto, electrical insulator disks overlying the inner end of said ferrules, conductor sleeves attached to said disks extending between said insulator blocks each in electrical contact with one of said conductor bars, said sleeves being adapted to receive a conductor.

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