

[54] STRAIN RELIEF MEMBER AND METHOD
OF MANUFACTURING SAME

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[51] Int. Cl. H01r 13/58

[58] Field of Search 339/103, 104, 183,
339/223

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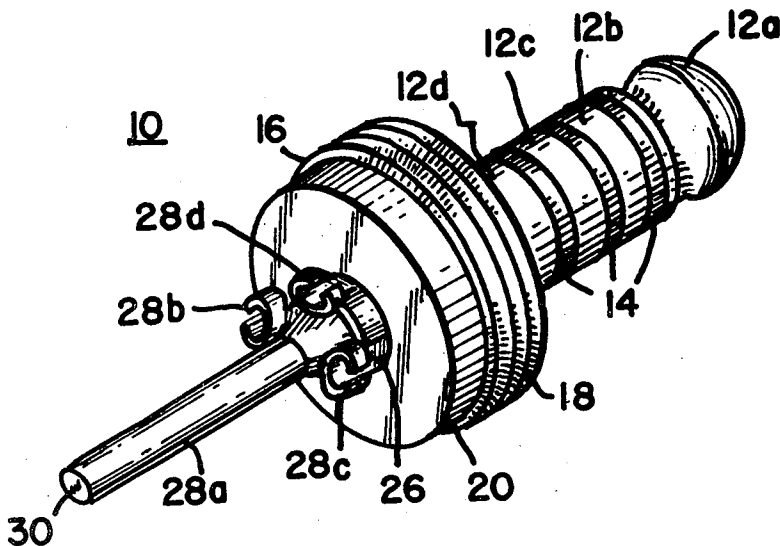
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[57] ABSTRACT

A strain relief member and a method for manufacturing same for utilization with electrical connector components comprising an angular support member formed integrally with and disposed entirely within the electrical component and a clamp member capable of compressing a cable into engagement with one surface of the angular support member.

1 Claim, 7 Drawing Figures



2 Sheets-Sheet 1

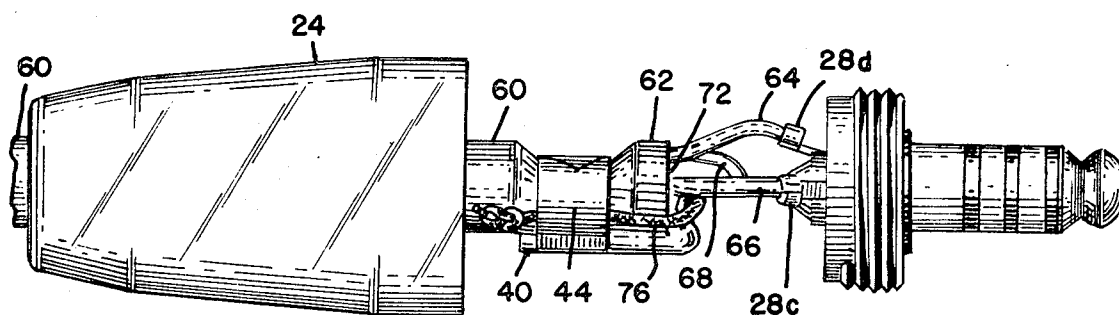
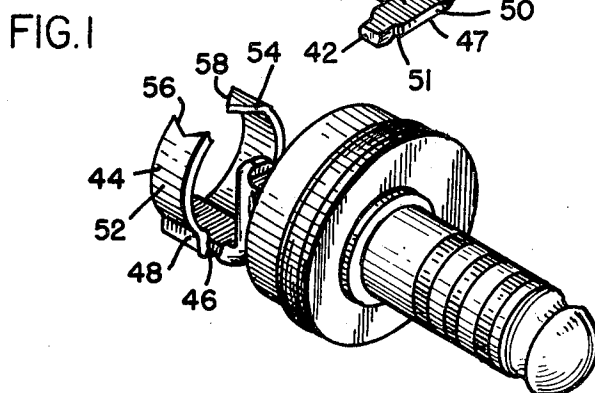
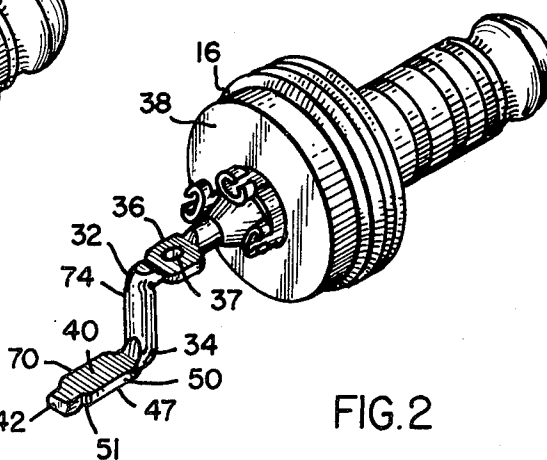
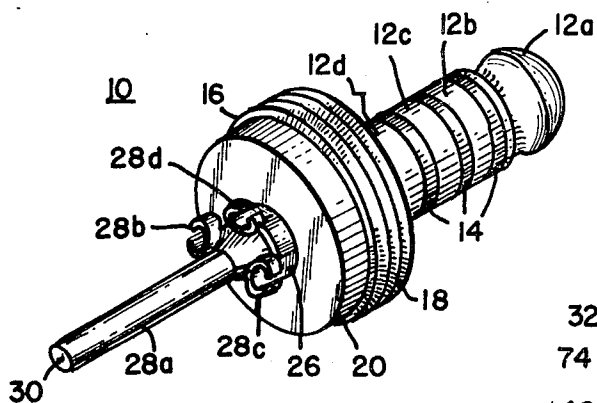


FIG. 4

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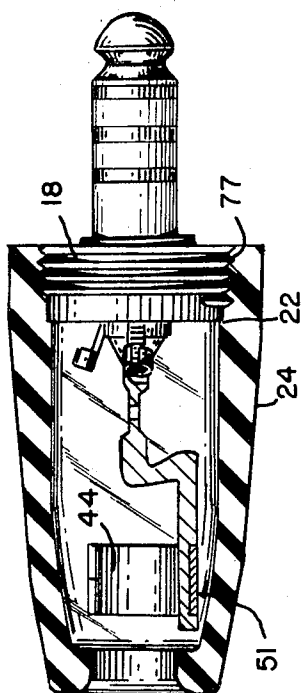


FIG. 5

FIG. 6

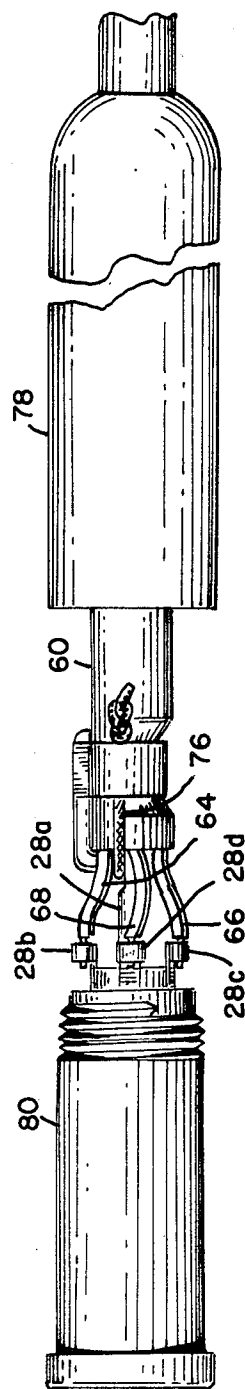
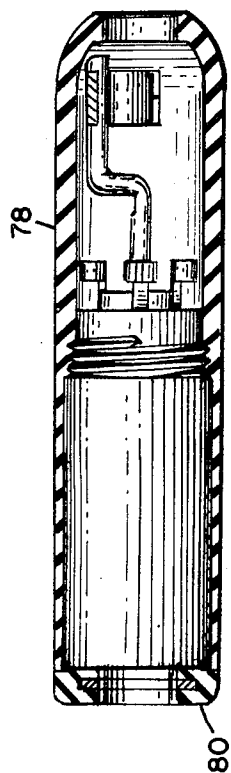


FIG. 7

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STRAIN RELIEF MEMBER AND METHOD OF MANUFACTURING SAME

This invention relates generally to electrical assemblies and more particularly to strain relief devices adapted for use with plug-in elements and a method for manufacturing same.

Various devices have been utilized in the past to avoid the strain on electrical leads connecting male or female electrical components to an electrical source or to other units. A majority of these devices require separate attachments which are either screwed or bolted to the frame of the component. Similarly other devices include cords which are an integral part of the wire assembly to be secured to the frame relying on the cord to absorb tension and the like transmitted by the wiring.

It is therefore an object of this invention to provide a strain relief mechanism which is integrally formed during the fabrication of the component to secure the wiring against linear movement.

It is a further object of this invention to provide a strain relief device which is wholly within the component.

It is still another object of this invention to provide a strain relief which will axially align wiring leads with a mating component.

Another object of this invention is to provide a telephone plug wherein the center lead serves a dual purpose as a terminal and strain relief device.

Other objects of this invention will, in part, be obvious and will, in part, appear hereinafter.

In the drawings:

FIG. 1 is a view in perspective of a telephone plug embodying the features of this invention prior to the formation of strain relief configuration.

FIG. 2 is a view in perspective of a telephone plug with the center terminal formed into a strain relief configuration.

FIG. 3 is a view in perspective of a telephone plug with the strain relief clamp in assembly.

FIG. 4 is a view in front elevation illustrating a telephone plug with wiring connected to the terminals and the strain relief assembly positioned on the cable.

FIG. 5 is a view in front elevation, partly in section with the telephone plug assembled with the housing.

FIG. 6 is a view in front elevation, partly in section, illustrating a telephone jack embodying the features of this invention.

FIG. 7 is a view in front elevation of a telephone jack prior to assembly with the housing with the strain relief secured to a cable.

Referring to the drawings, there is illustrated in FIGS. 1 to 5 a telephone plug 10 having a series of electrical connectors 12a, 12b, 12c and 12d separated by insulators 14. This assembly is fitted into a bushing 16 having threads 18 at its forward perimeter and providing a shoulder 20 adapted for abutting relationship with an internal shoulder 22 formed within a housing 24. An aperture 26 extends through the bushing 16 permitting the terminals 28b and 28c and 28d from the connectors to extend there through. The terminal 28a consists of an extension from the ball connector 12a and prior to its forming into a strain relief member is a continuation of the shaft 30 as shown in FIG. 1. By a stamping or forging process, the rod 30 is formed into the configuration as illustrated in FIG. 2 and comprises a pair of

right angular bends 32 and 34, a flattened area 36 having an aperture 37 there through in proximity to and in spaced relation to the rear surface 38 of the bushing 16. A second flattened area 40 is formed adjacent to the distal end 42 so as to lie in spaced parallel relationship to the flattened area 36.

As illustrated in FIG. 3, a strain relief clamp member 44 having a base portion 46 adapted to cooperate with the lower surface 47 of the flattened area 40 is shown in position. The base portion 46 has vertically extending side walls 48 laterally spaced from each other a distance so as to engage the side members 50 of the flattened area 40 and to lie within the indent 51 upwardly and outwardly formed therein.

An extension of the side walls 48 defined shaped members 52 and 54 which curve inwardly toward each other and terminate in lateral spaced relationship. One of said arcuately shaped members 52 has a notch 56 formed at its distal end and that other 54 has the distal end formed into an apex 58 so as to provide an interlocking substantially abutting relationship upon compression of the clamp member 44, if the clamp is compressed to its entirety, however, this is not necessary.

FIG. 4 illustrates an electrical cable 60 extending through the housing 24 leading from a power supply (not shown) and the other end 62 having leads 64 and 66 connected to the connectors 28c and 28d by crimping or soldering and lead 68 connected to the aperture 37 of the flattened area 36. The body of the cable 60 is provided so that it lies on the upper surface 70 of the flattened area 40 with its distal end 72 axially spaced from the riser 74 of the terminal 28a. The strain relief clamp member 44 is then compressed so that the apex 58 is in alignment with the notch 56 securing the cable 60 to the flattened area 40. Since most cables are provided with an inner cord 76 additional security against longitudinal movement is provided by allowing the cord to be looped around the downwardly extending riser 74 of the strain relief device and then to extend rearwardly and lie parallel to the cable 60 and be compressed between the strain relief clamp 44 and the extension of the cable 60 as shown in FIG. 4.

FIG. 5 illustrates the positioning of the telephone plug 10 within the housing 24 with the threads 18 mating with the interior threads 77 of the housing with an indent portion 51 extending within the lower surface 47 of the flattened area 40. In this manner, longitudinal movement of the clamp 44 with relationship to the flattened area 40 is prevented.

FIGS. 6 and 7 illustrate the utilization of the embodiment of this invention with a telephone plug or the like where the housing 78 is adapted to receive the telephone jack 80 having the connectors 28a, 28b, 28c and 28 attached to the leads 64, 66 and 68 with the cable 60 secured to the flattened area 40 by means of the strain relief clamp member 44.

Since certain other obvious modifications may be made in the device without departing from the scope of this invention, it is intended that all matters contained herein be interpreted in an illustrative and not in limiting sense.

I claim:

1. An electrical strain relief device adapted for use with an electrical component and formed integrally therewith, defining a flexible clamp member and a plurality of terminals, one of said terminals having a pair of angular bends vertically disposed in relationship to

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each other, said terminal having a cable support surface adjacent to the distal end thereof, said cable support surface having a pair of downwardly depending shoulders longitudinally spaced from each other a distance substantially equivalent to the width of the flexible clamp member to ensure alignment of said clamp

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member with the support surface, whereby compression of the clamp member will maintain an electrical cable disposed therein in fixed relationship to said terminal.

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