Feb. 15, 1966 G. H. LEONARD 3,235,276

STRAIN RELIEF PACKING

Original Filed Feb. 9, 1959

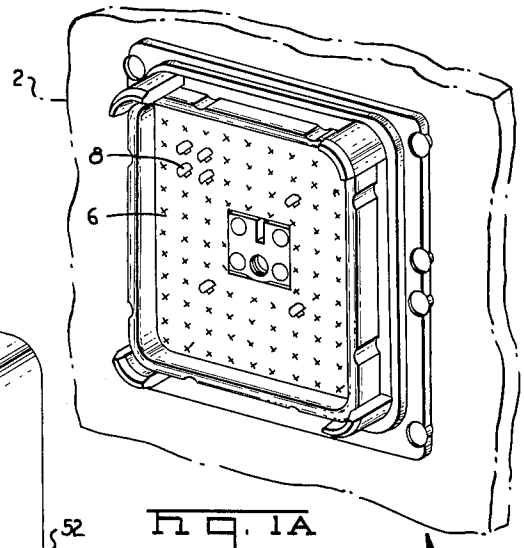


Fig. 1A

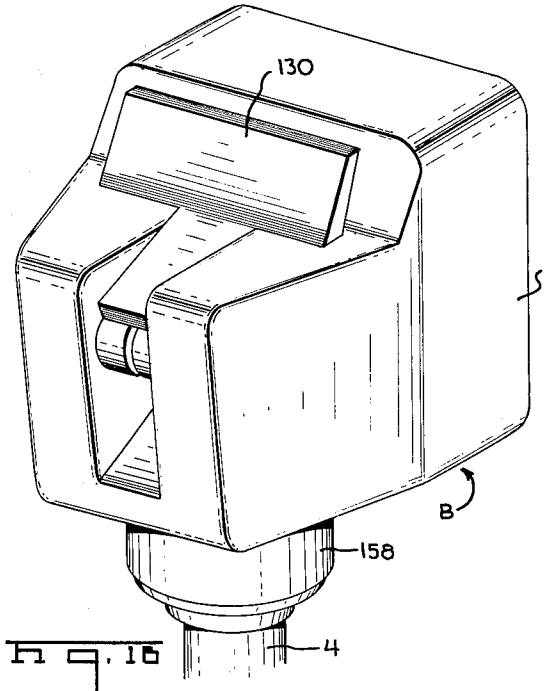


Fig. 1B

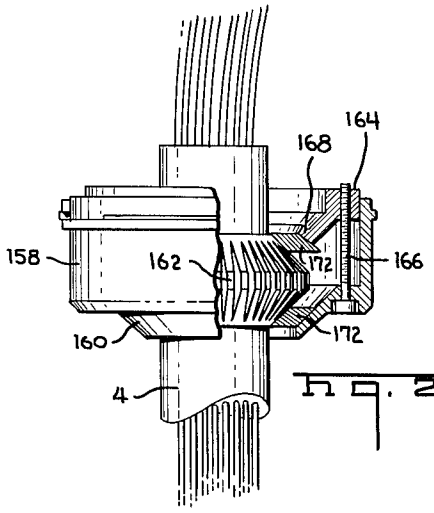


Fig. 2

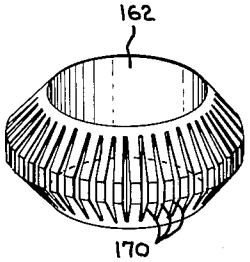


Fig. 3

United States Patent Office

3,235,276
Patented Feb. 15, 1966

3,235,276

STRAIN RELIEF PACKING

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Original application Feb. 9, 1959, Ser. No. 791,966, now Patent No. 3,065,441, dated Nov. 20, 1962. Divided and this application Nov. 19, 1962, Ser. No. 246,283
1 Claim. (Cl. 277—207)

This application is a divisional of my co-pending application, Serial No. 791,966, filed February 9, 1959, now Patent No. 3,065,441, issued November 20, 1962.

This invention relates in general to a strain relief assembly for a multi-contact connector, and more particularly to a packing for use in the assembly.

Advantages and attainments of the present invention will become apparent to those skilled in the art upon an examination of the drawings and the following detailed specification which show and describe a preferred embodiment; it is to be understood, however, that this embodiment is not intended to be exhaustive nor limiting on the invention but, on the contrary, is given for purposes of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of applying it in practical use so that they may modify and adapt it in various forms, each as may be best suited to the conditions of a particular use.

In the drawings:

FIGURE 1*a* and FIGURE 1*b* are perspective views of an embodiment of a separable connector assembly according to the present invention, the pair of units constituting the assembly being separated but in alignment ready to be connected;

FIGURE 2 is a side view, partly in section and partly broken away for clarity, of the strain relief assembly for introducing a cable into the connector unit of FIGURE 1*b*;

FIGURE 3 is a perspective view of a grommet or packing element carried within the strain relief assembly.

In the drawings the illustrative embodiment of the separable connector assembly of the present invention in general includes a pair of units A and B adapted to be brought operatively together to complete a multiplicity of circuit paths through the assembly, unit A being set for example in the control board or some convenient portion in the housing **2**, fragmentarily shown in FIGURE 1*a*, of a computing, printing or accounting machine or similar device, and constituting the electrical coupling into the internal electrical circuitry of the device. Unit B comprises a portable coupling mechanism including a housing **52** having an operating handle **130**, the mechanism serving to support and connect selectively the various wires of an external cable **4** to the appropriate wires brought to unit A. Units A and B each include an insulating panel **6** having apertures **8** that receive and support the cooperating sets of electrical contact elements, not shown here for purposes of clarity, but which are fully shown and described in my parent patent No. 3,065,441, aforesaid.

Cable **4** is introduced into housing **52** by means which relieves the contact inserts terminating the individual

wires from the stress imposed by the cable weight. To this end secured to the bottom of housing **52** is an apertured well **158** through which cable **4** is passed into housing **52**, the conical bottom **160** of the well providing a seat for annular packing **162** of rubber or similar resilient material. A gland **164** slidably received in well **158** is adapted to be driven against packing **162** by bolts **166** extending through the well and threaded into the gland thereby to squeeze and extrude the packing inwardly against cable **4** for strain relief support, the bearing surfaces **168** of the gland being conical in mirror image of well bottom **160**.

FIGURE 3 illustrates in detail packing **162** which is generally triangular or trapezoidal in cross-section. A series of equally spaced radial slots **170** terminating just short of the cylindrical inside surface render the packing more flexible in use, and essentially divide the packing into spaced, preferably equal sections, more or less of which may be removed by severing through the thin inside wall according to the size of cable **4**.

For convenience a series of numerals of descending magnitude may be molded integrally on the outer walls respectively of the set of the packing sections, the numerals corresponding to the various cable sizes contemplated to be used whereby the person who assembles the connector may cut off those packing sections indicating a larger cable size than the one being installed. On so doing, the inner diameter of the packing is thus conveniently matched with the cable diameter.

In the event, on matching the inside packing diameter to a relatively small diameter cable in use, so many of the packing sections are removed that the conical bearing surfaces of gland **164** and well **158** do not adequately grip therebetween the sloping outside surfaces of the packing, conical adapter or take-up rings **172** may be positioned on either side of the packing as shown in FIGURE 18.

The flexibility imparted to the packing by virtue of slots **170** reduces considerable the forces, than would otherwise be required, with which gland **164** must be driven to expand the packing radially inwardly. More particularly, since the packing has essentially been divided into spaced sections which thus act substantially independently, the sections are extruded and bulged inwardly when squeezed to provide a series of bulges bearing against the periphery of the cable while the slots provide reliefs into which the sections may sidewise extrude. In addition where the angle of inclination to the cable axis of conical surfaces **160** and **168** are steep, a self-constricting characteristic is advantageously imparted to the packing. That is, the frictional drag between the cable and the packing, on any axial movement of the cable, will cause the packing to become more tightly wedged between the cable and bearing surface **160** or **168**.

I claim:

In a strain relief assembly for a multi-contact connector, an annular packing of rubbery resilient material having a generally cylindrical inner surface, characterized by a plurality of circumferentially spaced bulges defining an opening for passing the conductor cable leading to said connector, said packing being approximately triangular in cross-section, a plurality of equally spaced radial slots

extending from the outer surfaces and both sides of said packing to just short of said inner surface for defining a plurality of packing sections, each section being connected to adjacent sections by integral easily severable thin wall portions for removing from the main packing body such sections as desired to accommodate cables of relatively small diameter and for dividing the packing into equally spaced and essentially independently acting sections, each of said sections producing an individual bulge of contact for gripping engagement with said cable by virtue of the rubbery character of said resilient material.

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