Sept. 22, 1970 C. W. SNYDER, JR 3,530,426

CONNECTOR HOUSING

Filed April 25, 1968

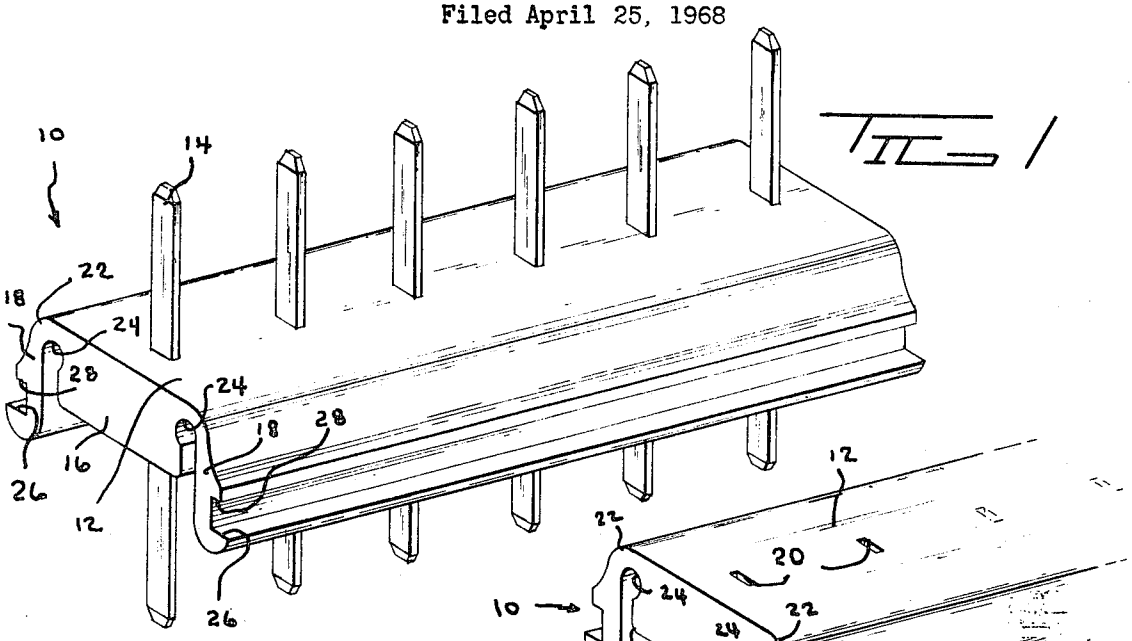


FIG 1

FIG 2

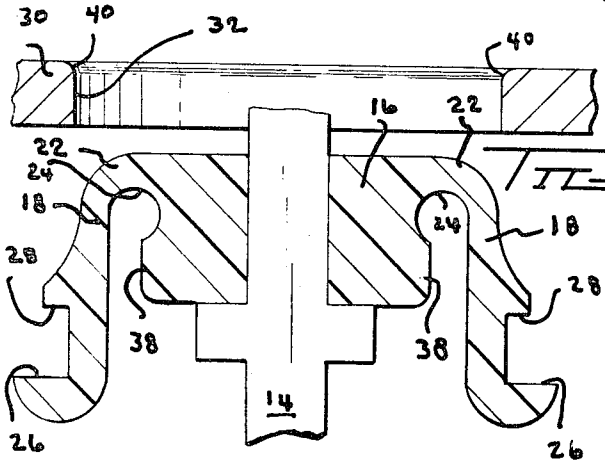


FIG 3

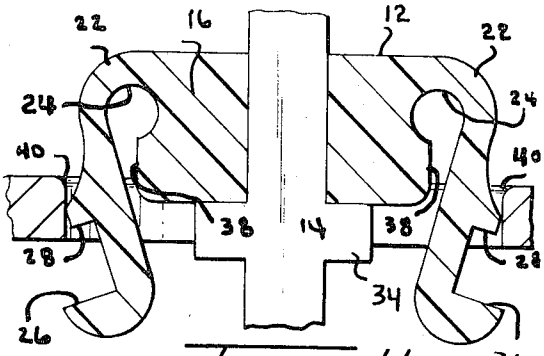


FIG 4

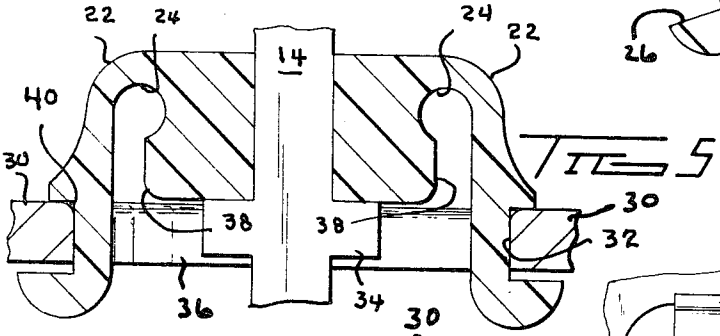


FIG 5

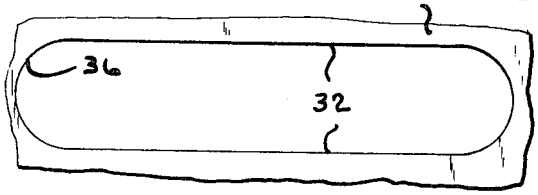
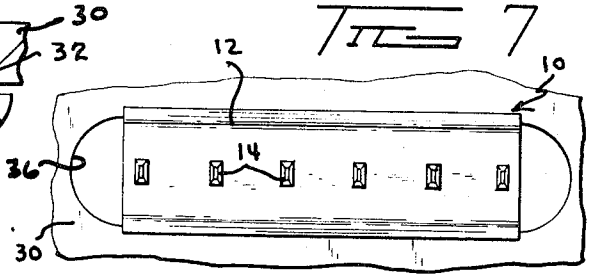


FIG 6

FIG 7



INVENTOR

CLAIR WILSON SNYDER, JR.

BY Jayne Hutchins

United States Patent Office 3,530,426 Patented Sept. 22, 1970

3,530,426

CONNECTOR HOUSING

Clair Wilson Snyder, Jr., Hellam, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 25, 1968, Ser. No. 724,147
Int. Cl. H01r 9/16, 9/22
U.S. Cl. 339—128 7 Claims

ABSTRACT OF THE DISCLOSURE

A housing for mounting connectors in a panel or chassis comprising an extruded member of electrically insulating material which receives contact members and which has resilient legs for snapping into an opening in the panel and for retaining the housing in position relative to the panel.

This invention relates to the art of electrical connectors and is concerned primarily with the provision of an inexpensive housing for insertion in an aperture in a panel or the like.

Many housings are known in the prior art for positioning electrical contacts within a panel aperture. It is customary for these housings to be molded pieces having apertures for receiving contacts and having some means for retaining the housing in position within the panel aperture. These molded housings frequently represent a large portion of the cost of the connector unit due primarily to the extremely high cost of molding equipment. In addition, the wide range of uses to which the connectors are put requires a great number of housing sizes to accommodate various numbers of contacts. Each housing size would, of course, require its own mold.

The above-mentioned high costs and number of housing sizes are reduced by applicant's invention by providing a housing of uniform cross-section and of an insulating material easily adapted to an extruding process. Applicant's housing has a central portion with legs on either side integral therewith and being pivotable so as to allow for insertion into a panel or chassis. Each leg has shoulders thereon forming a groove for mating and locking with a panel. The central portion has abutments thereon for limiting the pivotable movement of the legs and thereby preventing overstressing of the legs. Contacts are adapted to be receptively mounted in apertures provided in the central portion.

It is an object of this invention to provide a connector housing of uniform cross-section thereby permitting the housing to be formed by an extruding process.

A further object is to provide a connector housing of indefinite length which could be selectively severed to any desired length to accommodate a desired number of contacts.

A further object is to provide a connector housing which is of simple design and which is relatively inexpensive to produce.

The attainments of the present invention will become apparent to those skilled in the art upon a reading of the following detailed description when taken in conjunction with the drawings in which there is shown and described an illustrative embodiment of the invention; it is to be understood, however, that this embodiment is not intended to be exhaustive nor limiting of the invention but is given for purpose 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 it in various forms, each as may be best suited to the conditions of a particular use.

BRIEF DESCRIPTION OF THE DRAWING

In the drawings in which like reference numerals refer to like parts:

FIG. 1 is a perspective view of a connector made in accordance with the teachings of the present invention;

FIG. 2 is a perspective view showing the housing employed in the connector of FIG. 1;

FIG. 3 is a cross-sectional view of the connector of FIG. 1 prior to insertion in a panel aperture;

FIG. 4 is a cross-sectional view similar to FIG. 3 showing the connector during insertion in the panel aperture;

FIG. 5 is a cross-sectional view showing the connector of FIG. 1 positioned within the panel aperture;

FIG. 6 is a fragmentary top plan view of the panel aperture configuration for receiving the connector; and

FIG. 7 is a fragmentary top plan view showing the relative positioning of a connector within a panel aperture.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The connector of the present invention is indicated generally at **10** and includes a housing **12** and a plurality of electrical contacts **14**. The housing **12** is of substantially constant cross-sectional configuration and comprises a central portion **16** and a pair of legs **18** disposed on opposite lateral sides of the central portion. The constant cross-sectional configuration of the housing permits it to be extruded in indefinite length as indicated in FIG. 2. A plurality of apertures **20** are preferably punched in the central portion **16** of the housing for receiving the electrical contacts. The spacing between apertures **20** may be varied as desired depending on the contact spacing employed for each particular use.

Housing **12** is preferably formed of an electrically insulating material such as nylon to prevent shorting between the electrical contacts and the panel within which the connector is inserted. The material must be sufficiently resilient to permit the legs **18** of the housing to have a springing action in a manner to be described.

The legs **18** are joined to the central portion **16** by a hinge section **22**. The hinge section is sufficiently narrow to permit the legs to move in a pivotal manner relative to the central portion. A pair of large arcuate cutouts **24** are formed adjacent the hinge sections **22** and serve both to provide clearance between the legs and the central portion and also to yield a longer effective leg length.

Each leg **18** has a pair of oppositely disposed shoulders **26** and **28** adapted to be positioned on opposite sides of a panel or chassis **30** within which the connector is to be mounted. The lateral dimension between the legs **18** is of appropriate size for insertion within an aperture **32** in the panel **30**.

When it is desired to produce a connector the housing **20** is severed to appropriate length to accomodate the necessary number of contacts **14**. The contacts **14** are inserted into the apertures **20** in the housing either before or after severing the housing to length and are held therein by frictional forces and by the abutment **34** (if desired) formed on the contacts. The panel aperture **32** is then formed of an appropriate size to receive the connector and the aperture preferably is provided with radiused end portions **36** for positioning the connector. The length of the connector **12** should be just larger than the straight line portion of aperture **32** whereby the radiused ends **36** will serve to maintain the connector centrally located within the aperture.

The connector is inserted into the panel aperture as seen in FIG. 4 with the rounded external surface of the hinge sections **22** providing appropriate lead in. The

legs **18** of the housing pivot inwardly as the housing passes through the aperture **32**. In the event the aperture **32** is slightly smaller than it should be, the legs **18** could be forced to pivot inwardly to a point in excess of their elastic limit whereby the legs would be permanently deformed. To prevent against such occurrence the central portion **16** of the housing is provided with laterally extending abutment means **38** which would contact the legs **18** and prevent the legs from being bent beyond their elastic limit.

When the connector is fully inserted within the panel aperture the shoulders **26** and **28** will lie on opposite faces of the panel **30** and will retain the connector in position. The legs **18** will, of course, return to their normal position as shown in FIG. 5. It is preferable that the connector be inserted into the panel in the direction which is opposite to the direction in which the aperture **32** was punched. Punching of the aperture causes a slight radius **40** to be formed along one surface of the aperture and this small radius could have a detrimental effect on the holding characteristics of the shoulders **26** and **28** if the housing were to be inserted in the same direction as the punching direction.

It can be seen that a connector has been provided by this invention which is inexpensive to produce and which is extremely versatile in that a continuous housing length may be selectively severed to produce a connector of any desired size.

Changes in construction will occur to those skilled in the art and various apparently different modifications and embodiments may be made without departing from the scope of the invention. The matter set forth in the foregoing description and accompanying drawings is offered by way of illustration only.

What is claimed is:

1. A housing for mounting contacts in a panel or the like, said housing comprising an elongated member of substantially constant cross-sectional configuration, a central portion extending lengthwise of said housing, and a pair of resilient legs disposed on opposite lateral sides of said central portion, said central portion being adapted to receive a contact therein, said legs being adapted for maintaining said housing in an aperture in a panel, said housing having opposed shoulder means thereon for engaging opposite faces of said panel, means connecting said legs to said central portion for permitting pivotal movement of said legs relative to said central portion and abutment means disposed on opposite sides of said central portion for limiting the extent of movement of said pair of legs to prevent the overstressing thereof.

2. A housing as set forth in claim **1** wherein said central portion is formed of an electrically insulating material.

3. A housing as set forth in claim **2** further comprising a plurality of apertures extending through said central portion for receiving a plurality of contacts therein.

4. A housing as set forth in claim **1** wherein said opposed shoulder means are disposed in each leg of said pair of legs.

5. An electrical connector for insertion in a panel aperture comprising a housing having a substantially constant cross-sectional configuration, said housing having a central portion and a pair of resilient legs disposed on opposite sides of said central portion, at least one aperture extending through said central portion, and a contact member extending through said aperture, said housing having opposed shoulder means for engaging opposite faces of said panel, means pivotally connecting said legs to said central portion whereby said legs will pivot inwardly during insertion of said connector into a panel aperture to permit said housing to enter said aperture and be positioned relative to said panel and abutment means disposed on opposite sides of said central portion for limiting the inward pivotal movement of said legs to prevent the overstressing thereof.

6. A connector as set forth in claim **5** wherein said housing is an extrusion formed from an electrically insulating material.

7. A connector as set forth in claim **5** wherein said opposed shoulder means are disposed in each leg of said pair of legs.

References Cited

UNITED STATES PATENTS

2,802,958	8/1957	Curley	339—126 X
3,299,199	1/1967	Mattingly	339—198 X
3,430,188	2/1969	Leach	339—128

FOREIGN PATENTS

193,457	11/1957	Austria.

RICHARD E. MOORE, Primary Examiner

U.S. Cl. X.R.

339—198.