

Description

1. Technical field

This invention relates to a female electrical terminal (10) comprising an elongated electrically conducting strip (16) and electrically conducting resilient striplike beams (14) connected at either side of said elongated strip (16), said beams form a cavity (22) to accept a round or square pin inserted into said cavity (22) along an axis substantially parallel to the elongated strip (16).

2. Background art

A female electrical terminal as cited above is known from French Patent 1,319,621. The prior art is replete with descriptions of terminals used to contact square or round pins. Many of these terminals are effective only for their intended purpose. Examples of these terminals can be found in French Patent 960,968 and United States Patents 2,758,291, 3,538,340 and 3,763,460. However, the search continues for improved terminals that are effective and low cost. The terminal disclosed in above French Patent 1,319,621 is not really effective to contact square pins, whereas this terminal comprises no further electrical contact and mid-portion, except the bent beams. These beams are adjacent each other, leaving a small intermediate slot only and alternately coming from different sides of the spine. By this configuration much material is necessary for making this terminal.

The main object of the present invention is to provide a new low cost female terminal effective for contacting round and square pins at both ends and using less terminal material. The invention is defined in claim 1.

The Austrian Patent 365,003 and the British Patent 239,345 disclose female terminals consisting of a cylindrical tube having slant or transverse slits made in the tube wall, thus offering cylindrically bent spring leave portions. Also these terminals use much terminal material and therefore are neither effective at low cost as the terminal of the present invention.

I have designed a novel low cost female terminal, extremely effective for contacting round or square pins. My terminal has an electrically conducting rib cage mounted on a spine. The rib cage has at least four pairs of ribs in the form of curved cantilevered beams, each beam attached at one end to the spine and spaced apart at its other end from a corresponding beam. Each beam is at an acute angle with respect to the spine. The diameter of the rib cage is sufficient to receive round or square pins from other electrical devices. The spine also has mounting tabs at each end extending in a direction away from the rib cage.

The present invention may be best understood by those having ordinary skill in the art by reference to the following detailed description when considered in conjunction with the accompanying drawings in which:

Fig. 1 shows an elevation view of a six rib cage terminal.

Fig. 2 shows a partial cut away of a connector housing exposing a rib cage terminal with connecting round pins inserted.

Fig. 3[A] is a perspective of the rib cage terminal on a carrier strip after being stamped from flat metal stock and before forming.

Fig. 3[B] is a perspective of the same rib cage terminal as in 3[A] after forming.

Referring to Fig. 1 there is shown a rib cage terminal 10 with pins 12 and 13 inserted. Ribs 14 form an acute angle with regard to the spine 16 of the terminal 10. Mounting tab 18 assists in maintaining the position of the terminal 10 within a housing 28 as seen in Fig. 2. Slots 19 separate the ribs. A rib bridge 20 separates the top of each rib 14. Separate pins 12 and 13 are inserted from each end of the terminal 10. The sloped terminal faces 30 and 32 of the ribs 14 receive the terminal pins 12 and 13 respectively after the pins have passed through the channel 26 in the housing. Chamfered edges 24 in the housing 28 maintain easy entry of the pins 12 and 13. A central opening 22 within the inside space of the rib cage receives the pins 12 and 13. The pins are of such a diameter as to slightly spread the ribs 14 during insertion. The ribs 14 contract after withdrawal of the pins.

As can be seen in Fig. 3B, the ribs 14 are curved from the spine 16 in an upward direction and are spaced apart from the corresponding rib 14 coming from the other side of the spine 16.

The terminals of this invention can be made from metal flat strip stock as shown in Figs. 3A and 3B. First, the carrier strip 34 has pilot holes 36 punched therein. Thereafter a stamping press punches out a flat design 38. A forming press turns the ribs 14 so that the configuration shown in Fig. 3B is achieved. The terminal is then removed from the carrier strip and the mounting tabs 18 are formed.

The metal used to form the terminal of this invention can be any one of phosphor-bronze, beryllium-copper, cupro-nickel, other copper alloys, bronze, or other metal commonly used to manufacture terminals.

It is possible to vary the number of ribs 14 in the rib cage. By increasing the number of ribs 14 one increases the total amount of pressure exerted on pins 12 and 13. The minimum number of ribs recommended is four. There is no maximum number except as dictated by cost and the size limitations of the housing.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

Claims

1. Female electrical terminal (10) comprising an elongated electrically conducting strip (16) and electrically conducting resilient striplike beams (14) connected at either side of said elongated strip (16), said beams form a cavity (22) to accept a round or square pin inserted into said cavity (22) along an axis substantially parallel to the elon-

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gated strip (16), characterized in that said elongated strip (16) forms an elongated generally planar spine (16) and said beams (14) together with said spine (16) form a rib cage structure such that a round or square pin can be inserted into said cavity at both ends of the rib cage structure in order to electrically connect two pins, said rib cage structure being formed by at least four pairs of curved cantilevered beams (14), each beam (14) being at an acute angle with respect to said spine (16), all beams (14) being angled uniformly towards one end of the spine (16) and attached at one end to the spine (16) and spaced apart at the other end opposite to said spine from the end of a beam of the same pair connected to the other side of the spine (16).

2. A terminal according to claim 1 having a tab (18) on at least one end of the spine (16) extending in a direction away from the rib cage (22).

3. A terminal according to claim 1 wherein a bridge (20) connects the ends of the beams (14) each side of the rib cage (22).

4. A terminal according to claim 1 wherein each beam (14) is aligned with respect to the corresponding beam (14)

Patentansprüche

1. Aufnehmender elektrischer Anschluß (10), der einen länglichen, elektrisch leitenden Streifen (16) und elektrisch leitende, federnd nachgiebige, streifenförmige Querteile (14) hat, die mit jeder Seite des länglichen Streifens (16) verbunden sind, wobei die Querteile einen Hohlraum (22) zur Aufnahme eines runden oder viereckigen Stiftes bilden, der in den Hohlraum (22) längs einer Achse im wesentlichen parallel zu dem länglichen Streifen (16) eingeführt wird, dadurch gekennzeichnet, daß der längliche Streifen (16) einen länglichen, im allgemeinen flachen Dorn (16) bildet, und daß die Querteile (14) zusammen mit dem Dorn (16) eine Rippenkäfigkonstruktion bilden, so daß ein runder oder viereckiger Stift in den Hohlraum an beiden Enden der Rippenkäfigkonstruktion eingeführt werden kann, um die beiden Stifte elektrisch zu verbinden, und daß die Rippenkäfigkonstruktion von wenigstens vier Paaren von gekrümmten, freitragenden Querteilen (14) gebildet wird, jedes Querteil (14) unter einem spitzen Winkel bezüglich des Dorns (16) vorgesehen ist, und alle Querteile (14) unter einem gleichförmigen Winkel zu einem Ende des Dorns (16) angeordnet sind und an einem Ende mit dem Dorn (16) verbunden sind, wobei an dem dem Dorn gegenüberliegenden anderen Ende diese einen Abstand von dem Ende eines Querteils ein und desselben Paares

haben, das mit der anderen Seite des Dorns (16) verbunden ist.

2. Anschluß nach Anspruch 1, der einen lappenförmigen Vorsprung (18) wenigstens an einem Ende des Dorns (16) hat, der in eine Richtung von dem Rippenkäfig (22) weg weist.

3. Anschluß nach Anspruch 1, bei dem eine Brücke (20) die Enden der Querteile (14) auf jeder Seite des Rippenkäfigs (22) verbindet.

4. Anschluß nach Anspruch 1, bei dem jedes Querteil (14) bezüglich des zugeordneten Querteils (14) fluchtgerecht ausgerichtet ist.

Revendications

1. Élément de contact (10) électrique de type femelle comprenant une bande allongée (16) électriquement conductrice et des lamelles (14) en forme de bandes élastiques et électriquement conductrices connectées de chaque côté de ladite bande allongée (16), lesdites lamelles formant une cavité (22) pour recevoir une fiche ronde ou carrée insérée dans ladite cavité (22) suivant un axe sensiblement parallèle à la bande allongée (16), caractérisé en ce que ladite bande allongée (16) forme une colonne (16) allongée de forme générale plane et—lesdites lamelles (14) forment ensemble avec ladite colonne (16) une structure en forme de cage à côté de telle façon qu'une fiche ronde ou carrée peut être insérée dans ladite cavité à chacune des deux extrémités de la structure formant cage à côtes pour connecter électriquement les deux fiches, ladite structure formant cage à côtes étant formée d'au moins quatre paires de lamelles courbées (14) en porte à faux, chaque lamelle (14) faisant un angle aigu avec ladite colonne (16), toutes les lamelles (14) étant inclinées uniformément vers une des extrémités de la colonne (16) et étant attachées à l'une de leurs extrémités à la colonne (16) et espacées, à leur autre extrémité opposée à ladite colonne, de l'extrémité d'une lamelle de la même paire connectée de l'autre côté de ladite colonne (16).

2. Un élément de contact suivant la revendication 1, comportant, à au moins une extrémité de la colonne centrale (16), une patte (18) dirigée dans une direction opposée à celle de la cage à côtes (22).

3. Un élément de contact suivant la revendication 1, dans lequel un élément de pontage conducteur (20) connecte les extrémités des lamelles (14) de chaque côté de la cage à côtes (22).

4. Un élément de contact suivant la revendication 1, dans lequel chaque lamelle (14) est alignée avec la lamelle correspondante.

