

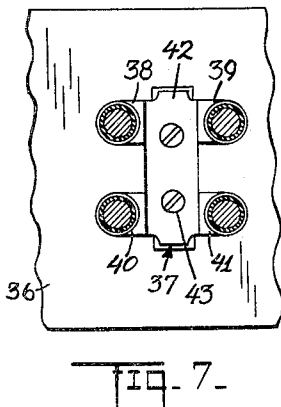
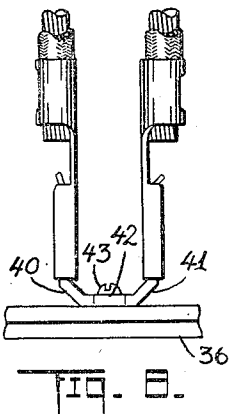
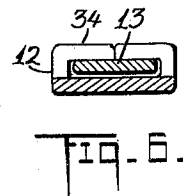
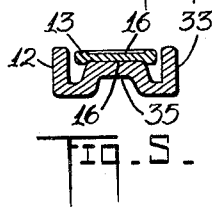
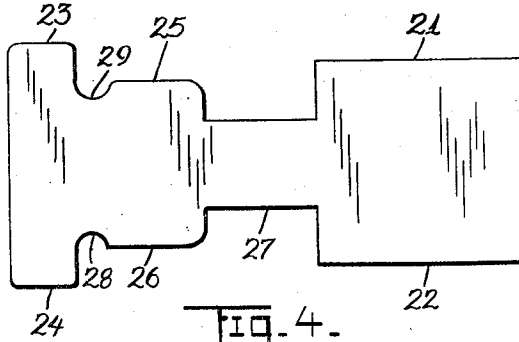
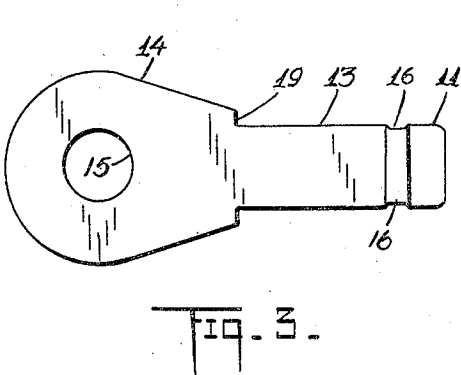
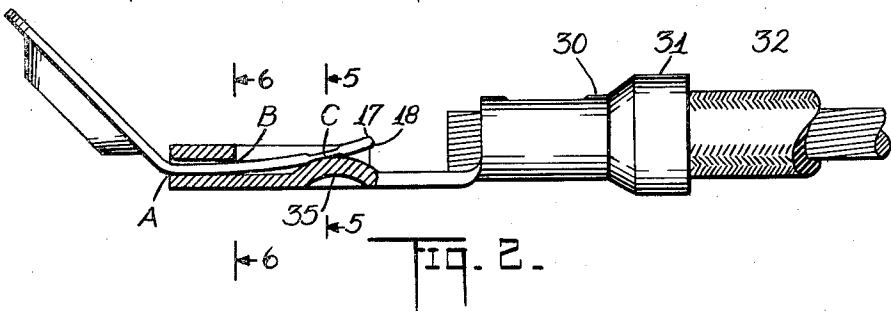
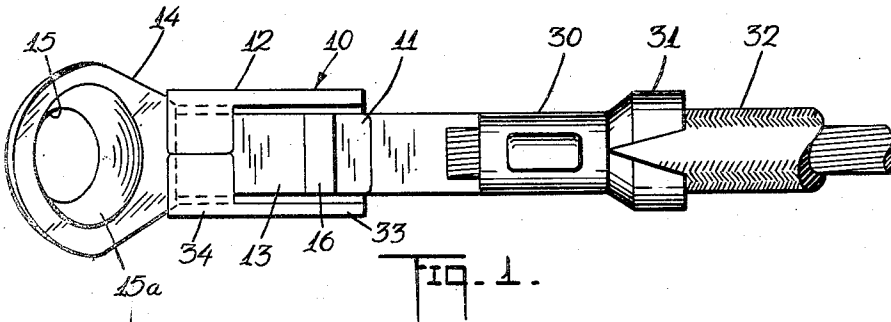
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DETACHABLE CONNECTOR HAVING TWO-POINT SUPPORT

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DETACHABLE CONNECTOR HAVING
TWO-POINT SUPPORT

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2 Claims. (Cl. 339-252)

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My invention relates to connectors and more particularly to a longitudinally displaced type or "in-line" electrical connector affording a quick means for making and separating the connection.

Separable connectors commercially in use require identical halves pivoting into interlocked position held together by spring clasp pressure and necessitating a slack in the wire conductors, or a three piece construction involving two contact blades held in position by the spring action of a coupler. Where in the prior art, projections sliding into apertures were used to interlock two connector halves, the connection became loose when slightly worn with decreased electrical and mechanical efficiency.

I have found that I can combine an "in-line" spring securing means for the connection in coordination with a snap securing means, and thus obtain a combination of securing means so inter-related as to insure a more positive means to maintain the component members together, and obtain a connector that can be quickly connected or separated with a small predetermined force.

It is therefore a primary object of my invention to provide a connector of the longitudinal displaced type having an improved means for securing together the component parts of a connector and which will afford a high degree of electrical and mechanical efficiency.

It is a further object of my invention to provide in a longitudinally displaced type of connector, a spring means for securing the connector parts together and plurality of longitudinally spaced contact points to bias the spring means to support the parts together in a positive manner.

Still other objects of my invention are to provide a spring male connector part having detent securing means at one end; to provide a two piece separable connector that can be stamped or otherwise formed of sheet metal, which can be manufactured economically, one of the pieces having a tubular end to which may be secured a conductor; to provide a separable connector wherein one of the contact members is wedged into position in a line offset from the face of the other contact member; and to provide a connector having superior electrical and mechanical efficiency.

I accomplish these and other objects and obtain my new results as will be apparent from the device described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing, in which—

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Fig. 1 is a top plan view of my novel connector in assembled position.

Fig. 2 is a side elevational view of the same partially in cross section.

Fig. 3 is a top plan view of the blank from which the male member of the conductor is formed.

Fig. 4 is a top plan view of the blank from which the female member of the connector is formed.

Fig. 5 is a cross sectional elevational view taken along line 5-5 of Fig. 2.

Fig. 6 is a cross sectional elevational view taken along line 6-6 of Fig. 2.

Fig. 7 is a top view of a multiple connector for use as a terminal strip, and

Fig. 8 is a side elevation view of the same.

In the drawings, reference numeral 10 designates a longitudinal displaced type of electrical connector comprising a male member 11 and a female member 12.

The male member 11 is stamped from hard sheet metal brass forming a blank as illustrated in Fig. 3, with a resilient tongue portion 13 in the form of a flat strip and a lug portion 14 having an aperture 15 with a cone-shaped wall 15a to receive the head of a machine screw for attachment to a supporting structure, as shown in Figs. 7 and 8. As illustrated the lug is formed at a 45° angle from the tongue portion, however, the shape, size and angle of the terminal may be varied to suit the needs of different applications. Adjacent the free end of the tongue portion, grooves 16 are swedged or cut on the upper and bottom sides to permit the male member to be locked to the female member as hereinafter described. The tongue portion may be reversed and inserted where required in a particular installation.

The grooves 16 may extend transversely throughout the width of the tongue portion and have a pan shaped configuration in cross section as illustrated in Fig. 2. It has been found that a depth of the groove from .004" to .006" has been found satisfactory for the intended purpose. The end corners 17 and 18 of the tongue are rounded to permit it to be cammed into the engaged position when inserted into the female member. A shoulder 19 is formed on the lug portion 14 to abut the outer edge of the female portion and limit the inward movement of the tongue portion when inserted.

The female member 12 may be made of hard copper stamped from sheet material forming a blank as illustrated in Fig. 4. The blank is constructed with three sets of tab portions of varying

widths; end tab portions 21, 22 and 23, 24 and central tab portions 25, 26, with a corresponding tab of each set extending on each side of the longitudinal center line. The end tab portions 21 and 22 are spaced from the central tab portions by a bridge portion 27, less than the width of the female portion by approximately the thickness of the metal, while tab portions 25 and 26 are spaced from the central end portion by reentered portions 28 and 29.

To form the finished female member the end portions 21 and 22 of the blank are rounded to form the barrel portion 30 as shown in Figures 1, 2, 7 and 8 having a shroud portion 31. The bared end of conductor 32 is inserted and crimped or otherwise secured within the barrel portion, with the conductor insulation accommodated within the shroud portion. The end portions 21 and 22 may be of a width to form the barrel by overlapping. Central tab portions 25 and 26 are bent upwardly forming a U-shaped channel 33, as shown in Fig. 5 to guide the movement of the male portion 13 and to restrict side-wise movement. The end tab portions 23 and 24 are bent over and around to form a substantially rectangular retaining body or enclosure 34, as shown in Fig. 6, to enclose and retain the tongue portion 13 when inserted.

A portion of the base of the channel 33 is struck up from the bottom to form a dimple or detent 35 extending into the channel which dimple engages one of the grooves 16 of the tongue portion and by flexure secures the male member within the female member, as shown in Figs. 2 and 5 depending on which position the tongue is inserted into the female member. The dimple may be formed in the connector while in the form of the blank as shown in Fig. 4.

The tongue portion 13 when inserted, engages the female member 12 at substantially three points, A, B and C in a line offset from the base of the female member, insuring a good wiping surface as it is inserted to form an efficient electrical connection. The point A is the lower inner edge of the retaining body 34 at the outer end; the point B is the upper inner edge of the retaining body at the inner end; and the point C is the top of the dimple 35. The tongue being resilient conforms to the shape of the female member at the three points of engagement and is wedged into and retained in position by spring pressure; the dimple engaging the groove forming a supplemental securing means. However a predetermined pull will quickly separate the connector parts when necessary, and the connection may be quickly made by pushing one within the other.

In Figs. 7 and 8 is shown a multiple arrangement of connectors mounted to a terminal board 36. This construction differs from that disclosed in Figs. 1-6 inclusive, in the details of the male member 37 which is provided with four integrally spaced tongue portions 38, 39, 40 and 41 for each of the connectors and is secured to the terminal board by the central body or lug portion 42 by bolts 43. The female members may instead be integrally formed.

My device makes possible a quick disconnect connector having with it a novel means to secure the parts together to insure an improved electrical and mechanical connection. By constructing a hollow body portion in one end of the female member and a dimple spaced therefrom, I can wedge the springy tongue of the male portion within the hollow body to obtain a good electrical contact and assist the locking action of the dimple with the groove in the tongue member. I provide a connection comprising two parts which can be made from sheet metal and easily fabricated into the finished connector. My connector can be utilized for a single connection or a plurality of connections.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which, objects of my invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

I claim:

1. A two-piece electrical connector comprising a male member and a female member, one end of said male member consisting entirely of a resilient tongue portion, said female member consisting of a socket and having rigid walls and an opening to receive the tongue portion, and a securing means formed in the socket wall of the female member for engagement with said tongue portion, said securing means longitudinally spaced from the opening in said socket wall, whereby, when said tongue portion is inserted into position, the tongue is transversely flexed away from its longitudinal position and secured in position, said tongue portion being engaged by the female member on at least two spaced apart points of support.

2. The connector of claim 1, wherein a counter-part securing means is formed on the tongue portion comprising a seat formed adjacent an edge in the resilient tongue portion for engagement with the securing means on the female member.

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