Dec. 11, 1956 H. W. BATCHELLER 2,774,055

ELECTRIC CONNECTOR MEMBER WITH MARGINAL SLITS

Filed March 31, 1953

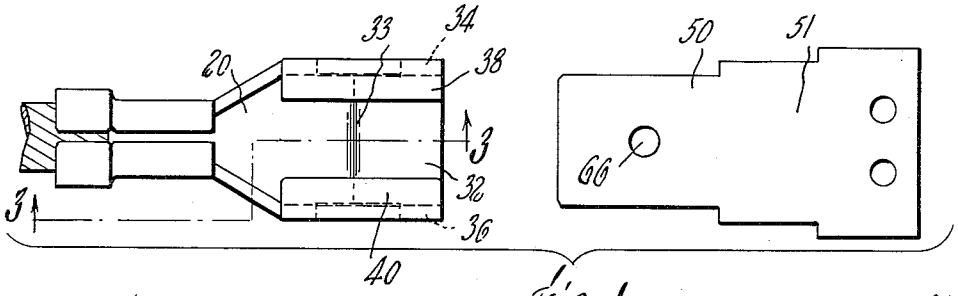


Fig. 1.

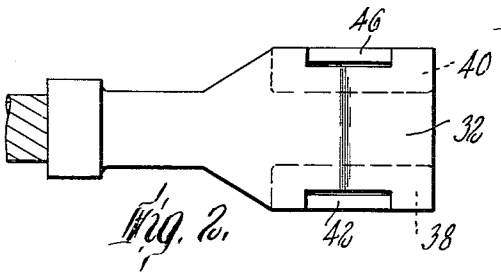


Fig. 2.

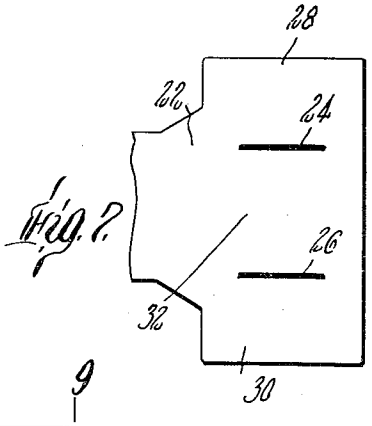


Fig. 7.

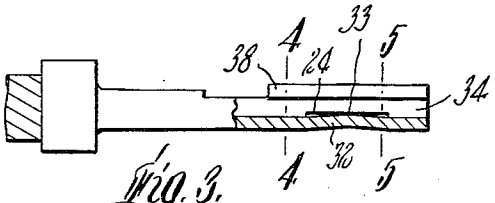


Fig. 3.

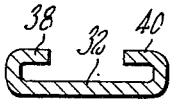


Fig. 4.

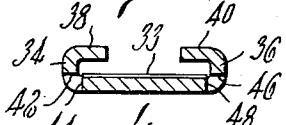


Fig. 5.

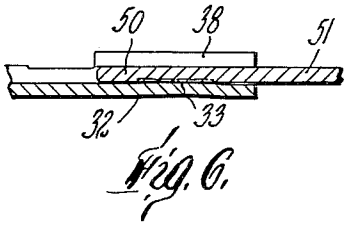


Fig. 6.

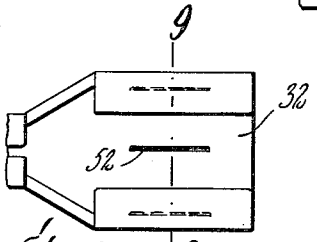


Fig. 8.

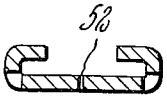


Fig. 9.

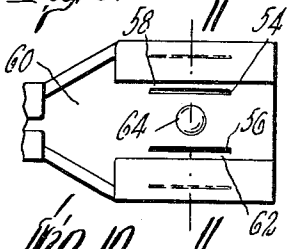


Fig. 10.

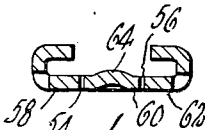


Fig. 11.

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# ELECTRIC CONNECTOR MEMBER WITH MARGINAL SLITS

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Application March 31, 1953, Serial No. 345,892

4 Claims. (Cl. 339—258)

This invention relates to electrical connectors of the type comprising a male and a female member, and more particularly to the female member of such a connector. Such member is essentially a shallow channel with inturned flanges on the side walls to receive and to grip the male member which is essentially a plane tongue adapted to enter the channel between the side walls and to engage under the inturned flanges. It is important that when the members of the connector are joined, there will be an adequate area of firmly-pressed interfacial engagement for the passage of electric current from one member to the other. The members should also be resistant to separation so that accidental disconnection will not occur unless the members are pulled apart by considerable force. These qualities, however, must for practical reasons be combined with simplicity and cheapness of construction for commercial success. It is an object of the present invention to provide a female connector member having all of these qualities. According to the invention, the member is made of a single piece of sheet or strip metal stock. A blank of suitable contour is died or cut out, slits or slots are formed in the blank and it is then bent to the desired shape.

For a more complete understanding of the invention reference may be had to the following description thereof, and to the drawing, of which—

Figure 1 is a plan view of a female connector member embodying the invention, and a complemental member to fit therein;

Figure 2 is a bottom plan view of the female connector member shown in Figure 1;

Figure 3 is a section on the line 3—3 of Figure 1;

Figure 4 is a section on the line 4—4 of Figure 3;

Figure 5 is a section on the line 5—5 of Figure 3;

Figure 6 is a fragmentary longitudinal section of the members shown in Figure 1, when joined;

Figure 7 is a fragmentary plan view of a blank for the female connector member shown in Figure 1;

Figure 8 is a plan view of a modified form of the invention;

Figure 9 is a section on the line 9—9 of Figure 8;

Figure 10 is a plan view of another modification of the invention; and

Figure 11 is a section on the line 11—11 of Figure 10.

In Figure 1 the female connector member 20 is a member which embodies the invention. This member is preferably made of strip or sheet metal stock such as half-hard brass which can be bent sharply without requiring annealing. A blank is cut from such stock to a shape the forward portion of which is shown at 22 in Figure 7. This portion is considerably wider than it is long. According to the invention, two parallel slits or slots 24 and 26 are cut in this portion, these slots extending longitudinally of this portion of the blank and being of lesser length than said portion. The slots are symmetrically arranged with respect to the longitudinal median of the blank and are respectively between two laterally extending wing portions 28 and 30 of the blank and the central



portion 32. In the finished connector member, the central portion 32 is the floor of the shallow channel, and the lateral wings are the side walls and top flanges, as hereinafter described.

After the slits or slots 24 and 26 have been cut, the area 32 between them is slightly arched by swaging or otherwise to form a transverse ridge 33 extending from the mid point of one slit to the mid point of the other. This ridge is slightly elevated above the plane of the blank and the area 32 slopes therefrom gradually in both directions, this area or a substantial portion thereof thus forming a very flat inverted V as indicated in Figure 3.

After the central area has thus been swaged, the wings 28 and 30 are bent upward on lines of bend which coincide with the slits 24 and 26 to form side walls 34 and 36 and then inward to form plane inturned flanges 38 and 40 which extend along the upper edges of the side walls and overhang portions of the floor 32. The slots 24 and 26 terminate short of the ends of the corresponding side walls so that the side walls are connected to the floor 32 at their ends. When the wings 28 and 30 are bent up, the opposing edges of the slits become separated, as indicated in Figure 5, and are substantially at right angles to each other. Thus the lower edge 42 of the side wall 34 formed by the slit 24 is perpendicular to the edge 44 of the floor. In like manner the edge 46 at the bottom of the wall 36 formed by the slot 26 is perpendicular to the edge 48 of the floor. These slits or slots provide a sufficient yielding on the part of the floor 32 when the tongue 50 of a complementary connector member 51 is inserted in the channel formed by the floor and the side walls 34 and 36, the thickness of the tongue 50 being substantially equal to the clearances between the underfaces of the flanges 38 and 40 and the plane of the floor 32. As the tongue 50 is pushed into this channel, its leading end rides on the slightly inclined forward portion of the floor 32 so that the tongue is cammed upward against the flanges 38 and 40, the floor 32 yielding downward to a sufficient degree to permit the end of the tongue 50 to be thrust beyond the ridge 33. The frictional pressure of the side margins of the tongue 50 against the flanges 38 and 40 is sufficient to hold the members firmly assembled if the clearances have been properly formed with reference to the thickness of the tongue.

Figures 8 and 9 illustrate a slightly modified form of the invention, the modification consisting in the provision of a third slit or slot 52 which is formed in the middle of the floor 32 half way between the slits 24 and 26. The floor is swaged upward as hereinbefore described, the slit 52 serving to permit the portions of the floor on either side of this slit to yield independently of each other when the tongue 50 is thrust into the channel.

A further modification is illustrated in Figures 10 and 11 wherein two additional slits 54 and 56 are shown, these slits being parallel to the slits 24 and 26 and preferably of about the same length. These additional slits divide the floor into three longitudinal strips 58, 60 and 62, all of which are given the inverted V shape hereinbefore described. The central strip 60 may also have a low boss 64 formed thereon. This boss is located and adapted to cooperate with a recess or hole 66 in the tongue 50. The dimensions of the two members are such that when the tongue 50 is inserted in the channel of the female member illustrated in Figures 10 and 11, the central strip 60 of the floor yields downward independently of the strips 58 and 62 until the recess 66 registers therewith. This engagement of the boss 64 in the recess 66 serves to hold the two members in assembled relation so that they cannot be separated except by the application of considerable force. The lateral margins of the tongue 50 are pressed by the slightly arched strips 58 and 62 of the floor against the underfaces of the flanges 38 and 40

to maintain firmly pressed interfacial contact for good current conduction.

I claim:

1. An electric connector member comprising a piece of sheet metal stock bent to form a shallow channel having a floor, side walls extending up from the side edges of the floor and plane inturned flanges along the top edges of the walls, said member having a slit therethrough at the junction of each said side wall with said floor, each said slit terminating short of the ends of the corresponding side wall, said floor having a transverse ridge above the level of the ends of the floor, from which the forward portion of the floor slopes gradually downward to the forward end.



2. A connector member as in claim 1, said floor having a central slit of limited length parallel to the slits at the side edges of the floor.

3. A connector member as in claim 1, said floor having two spaced slits of limited length parallel to and spaced from the slits at the side edges of the floor.

4. A connector member as in claim 3, said floor having a low boss projecting up between said two spaced slits.

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