

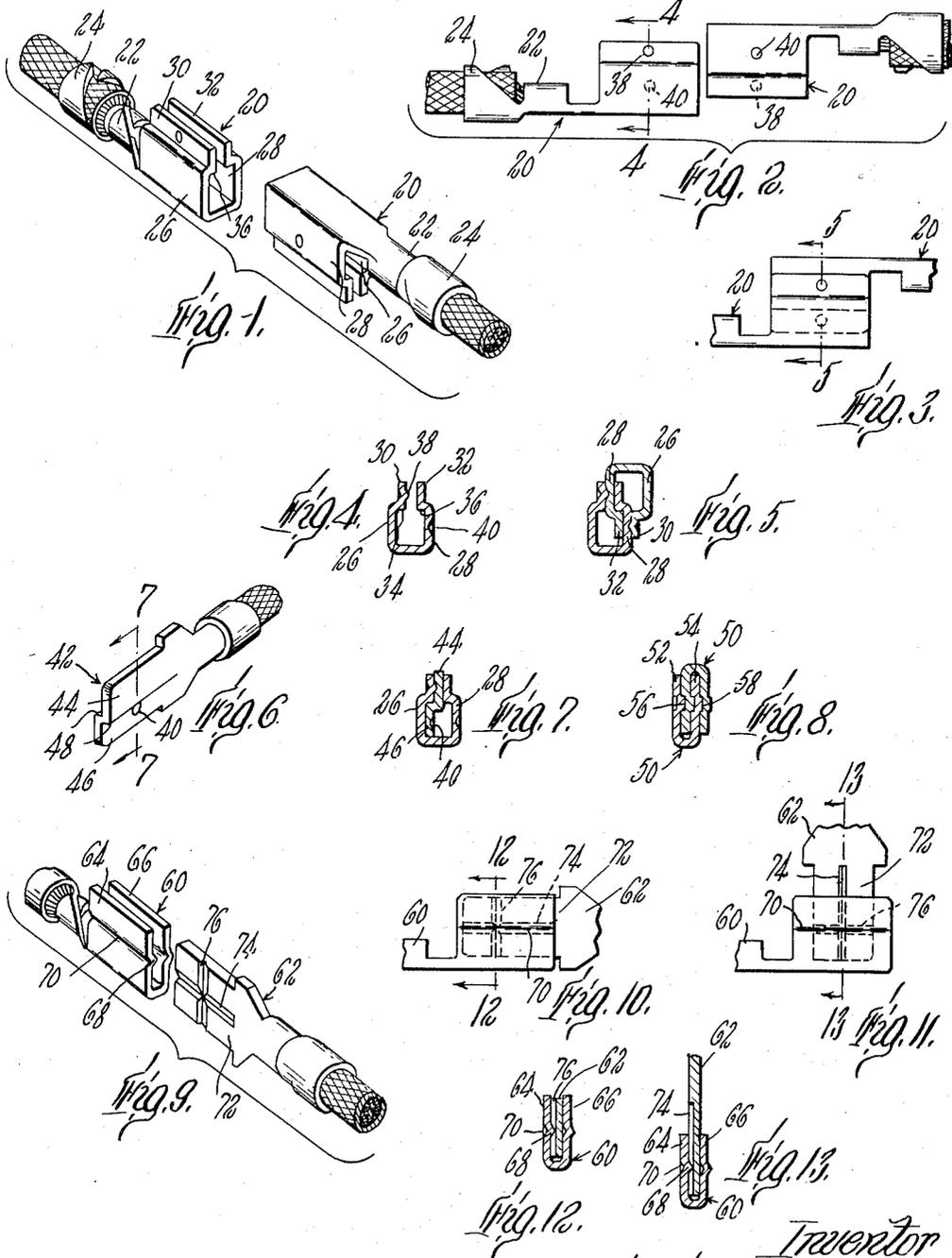
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ELECTRICAL CONNECTOR

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ELECTRICAL CONNECTOR

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This invention relates to an improved electrical connector of the male-female type the members of which are pushed together into frictional engagement to make a connection and are pulled apart to break the connection. According to the present invention, the female member of a connector is so designed that it can make a connection not only with a male connector member of suitable complementary construction, but also with a similar female member. The installation of wiring in electrical appliances such as radios, refrigerators, ranges and the like has been greatly speeded up by the use of precut pieces of wire to the ends of which connector members of the frictional engagement type have been attached, the wiring diagram being planned so that at each connection point one terminal will be male and the other female. It happens, however, that there are occasions when it is desirable to depart from the wiring diagram and make other connections. In such case the operator may find himself with two male terminals or two female terminals to be connected. This can be done if a suitable intermediate double member is at hand. Otherwise it may be difficult to make a good connection. With a connector member such as is hereinafter described, such a situation would present no problem.

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 perspective view of two similar connector members in position to be joined together;

Figure 2 is a side elevation of the same;

Figure 3 is a side elevation of these connector members when joined together;

Figure 4 is a section on the line 4—4 of Figure 2;

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

Figure 6 is a perspective view of a male member complementary to the members shown in Figure 1;

Figure 7 is a section on line 7—7 of Figure 6, together with a sectional view of the other member as shown in Figure 4;

Figure 8 is a transverse sectional view of a modified form of connector;

Figure 9 is a perspective view of the two separated members of another modified form of the invention;

Figure 10 is a side elevation of the members shown in Figure 1, joined together;

Figure 11 is similar to Figure 10 except that the members are joined in a different way;

Figure 12 is a section on the line 12—12 of Figure 10; and

Figure 13 is a section on the line 13—13 of Figure 11.

The form of the invention illustrated in Figures 1 to 5 is embodied in a connector member 20 which can be made of a single piece of sheet metal and can be assembled with another similar member to form a connection. The connector member 20 comprises a channel portion to interengage with the channel portion of a similar member, and a wire gripping portion with tongues 22

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and 24 to embrace the stripped end of a wire to which the member is attached, and the adjacent insulation on the wire. The channel portion of the member 20 has side walls 26 and 28 with parallel, opposed marginal portions 30 and 32, respectively, which are spaced apart a distance slightly less than the stock thickness of the sheet metal of which the members are made. The marginal portions 30 and 32 of the side walls are offset toward each other with respect to the main portions of the respective walls, forming inner shoulders 34 and 36. When two connector members 20 are assembled or joined as indicated in Figures 2 and 3, one is inverted with respect to the other and they are moved end on into telescoping relation, one of the side walls of each member, e. g., the wall 28, being gripped between the marginal portions 30 and 32 of the other member, as indicated in Figure 5. When the members are thus assembled, the shoulder 36 of one member bears on the shoulder 36 of the other and prevents disassembling of the members releasably in their assembled relation, suitably placed bosses 38 and dimples 40 are formed on the side walls of the members.

The connector member 20 can be assembled with another similar member, as hereinbefore described, or with a spade-type member 42 such as is shown in Figure 6. The terminal portion of this member is a flat tongue of generally rectangular shape. Along its longitudinal median the tongue is reversely bent so that the portions 44 and 46 on either side of the median are in parallel planes but are offset from each other a distance preferably equal to the stock thickness of the sheet metal of which the member is made. The reverse bends are sharp so that on each side of the tongue a longitudinally extending shoulder 48 is formed. When the member 42 is assembled with a member 20, as shown in Figure 7, one of the inner shoulders 48 engages one of the inner shoulders 34 or 36 of the side walls of the members 20, keeping the members in alignment and preventing disassembling except by longitudinal withdrawal.

A modified form of the invention is shown in Figure 8. Two similar members 50 are assembled, each member consisting of a piece of sheet metal the terminal portion of which is bent to form a U-shaped channel with parallel side walls 52 and 54 spaced apart a distance slightly less than the thickness of the metal stock of which the members are made. At or near the longitudinal median of each of these walls a rib 56 is formed on one face of the wall and a corresponding groove 58 on the other face of the wall by a longitudinally extending portion of the wall which is offset from the remainder of the wall. When the members are assembled, ribs and grooves of the members interfit to prevent disassembling of the members except by longitudinal withdrawal.

Another modified form of connector is shown in Figures 9 to 13. The two members 60 and 62 are different but complementary. The terminal portion of the member 60 is a U-shaped channel, the side walls 64 and 66 of which are spaced apart a distance slightly less than the thickness of the sheet metal stock of which the members are made. On the inner face of one of the side walls a rib 68 is formed at or near the longitudinal median of that face. The rib may conveniently be formed by indenting the opposite face of the wall as at 70. The member 62 is of the spade type, the terminal portion consisting of a generally rectangular tongue 72 in a face of which is a longitudinal groove 74 extending along the median of the face and adapted to be fitted by the rib 68 on the member 60. A transverse groove 76 may also be provided in the face of the member 62 to receive a portion of the rib 68 when the tongue 72 is inserted in the channel of the member 60 in the manner shown in Figure 11. The interengagement of the

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rib 60 with the groove 74 or 76 holds the members 60 and 62 releasably with their long axes either aligned or at right angles to each other as indicated in Figures 10 and 11.

I claim:

1. An electric connector member made of a piece of sheet metal stock bent to form a channel having side walls with opposed parallel portions spaced apart a distance slightly less than the stock thickness of the sheet metal and adapted to grip a portion of one of the side walls of a similar member assembled therewith, said member including means for preventing withdrawal of said similar member from assembled relation therewith except in a direction parallel to the longitudinal axis of said member.

2. An electric connector member made of a piece of sheet metal stock bent to form a channel with side walls having parallel longitudinal margins spaced apart slightly less than the stock thickness of the sheet metal, one of said side walls having a longitudinal shoulder on its inner face adapted to be engaged by a similar shoulder on a similar member when the two members are assembled.

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3. An electric connector comprising one member made of a piece of sheet metal stock bent to form a channel with side walls having marginal portions in parallel planes spaced apart a distance slightly less than the stock thickness of said sheet metal, one said wall having a longitudinally extending shoulder, and a member of the spade type made of similar sheet metal and having a longitudinally extending shoulder on one face thereof adapted to engage said inner shoulder when the members are assembled.

4. An electric connector member made of a piece of sheet metal stock bent to form a channel having side walls one of which has two mutually offset longitudinally extending portions in parallel planes forming an inner longitudinally extending shoulder facing toward the bottom of the channel.

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