

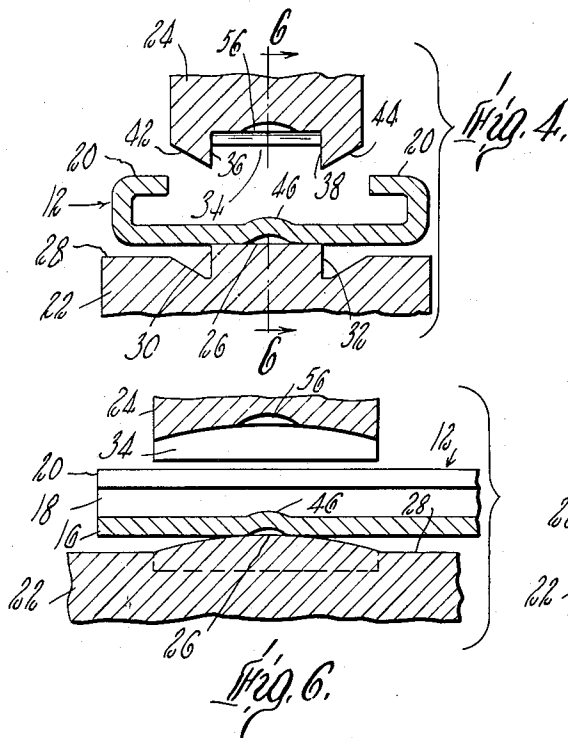
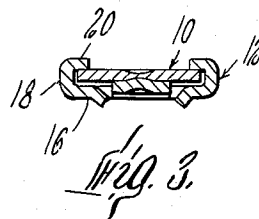
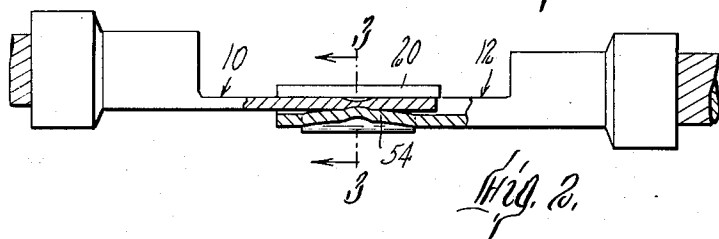
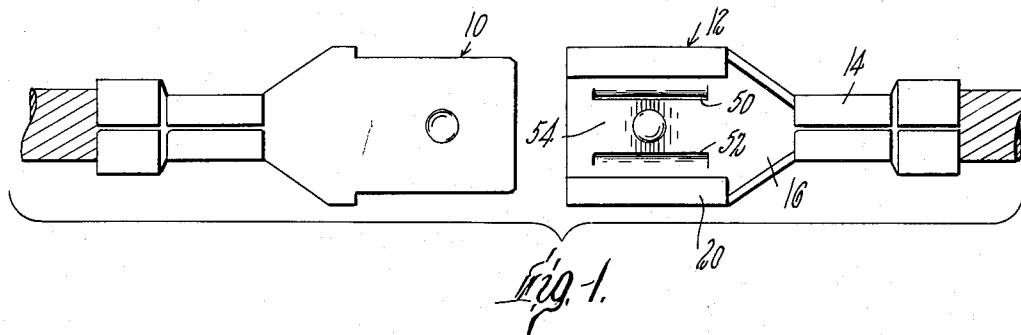
April 17, 1956

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2,742,628

FEMALE MEMBER OF ELECTRICAL CONNECTOR OF THE SPADE TYPE

Filed March 25, 1955



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FEMALE MEMBER OF ELECTRICAL CONNECTOR OF THE SPADE TYPE

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Application March 25, 1955, Serial No. 496,767

1 Claim. (Cl. 339—256)

This invention relates to electrical connectors of the spade type, and more particularly to improvements in the female member of such a connector, the male member being a simple rectangular tongue adapted to be inserted into the shallow channel of the female member. Connectors of this kind are shown and described in United States Letters Patent Nos. 2,600,188 and 2,600,190. The female members shown in these patents comprise a shallow channel with overhanging flanges along the sides to hold down the margins of the male connector member when the members are assembled. To avoid looseness between the members, two parallel slots are cut in the floor of the channel, then the strip between the slots is swaged to widen and harden it, the strip having a central boss which projects up above the level of the floor of the channel so as to press against the under side of the male member and thus to press the side margins of the male member against the under faces of the flanges of the female member. The boss also is designed to enter a recess in the face of the male connector member to press resiliently therein so as to hold the members against disassembling unless sufficient force is employed to flex the strip to permit the boss to ride out of the recess. The two narrow slots in the floor of the female member are cut by equally narrow punches which are subject to rapid wear and frequent breakage owing to their small size. It is an object of the present invention to provide a connector member of a somewhat similar kind which can be made with tools which are more rugged than the narrow punches referred to. Since in the improved form, there are no punch-outs, the accumulation of large numbers of tiny waste metal bits is avoided.

According to the present invention, a central strip is formed in the floor of the member by two parallel cuts which are made in such a way that the margins at the cuts opposite to the side edges of the central strip are bent down and away from the strip so that the cut edges are clear of one another as hereinafter described.

On the drawing, Figure 1 is a plan view of the separated members of a connector embodying the invention;

Figure 2 is a side elevation of the members assembled, a portion being broken away to show in section;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a transverse sectional view, on a larger scale of an anvil and die about to make cuts in a female connector member;

Figure 5 is a section similar to Figure 4, but showing the parts after the cuts have been made;

Figure 6 is a section on the line 6—6 of Figure 4; and

Figure 7 is a section on the lines 7—7 of Figure 5.

The connector illustrated on the drawing is of the spade type and consists of a conventional male member 10 and an improved female member 12. The latter is preferably made of a single piece of sheet metal and comprises a portion 14 having any desired means by which the member can be secured to a wire, and a terminal portion in the form of a shallow channel with a floor 16, side walls 18 and intumed flanges 20 extending from the side walls over the side margins of the floor. The channel is adapted to receive the terminal portion of the male member 10 the width of which is slightly less than the distance be-

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tween the walls 18, and the thickness of which is slightly less than the distance between each flange 20 and the floor 16. To make a good electrical connection between the members, it is important that some surface areas of one member be pressed firmly against surface areas of the other member. For this purpose in some connectors a portion of the floor of the female member is arched upward to engage the under face of the male member resiliently and to press the side margins of the member 10 up against the flanges 20.

According to the present invention the arched portion of the floor is formed in a novel and economical manner, the resulting product having novel features. As shown in Figures 4 to 7, an anvil 22 is provided to cooperate with a cold-forging tool and cutter 24. A central portion of the anvil is arched upward as at 26 from the plane of the top face 28 of the anvil. The arched portion 26 has vertical side faces 30 and 32 which extend down below the plane of the face 28, each of the faces 28 and 30 being a side of a V groove extending alongside of the arched portion 26 for its full length. Cooperating with the anvil 22 is the tool 24 the width of which is sufficiently small to admit the tool between the edges of the flanges of a female connector member 12 when the latter is properly placed on the anvil 22. The end of the tool 24 is formed with a longitudinal recess 34 in the form of a channel having parallel side walls 36 and 38 spaced apart the same distance as that between the sides 30 and 32 of the arched portion 26 of the anvil. The bottom of the channel 34 is curved to be complementary to the top surface of the arch 26. The side margins 42 and 44 of the tool face are beveled to form with the faces 36 and 38 two cutting blades adapted to fit in the grooves on either side of the arched portion 26 of the anvil.

In making a member 12, a blank is first cut from a sheet or strip of suitable metal such as brass. The sides of the blank are bent up to form side walls and flanges of a shallow channel. If desired, a central boss 46 may be formed in the floor of the channel at this time or later. The partly-formed member 12 is then properly placed on the anvil 22 and the tool 24 is driven down on it. The blades formed between the surfaces 42 and 36 and between 38 and 44 make parallel spaced cuts 50 and 52 in the floor of the member 12, thus forming a central strip 54 which is shaped during the cutting process into an arched form between the top of the arched portion 26 of the anvil and the complementary bottom surface of the channel 34, this surface having a central recess 56 to accommodate the boss 46. As the cuts 50 and 52 are made, the floor portions adjacent thereto and opposite the central strip 54 are bent downward by the cutting blades, as indicated in Figure 5, so that the cut edges 60 and 62 are at or below the level of the bottom of the floor 16 and are longitudinally offset from the planes of the edges of the central strip 54. Thus any engagement between the edges 60, 62 and the side edges of the strip 54 when the strip is flexed downward in active service is avoided.

The boss 46 can, if desired, be formed simultaneously with the arching of the central strip 54 by suitably shaping the anvil 22.

I claim:

An electrical connector member consisting of a piece of sheet metal bent to form a shallow channel having a floor with side margins, parallel side walls, and intumed flanges on said side walls overhanging the side margins of said floor, said floor having two parallel longitudinally extending cuts therethrough defining a central longitudinal strip between them, said strip being slightly arched upward, portions of said floor along said cuts being bent down below the level of the bottom of said floor.

No references cited.