June 18, 1968 P. P. DANESI 3,388,976

FEMALE MOLDED-ON ELECTRICAL CONNECTOR

Filed Oct. 22, 1965

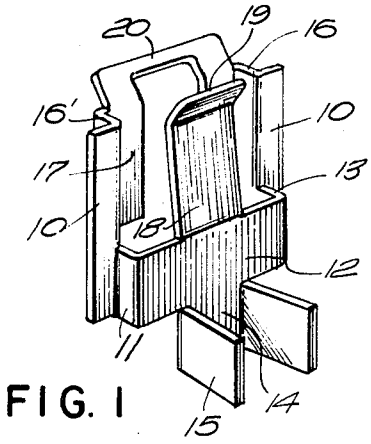


FIG. 1

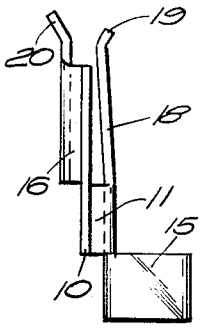


FIG. 2

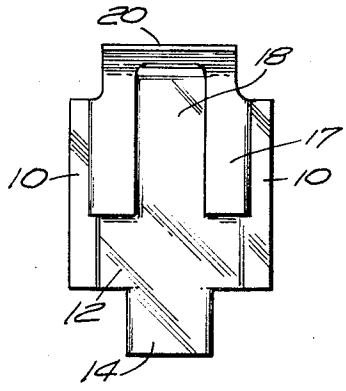


FIG. 3

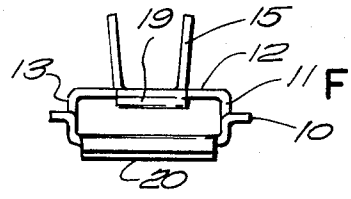


FIG. 4

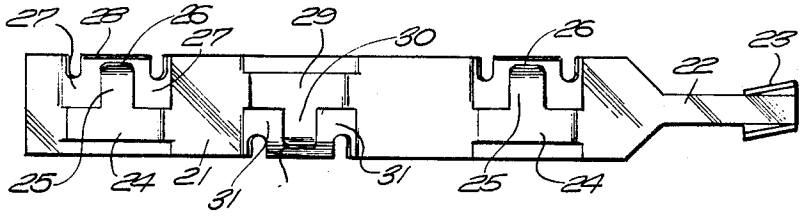


FIG. 5

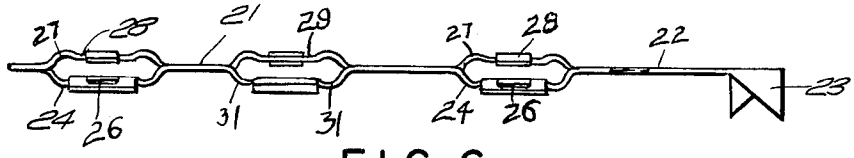


FIG. 6

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FEMALE MOLDED-ON ELECTRICAL CONNECTOR

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10 Claims. (Cl. 29—193)

My present invention relates to the electrical art and more particularly to a novel female electrical connector for molded-on construction.

The principal object of the present invention is to provide a novel female type electrical connector for receiving a male contact blade and which can be readily stamped in a single integral piece from sheet stock.

Another object of the present invention is to provide a female connector which electrically wipes both sides of a male contact blade and which can be stamped in a single integral piece.

A further object of the present invention is to provide a female contact blade integrally formed from sheet stock and which lends itself to manufacture in strip form in coils in side by side relation.

Another object of the present invention is to provide a female electrical connector which can be stamped in a single integral construction suitable for mounting in a molded-on type of plug base.

A further object of the present invention is to provide a female electrical connector which can readily be manufactured in strip form for making gang connectors utilizing two or more connectors in a single outlet.

With the above and other objects and advantageous features in view my invention consists of a novel arrangement of parts, more fully described in the detailed description following, in conjunction with the accompanying drawings, and more particularly defined in the appended claims.

In the drawings,

FIG. 1 is a perspective view of a female connector embodying my present invention.

FIG. 2 is a side elevation thereof.

FIG. 3 is a rear view thereof.

FIG. 4 is a top plan view thereof.

FIG. 5 is a plan view of a contact of the present invention in triple service strip form.

FIG. 6 is an edge view of the form shown in FIG. 5.

Female electrical contact blades are usually formed either in two separate pieces spaced apart to receive the male blade therebetween, or in a single piece folded over to provide two resilient sections and the male contact blade slides between them. The main factor is that the male contact blade is electrically contacted or wiped on both sides and resiliently held in electrical contact with the female blade. It is now customary to provide the contact plugs themselves out of plastic material molded in quantities to reduce the cost. It is therefore necessary that the female blades be carefully constructed so that they can be readily molded into the plug bodies. The present invention is designed to provide a female blade construction which can be readily stamped without large folding problems and which reduces the amount of waste material to an absolute minimum providing little or no scrap. This is of utmost importance, also, as the blades must be manufactured in quantities in strip form in coils side by side. The construction of the present invention therefore provides a female contact blade which can be manufactured in strip form side by side with no scrap between and which punches a two layer blade out of a single sheet of stock.

Referring more in detail to the drawings, the body of material **10** is stamped to provide a sharp forwardly extending fold **11** covering approximately one third from the bottom end upwardly and having a front integral strip **12** extending across the blade, and terminating in an integral fold **13** rearwardly, integrally joining the other side of the body portion **10**. Extending integrally downwardly from the front edge of the portion **12** is a central portion **14** having integral lugs **15** extending forwardly from each side edge and adapted to receive the bare end of the conductor wire between. Now, the upper end of the body portion **10** is bent rearwardly at each inner edge at **16** and then inwardly to form a wall portion **17**. However, as the portion is bent outwardly a vertical tongue **18** is cut out and left standing integrally with the upper edge of the front member **12**. The tongue portion **18** is slanted slightly inwardly, as shown in FIG. 2, terminating in a rearwardly extending tip **19** for forming a guide entry into the terminal. The rear wall portion **17** is provided with an integral top portion **20**, and the top edge, including the portion **20**, is bent rearwardly as also shown in FIG. 2.

With the parts illustrated in FIGS. 1 to 4 inclusive a slot area is provided between the side walls **16** and **11** and **13** at opposite side edges, the spring tongue **18** at the front edge, and the walls **17** at the rear. It is contemplated that the spring tongue **18** be approximately .125 inch in width and the difference between the walls **16** be approximately .250 inch in width. If the male contact blade is approximately ¼ inch in width it will slide snugly between the walls **16**, and it will be wiped on one side with the tongue **18** on the other side with the two sections **17** totaling an electrical contact on each side of .125 inch. Thus, a simple stamping operation permits the sheet of stock to be stamped inwardly and outwardly to provide a space therebetween, and to allow a male contact blade to be slipped between the parts with adequate electrical contact. The blade can readily be molded into a female connector and can easily be formed in strip form since it is only necessary to provide a connection at the side edges of the body portion **10** between adjacent contact blades. Thus the strip of material can be formed with continuing blades next to each other and with no scrap whatsoever between the blades. The construction is simple and easy and very economical to manufacture. No assembly is required once it leaves the stamping press.

The above described construction lends itself to manufacture in strip form for assembly with wire and insertion into the molds for molding into a normal female connector. However, this construction also permits the manufacture of so called "gang" connectors in which two or more contact portions are provided in a single connector. FIGS. 5 and 6 illustrate such a connector. In the illustrated form, three contact portions are provided. To conserve space and to allow the male connectors to be inserted without interfering with each other, the two end contacts are made on one side and the middle contact is made on the other side, allowing for sufficient space between the contacts.

Referring to these figures, the strip of metal **21** is provided with a reduced portion **22** at one end having complementary lugs or ears **23** for receiving the bare end of a contact wire. At two points, one adjacent the contact end and the other adjacent the remote end, I stamp out a horizontal strip **24** having a central vertical tongue **25** with an outwardly bent upper tip end **26**. The material from which this is stamped is punched into the opposite direction, as in the form shown in FIG. 1, to provide contact areas **27** on each side connected by rearwardly bent integral portion **28** at the top. This form will also receive a male contact blade between the spring tongue **25** and the rear portions **27** as in the form illustrated in FIG. 1. However, in the intermediate portion of the strip

21 between the above described portions, I provide a contact area in inverted position. In this form the front strip 29 is provided with a downwardly extending tongue 30 having a bent tip and the rear part is provided with the side strips 31, at each lower edge terminating with an integral bottom connecting portion 32. With such a construction, the pair of strips illustrated in FIGS. 5 and 6 may be inserted into an elongated housing in side by side position so that on one side of the housing a male plug can be inserted at the forward end or at the rear end, and on the other side the male plug can be inserted in the center between the two ends. This permits the parts to be closely formed and the overall plug to be foreshortened as it is not necessary to crowd three male contact plugs in side by side relation. This construction permits gang type female contact blades to be formed in any desired length, the three shown being for illustrated purposes only.

Both illustrated forms utilize the principle of stamping the sheet stock to form spaced elements for receiving a male contact blade and providing adequate electrical contacting area on both sides of the male blade. The device is simple and economical to manufacture, requires no special assembly, and is readily moldable into a female contact plug. Other advantages of the present invention will be readily apparent to a person skilled in the art.

I claim:

1. A female electrical contact element comprising a generally rectangular body of electrically conductive material having flat parallel side edge portions, the lower portion of said body being bent forwardly to form a transverse strip integrally connected at each end to said side edge portions, said strip being a a plane parallel to and forwardly of the plane of said side edge portions, an integral vertical strip extending from the upper edge of said transverse strip, the upper portion of said body being bent rearwardly in a plane rearwardly of the plane of said side edge portions, said vertical strip and transverse strip being in spaced relation to said upper body portion defining a slot therebetween and closed at each side edge by said edge portions for receiving a male contact blade.

2. A female electrical contact element as in claim 1, wherein said transverse strip has an integral depending cord receiving portion for connection to an electrical cord lead wire.

3. A female electrical contact element as in claim 1, wherein said vertical strip is stamped from said body portion leaving a vertical slot in said upper portion of said body.

4. A female electrical contact element as in claim 3, wherein the effective contacting area of said transverse and vertical strips are equal to the effective contacting area of said upper body portion minus the vertical slot.

5. A female electrical contact element as in claim 1 wherein the upper end of said vertical strip is inclined forwardly and the upper edge of said upper rear body portion is inclined rearwardly to form an entrance guide for a male contact element.

6. A female electrical contact element as in claim 1, wherein a plurality of contacts are integrally connected at the outer edges of said side edge portions to form a strip of contacts in side by side relation.

7. A female electrical contact element as in claim 1, wherein a plurality of said contacts are joined integrally to form a gang contact strip, each contact element being reversed with respect to the adjacent contact elements.

8. A female electrical contact element as in claim 2, wherein said vertical strip is stamped from said body portion leaving a vertical slot in said upper portion of said body.

9. A female electrical contact element as in claim 4, wherein said transverse strip has an integral depending cord receiving portion for connection to an electrical cord lead wire.

10. A female electrical contact element as in claim 9, wherein the upper end of said vertical strip is inclined forwardly and the upper edge of said upper rear body portion is inclined rearwardly to form an entrance guide for a male contact element.

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