

PATENT SPECIFICATION

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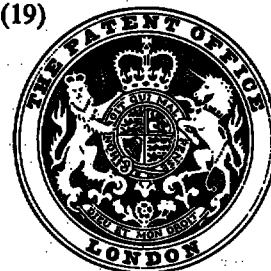
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(19)



(54) IMPROVEMENTS IN OR RELATING TO ELECTRICAL CONNECTORS

(71) We, PRESSAC LIMITED, a British Company of Acton Grove, Long Eaton, Nottingham NG10 1FW, formerly of Leopold Street, Long Eaton, Nottingham NG10 4QL, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:-

This invention relates to a female contact for electrical connectors of the kind comprising a moulding that houses one or a plurality of female contacts, the or each of which is adapted to be slidably engaged by a male contact blade.

The primary object of the invention is the provision of a female contact for a connector of the above kind that requires only a low insertion force and a low extraction force to be applied to a male contact blade when the latter is engaged with and disengaged from a female contact.

Another object of the invention is the provision of a female contact for a connector of the above kind wherein a minimum of metal contact is made with a complementary contact blade so that a maximum dissipation of the heat along the metal of the female contact can occur while ensuring nevertheless that a good electrical connection is achieved.

According to this invention there is provided a female contact for an electrical connector of the kind referred to, comprising a body portion of electric conductive material adapted to receive an electric lead and from which body portion extend an integral springy tongue and a pair of laterally spaced apart substantially rigid and parallel cantilever arms between which tongue and said arms a male contact blade can be slidably engaged and gripped so that the electrical contact is made with opposite surfaces of said blade, the part of each arm that makes contact with a first side of the blade being

shaped to make substantially point contact with said blade and the part of the springy tongue that makes contact with the other and opposite side of the blade being shaped to make substantially line contact therewith.

A preferred embodiment of the invention will now be described by way of example with reference to the drawings accompanying our provisional specification wherein:-

Figure 1 is a side elevation of a female contact embodying this invention, and

Figure 2 is a plan view of Figure 1.

Referring to the drawings the female contact is substantially trough-like shape and is formed (as viewed in Figure 1) with a forwardly and upwardly inclined spring tongue 1 that extends in continuity with body portion 1a of the connector. The rear part of the connector is formed with lugs 2 and 3 intended to be crimped respectively about a bared end of a lead and an adjacent part of the insulation thereof.

The front end of this rear part of the contact is formed with upstanding side walls 4 terminating at their upper ends in outwardly directed horizontal flanges 5 having leading parts 5a of less width and from which depend shallow vertical wall portions 4a extending forwardly cantilever fashion from the side walls 4.

The upper end of the forwardly and upwardly inclined springy tongue 1 is bowed at 1b and the adjacent parts of the depending wall portions 4a are formed with arcuate edges as indicated at 4b. The leading end of this tongue is downwardly and forwardly inclined as indicated at 1c.

When a plurality of male contact blades is engaged with an assembly of a corresponding number of complementary female contacts of an electrical connector, each constructed as described above, and houses in bores of a moulding of insulating material, each male contact blade (not shown) becomes sandwiched between the apex of

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the upper surface of the bowed portion 1b (first contact surface) of the springy tongue 1 (which yields) and the lower arcuate edges 4b (second contact surfaces) of the substantially rigid cantilever portions 4a extending forwardly from the side walls 4, the width of each male contact blade being greater than the width of the tongue 1 and sufficient to bridge the arcuate edges 4b of the substantially rigid cantilever portions 4a.

From the foregoing it will be appreciated that the minimum of metal is present between the contacting areas of the male and female contacts, i.e. between what can generally be regarded as a line contact between the top of the bowed part 1b and the underside of a male contact blade, and point contacts between the lower edges of the arcuate edges 4b and the upper surface of a male contact blade adjacent to the side edges thereof.

For this reason the maximum dissipation of the heat generated is obtained by convection from the surrounding air as well as the usual conduction along the metal.

An important feature of the construction of the illustrated female contact is the combination of the substantially rigid overhanging cantilever parts 4a and 5a and the resilient springy tongue 1. This has the effect of producing a consistent electrical contact and facilitates production. Thus the construction provided by this illustrated embodiment allows the contact preload to be of such great a magnitude without causing the insertion/extraction forces to be undesirably excessive.

Although the invention is primarily concerned with the engagement and disengagement of assemblies of male and female contacts of connectors of the kind referred to wherein usually much force may have to be exerted when engaging and disengaging mating contacts, the invention can, with advantage, be applied to connectors com-

prising a single pair of mating contacts, i.e. one female and one male contact.

WHAT WE CLAIM IS:-

1. A female contact for an electrical connector of the kind referred to, comprising a body portion of electric conductive material adapted to receive an electric lead and from which body portion extend an integral springy tongue and a pair of laterally spaced apart substantially rigid and parallel cantilever arms between which tongue and said arms a male contact blade can be slidably engaged and gripped so that electrical contact is made with opposite surfaces of said blade, being shaped to make substantially point contact with said blade and the part of the springy tongue that makes contact with the other and opposite side of the blade being shaped to make substantially line contact therewith.

2. A female contact as claimed in claim 1, wherein the part of each arm that makes electrical contact with said first side of a blade comprises an arcuate edge portion of said arm.

3. A female contact as claimed in claim 1 or 2, wherein the part of said springy tongue that makes contact with said opposite side of a blade is bowed towards said blade so as to make substantially transverse line contact therewith.

4. A female contact for an electrical connector of the kind referred to constructed substantially as hereinbefore described with reference to and as illustrated by the drawings accompanying the Provisional Specification.

5. An electrical connector of the kind referred to fitted with one or more female contacts as claimed in any of the preceding claims.

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